Efficiency Works™ Homes

Efficiency Works Homes Retrofit Rebate Service Provider Guide

Effective as of January 1, 2025

Overview

This service provider guide outlines the standards and expectations for service providers who want to participate in Platte River Power Authority's Efficiency Works Homes program.

We want service providers who are interested in continuing to grow the residential energy-efficiency market in northern Colorado and have demonstrated commitment to that goal.

A high level of cooperation and communication is expected of participating service providers, including workforce-development opportunities, trainings and leads generated through the Programs.

Please note: Efficiency Works also provides services for local businesses. Please visit EfficiencyWorks.org/Business for more information on commercial programs.

Contact information

Program administrator/sponsor

General program information
Efficiency Works
1-877-981-1888 (toll-free)
Website: EfficiencyWorks.org
Email: Homes@EfficiencyWorks.org

Efficiency Works™

Estes Park | Fort Collins | Longmont | Loveland

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About the Efficiency Works rebate and retrofit program

The Efficiency Works Rebate and Retrofit Program (or the "Program") is a joint utility program to support efficiency in Northern Colorado. Developed as a partnership between Platte River Power Authority and the utilities of its owner municipalities—Estes Park, Fort Collins, Longmont and Loveland—Efficiency Works unites all five utilities' efficiency offerings under one Program.

The Efficiency Works Rebate and Retrofit Program has the following goals:

Provide utility customers with a simple, timely and effective process for making home improvements that save energy and water and improve comfort, health and safety

- Maintain a high commitment to installation standards based on quality, best practices and building science
- Provide the customer with accurate, unbiased information to help them select energy- and water-improvement measures and choose service providers that will best meet their needs
- Provide utilities with cost-effective electricity savings
- Ensure that utility rebate funding is effectively utilized by confirming that service provider work meets Program standards
- Offer or inform the customer of financing options available from the utility or local financial institutions, in addition to rebates

Rebate and Retrofit program participants may receive a home efficiency assessment from an Efficiency Works advisor. The Efficiency Works advisor also provides assistance with:

- Understanding and prioritizing energy efficiency upgrades
- Facilitating service provider bidding
- Partnering with service providers to drive conversions for upgrades
- Promoting and discussing available rebates, financing and other incentives
- Assessments are required for Insulation and Air Sealing and Window/Sliding glass door measures. HVAC rebates are available to customers without an assessment.

Service provider requirements

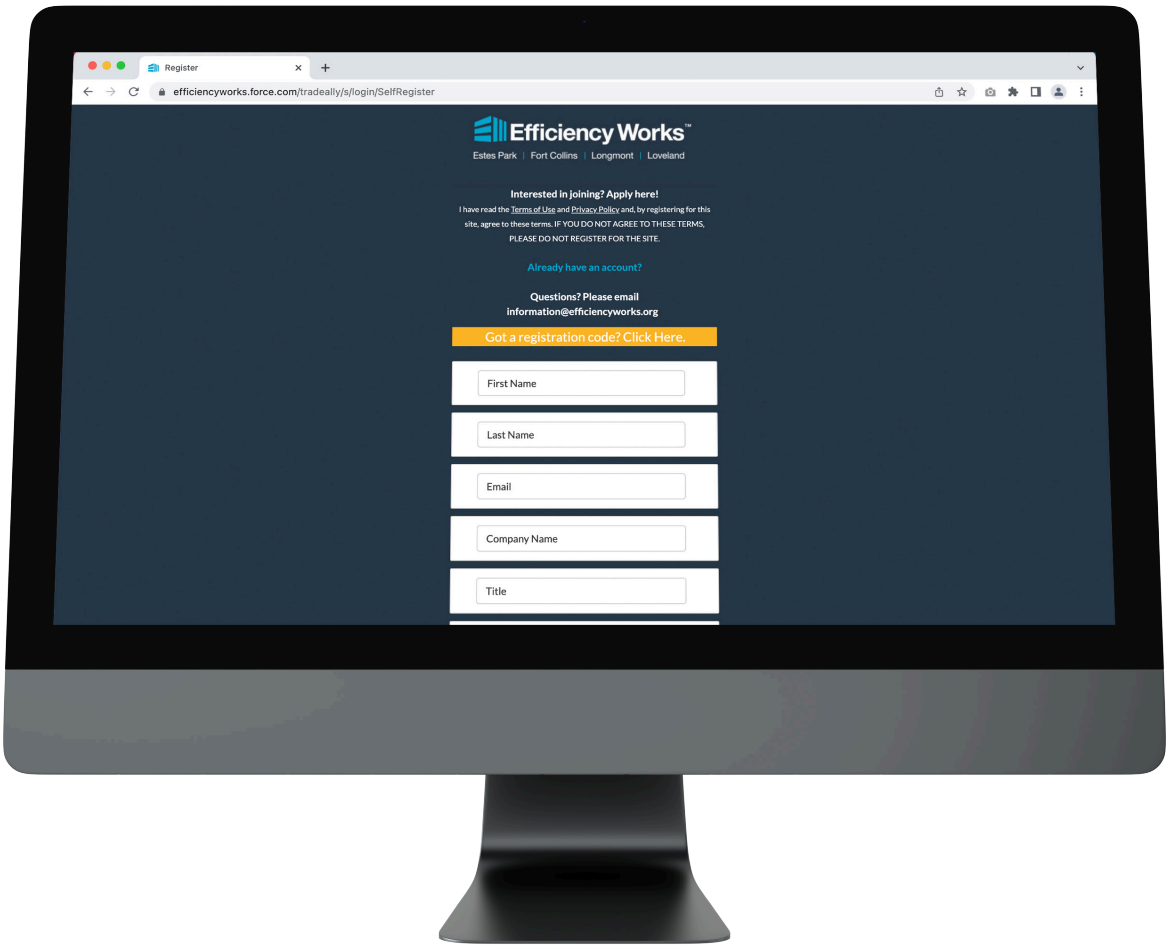
The following elements are required for all service providers. While only a few of these will be stored in the Trade Ally Connect (TAC) platform, all of these are to be maintained as we have the right to request them at any time:

- Service provider licenses (if applicable)
- Current W9 (required in TAC)
- EPA lead-safe certification (for window and insulation service providers)
- Proof of general liability insurance with Platte River Power Authority named (required in TAC)
- Certificate of good standing from Colorado Secretary of State
- Certificate of workman's comp
- Signed service provider agreement (digital signature required in TAC)
- Program orientation & rebate processing training
- Trade-specific technical training
- Complete an MIV (Mentoring Improvement Verification) within the first five completed rebate applications

Service provider application and agreement

The first step in the process of joining the Efficiency Works Rebate and Retrofit Program service provider pool is to set up a profile in our service provider portal (Trade Ally) using the following link:

EfficiencyWorks.Force.com/tradeally/s/login/SelfRegister



By entering in the required information, you receive a customized landing page that displays your company's website, contact info, services provided, territories covered, etc. The portal will also present you with our service provider agreement for you to sign.

Once you have completed your profile setup, the system will contact our team to let us know that you are wanting to join the Program. At this point, we will reach out to you to discuss your next steps of orientation and technical training.

Service provider onboarding process

- All contractors entering the service provider pool must watch our Orientation/Rebate Application training videos found in the online portal under the Resources tab.
- All service providers must have appropriate team members attend an Efficiency Works Rebate and Retrofit Program technical training with the Program manager or technical consultant.
- Until both requirements are met the new service provider will not be **Approved - Listed.**

Minimum training requirement

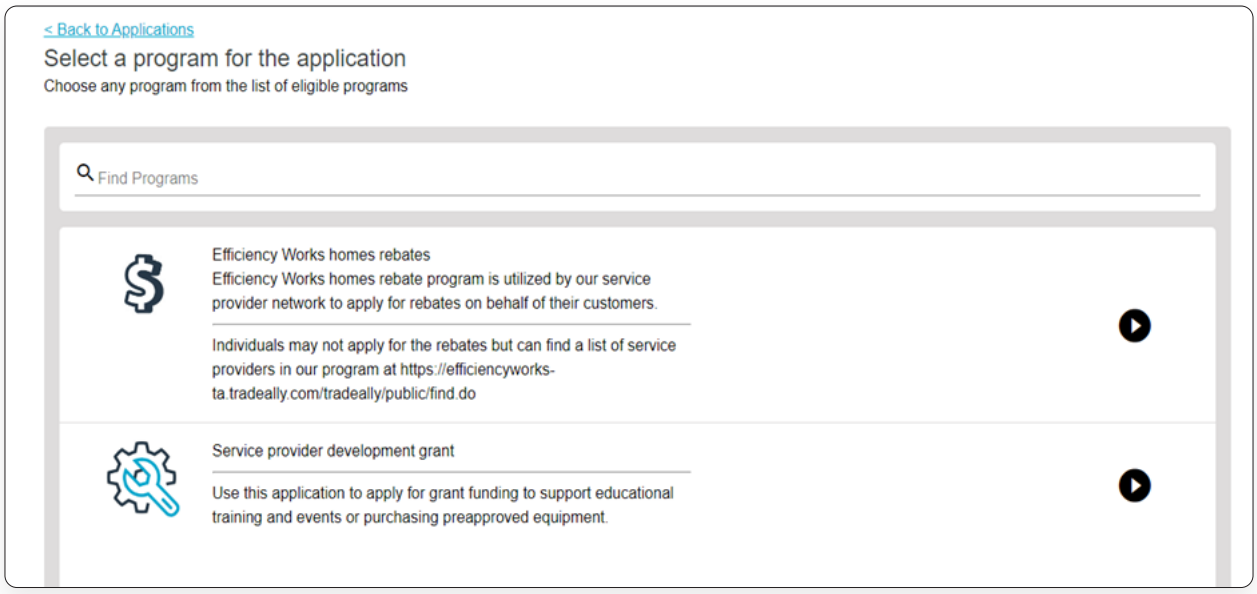
- All service providers are required to attend at least one training annually.
- This can include any Efficiency Works technical training, MIV or a staff/program overview with the program staff.
- Efficiency Works delists service providers who have not met the minimum training requirement annually on March 1st.

Minimum work requirement

- All service providers are required to complete at least one job within the first twelve months of joining the program and a minimum of one job annually thereafter.
- Twelve jobs annually is required to achieve Premium status on the Service Provider finder tool.
- Efficiency Works delists service providers who have not met the minimum work requirement annually on March 1st.

Service provider development grant

Please be reminded that our Service Provider Development Grant application is now accessible through your portal. Applying for the grant will be visible when applying for a rebate, as depicted in the attached screenshot.



It is important to note the following guidelines:

Preapproval is mandatory for all applications, including equipment purchases. Applications must be submitted BEFORE attending training sessions.

Once preapproved, final applications for training and equipment purchases must be submitted within 45 days of the purchase or training date.

Eligible items for the grant include custom training, approved EW Training (of multiple types), and various equipment such as a precision manometer, blower door, combustion analyzer, personal lo level CO alarm, TEC flow plate and Tru Tech Tools (Fieldpiece JL3KH6 Job Link® Charge and Air Kit). Additionally, MeasureQuick approved tools is also eligible for funding.

Eligible expenses

Training – Fees for training registrations and certifications will be approved by the Efficiency Works team on a case-by-case basis and must support Efficiency Works programs.

Travel for training – Custom incentives within the Service Provider Development Grant offering are eligible for travel expense reimbursement. Prescriptive Service Provider Development Grant incentives are ineligible for travel expense reimbursement. Eligible travel for the service provider development grant includes air travel, rental vehicle, personal vehicle mileage, rideshares and public transportation to and from an approved training event. See stipulation details below.

Air travel:

- Eligible air travel expenses include the purchase of a standard economy round-trip flight to the training destination for each attendee with an accompanying receipt.
- To and from nearest airport: If the training event requires a flight, personal vehicle mileage to and from the nearest airport is an eligible expense. Current IRS standard mileage rate applies (currently $0.63/mile). Mileage reimbursement requests must include screenshots of the path driven to and from the training location.
- Parking at nearest airport: If overnight airport parking is necessary, the training attendee may choose to park their vehicle in any parking facility but will be reimbursed only up to the current rate for DIA East/West garage (covered parking) lot.

Rental vehicle:

- Rental vehicle expenses are eligible if the vehicle purchase is approved and accompanied by a receipt.
- These expenses will be limited to a maximum of $80 per day.

Personal vehicle:

- If a personal vehicle is used to travel to an approved training, mileage driven will be eligible for reimbursement at the current IRS standard mileage rate (currently $0.63/mile) for all miles driven to attend trainings from either their starting destination (i.e., home) or work location, whichever is less.
- Mileage reimbursement requests must include screenshots of the path driven to and from the training location.

Rideshare and public transportation:

- If a rideshare service (e.g., Uber, Lyft) or public transportation is used to travel to an approved training, reimbursement will be provided for the actual fare paid.
- Reimbursement requests must include receipts or proof of payment showing the date, fare amount, and travel route taken.

Lodging for training – Overnight lodging for trainings that are greater than 200 miles from the attendees' home or office (whichever is shorter) is eligible for reimbursement. Overnight lodging in the Denver metro area is limited to conferences or events where scheduled activities cover more than one day. Otherwise, attendees are expected to drive to and from the activity on the day it is held.

INELIGBLE TRAVEL EXPENSES include vehicle toll fees, parking fees, hotel parking, meals, employees time at the event, other incidentals and unapproved equipment and trainings.

Equipment – Eligible items for the grant include various equipment including:

- Precision manometer
- Blower door
- Combustion analyzer
- Personal low-level CO alarm
- TEC flow plate
- Tru Tech Tools: Fieldpiece JL3KH6 Job Link® Charge and Air Kit

The total funds available may be subject to limitations based on the remaining total of grant funds, or rebates may be capped by available funds, 50% of training/equipment, or a total of $2,000, whichever is less.

Service provider status

Within the Efficiency Works Rebate and Retrofit Program, service providers may change statuses depending on their performance and minimum work requirements.

The service provider statuses are defined here:

Approved – Onboarding

- Company has successfully signed the Efficiency Works agreement.
- Company has provided required insurance documentation.
- Company has basic access to online portal but not applications.

Approved - Listed:

- Company has successfully signed the Efficiency Works agreement.
- Company has provided required insurance documentation.
- Appropriate company staff has completed required technical training and orientation.
- Company is now listed on the Efficiency Works website.
- Company staff now has full access in portal allowing submittal of rebate applications.

Approved - Delisted:

- Service provider does not have updated required paperwork. Ex. Certificate of Insurance (COI)
- Company has basic access to online portal but not applications.

Delisted - Unapproved:

- Was removed from the Program through an official letter. The possible reasons for removal include not meeting the minimum work requirement, not meeting technical standards, not meeting professional expectations, or the service provider requesting to be removed.

Performance tiers

All new service providers are started on the Standard Tier

Standard tier:

- Service provider maintains "Approved" status
- Company name will appear below premium listed service providers on the website.
- Rebates can be processed
- Meets minimum work requirement

Premium tier:

- Service provider maintains "Approved" status
- Rebates can be processed
- Meets premium work requirement of twelve jobs annually
- Window service providers get an exception to the Minimum Work Requirement. They are only required to complete 9 jobs/year to maintain Premium Tier status.
- The company's name will be listed higher on the website compared to service providers classified under the Standard Tier.

Suspension from the program (one-year minimum)

Service providers who fail to maintain either Premium Tier Status or Standard Tier Status will be removed from the pool. Any remaining jobs under contract with the suspended/terminated company shall be completed by the service provider under the supervision of Program management. If a suspended/terminated service provider wants to re-enter the Program, they would need to provide evidence that the previous problems have been corrected and develop a Program-approved improvement plan (**Appendix L**).

The Efficiency Works Rebate and Retrofit Program mentors and trains service providers to promote high-quality work and an excellent customer experience. To protect the reputation of the Program, suspension can occur based on any occurrences of service providers not meeting the criteria outlined in this Participant Guide and in the Participation Agreement. Examples include, but are not limited to, the following:

- Repeated failure to meet Program standards
- One or more field-inspection failures in especially egregious circumstances or if a serious health/safety issue is created
- Repeated customer complaints related to customer service and professionalism
- Failure to address homeowner complaints
- Failure to respond in a timely manner to requests for information from homeowners and Efficiency Works Program personnel (two business days)
- Each service provider shall designate a primary contact for Platte River Power Authority to reach regarding homeowner complaints, quality-control results, and time-sensitive Program information.
- Repeated failure to submit paperwork within the time frames outlined in this guide
- An egregious interaction with a customer or Program staff

Service provider certification and quality-control process

Efficiency Works requires that all service providers complete required Program trainings and mentoring sessions. An overview of Program mentoring requirements is attached in **Appendix G.**

Efficiency Works performs Mentoring Improvement Verifications (MIVs) and Post-Improvement Verification (PIVs) inspections on a sampling of all work performed where a rebate application has been submitted. Service providers are expected to perform work to municipal-building code and the Efficiency Works Rebate and Retrofit Program installation standards. Each service provider will have a minimum of one MIV session to assess the company's command of the Program's Installation Standards when joining the program. When corrections are identified, a corrections notice will be sent to the company contact. The service provider has five business days (or at the homeowner's convenience) to remedy any issues that were identified. All corrections shall be recorded with the appropriate photo documentation that should be submitted to the quality-control agent.

Program installation standards

Service providers who wish to participate in the Efficiency Works Rebate and Retrofit Program are expected to complete all upgrades using the Program standards outlined in this guide. The Program standards are attached in **Appendix A: Installation Standards.**

In addition, all work must be completed to meet all OSHA safety standards, all applicable building codes and manufacturer installation standards. It is the provider's responsibility to know which version of the International Energy Conservation Code applies to the home they are working on. All required permits for work completed in the Program must be pulled prior to the work being completed.

Where Program standards require combustion-safety testing, such tests should be performed in compliance with the process outlined in **Appendix B: Combustion safety testing process.**

Combustion safety testing

All trades are required to provide combustion safety testing documentation **(Appendix F)** for all jobs in the Program. See **Appendix B** for more details. Exception: Window jobs are required to present **Appendix F - Windows Post-improvement carbon monoxide and ventilation disclosure.**

Appendix F – Windows Post-improvement carbon monoxide and ventilation disclosure

Program standards require the commissioning of all HVAC units, ductless mini splits, and split system heat pumps. Commissioning forms must accompany all rebate applications. Please reference the electronically fillable forms below:

- **Appendix E - Air source heat pump, ducted or partially ducted commissioning form**
- **Appendix E2 - Air source heat pump, non-ducted commissioning form**

The **Post-improvement carbon monoxide and ventilation disclosure** can be found in **Appendix F.** This disclosure is **required for every job** in the Program regardless of whether a combustion test was required.

Program documentation requirements

In order to be eligible for rebates, all trades in the Program have their own quality-control documentation process. That process is outlined below:

- HVAC service providers must take photo documentation and fill out commissioning forms for heat pumps, ductless mini splits.
- Window service providers must take photo documentation of their installs and provide window specifications.
- Insulation and air-sealing service providers must take photo documentation of each measure before and after.

Applying for rebates

Service providers in the Efficiency Works Homes program applies for all customer rebates using our online portal Trade Ally Connect (TAC). There are **two steps** to complete the rebate application.

1. Have the customer sign the appropriate documents found in the online portal Resource page which includes the following documents:

   a. Terms and Conditions: This is our legal document that must be signed for the customer to receive any rebates. This must be signed by the owner or person having authority to sign.

   b. Appendix F – Efficiency Works Rebate and Retrofit Program post-improvement carbon monoxide and ventilation disclosure: This is required for certain measures as it clearly identifies any possible dangers that might exist from any combustion appliances such as their hot-water heater with regards to carbon monoxide.

2 The next step involves logging into your Service Provider portal. Once in your portal, click on the dollar sign symbol on the right side of the screen which will take you to the rebates that are already in the system under your company as well as let you start a new rebate application.

There are two options for how service provider can apply for our rebates.

Submit for final review and payment = Work is completed and is ready for review for payment

Preapproval* = Work has not begun, and you are applying to get a Rebate Reservation ensuring that the funding will be available once work has been completed.

**Rebates $2,500 and over as well as available bonuses and special offerings may require preapproval.*

Rebate training videos
We have created online training videos for all of our trades regarding how to apply for rebates at the following links:

HVAC rebate example
Vimeo.com/896341728

Windows rebate example
Vimeo.com/581865419

Insulation and air sealing rebate example
Vimeo.com/581863921

HVAC specialty videos
How to Use the Flow Plate
How to Measure Static Pressure
Vimeo.com/album/5061174
Password: HVACROCKS1

EW Combustion Safety Test Summary Steps
Vimeo.com/896693313

Setting up Worst Case Depressurization
Vimeo.com/896711935

EW Combustion Safety Protocol
Vimeo.com/896707435

In addition to the online training videos you should also take advantage of **Appendix K,** as it was created to show screenshots of the rebate application process.

Appendix K – Rebate application procedure

Appendix C - Rebate checklist – provide a documentation summary for qualifying rebate.

Applying for Heat Pumps rebates during cold weather - HVAC service providers
If you install a heat pump in cold weather and would like to wait for warmer weather to commission the system, we have a process for that.

Choose "Yes" for the question: "Does the system need to be commissioned at a later date?" in the heat pump measure screen before submitting your application. This tells our team that the heat pump was installed and that you will be following up with the commissioning process/form as soon as the weather turns warm again. This sets the application status to "Waiting on Commissioning" and also sends a notification to the customer and service provider saying that we have the application and are waiting on the service provider to return to commission in warmer weather. After you commission the unit, go back into the application and attach **Appendix E** and then submit. Cold weather commissioning for heat pumps is now available using the Appendix E commissioning form.

Rebate application time frame
Rebate applications must be submitted with all required documentation within **45 days of the project completion date** in order to be processed. The project completion date is defined as the date on which the Efficiency Works Incentives and Request for Payment Terms and Conditions were signed.

Once rebates are received, they are processed in a two week timeline. If there are any issues with your application, it will be sent back to you with a message explaining how to correct the application. Once a rebate has been approved, an email stating that fact along with how much money has been rewarded will be sent to the customer and the service provider for a paper trail. This process will keep the customer informed as to what is happening with their rebate funds.

Invoices and rebates

Any time a service provider sells a job that qualifies for rebates it should be clearly stated on the invoice. This includes using the Efficiency Works program name, the measure name, and total rebate amount.

Professionalism guidelines and contact with customers

High standards of professionalism are necessary to maintain your good reputation in the community, and we encourage you to strive for the best in customer service. Efficiency Works Rebate and Retrofit Program and its partner utilities rely heavily upon positive word of mouth for marketing. Our goal is to ensure that clients are completely satisfied with their experience, including their interactions with participating service providers. It is expected that service providers will handle all interactions with Efficiency Works clients with the utmost respect and professionalism. Efficiency Works Rebate and Retrofit Program reserves the right to remove a service provider from the participating service provider pool based upon repeated customer complaints related to customer service or professionalism.

The Program has established the following general guidelines for service providers:

- Respect the customer's time and be prompt for all appointments. If you expect to be more than a few minutes late, call the customer **before the appointment time** and let them know that you're running late and when you expect to be there.
- Follow through on your commitments to customers, including providing estimates in a timely manner.
- Educate all company customer service representatives to provide accurate information to customers about Efficiency Works. The person answering the phone needs to know about the Program for which you are providing service.
- Respect the customer's home and follow all rules of the house (i.e. taking off shoes, not parking in the driveway).
- If you make a mess of any kind, clean it up before leaving the job site.

Home performance service providers

The Efficiency Works Rebate and Retrofit program allows assessments to be offered by service providers who have the required tools and have met our training requirements. Service providers who meet this designation will be referred to as Home Performance (HP) service providers.

Home Performance Service Provider Eligibility:

- Must be actively participating in the program and in good standing
- Must attend training for assessment orientation and template evaluation
- Technician conducting assessment must be BPI or RESNET certified
- Must acquire all customers via internal marketing as the program will not send assessment leads to HP service providers

Assessment Expectations:

- SNUGGPro is required for the assessment
- If not using Efficiency Works assessment template - you must attach our rebate summary document to the customer report, so they are aware of the offerings
- Customer must sign Efficiency Works Assessment Terms and Conditions
- The assessment must be fair to the customer and the program, meaning that whatever is wrong with the home is the focus of the assessment, not the specific specialty of the service provider
- Optional: Home Energy Score (HES) is desired in Fort Collins

Quality Control:

- Efficiency Works Quality Control staff will shadow the first job to make sure the expected process is in place
- First five assessments will get 100% paper review prior to providing the report to the customer.

Home Performance Assessment Rebate Table

Measure	Customer	EW	Xcel
Assessment (Gas)	$60	$140	$200
Assessment (Electric)	$60	$340	$0
HES	$0	$75	$0

To inquire about becoming a HP service provider - contact Homes@EfficiencyWorks.org.

Assessment handoff for air sealing and insulation service providers

When you meet a customer who wants to do rebate eligible work in the Insulation and Air Sealing trade, you always have to check on their eligibility.

- Do they buy electricity from one of these entities?: Fort Collins, Loveland, Longmont, Estes Park
- Is the home more than 365 days old?
- Have you had an Efficiency Works assessment before?

If you meet a customer who meets the eligibility list above but does not have the assessment, use the following protocol to hand them over to the program.

Send an email with the customer's address and last name to both emails listed below:

- EfficiencyWorks@ArusConsulting.com
- Homes@EfficiencyWorks.org

"Greetings Efficiency Works Energy Advisors,

I am sending you a customer last name, [Last Name], who resides at:

[Street Address]

[City, CO Zip]

We are in discussions about doing rebate eligible insulation and air sealing work and are sending them over to you to get that required energy assessment scheduled. Please let us know when the customers assessment report is complete so that we can schedule their upgrades.

Let us know if you have any questions.

Sincerely,"

This protocol will prevent the customer from automatically being handed over to our "Streamline Service Providers" where they would see standardized pricing.

However, if the customer during their conversation with their Efficiency Works Energy Advisor decides they want to see "Streamlined " pricing and be introduced to a Streamlined Service Provider, we would be obligated to do that as the customer drives the process. The streamlined offering including standardized pricing will not be offered to the customer unless the customer requests to see it. Platte River Power Authority in no way guarantees that the customer will continue to complete the air sealing and insulation work with the contractor who originally handed them over for an assessment.

Health and safety

The Efficiency Works Rebate and Retrofit Program works on existing homes across Northern Colorado. Due to the age of the homes participating, we occasionally run into health and safety concerns. According to Platte River Power Authority service provider Participation Agreement, "The service provider agrees to meet OSHA and department of labor requirements regarding personal protective equipment and safe work practices." This means that it's up to you to do safe work, and it is expected. Please read through these scenarios as many of them impact the eligibility of rebates.

The following sections address the Program's stance on different health-and-safety concerns. Some of this language is in our assessment report, and some of it is in signed paperwork with the customers.

Asbestos
"The presence of suspected non-rigid asbestos in the home disqualifies the home for all rebates, blower door tests, duct pressurization tests or any activity that will introduce asbestos particles into the living space. Non-rigid asbestos materials that can be a source of airborne asbestos if material can be disturbed by movement or air currents. Examples of non-rigid asbestos include, but are not limited to, vermiculite, boiler and pipe insulation, ceiling coatings, etc. Blower door tests shall not be conducted if asbestos is present or suspected. Vermiculite used as loose fill insulation should be presumed to contain asbestos.

To move forward after possible asbestos is identified:

- The customer must either produce qualified lab test results showing that the home does not have asbestos

-or-

- A qualified remediation service provider must remediate the asbestos to meet industry standards and provide proof that the work is complete.

-or-

- If the planned work will not disturb the area with possible asbestos, then the work can move forward. This approach follows the Federal Weatherization Program's model.

Mold
"According to the EPA, any mold area less than 10 square feet is considered the lowest level of contamination and can be handled by the customer. When you get over this amount, expert service providers are recommended.

- EPA.gov/mold/mold-cleanup-your-home
- EPA.gov/mold/mold-course-chapter-6

When a mold-like substance is found to be present in an area of the home and it exceeds an area greater than 10 square feet, the blower door test shall NOT be done. Air sealing and insulation work may not be installed until one of the following conditions have been met:

1. A certified mold abatement professional has remediated the mold and has attested to its remediation in writing.
2. A certified mold abatement professional has determined that the substance is not mold and does not need to be remediated and has attested to this determination in writing.
3. If the area of suspected mold-like substance is less than 10 square feet, the homeowner should be informed and directed to consult the EPA's "A Brief Guide to Mold, Moisture, and Your Home."

Consider radon testing
Radon typically occurs near mountainous regions, and Colorado has one of the highest radon danger designations in the United States.

Test for lead
Your home may also contain lead paint. Lead was used in paint until the late 1970s. Test for lead before insulating, air sealing, or renovating. If lead is found, your service provider may have additional requirements to perform your work.

Knob and tube wiring
Due to its age (pre-1950), your home may have knob-and-tube wiring. This is a potential fire hazard due to its age, improper modifications, and insulation covering the wires. In addition, knob and tube has no ground wire and cannot service three-pronged appliances (which violates modern electrical codes). If the wiring has never been upgraded, it will need to be replaced.

To move forward after knob and tube wiring is identified:
- Work with a licensed electrician to verify that it is not energized before air sealing or insulating.
- Once a licensed electrician has signed off (on their business letterhead) that the knob and tube is no longer energized, the work may proceed.

Chemical sensitivity
"Disclaimer: This assessment/report does not offer medical advice or establish if a home is "safe to occupy." If you have any health condition that represents a compromised immune system, chemical sensitivities, or any similar issue, you should seek expert medical advice about the impacts of altering your home and what products should be used.

Appendix A: Installation standards

Effective 1/1/2025

General notes

- An Efficiency Works Energy Assessment required as prerequisite for all jobs (Exceptions: Windows can be installed pre-assessment & HVAC jobs do not require an assessment).
- To participate in the Efficiency Works Rebate and Retrofit Program (EWR), service providers must apply for inclusion, and pass the applicable training requirements.
- Do-It-Yourself installation will not qualify for incentives.
- The information in this matrix is subject to change. Platte River Power Authority (PRPA) will provide thirty (30) days' notice of any changes in installation standards.
- All efficiency measures must be installed per the manufacturer's installation instructions, industry standards, and all applicable federal, state, and local codes and regulations.
- Where possible, all insulation measures must meet the R-value requirements prescribed by the IECC version adopted in each Authority Having Jurisdiction (AHJ).
- Refer to the program website to see the latest incentive summary: EfficiencyWorks.org/homes/rebates
- Homes participating in the Efficiency Works Program are evaluated for tightness and whole house controlled mechanical ventilation rates using ASHRAE 62.2-2013. The initial tightness is reported in the Assessment Report and the Homeowner is provided a post-improvement disclosure acknowledging the potential need for controlled mechanical ventilation.
- Where any building envelope improvement measures (attic insulation, frame wall insulation, window replacement, etc.) are undertaken, the corresponding building component(s) must be durably air sealed.
- Where required, combustion safety testing must be performed the day of the completion of improvements.
- An Efficiency Works assessment is required to be completed prior to the rebate application for all building envelope measures.

Air sealing

Existing conditions

- Initial blower door test: ACH50 = 3.0 or greater.

Installation standards

Attic to living space air sealing:

1. In order to qualify for rebates, efforts must be taken to air seal significant leaks and bypasses that allow connection between the outside and living space. Areas to air seal may include bypasses around chimneys, drop soffits, shower inserts or other large penetrations; interior and exterior wall top plates; and plumbing and wiring penetrations.
2. Use approved high temp sealant around heat sources like B-vents, fireplaces and chimneys, and make sure they maintain the required clearance to combustibles.

Minimum shell leakage (CFM50) reduction of:

- 15% reduction to qualify for Tier 1 rebate
- 25% reduction to qualify for Tier 2 rebate
- 33% reduction to qualify for Tier 3 rebate
- 50% reduction to qualify for Tier 4 rebate
- **If the Combustion Safety Test fails under Worst Case Conditions**, the service provider is required to counsel the Homeowner about possible solutions.
- **If the Combustion Safety Tests fail under Natural Conditions**, the service provider is required to counsel the Homeowner on possible solutions and refer them to the list of participating HVAC service providers for further diagnostics and solutions. **No rebates will be approved for houses that have CAZ failures under Natural Conditions until those failures are remedied.**

Post-installation tests

- Combustion Safety Test required record results on Appendix F.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness improvement.

Field Manual Notes

- Need to fully educate customer on front end so they understand about house as a system, ventilation and combustion safety.
- Options to mitigate a **failed Combustion Safety Test** may include:
  1. Replace natural draft gas burning appliances with sealed combustion or electric equipment.
  2. Seal return air ducts and filter slot in CAZ.
  3. Re-line the old common B- vent.
  4. Add combustion air ducts.
  5. Obtain further diagnostics and solutions from an EW-H Participating HVAC service provider.
- Service provider to educate homeowner about these options.

Conditioned crawl space insulation

Existing conditions

- Service provider must inspect for proper grading, downspout leaders, moisture evidence on foundation walls, cracks in the foundation, and damp ground. **All moisture problems must be mitigated.**
- If any evidence of moisture intrusion having occurred at any time is present, (efflorescence on the foundation wall, cracked soil, mold, staining) the crawl space must be treated as having moisture present.
- Un-insulated or poorly installed insulation.
- If framed floor above is insulated with anything except closed cell foam, a vapor barrier which is attached to the cold side of the framed floor assembly is not allowed.

Installation standards

- All three elements (rim joist, foundation wall, and moisture/soil gas barrier) of a conditioned crawl space must be completed in order to qualify for a rebate. If any one of the elements already exists, it must meet EWR Installation Standards AND the other elements must be completed to EWR Installation Standards for a conditioned crawl space rebate.
- **Moisture/ soil gas barrier installation requirements:**
  1. Barrier must meet ASTM specs listed in Field Manual Notes Notes.
  2. Remove all debris and major ground surface irregularities.
  3. Cross laminated polyethylene barrier is required; the barrier must be sealed and mechanically fastened at least 12” up crawl space foundation wall or, in cases involving moisture, to the foundation plate (urethane caulk meets sealing and mechanical fastening requirements) [**Permathane** Preferred]. Seams must be overlapped 6” minimum and be sealed w/ approved tape

or sealant.

4. **If the foundation or soil in the crawl space is damp or shows evidence of moisture intrusion, the soil gas barrier must be extended up to and be sealed to the foundation plate to keep moisture out of wall insulation.** Provision must then be made for moisture under the barrier or in the foundation wall to be removed so covered areas can dry to the outside.

- **Field stone foundation wall will need to be air sealed. (See Field Manual Notes Notes)**
- **Insulate and air seal rim joists and foundation plate to R-value prescribed by the IECC as adopted by the Authority Having Jurisdiction (AHJ):**

1. XPS foam board cut to fit, foamed-in place.
2. Closed or open cell 2-part spray foam.

- Foam insulation does not require thermal barrier on rim joist (per IRC), **but does require an ignition barrier** as outlined in 2012 IRC Section R316.5.4.

- **Insulate interior of foundation walls to R-value prescribed by the IECC as adopted by the AHJ:**

1. **Perforated vinyl faced fiberglass blanket**

- **Vinyl faced insulation blanket is NOT allowed if foundation or ground shows evidence of past or present moisture-** Unless the moisture barrier extends up to and is sealed to the foundation plate.
- Insulation blanket must be full height and be in substantial contact with the foundation wall along its entire width and not be pulled out by the footing.
- Seal vinyl facing to top of wall and soil barrier so conditioned inside air cannot reach foundation wall and condense.

2. **Foam board: Polyisocyanurate, XPS or EPS**

- **Ignition barrier required**, unless listed and approved for use without a thermal or ignition barrier in this application by the ICC ES (see Field Manual Notes notes).

3. **Two-part closed or open cell spray foam**

- **Ignition barrier required,** unless listed and approved for use without a thermal or ignition barrier in this application by the ICC ES (see Field Manual Notes notes).
- **Open cell spray foam is only allowed** on the interior of foundation walls if there is **no indication of moisture,** unless the soil moisture barrier extends to the foundation plate with mechanical ventilation underneath.

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness

improvement.

Field Manual Notes

- **Moisture/ soil gas barrier specifications:**
  1. Cross laminated poly sheeting used as a moisture and soil gas barrier in crawl spaces must be performance tested to ASTM E-1745 and installed per ASTM E-1643 with a minimum of Class C rated. It must resist deterioration from contact with the soil and maintain a perm of 0.3 or less (per ASTM E-154 section 13). The moisture and soil gas barrier must have a minimum strength of 13.6 lbs./in (ASTM E-154 section 9) and puncture resistance of 475 grams (ASTM D-1709 method B).
  2. Field stone and brick foundation details: moisture barrier must run up to foundation plate and be fastened and caulked; or apply closed cell spray foam with an ignition barrier covering all fieldstone or brick foundation walls.
- **Crawl spaces that contain atmospherically vented combustion appliances must have adequate volume for combustion air and/ or provide outside combustion air per 2012 International Residential Code (IRC) Section G2407.**
- No spot ventilation exhaust vents may terminate in the crawl space.
- No insulation needed on wall between crawl space and basement.
- All foam must meet ASTM E-84 Class 1 standards for Flame Spread and Smoke Development.
- **Ignition barriers may be required over spray foam or foam board installed on the inside of crawl space foundation walls depending on product specifications:**
  1. Ignition barriers include intumescent coatings listed for this use, 1½" mineral fiber (includes fiberglass), and other materials listed in the 2012 IRC, Section 316.5.4.
  2. Spray foam insulation that has been approved by the ICC ES for use in these locations without the addition of an ignition barrier can be used. The ICC ES Report for such material must be provided to the Program Manager for reference prior to the issuance of rebates.
- Rim joist and sill plate in a crawlspace can have up to 3.25" of spray foam applied without a **thermal** barrier being required (2012 IRC Section R316.5.11). An ignition barrier may still be required in this location depending on product specifications.

Basement wall insulation

Existing conditions

- No existing insulation.
- Exterior grade must drain away from foundation or be mitigated as part of the job scope.
- Foundation cracks shall be completely sealed.

- **If evidence of moisture exists, it must be or have been mitigated prior to insulating.**

Installation standards

- Insulate interior of basement walls to the R-value prescribed by the IECC as adopted by the AHJ.
  1. Exterior foundation wall: XPS foam board
  1. Exterior foam board insulation must be closed cell and extend down 48" below grade or to top of footer - whichever is less. Insulation must be protected above grade w/ non-organic exterior finish. Provide flashing from under existing exterior finish, over top of foam exterior finish, flashed from under finish on walls.
  2. Interior Foundation Wall Insulation:
  1. Old brick or field stone foundations **must have closed cell spray foam** installed over entire interior foundation wall and rim joist.
  2. 1" XPS, EPS or Polyisocyanurate foam board + R-13 Batt
     - R-13 un-faced batt is installed in the finished frame wall so foundation can dry to the inside. (See Field Manual Notes).
  3. Interior foundation wall insulation: XPS or EPS foam board or spray foam.
     - Basement walls with foam insulation must be finished with drywall or equivalent thermal barrier, except where material is listed and approved for use in this application by the ICC ES.
     - Open cell spray foam is approved only if there is no indication of moisture on the foundation walls
  4. Perforated vinyl faced fiberglass blanket:
     - Vinyl faced insulation blanket is NOT allowed if foundation shows evidence of past or present moisture.
     - Insulation blanket must be full height and be in substantial contact with the foundation wall along its entire width and not be pulled out by the footing.
     - Seal vinyl facing to top of wall and soil barrier so conditioned inside air cannot reach foundation wall and condense.
- Insulate and air-seal rim joist and foundation plate to R-value prescribed by the IECC as adopted by the AHJ:
  1. XPS or Polyisocyanurate foam board cut to fit, foamed-in place.
  2. Closed or open cell 2-part spray foam
  3. Foam insulation does not require **thermal** barrier on rim joist (per IRC), but may require an **ignition** barrier as outlined in 2012 IRC Section R316.5.4 depending on product specifications.

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness

improvement.

Field Manual Notes

- Cracks causing moisture intrusion into basement shall be sealed as part of the job scope.

Cantilever floor insulation

Existing conditions

- No restriction on existing condition of exterior cantilevers or cantilevers into garage.

Installation standards

- Exterior finish material must be removed if water pipes are located below the top 1/2 of the floor joist cavity.
- Inside end of joist space must be blocked and air sealed (see Field Manual Notes for options).
- If interior blocking is not in place, and there is adequate room, remove soffits to block and air seal.
- If soffits cannot be removed to block and air seal interior, other methods of interior blocking can be used.
- Floor cavities used as a return air duct must have the header block or pan sealed prior to insulation installation. **Make sure insulation does not enter return air floor cavity.**
- Disconnected ducts must be repaired prior to insulation installation.
- Final condition: intact, sealed air barrier, inside and outside.
- Final condition: joist cavities dense packed with blown insulation.
- If water pipes are in the bottom half of the joist cavity in the cantilevered floor area, they must be protected from freezing by installing net under the bottom of pipes so that insulation is only blown on the cold side of the pipe.
- Seal around any supply boots where they meet the subfloor to prevent insulation from blowing into the house.
- **Service providers must provide photo documentation of the following details:**
  1. Netting of pipes in floor cavities.
  2. Blocking of inside end of joist space.
  3. Return air duct sealing to prevent insulation from entering forced air system.
  4. Air sealing around any supply boots at the subfloor.

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.

- Blower door test required prior to air sealing and after insulating in order to measure house tightness improvement. Record results on Appendix F.

Field Manual Notes

- Other kinds of end blocking that will create the 6th side of insulation cavity:
  - Change in direction of floor joists
  - Rim joist on other side of a narrow room adjacent to cantilever
  - House with insulation in interior floors (for sound)
  - Install an onion bag in each floor cavity that is filled with insulation to act as a block
- Do not dense pack near panned or leaky return system without air sealing ducts.
- The phrase dense-pack refers to a specific process where the insulation is blown into the cavity and then dense-packed. We do no rebate a cantilever that has simply been filled with insulation. It must be dense- packed to 3.5lbs/cubic foot (cellulose) – ~2.5lbs/cubic foot for (fiberglass).

Floor over garage insulation

Existing conditions

- Existing insulation does not fill floor cavity.

Installation standards

- Drywall must be removed if the joist space over wall between garage and house is not air sealed.
- Inside end of joist space must be blocked and air sealed (see Field Manual Notes for options).
- Drywall must be removed if water pipes are located below the top 1/2 of the floor joist cavity.
- If water pipes are located in the bottom half of the joist cavity in the floor over the garage area, they must be protected from freezing by installing net/tyvek under the bottom of pipes so that insulation is only blown on the cold side of the pipe.
  - In order to install net/tyvek, drywall must be removed from the garage ceiling to gain access to pipes.
  - Drywall must be replaced with 5/8” Type X gypsum board or other material approved for use in this location by the IRC as adopted by the AHJ.
- Floor cavities used as a return air duct must have the header block or pan sealed prior to insulation installation. **Make sure insulation does not enter return air floor cavity.**
- Air seal around any visible supply boots at the subfloor to prevent insulation from entering the living space.
- Disconnected ducts must be repaired prior to insulation installation.

- Insulation must be dense packed (see field notes).
- Drywall on garage ceiling must be complete and sealed.
- Garage ceiling with living space floor above is a Firewall. If removed, it must be restored to current code compliance.
- **Service providers must provide photo documentation of the following details:**
  1. Netting of pipes in floor cavities
  2. Blocking of inside end of joist space
  3. Return air duct sealing to prevent insulation from entering forced air system
  4. Air sealing around any supply boots at the subfloor

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F Form.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness improvement. Record results on Appendix F Form.

Field Manual Notes

- Other kinds of end blocking that will create the 6th side of insulation cavity when dense packing floor joist cavity:
  1. Change in direction of floor joists
  2. Rim joist on other side of a narrow room adjacent to cantilever
  3. House with insulation in interior floors (for sound)
  4. Install a burlap bag in each floor cavity that is filled with insulation to act as a block
- Do not dense pack near panned or leaky return system without air sealing ducts.
- The phrase dense-pack refers to a specific process where the insulation is blown into the cavity and then dense-packed. **We do not rebate a garage floor that has simply been filled with insulation.** It must be dense-packed to 3.5lbs/cubic foot (cellulose) – ~2.5lbs/cubic foot for (fiberglass).

Exterior frame wall insulation

Existing conditions

- Existing condition: R-9 or less.

- Do not dense pack walls if knob and tube wiring is present.
- Measure includes garage/house walls.

Installation standards

- Use dense-pack cellulose or short fiber fiberglass in all wall cavities, installed with fill tube.
- Air seal around windows, doors, and electrical boxes in wall assembly prior to insulating.
- Must seal all penetrations into electrical panels, outlet and switch boxes to keep out insulation.
- Plug, seal and refinish all drill holes used to fill exterior walls after insulating.
- Cloth sheathed electrical wire must be evaluated or replaced with contemporary code complying 90 degree C temperature rated wiring prior to dense packing walls by an electrical service provider licensed to perform work in the local jurisdiction.
- Knob and tube wiring must be replaced with contemporary code complying 90 degree C temperature rated wiring prior to dense packing walls by an electrical service provider licensed to perform work in the local jurisdiction.
- Lead safe practices should be followed if appropriate.

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness improvement.

Attic insulation (flat ceiling)

Existing conditions

- Existing insulation of assembly must be < R- 30 to qualify for attic insulation rebate.
- Insulation areas compressed to <R-30 after air sealing can qualify for a rebate.

Installation standards

- Attic must be air sealed and have mechanical / duct issues corrected prior to blowing insulation.
- Insulation baffles must be installed between rafters or trusses to allow air flow from the box soffit to the attic. Baffles must be installed adjacent to all soffit vent locations, with air impermeable insulation stops between all other truss rafter ends (recommend adding passive ventilation to minimum code amounts).
- Install an insulation stop on the outside edge of the top plates to maximize R-value at exterior edge of exterior wall top plates and minimize wind washing. This can consist of insulation batts or bags to blow insulation into. Closed-cell spray foam is preferred here for higher R-values.

- Air-seal all shell components interfacing with attic, including the back side and underneath knee walls.
- Extend any unvented bath or kitchen fan vent to exterior (vents not allowed to terminate in attic).
- Cloth sheathed electrical wire must be evaluated or replaced with code complying wiring prior to insulating.
- Knob and tube wiring must be abandoned or removed and new code complying wiring installed prior to insulating.
- Repair and seal any disconnected HVAC prior to blowing attic insulation:
  1. Un-insulated ducts must be insulated to minimum R-8.
  2. Fix ducts that severely restrict airflow.
- **Insulation** < R-30 must be improved to at least R-60 to qualify for a rebate:
  1. If blowing cellulose on top of fiberglass, add an additional 2" of cellulose to the total to account for compression of the fiberglass underneath.
- **Seal thermal bypasses:**
  1. Chases, plumbing vents, b-vents, chimneys, top plate penetrations, etc. Insulate and air seal knee walls and skylight shafts and provide an air barrier. Separate knee wall and skylight requirements and incentives are listed below.
- Whole house fan in ceiling must have a sealed, insulated cover, or install fan w/ motorized insulated cover.
- Recessed lighting (except ICAT rated recessed lighting) must be air- sealed with either can inserts or covers. Covers must maintain 3" clearance to can and unrated cans must not be covered with insulation. If installing inserts also seal gap in drywall around can.
- Attic hatch must be insulated to the same level as the adjacent attic insulation (with a minimum of R-20 of that insulation being rigid foam), be air-sealed with a dense foam weather strip, and have full depth insulation dam around the hatch installed in accordance with IECC as adopted by the AHJ (The dam must support the weight of a 200 lb. adult). Seal all trim around hatch to drywall. The hatch must be fully functional, that is, the hatch must be able to be removed from the access opening, either up into the attic, or down into the house. If the location and spacing of the hatch prevents it from being insulated to our standards to stay functional – an exception will be allowed.
  - Alternatively, if hatch is insulated with rigid foam board **only**, R-38 is adequate.
- Attic hatches that are pull-down stair assemblies must have some system to air seal and insulate that assembly. This can be a site-built system or a store-bought system. See Field Manual Notes for suggestions.
- Foam panel can be undersized by ½ inch maximum compared to drywall surface area. This means the foam should be as close to the size of the drywall as possible.

- Insulation dams are required at all ceiling level transitions (including tops of knee walls, the attic hatch entrance and around whole house fans) and around whole house fans. This is typically cardboard or return panning material.
- **Ignition barrier not required** on exposed foam, provided the following conditions are met, and it is allowed by the product's ESR:
  1. Entry to the attic or crawl space is only to service utilities and no storage is permitted.
  2. Air in the attic is not intentionally circulated to other parts of the building.
  3. Attic ventilation is provided in accordance with IRC Section R806, as applicable.
  4. Combustion air is provided in accordance with IMC (International Mechanical Code®) Section 701.
- If attic storage is present or possible (pull-down stair, platform, etc.) **ignition barrier is required** on all exposed foam.
- A vertical insulation dam should be mechanically fastened to the vertical face of the knee wall right below where the wall transitions to the ceiling. This will allow the insulation on the ceiling to make great contact with the actual top plate and provide the thermal resistance.

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness improvement. Record results on Appendix F.

Field Manual Notes

- Alternative details are allowed for installing adequate insulation at exterior wall top plates (while maintaining ventilation path at soffit vents).
- Recommend flagging electrical J boxes that will be buried under insulation.
- Recommend adding attic ventilation that meets the requirements of IRC as adopted by the AHJ.
- Pull-down stair options:
  1. Build a rigid foam box around the perimeter of the stair assembly that is air sealed where it meets the ceiling plane. (Foam insulation requires an ignition barrier in this case where storage or pull-down stair is present).
  2. Install a kit like an Attic Tent, Draft Cap, or Energy Guardian that is designed to seal this location.
- Insulation dams at ceiling level transitions can be made of cardboard.

Attic knee wall and skylight shaft

Existing conditions

- Un-insulated or insulated to R-11 or less.

Installation standards

1. If un-insulated, first fill cavity, then add a minimum R11 spray foam, foam board or vinyl faced fiberglass blanket over cavity insulation:
    1. Seal all edges and seams of insulation
    2. **Ignition barrier not required** on exposed foam, provided the following conditions are met, and it is allowed by the product's ESR:
        - Entry to the attic is only to service utilities and no storage is permitted.
        - Air in the attic is not intentionally circulated to other parts of the building.
        - Attic ventilation is provided in accordance with IRC Section R806, as applicable.
        - Combustion air is provided in accordance with IMC (International Mechanical Code®) Section 701.
    3. If attic storage is present or possible (pull-down stair, platform, etc.) **ignition barrier may be required** on all exposed foam depending on product specifications.
    4. Insulation must meet flame spread and smoke development requirements of IRC version adopted by the AHJ.
    5. Insulation must be installed to RESNET Grade I.
2. If already insulated, add a minimum R-11 spray foam, foam board or vinyl faced fiberglass blanket over existing cavity insulation:
    1. Seal all edges and seams of insulation
    2. **Ignition barrier not required** on exposed foam, provided the following conditions are met, and it is allowed by the product's ESR:
        - Entry to the attic or crawl space is only to service utilities and no storage is permitted.
        - Air in the attic is not intentionally circulated to other parts of the building.
        - Attic ventilation is provided in accordance with IRC Section R806, as applicable.
        - Combustion air is provided in accordance with IMC (International Mechanical Code®) Section 701.
    3. If attic storage is present or possible (pull-down stair, platform, etc.) ignition barrier may be required depending on product specifications.
    4. Insulation must meet flame spread and smoke development requirements of IRC version as adopted by the AHJ.
    5. Insulation must be installed to RESNET Grade I.

3. Insulation dams are required at the tops of knee walls. (See Field Manual Notes)

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness improvement. Record results on Appendix F.

Field Manual Notes

- An air barrier alone does not address the significant thermal bridging problems experienced in these assemblies, especially in the summer when attic temperatures often exceed 130˚F.
- While an air barrier only is a requirement for attic insulation rebates –rebates for attic knee wall insulation requires the addition of a thermal break.
- It is recommended, but not required, that un-insulated solar tubes be insulated to R-11.
- A vertical insulation dam should be mechanically fastened to the vertical face of the knee wall right below where the wall transitions to the ceiling. This will allow the insulation on the ceiling to make contact with the actual top plate and provide the thermal resistance.
- Insulation dams at ceiling level transitions can be made of cardboard.

Cathedral ceiling insulation
(unvented attic and unvented enclosed rafter spaces)

Existing conditions

A cathedral ceiling is present.

Installation standards

- No Class 1 vapor retarders may be installed on the inside face of the roof rafters.
- Where wood shingles or shakes are used, a minimum ¼" vented air space must separate the shingles or shakes and the roofing underlayment above the structural sheathing.
- In order to earn rebates, unvented attic and unvented enclosed rafter spaces must have R-20 continuous exterior rigid board or sheet insulation installed directly above the structural roof sheathing and covered by an approved roofing material (per the IRC version adopted by the AHJ).
  - R-20 continuous exterior rigid board or sheet insulation must meet the requirements of the 2012 IRC Section R806.5 & R906.2.
  - All seams in the exterior rigid board or sheet insulation must be sealed at the perimeter of each individual sheet in order to form a continuous layer.

- Dense packed short fiber fiberglass **insulation (no cellulose will be allowed)** must be installed to completely fill the cavity between the structural roof sheathing and the interior drywall to the required density.
- Replace or air seal any IC recessed lights in vaulted rafter space with Air Tight (ICAT) cans or install an insert and air seal drywall cutout to can.

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Blower door test required prior to air sealing and after.

Field Manual Notes

- Allowable unvented vaulted ceiling assemblies are addressed in the 2012 IRC Section 806.5. In addition to the method described in the Installation Standards, unvented vaulted ceilings may also be insulated without the use of exterior rigid board or sheet insulation, but only when an adequately thick layer of air impermeable, vapor impermeable insulation is installed in direct contact with the inside face of the structural roof sheathing. These alternative methods would require the complete removal of the interior drywall.

Conditioned Attics

(unvented attics with spray foam on the underside of the roof deck)

Existing conditions

Attic cannot have any major signs of moisture damage.

Installation standards

- All existing insulation must be removed from the attic floor (vacuum out all blown insulation – remove all batts).
- All sources of interior moisture must be properly vented.
  - No unvented grow operations.
  - Clothes dryers and kitchen & bath fans must be operational and vented to the outside.
  - Relative Humidity should not exceed 40%.
- Spray foam must be closed cell if insulation is only on the underside of the roof deck.
  - Open cell (air permeable) foam is allowed on the underside of the roof deck only if there is R-20 worth of air impermeable insulation (rigid closed cell foam) installed directly above the structural roof sheathing for condensation control.
- An ignition barrier is required to cover all exposed foam.
- Minimum R-30 on underside of roof deck.

- Spray foam insulation must extend down over the top plate and must have backing (e.g. rolled up fiberglass batt) where roof deck meets the top plate.
- All attic ventilation (soffit, gable, roof vents) must be removed or sealed.
- All gable walls must now meet wall R-Value requirements.
- No interior Class 1 vapor retarders are allowed on the ceiling side (attic floor) of the unvented attic assembly.
- Where wood shingles or shakes are used, a minimum of ¼" vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
- Where rigid insulation board is used as the air-impermeable insulation layer, it shall be sealed at the perimeter of each individual sheet to form a continuous layer.

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Blower door test required prior to air sealing and after insulating in order to measure house tightness improvement. Record results on Appendix F.

Field Manual Notes

- The unvented attic space is completely within the building thermal envelope.

Window replacement (including sliding glass doors)

Existing conditions

- Existing windows and/or sliding glass doors must have one of the following conditions: single pane; clear glass; metal frames; or leaky/poor sealing.
- Walls must be insulated or be insulated as part of this job scope to receive rebate.

Installation standards

- Window installations must be completed by EW-H certified window installers.
- **Full frame replacement window installation is preferred whenever possible.**
- Replacement windows must meet Northern Climate Zone Energy Star requirements (version 6 or 7) to qualify for Efficiency Works rebates:
- Windows/sliding glass doors must have low maintenance exterior: clad, fiberglass, composite or vinyl. Exception: If house is being considered for or is registered as a Historic Home, and wood trim is required.
- When a replacement window is installed inside an existing window frame (Block Frame method), air sealing is required around the existing window frame (remove interior trim, insulate and air seal between framing and existing window frame).

- Replacement windows must be properly insulated, and air sealed in the opening with low expansive foams.
- Dense pack old weight pockets with cellulose or short fiber fiberglass, or spray full with low expansive foam.
- Photo-Documentation is required for all window rebates. This can be as simple as taking a picture with your phone during the installation process. We are not expecting a photo of each window - however, we will need to see enough proof to verify the install method and to easily be able to identify the home from the photo.
- Must use window wrap approved by the manufacturer; typically, urethane sealant.
- Use manufacturer approved Low expansive foams to air seal windows in the opening.

Post-installation tests

- Appendix F – Window version must be signed by customer.

Field Manual Notes

- Replacement window types/ methods:
  1. Block frame- replacement windows are installed inside frame of existing window frame. Block frame installations must include air sealing around existing window frame and insulating the weight pockets in old single/double hung windows.
  2. Full frame - replacement windows are installed in existing framing after old window and trim is removed on the inside, and the mounting flange trim is removed on the outside and re-flashed. This method is less prone to leakage.

Heat pumps

Existing conditions

- Allowed in gas or electrically heated homes

Installation standards

- System must be right-sized using an ACCA approved Manual J (Version 7 minimum) block load calculations.
- Determine if existing forced air system duct size is large enough for heat pump.
- **Tier 1: Non-Cold Climate Heat Pump**
  15.2 SEER2 and 7.8 HSPF2
  Heat pump condenser, evaporator, and furnace must be AHRI matched.
  Shall not exceed .8 IWC TESP
  Change over temperature < 35 F
  Size for cooling load
- **Tier 2: Cold-Climate Heat Pump**
  15.2 SEER2 and 8.1 HSPF2
  Heat pump condenser, evaporator, and furnace (if applicable), must be AHRI matched.
  Shall not exceed .8 IWC TESP
  Cold climate HP certified by NEEP, ENERGY STAR®, CEE, or AHRI
  Change over temperature of 5F or less
  Size for 100% of the heating load

Post-installation tests

- Complete Appendix E and return with rebate application.
- Combustion Safety Test required. Record results on Appendix F.

Field Manual Notes

- Outdoor temps must be >60 degrees F to commission unless using cold weather commissioning protocol.

Ground source heat pumps

Existing conditions

- Allowed in gas or electrically heated homes

Installation standards

- **Water to water**
  16.1 EER & 3.1 COP
  Must be ENERGY STAR® certified
  Must be closed loop design
- **Water to air**
  17.1 EER & 3.6 COP
  Must be ENERGY STAR® certified
  Must be closed loop design

Ductless mini split

Existing conditions

- Allowed in gas or electrically heated homes

Installation standards

- System must be right-sized using an ACCA approved Manual J (Version 7 minimum) block load calculations.
- 21 SEER2 & 9.1 HSPF2
- Cold climate HP, certified by NEEP, ENERGY STAR, CEE, or AHRI
- Can be designed for the heating load

Post-installation tests

- Complete Appendix E2.

Field Manual Notes

Heat pump water heater

Existing conditions

- Gas or electrically heated home

Installation standards

- Must be ENERGY STAR certified.

Smart thermostat

Existing conditions

- Non-programmable, non- Smart thermostat being replaced.

Installation standards

- Must be ENERGY STAR certified.
- New thermostat must be smart thermostat and installed in a manner where all of the features are available.
- Thermostat must be clearly called out on invoice.

Exterior doors (hinged doors on the exterior of the home or between home and unconditioned space, i.e., garage.)

Existing conditions

- Any exterior door qualifies for replacement.

Installation standards

- Replacement hinged doors must meet Northern Climate Zone Energy Star requirements (version 6 or 7)
  to qualify for Efficiency Works rebates.
- Replacement doors must meet Northern Climate Zone Energy Star requirements to qualify for our incentives.
- Must be installed to meet local code.
- Replacement doors must be properly insulated, and air sealed in the opening with low expansive foams.
- Flashing tapes are not required around doors installed between garage and home.

- Photo-Documentation is required for all door rebates. This can be as simple as taking a picture with your phone during the installation process. We are not expecting a photo of each door - however, we will need
  to see enough proof to verify the install method and to easily be able to identify the home from the photo.
- Must use window wrap approved by the manufacturer; typically, urethane sealant.
- Use manufacturer approved Low expansive foams to air seal doors in the opening.

Post-installation tests

• Appendix F – Window version must be signed by customer

Mechanical ventilation

Existing conditions

- Per ASHRAE 62.2-2013 calculation, home requires mechanical ventilation.

Installation standards

- Install Ventilation per ASHRAE 62.2-2013 mechanical ventilation requirements
- Minimum 50% efficiency for sensible exchange
- System must:
  - Measure air flows for compliance
  - Heat Recovery Ventilator (HRV) or
  - Energy Recovery Ventilator (ERV)

Post-installation tests

- Combustion Safety Test required. Record results on Appendix F.
- Commission any installed ventilation system.
- Measure all system airflows to verify they meet ASHRAE 62.2 2013 ventilation requirements.
- Document intake and/or exhaust flow rates for rebate application submittal.

Service panel upgrade

Existing conditions

- Gas or electrically heated home

Installation standards

- Must be installed by a licensed electrician
- Must provide photo documentation of final installation
- Must provide an invoice for rebate application
- Must be replaced with a minimum of a 200 amp panel for the following qualifying reasons
    a. Heat pump upgrade
    b. Heat pump water heater upgrade
    c. Solar and battery installations
    d. EV charger installation
    e. Home electrification appliances

Appendix B: Combustion safety testing process (cst)

Assessment CST Process:

- Assessor performs the following tests:
  1. Gas Leak Detection
  2. Worst Case Depressurization Test
  3. Carbon Monoxide (CO) Test in vent pipe
  4. Spillage and Draft Test
- Assessor records results on audit data sheet for installation contractor's use.
- Assessor will follow Building Performance Institute's (BPI) Building Analyst Legacy **Standards Combustion Safety Test Action Levels:**

	CO Test Result*	And/Or	Spillage and Draft Test Results	Retrofit Action
☐	Fails at Worst Case Only			Recommend that spillage problem be fixed. Have owner sign disclosure form.
☐	Fails at Natural Conditions			Turn off the appliance. Have the owner call for service immediately. Have owner sign disclosure form.
☐	Between 9 & 35 ppm ambient CO in breathing zone			Advise homeowner that CO has been detected. Recommend all CO sources checked and windows/doors opened.
☐	> 35 ppm ambient CO in breathing zone			Abort the test. Turn off the appliance, ventilate the space, and evacuate the building. Have owner call for service immediately and sign disclosure form.
☐	0 - 100 ppm	And	Passes	No Signature – Refer to back for Possible Recommendations
☐	>100 ppm	And	Passes	Work may not proceed until the system is serviced and the problem is corrected. (Atmospheric DHW only) Have owner sign disclosure form.
☐	>200 ppm	And	Passes	Work may not proceed until the system is serviced and the problem is corrected. (Cat 3 & 4 DHW only) Have owner sign disclosure form.
☐	0 - 400 ppm	And	Passes	No Signature (Boilers and Furnaces only) Refer to back for Possible Recommendations
☐	>400 ppm		Passes	Work may not proceed until the system is serviced and the problem is corrected. (Boilers and Furnaces only)

*CO measurements for undiluted flue gases in the vent at steady state.

NOTICE: As of 7/1/15 all sealed combustion equipment tested in the EW program will be referenced to the ASNI/BSR AZ223.1/NFPA 54 CO Threshold Chart. This means that water heaters will be allowed to up to 200 ppm CO (Air Free) and boilers and furnaces will be allowed up to 400 ppm CO (Air Free). All other equipment will be referenced to the BPI Building Analyst Legacy Standard. See table at end of this document.

Appendix B: Combustion safety testing process (cst)

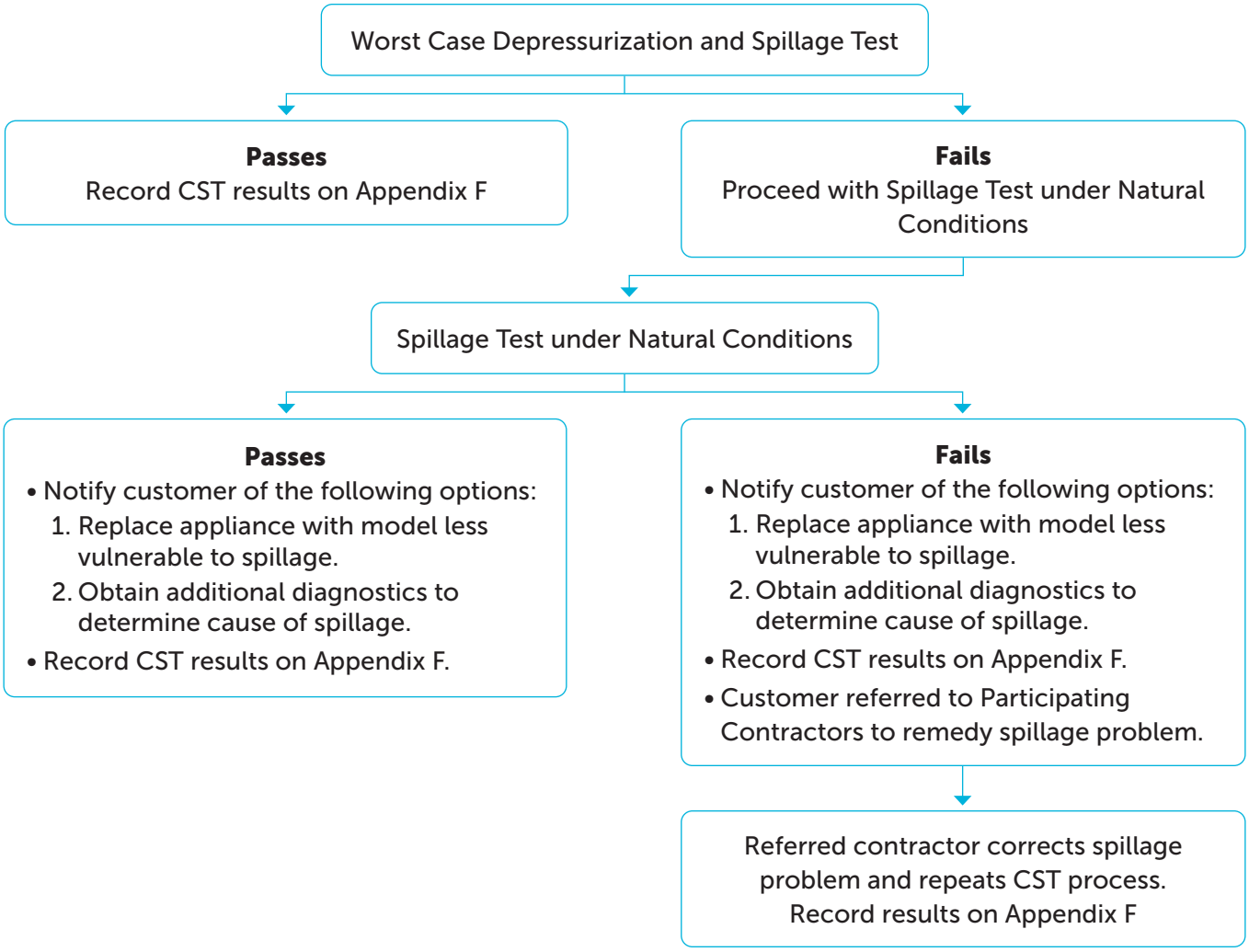
Building Performance Institute, Inc.
A national non-profit working for you.

Post-installation CST process:

Installation contractor performs worst case depressurization and spillage test as well as spillage test under natural conditions if needed (see flow chart below) after the following installations:

- Air sealing
- Conditioned crawl space insulation
- Cold crawlspace insulation
- Basement wall insulation
- Cantilever floor insulation
- Floor over garage insulation
- Exterior frame wall insulation
- Masonry exterior wall insulation
- Attic insulation (flat ceiling)
- Attic knee wall insulation
- Cathedral ceiling insulation
- Replacement gas furnace
- Replacement gas boiler
- Replacement water heater
- Duct sealing
- Mechanical ventilation

Appendix B: Combustion safety testing process (cst)



Appendix B: Combustion safety testing process (cst)

Overall combustion safety review:

Question: What appliances are required to be tested?
Answer: Only atmospheric ones (Category 1)

Question: What are the four required components of the required combustion test?
Answer:

- Worst Case Depressurization (Record with DG-700 or manometer)
- Spillage Testing (with mirror or smoke)
- Undiluted CO Testing (with Combustion Analyzer)
- Capture results on Appendix F – Discuss results with customer

Question: When do I need to test the equipment under Natural Conditions?
Answer: Only when the appliance fails Worst Case spillage.

Question: What happens if the appliance fails spillage under Worst Case/Natural Conditions?
Answer: Both situations mean you need to talk to the homeowner about possible next steps to improve the results. Please remember that a spillage failure at Natural conditions is a VERY SERIOUS situation that you need to be very clear about not operating the device until it is fixed by a qualified professional.

Question: Do we have to get Appendix F signed by the homeowner if the appliance fails testing?
Answer: The advisors will handle getting the final signature on Appendix F – However, you will still be required to provide your relevant test results on the Rebate application (you will see Appendix F there now) and you must discuss any failures with the homeowner immediately after finding the results.

Question: Are there ever situations where we do not have to perform the Combustion Safety Testing?
Answer Part 1: The following measures are exempt from testing if they are the only measure being installed.

- Window replacements
- New AC or Heat Pump

Answer Part 2: The following scenarios **do not** have to be tested.

- 80% Furnace in crawlspace with independent flue
- 80% Furnace in an attic with independent flue
- Sealed combustion equipment only

Appendix B: Combustion safety testing process (cst)

Technology	Original Approach	Current Approach
Atmospheric DHW	less than 26 ppm (as measured) - No Action	less than 26 ppm (air free) - No Action
Atmospheric DHW	26-100 ppm (as measured) - recommend tune up and get signature	26-100 ppm (air free) - recommend tune up and get signature
Atmospheric DHW	100+ ppm (as measured) - STOP WORK - get signature - no rebate can be paid unless this is resolved	100+ ppm (air free) - STOP WORK - get signature - no rebate can be paid unless this is resolved
Sealed DHW (this includes tankless)	less than 26 ppm (as measured) - No Action	less than 26 ppm (air free) - No Action
Sealed DHW (this includes tankless)	26-100 ppm (as measured) - recommend tune up and get signature	26-199 ppm (air free) - No Action
Sealed DHW (this includes tankless)	100+ ppm (as measured) - STOP WORK – get signature - no rebate can be paid unless this is resolved	200+ ppm (air free) - STOP WORK – get signature - no rebate can be paid unless this is resolved
Atmospheric 70% -80% Furnace	less than 26 ppm (as measured) - No Action	less than 26 ppm (air free) - No Action
Atmospheric 70% -80% Furnace	26-100 ppm (as measured) – recommend tune up and get signature	26-399 ppm (air free) - No Action
Atmospheric 70% -80% Furnace	100+ ppm (as measured) - STOP WORK – get signature - no rebate can be paid unless this is resolved	400+ ppm (air free) - STOP WORK – get signature - no rebate can be paid unless this is resolved
Sealed Combustion Furnace	less than 26 ppm (as measured) - No Action	less than 26 ppm (air free) - No Action
Sealed Combustion Furnace	26-100 ppm (as measured) - recommend tune up and get signature	26-399 ppm (air free) - No Action
Sealed Combustion Furnace	100+ ppm (as measured) - STOP WORK - get signature - no rebate can be paid unless this is resolved	400+ ppm (air free) - STOP WORK - get signature - no rebate can be paid unless this is resolved
Atmospheric Boiler	less than 26 ppm (as measured) - No Action	less than 26 ppm (air free) - No Action
Atmospheric Boiler	26-100 ppm (as measured) – recommend tune up and get signature	26-399 ppm (air free) - No Action
Atmospheric Boiler	100+ ppm (as measured) - STOP WORK - get signature - no rebate can be paid unless this is resolved	400+ ppm (air free) - STOP WORK - get signature - no rebate can be paid unless this is resolved
Sealed Combustion Boiler	less than 26 ppm (as measured) - No Action	less than 26 ppm (air free) - No Action
Sealed Combustion Boiler	26-100 ppm (as measured) – recommend tune up and get signature	26-399 ppm (air free) - No Action
Sealed Combustion Boiler	100+ ppm (as measured) - STOP WORK - get signature - no rebate can be paid unless this is resolved	400+ ppm (air free) - STOP WORK - get signature - no rebate can be paid unless this is resolved

Appendix C: Required documents for rebate application

This is a checklist of required documentation when applying for Efficiency Works Retrofit Program rebates.

Air sealing

Invoice - Clearly calling out Program Measures by Name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Conditioned crawlspace insulation

Invoice - Clearly calling out Program Measures by Name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Basement wall insulation

Invoice - Clearly calling out Program Measures by Name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Cantilever floor insulation

Invoice - Clearly calling out Program Measures by Name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Floor over garage insulation

Invoice - Clearly calling out Program Measures by Name
Appendix F -Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Exterior frame wall insulation

Invoice - Clearly calling out Program Measures by Name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Attic insulation - flat ceiling

Invoice - Clearly calling out program measures by name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Attic knee wall and skylight shaft

Invoice - Clearly calling out program measures by name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Cathedral ceiling insulation

Invoice - Clearly calling out Program Measures by Name
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer
Photo Documentation of Before and After Work

Window Replacement (Including Sliding Glass Doors)

Invoice - Clearly calling out Program Measures by Name
Photo Documentation of the Window Install (photos during install)
NFRC Labels for All Glass (This can be photos or scans)
Efficiency Works Paperwork: Terms and Conditions, Appendix F2 (window version) & Certificate of Completion signed by customer

Exterior Door (hinged doors on the exterior of the home or between home and unconditioned space, i.e., garage.)

Invoice - Clearly calling out Program Measures by Name
Photo Documentation (photos during install)
Efficiency Works Paperwork: Terms and Conditions, Appendix F (window version) & Certificate of Completion signed by customer

Ductless Mini - Splits

Invoice with equipment size, manufacturer, model number (both evaporator and condenser), and efficiency SEER2, HSPF2
Appendix E-2 Ductless CX form
AHRI Documentation
Efficiency Works Paperwork: Terms and Conditions signed by customer

Central Heat Pump - Split Systems

Commissioning Form Has Been Completed - Appendix E
Invoice with equipment size, manufacturer, model number (both evaporator and condenser), and efficiency SEER2, HSPF2
AHRI Documentation
Cold Climate Certification documentation
Manual J ACCA Approved - summary report
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer

Ground Source Heat Pumps

Invoice with equipment size, manufacture, and efficiency SEER2, EER2, HSPF2, AHRI
Document, Appendix E, Appendix F, Manual J - summary report
Efficiency Works Paperwork: Terms and Conditions signed by customer

Heat Pump Water Heater

Invoice with the equipment size, manufacturer, model #, previous water heater fuel type
Appendix F - Post Improvement Carbon Monoxide and Ventilation Disclosure
Efficiency Works Paperwork: Terms and Conditions signed by customer

Mechanical Ventilation

Invoice with the equipment size, manufacturer, model #
Combustion Safety Testing Completed and Recorded -Appendix F
Efficiency Works Paperwork: Terms and Conditions signed by customer

Smart Thermostat

Invoice with manufacturer brand & model #
Efficiency Works Paperwork: Terms and Conditions signed by customer

Service Panel Upgrade

Invoice with manufacturer brand & model #
Efficiency Works Paperwork: Terms and Conditions signed by customer

Appendix D: This document is no longer in use

Appendix E: AC/Heat pump commissioning form

Customer Name:	**Date:**
Address:	
Installing Company:	**Installing Technician:**

Split System AC/Heat Pump

Section 1. HVAC Service Provider Checklist Please complete the following section.

Equipment Specifications							
Unit Type	AC ☐	Heat pump ☐		Blower motor name plate size (HP):			
Manufacturer				Compressor RLA (Amps):			
Air Handler Model #				2 stage? Yes or No			
Outdoor Unit Model #				Expansion Valve Type	TXV ☐		
Indoor Coil Model #					Fixed orifice ☐		
Nominal capacity(tons)							

Controls				
Tstat mfgr/model #				
Tstat type:	Manual ☐	☐	Communicating ☐	
Temperature Setpoints:	Heating / unoccupied (F)		Fan Setting	☐ On
	Cooling / unoccupied (F)			☐ Off

Indoor Measurements					
Return air DB temp		(F)	Blower motor electrical power		Volts
Supply air DB temp		(F)			Amps

System Air Flow			
Total air flow CFM		Supply ESP (IWC)	
		Return ESP (IWC)	
		Ext. Static Pressure (IWC)	
		Total ESP is 0.80 IWC or lower	Pass/Fail
		CFM per ton is 350 to 500	Pass/Fail

Outdoor Measurements			
Compressor electrical power	Volts	Notes	
	Amps		

Electrical Work	
☐	All electrical work performed by authorized electrician or as authorized by Electrician's board
☐	Disconnect box wiring shock risk reduced by lock, strap tie and/or box that provides other means of protection

Heat Pump (If Applicable)		
☐	System was run in both heating and cooling modes to ensure proper operation	
	Switchover Temperature	(F)

Appendix E: AC/Heat pump commissioning form

Notes

Cold Weather Commissioning ***If you choose to perform cold weather commissioning of air conditioners or heat pumps you must either fill out the section below or provide approved additional documentation in rebate application.***					
Manufacturer specified lengths (feet): Minimum:_____ Maximum with factory charge:_____ Maximum:_____					
Maximum line set for factory charge (manufacturer): _____					
Actual line set length: _____					
☐	Refrigerant added, if required by manufacturer: _____ Pounds_____ Ounces_____			☐ NA	
☐	Line set purged with nitrogen, pressure tested & evacuated with pump per manufacturer's instructions.				
	OEM Guideline	Actual		OEM Guideline	Actual
Pressure test pressure (PSI)		# of evacuations performed			
Duration (minutes)		Vacuum Level (microns)			
☐	Flare connections tightened using manufacturer's torque specification				
☐	Visible line sets run through line set covers with transition and termination fittings				
☐	Insulation covers full length of line sets (no exposed copper)				
☐	Floor/wall/ceiling penetrations sealed				
☐	Condensate line installed without dips or traps				
☐	System was run in both heating and cooling modes to ensure proper operation				

Warm Weather Commissioning			
Minimum of 65 F unless otherwise stated by OEM			
TXV only			
Target subcooling (F)		Actual subcooling (F)	
Actual subcooling is +/- 3 F of target, 2 F minimum		Pass/Fail	
Fixed Orifice Only			
Target Superheat (F)		Actual Superheat (F)	
		Actual Super heat is +/- 5 (F) of target	Pass/Fail
Trained Technician's Signature			

Section 2. Homeowner Checklist Please check all boxes to confirm that all requirements have been met.	
☐	I have been supplied with an Owner's Manual for the ac/heat pump
☐	The installer taught me how to turn the unit on and off, clean the filter, switch between heating and cooling modes (if applicable), change the temperature set point, adust air flow direction, and call fall for services.
☐	Noise and vibration levels are acceptable
☐	Line set covers are aesthetically acceptable
Customer's Signature	

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Appendix E2: Ductless minisplit commissioning form

Customer Name:	**Date:**
Address:	
Installing Company:	**Installing Technician:**

Ductless Heat Pump

Section 1. HVAC Service Provider Checklist Please complete the following section.

	Outdoor Unit
	Unobstructed airflow
	Level
	Does not interfere with walkway, porch, window or door
	Installed at a servicable height
	Secured to wall or stable base
	Protected by rain cap (required if installed under roof drip line)
	Line Set
Manufacturer specified lengths (feet): Minimum:_____ Maximum with factory charge:_____ Maximum:_____	
Maximum line set for factory charge (manufacturer): _____	
Actual line set length: _____	
	Refrigerant added, if required by manufacturer: _____ Pounds_____ Ounces_____ ☐NA
	Line set purged with nitrogen, pressure tested & evacuated with pump per manufacturer's instructions.

	MFG Guideline	Actual		MFG Guideline	Actual
Pressure test pressure (PSI)			# of evacuations performed		
Duration (minutes)			Vacuum Level (microns)		

	Flare connections tightened using manufacturer's torque specification
	Visible line sets run through line set covers with transition and termination fittings
	Insulation covers full length of line sets (no exposed copper)
	Floor/wall/ceiling penetrations sealed
	Condensate line installed without dips or traps
	Indoor Unit
	Level
	Adequate clearances for services and operation
	Electrical Work
	All electrical work performed by authorized electrician or as authorized by Electrician's board
	Disconnect box wiring shock risk reduced by lock, strap tie and/or box that provides other means of protection
	System
	System was run in both heating and cooling modes to ensure proper operation
Trained Technician's Signature	

Section 2. Homeowner Checklist Please check all boxes to confirm that all requirements have been met.

	I have been supplied with an Owner's Manual for the heat pump
	The installer taught me how to turn the heat pump on and off, clean the filter, switch between heating and cooling modes, change the temperature set point, adust air flow direction, and call fall for services.
	Noise and vibration levels are acceptable
	Line set covers are aesthetically acceptable
Customer's Signature	

Appendix F: Efficiency Works retrofit program post-improvement carbon monoxide and ventilation disclosure

Customer Name: _____ Customer Address _____

Combustion Safety
Your participating contractor has tested the functioning of the exhaust system of your gas furnace and/or water heater to the standards of the Building Performance Institute. This includes a spillage (a.k.a. "back-drafting") test performed under two test conditions: **natural conditions** and **worst-case conditions** as well as undiluted and ambient carbon monoxide (CO) measurements.

☐ Under **worst-case conditions** a potential carbon monoxide hazard has been identified in the home
Worst-case conditions occur when all exhaust systems (bathroom fans, stovetop fans, dryers, furnace, etc) are all running at the same time. This simulates a depressurization condition where exhaust from gas burning appliances could enter the living space.

☐ Under **natural conditions** a carbon monoxide hazard has been identified in the home
Natural conditions occur when all the systems in the home are operating in a manner most similar to the typical state of the home. Failure under natural conditions means that exhaust from gas burning appliances is likely to enter the living space regularly. Immediate actions should be taken to correct the spillage from the natural draft gas vent.

Health and Safety Issues
Breathing the exhaust from gas burning appliances is hazardous to your health. Carbon monoxide can be fatal in high doses or cause chronic health problems in lower concentrations. Nitrogen oxides, which are irritants, are also combustion by-products. Safe combustion means that there is little or no carbon monoxide production and that 100% of the combustion products are vented to the outside at all times.

Building Envelope Tightness and Indoor Air Quality
Your participating contractor has tested the amount of air leakage through your home's exterior surfaces, referred to as the "building envelope". This test is used to estimate the heating and cooling energy cost savings attributable to air-sealing measures, and to estimate the amount of available fresh air that enters the home through leaks in the building envelope.

While home efficiency upgrades often focus on reducing air leaks as a key strategy for saving energy and increasing comfort, these retrofits simultaneously reduce the amount of fresh air that is introduced into the home, potentially leading to increased levels of moisture and pollutants in the indoor air. It is often recommended that, when implementing air-sealing measures, a controlled mechanical ventilation system also be installed. It may seem counterintuitive to seal leaks in the building envelope only to add a mechanical system to re-introduce fresh air; however, this strategy maximizes energy savings while safeguarding indoor air quality. Relying on building envelope air leakage alone to provide fresh air means that 1) the "fresh" air often enters through leaks from undesirable locations such as an attached garage, crawl space, or attic, and 2) the more extreme the outdoor conditions (extreme heat or cold, high winds, etc.), the more leakage occurs – leaving the home over-ventilated on the days and nights when a minimum level of air leakage is advantageous. A mechanical ventilation system provides a consistent, controlled amount of ventilation air to a tight and energy efficient home.

Disclosures (Check all that apply)

☐ I understand there is a potential carbon monoxide hazard in my home.

(Contractor has provided Combustion Safety Details on page 2 of this document.)

Customer Name	Customer Signature	Date

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Appendix F: Efficiency Works retrofit program post-improvement carbon monoxide and ventilation disclosure

Note - Spillage must be checked with a mirror or smoke pencil

Appliance 1: _____

Worst Case Depressurization (Pa) [if measured]: _____

Natural draft gas appliance flue gas spillage time @ Worst Case? _____ Pass Test? ☐ YES ☐ NO

Natural draft gas appliance flue gas spillage time @ Natural Conditions? _____ Pass Test? ☐ YES ☐ NO

Note: Natural Conditions are only required if spillage fails Worst Case.

Water Heater Orphaned? ☐ YES ☐ NO

Has original flue been relined? ☐ YES ☐ NO

Existing Flue Size? _____

CO @ Steady State (ppm): _____

Ambient Carbon Monoxide (ppm): _____

Next Steps?

Appliance 2: _____

Worst Case Depressurization (Pa) [if measured]: _____

Natural draft gas appliance flue gas spillage time @ Worst Case? _____ Pass Test? ☐ YES ☐ NO

Natural draft gas appliance flue gas spillage time @ Natural Conditions? _____ Pass Test? ☐ YES ☐ NO

Note: Natural Conditions are only required if spillage fails Worst Case.

Water Heater Orphaned? ☐ YES ☐ NO

Has original flue been relined? ☐ YES ☐ NO

Existing Flue Size? _____

CO @ Steady State (ppm): _____

Ambient Carbon Monoxide (ppm): _____

Next Steps?

Blower Door Pre: _____ Blower Door Post: _____

%Difference: _____ Wind Conditions: _____

Combustion Safety

As the participating contractor in Efficiency Works, I acknowledge that I have tested the functioning of the exhaust system of the gas furnace and/or water heater to the standards of the Building Performance Institute as called out by Efficiency Works. This includes a spillage (a.k.a. "back-drafting") test performed under two possible test conditions: natural conditions and worst case conditions as well as undiluted and ambient carbon monoxide (CO) measurements. I also acknowledge that I have discussed the results of those tests and any health/safety issues with the homeowner directly.

CAZ Tester Name | CAZ Tester Signature | Date

Contractor Notes:

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Appendix F2: Windows post-improvement carbon monoxide and ventilation disclosure

Customer Name: _____ Customer Address _____

Health and Safety Issues

Older windows can be the cause of comfort problems including cold surfaces and excessive air leakage. Fixing these air leakage issues can cause a home to become tighter if all or most of the older windows are replaced with newer ones. A more airtight home could potentially create difficulties for atmospherically vented HVAC equipment, including water heaters, to vent their combustion gases outside the home. Atmospherically vented appliances depend on air coming into the house as fast as it goes out to vent properly. The newer, tighter windows reduce much of the previous air leakage from occurring, which in some situations can cause the combustion gases (including irritants such as Carbon Monoxide and Nitrogen Oxides) to be pulled back down the HVAC equipment's flues/chimneys and into the home; a situation called back-drafting.

A basic Combustion Appliance Zone safety test (CAZ test) is the best way to ensure that all combustion equipment vents properly after windows are replaced. The CAZ test verifies that space- and water-heating equipment successfully exhausts all combustion gases while the house is in the worst-case scenario (i.e. being depressurized by bath fans, kitchen fans, and the main blower of the furnace/AC). Please consider hiring a contractor to provide this service.

Additionally, it is important that the home have properly located, working Carbon Monoxide detectors. Breathing the exhaust from gas burning appliances is hazardous to your health. Carbon monoxide can be fatal in high doses or cause chronic health problems in lower concentrations. Safe combustion means there is little or no carbon monoxide production and that 100% of the combustion products are vented to the outside at all times.

Building Envelope Tightness and Indoor Air Quality

While home efficiency upgrades often focus on reducing air leaks as a key strategy for saving energy and increasing comfort, these retrofits simultaneously reduce the amount of fresh air that is introduced into the home, potentially leading to increased levels of moisture and pollutants in the indoor air. It is often recommended that, when implementing air-sealing measures, a controlled mechanical ventilation system also be installed. It may seem counterintuitive to seal leaks in the building envelope only to add a mechanical system to re-introduce fresh air; however, this strategy maximizes energy savings while safeguarding indoor air quality. Relying on building envelope air leakage alone to provide fresh air means that 1) the "fresh" air often enters through leaks from undesirable locations, such as an attached garage, crawl space, or attic, and 2) the more extreme the outdoor conditions (extreme heat or cold, high winds, etc.), the more leakage occurs, leaving the home over-ventilated on the days and nights when a minimum level of air leakage is advantageous. A mechanical ventilation system provides a consistent, controlled amount of ventilation air to a tight and energy efficient home.

Disclosures (Check all that apply)

☐ I understand that Indoor Air Quality is tied to building tightness and that mechanical ventilation will often improve indoor air quality. Further information on mechanical ventilation strategies and rates are available from an Efficiency Works Advisor.

☐ In the event that my audit occurred prior to my window upgrade, I understand that it is advisable to hire a contractor to conduct a follow up CAZ Test to ensure my combustion appliances are functioning properly with a tighter building envelope.

☐ In the event that my audit occurred after my window upgrade, I understand that the CAZ test recommendation has been fulfilled.

Customer Name	Customer Signature	Date

Contractor Notes:

Appendix G: Retrofit rebate application and installation assistance and quality control

"Mentoring Improvement Verifications" or **"MIV"** means a service for listed service providers who request further guidance on installation standards, commissioning requirements or rebate application process. These are typically used by new service providers or service providers with new staff. Efficiency Works staff or Service Provider may request an MIV.

"Post-Installation Verifications" or **"PIV"** means a quality assurance service that inspects a completed retrofit measure. Efficiency Works staff or customer may request a PIV. The PIV is targeted to be completed within two weeks of the request. The PIV will verify the retrofit measure was installed and in compliance with the Efficiency Works Homes Service Provider Guide standards. If any discrepancies exist, these will be documented, and a correction notice provided to the installing Service Provider. Once the corrective notice items have been addressed by the service provider, Efficiency Works will reinspect the retrofit measure via photo evidence or by in-field verification, whichever is most appropriate. Failure of a service provider to complete the actions laid out in the corrective notice may result in expulsion from Efficiency Works.

It is mandatory for all service providers to complete a rebate application MIV within the first 5 submitted rebate applications. Trade specific in the field MIV's are available to all listed service providers upon request.

Trade specific in the field MIV's may be required of service providers who repeatedly fail PIV's or submit rebate applications that do not meet the requirements of Appendix A.

The schedule an MIV or PIV please contact: Homes@EfficiencyWorks.org

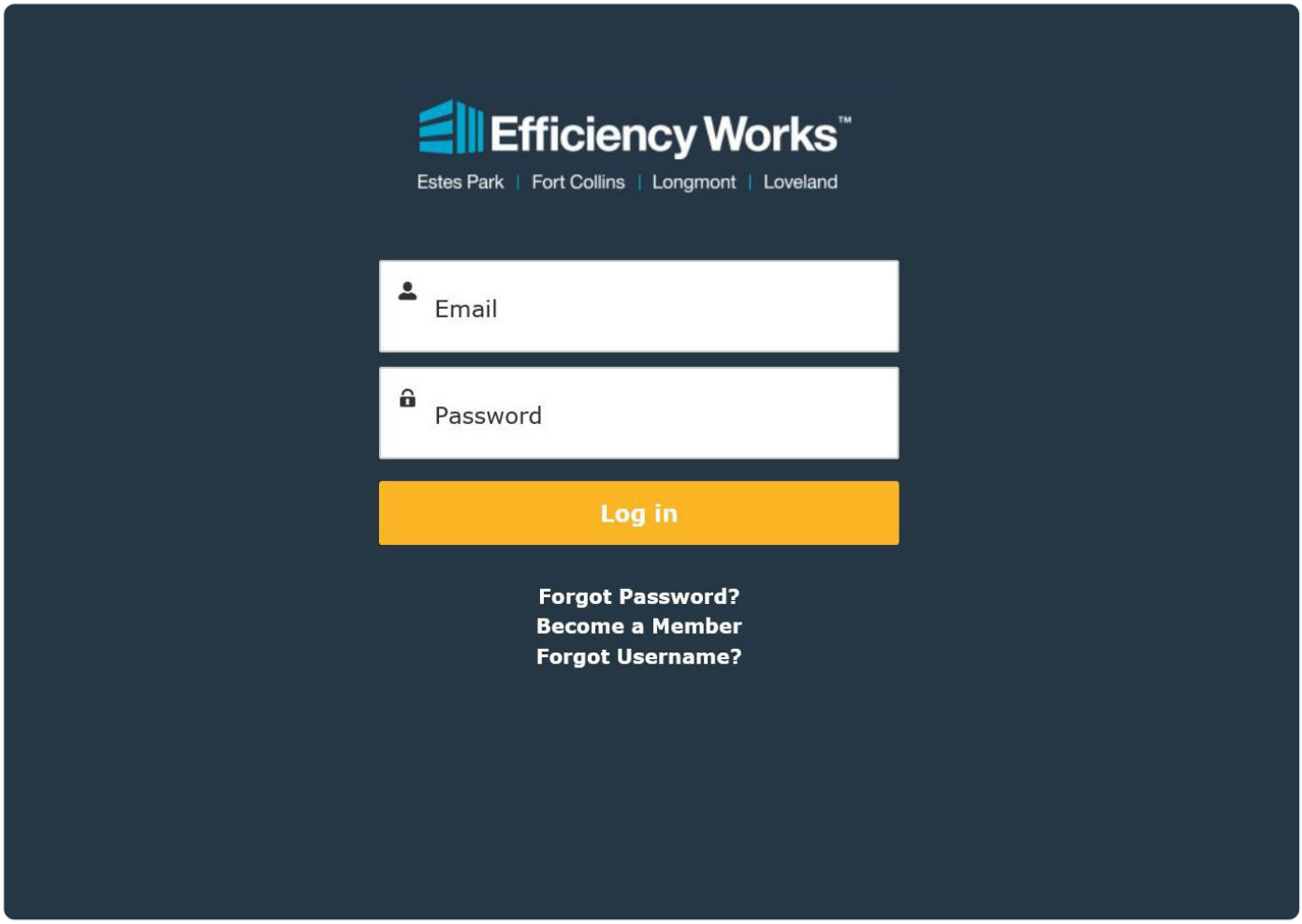
Appendix H: Rebate matrix

Visit the EfficiencyWorks.org website for the most up to date information:
EfficiencyWorks.org/homes/rebates/#retrofit

Appendix I: This document is no longer in use

Appendix J: This document is no longer in use

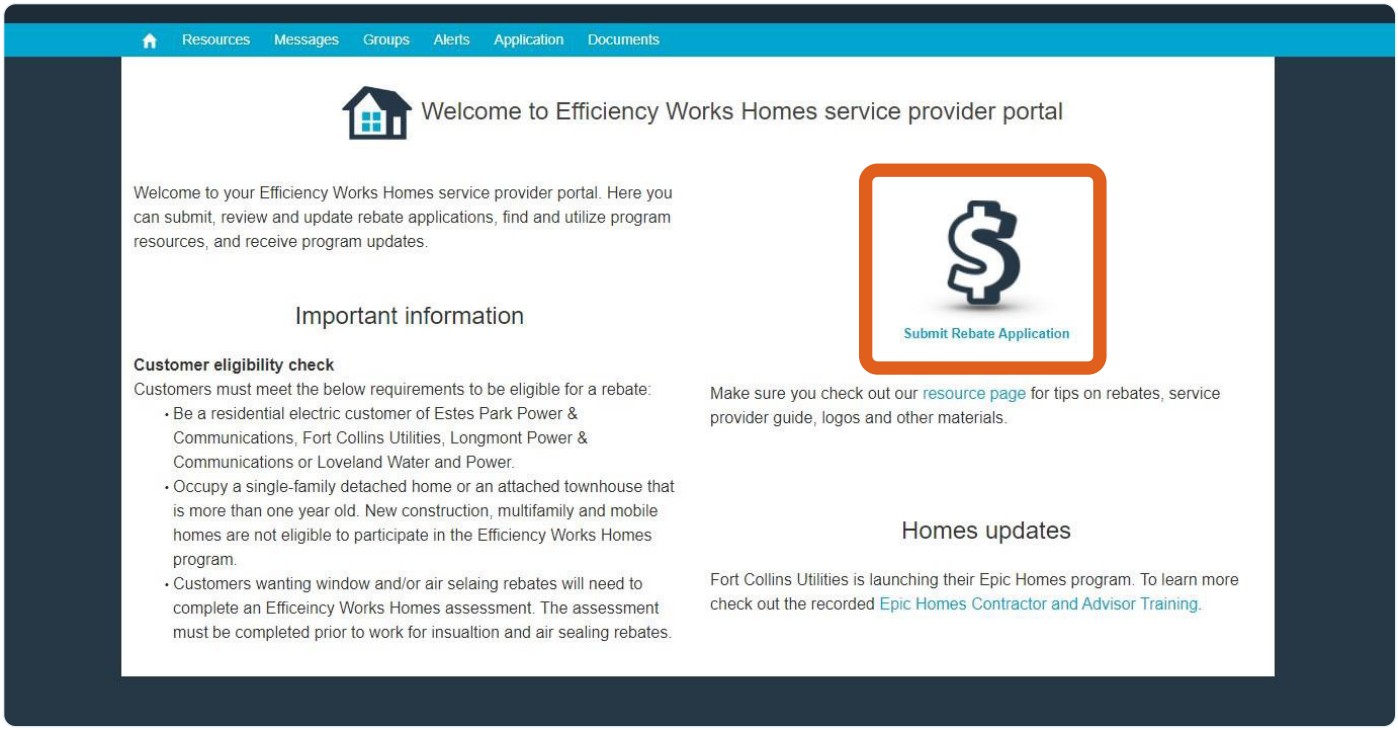
Appendix K: How to apply for a rebate in Efficiency Works Homes



When you are ready to apply for a rebate or manage an existing rebate you need to log into your Trade Ally portal.

EfficiencyWorks.Force.com/tradeally/s/login

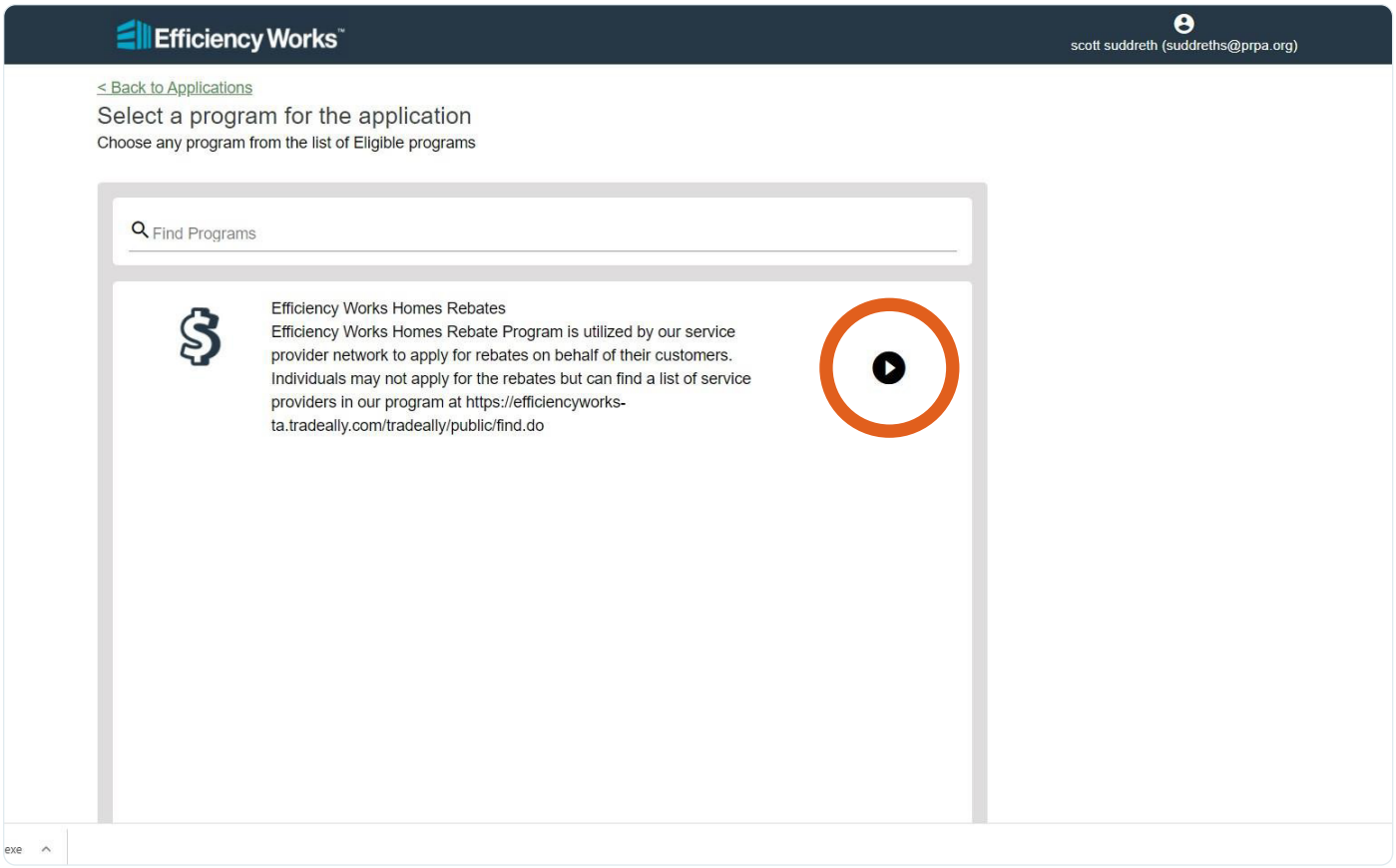
Appendix K: How to apply for a rebate in Efficiency Works Homes



Step 1

Once on this page you click on **Submit Rebate Application.**

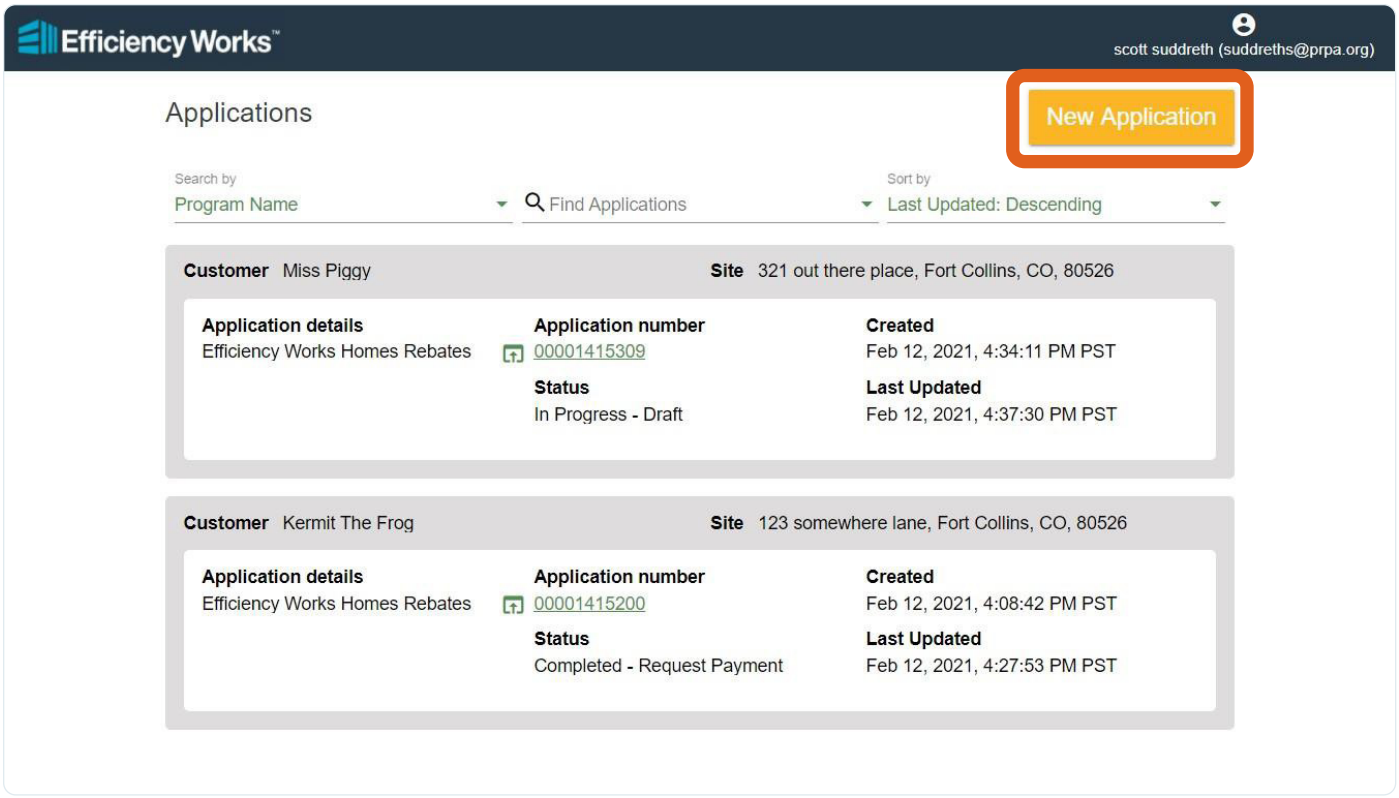
Appendix K: How to apply for a rebate in Efficiency Works Homes



Step 2

This page will list the Efficiency Works Homes rebates program. Click on the forward button to continue.

Appendix K: How to apply for a rebate in Efficiency Works Homes



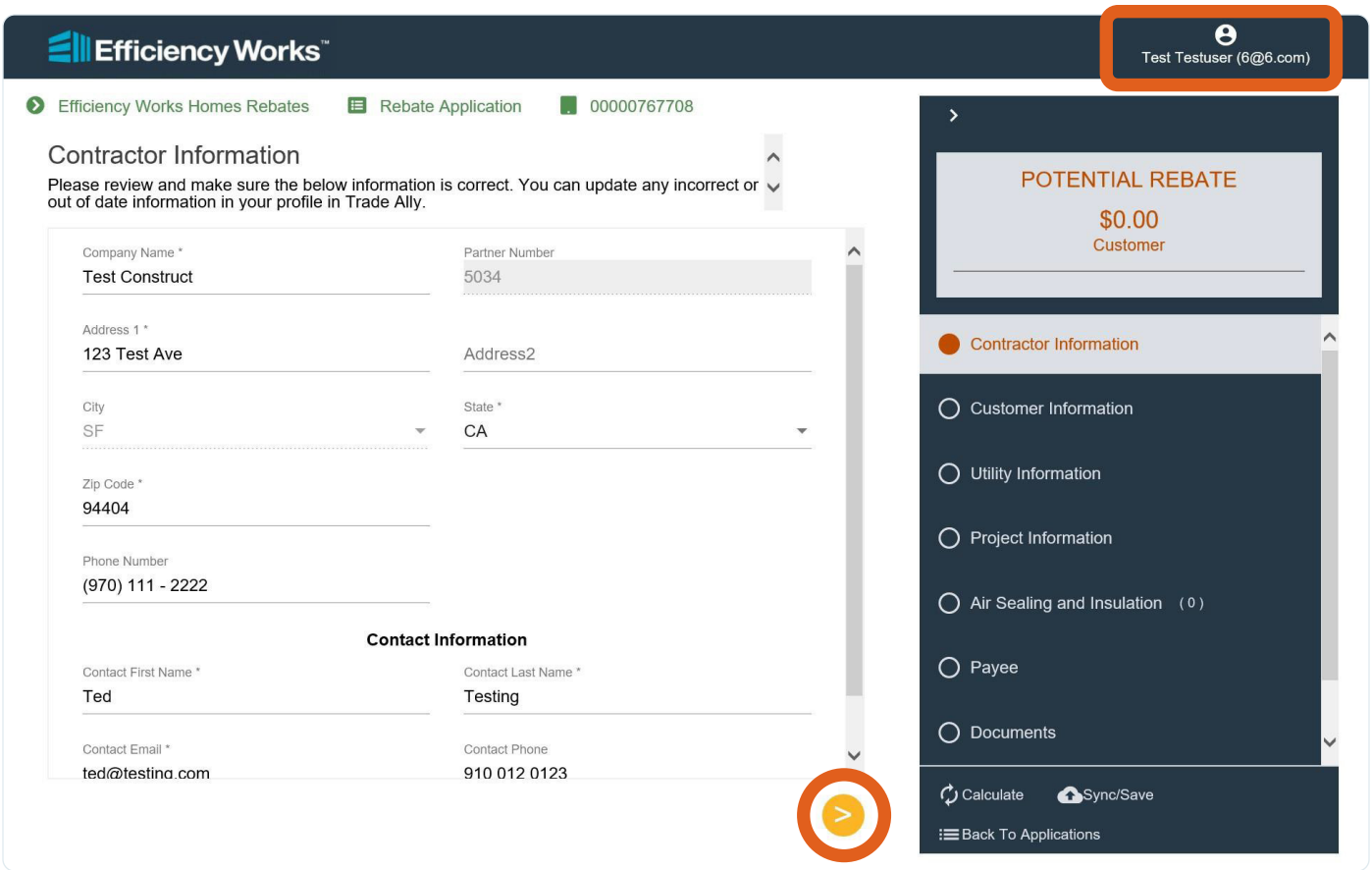
Step 3

You should now see the page above. This page allows you to look at your existing rebates you have in the program listed vertically down the page.

To access an existing application simply find it in the list and click on the green link under the application number.

To enter a new rebate application click on (**New Application**).

Appendix K: How to apply for a rebate in Efficiency Works Homes



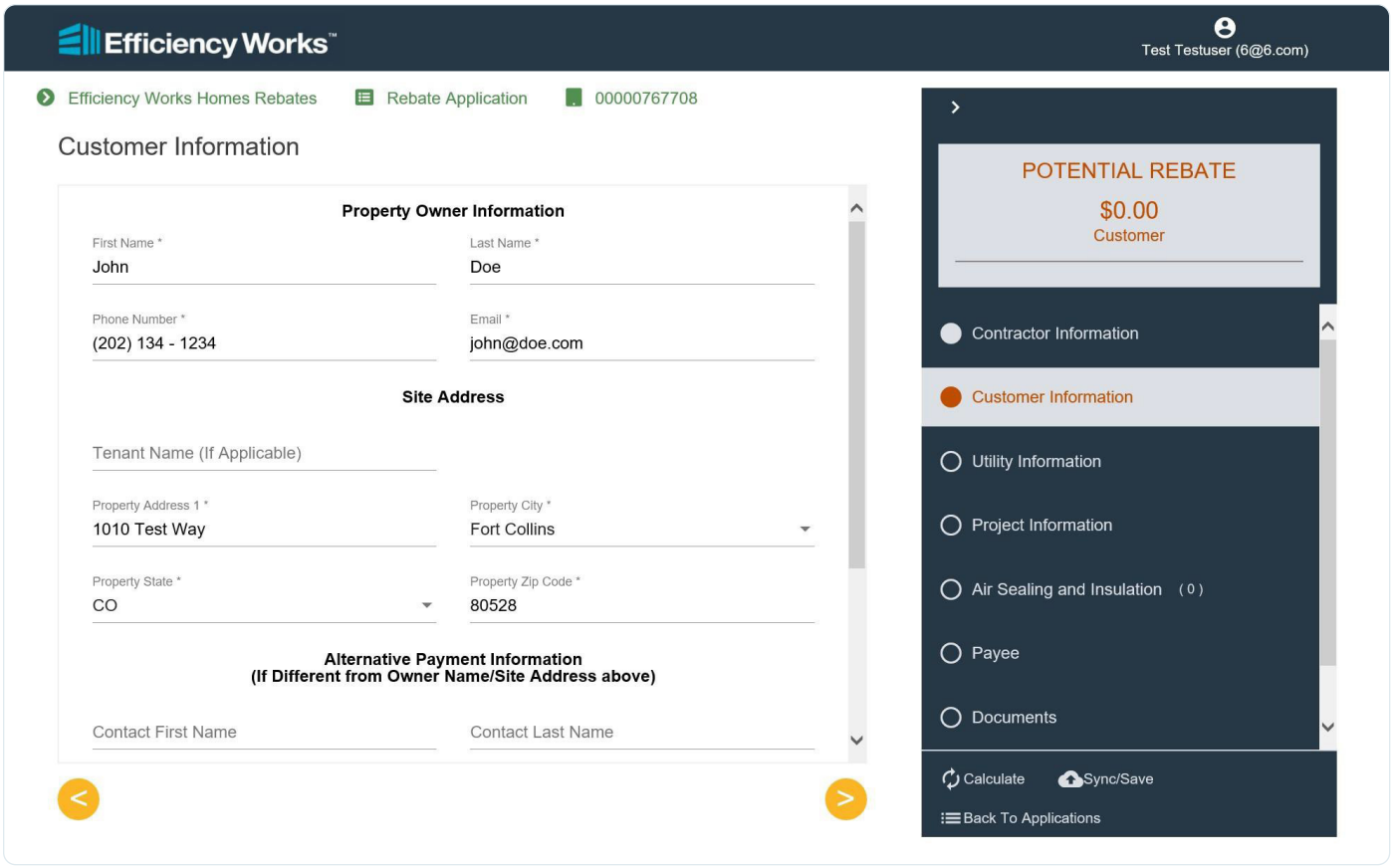
Note:

The column on the right-hand side of the page will track your progress throughout the application. You can only move forward one page at a time using the orange advance button (circled on this page in red) but you can move back as many pages as required.

Step 4

You should now see the page above. This is the **Contractor Information** page, and it should be auto-populated with your correct information as it is pulled from your profile page. If any of this information is incorrect – it should be changed in your Profile settings – see top blue circle. Click on **the orange advance button circled** to move forward.

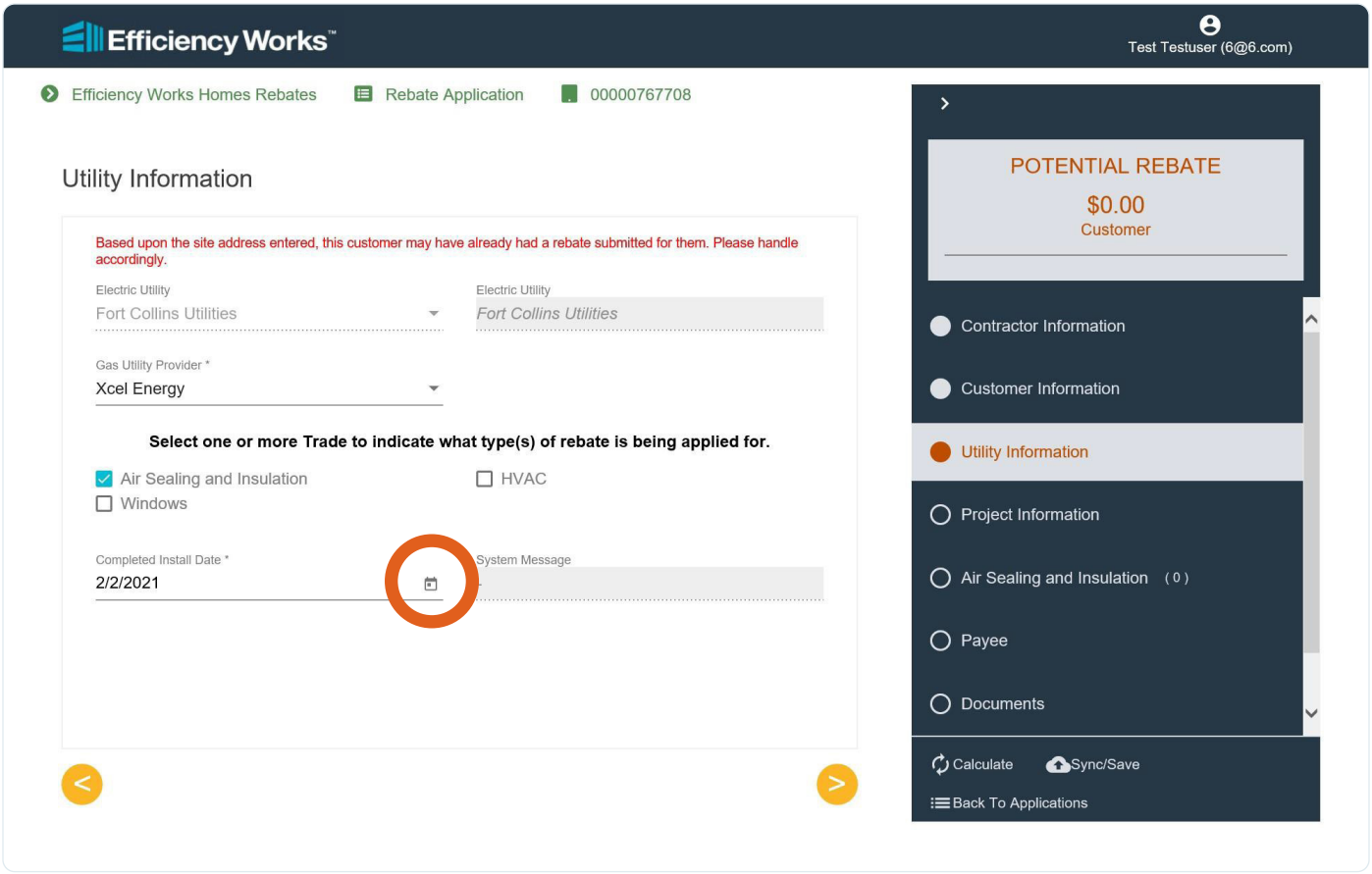
Appendix K: How to apply for a rebate in Efficiency Works Homes



Step 5

You should now see the page above. This page is the **Customer Information** page. You will need to fill out all the cells that have asterisks as they are the required fields. The Alternative Payment Information section will be covered in a later example in this document. Click on **the orange advance button** to move forward.

Appendix K: How to apply for a rebate in Efficiency Works Homes



Note:

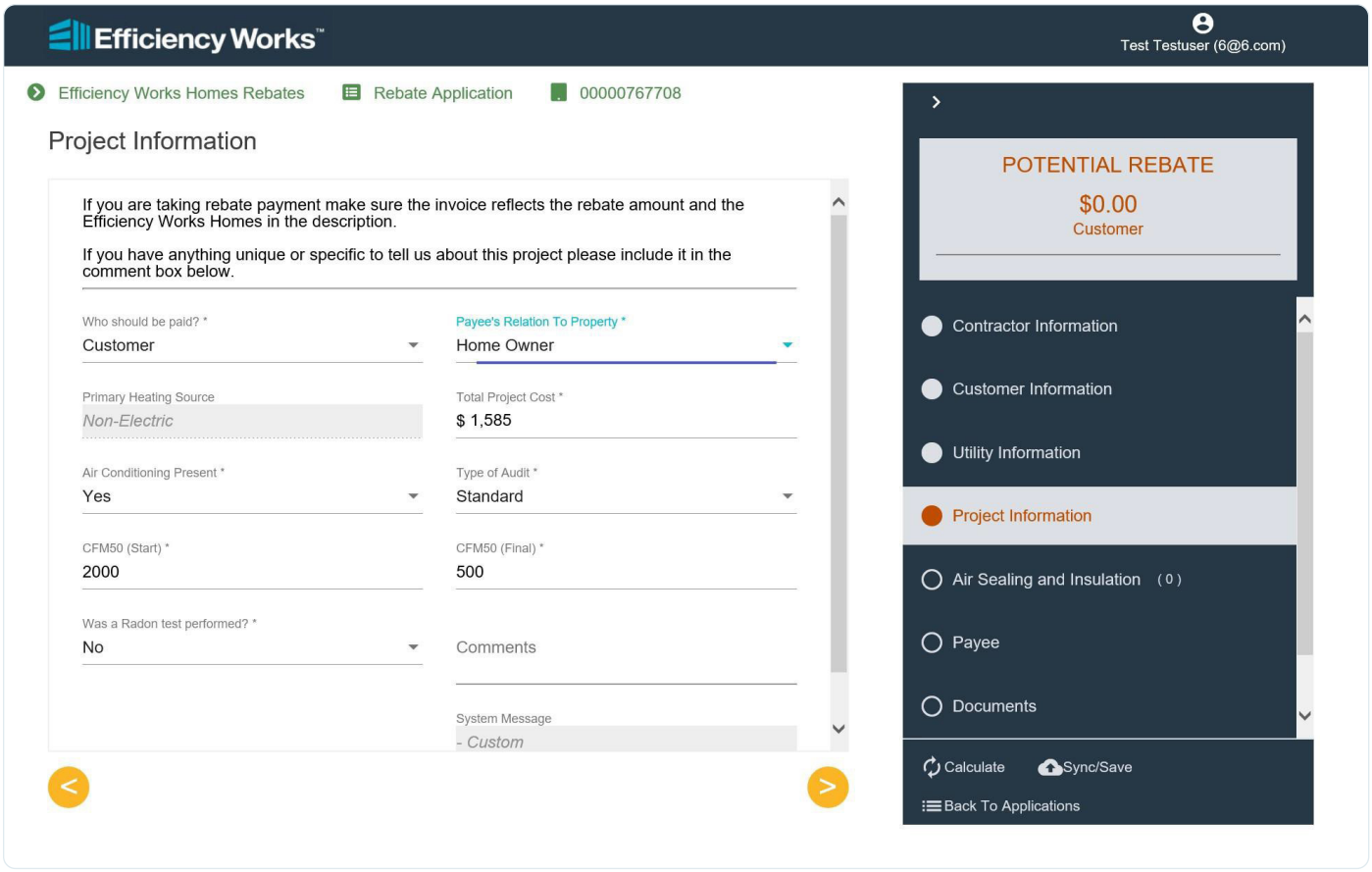
The red text at the top of the page is a notification that the system recognizes this address. If you ever see this, double check to make sure you have not already applied for the same rebate.

Step 6

You should now see the page above. This is the **Utility Information** page. Simply select the appropriate electrical and gas utility provider. Then you need to check the box beside your trade and choose the **Completed Install Date** by clicking on the calendar icon circled in red.

Click on the orange advance button to move forward.

Appendix K: How to apply for a rebate in Efficiency Works Homes



Step 7

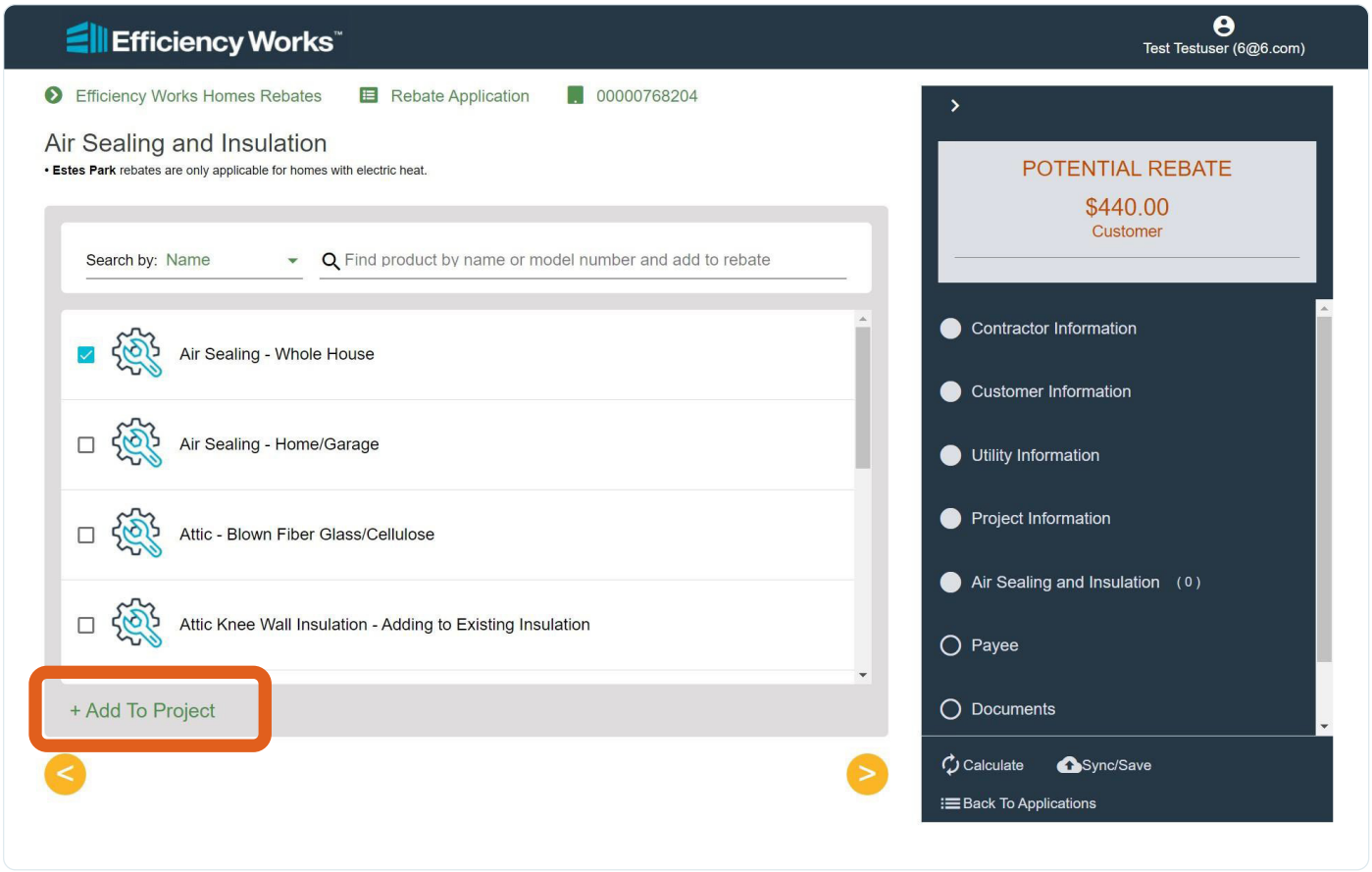
You should now see the page above. This is the **Project Information** page. Once again – fill out all cells with an asterisk. Note that this is the page where you tell us **who** will receive the rebate.

Customer = Customer gets rebate (You will be asked to select Payee's Relation To Property)

Contractor = Contractor gets rebate.

Click on the orange advance button to move forward.

Appendix K: How to apply for a rebate in Efficiency Works Homes

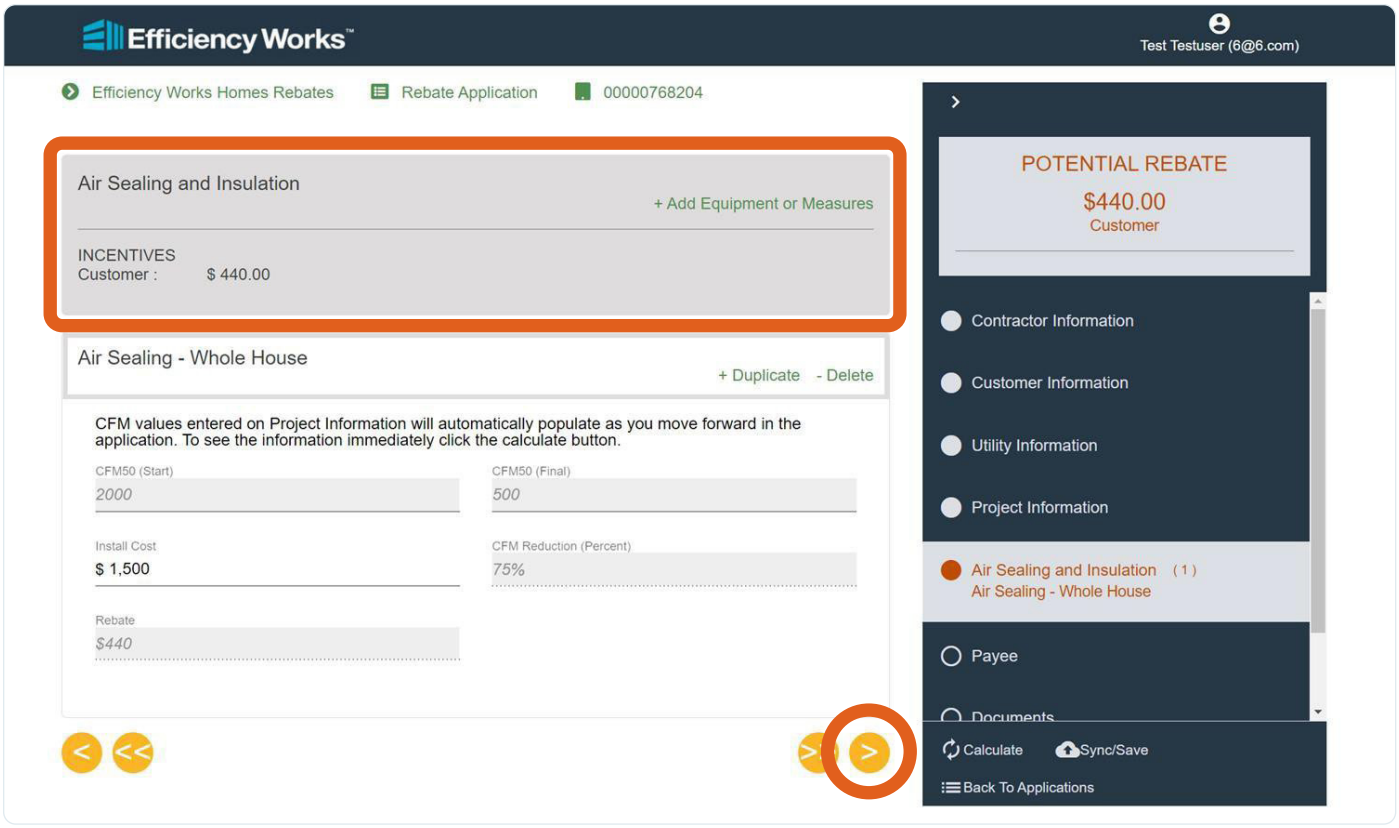


Step 8

You should now see the page above. This is an Air Sealing and Insulation example. Select all the measures you want to apply for and click + Add To Project.

Click on the orange advance button to move forward.

Appendix K: How to apply for a rebate in Efficiency Works Homes

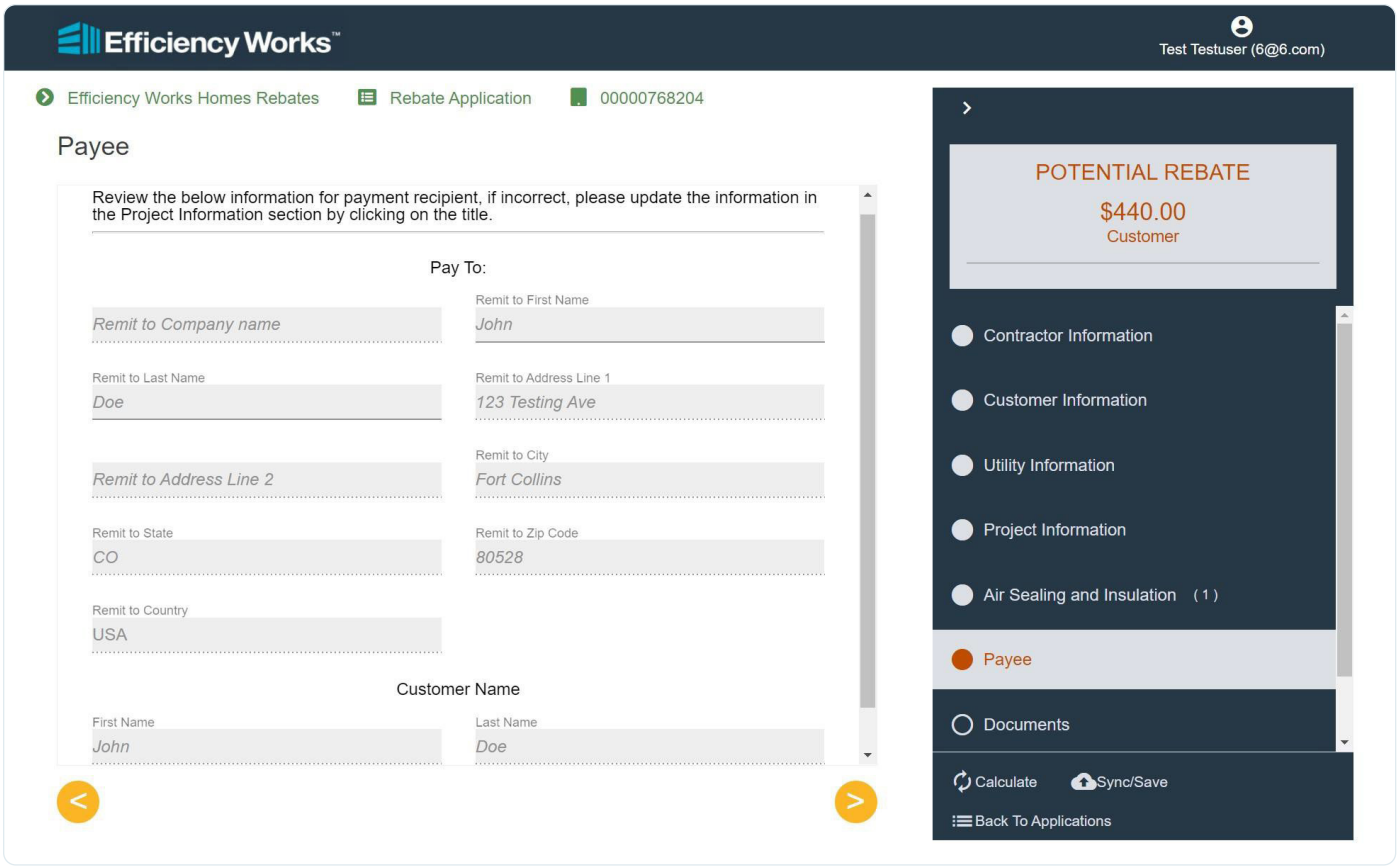


Step 9

Each measure has different inputs required. In this example we are applying for the Whole House Air Sealing rebate which is asking for a pre and post blower door value. The grey box above will provide a summary of the measures entered.

Click on the orange advance button to move forward once all measures are applied for.

Appendix K: How to apply for a rebate in Efficiency Works Homes

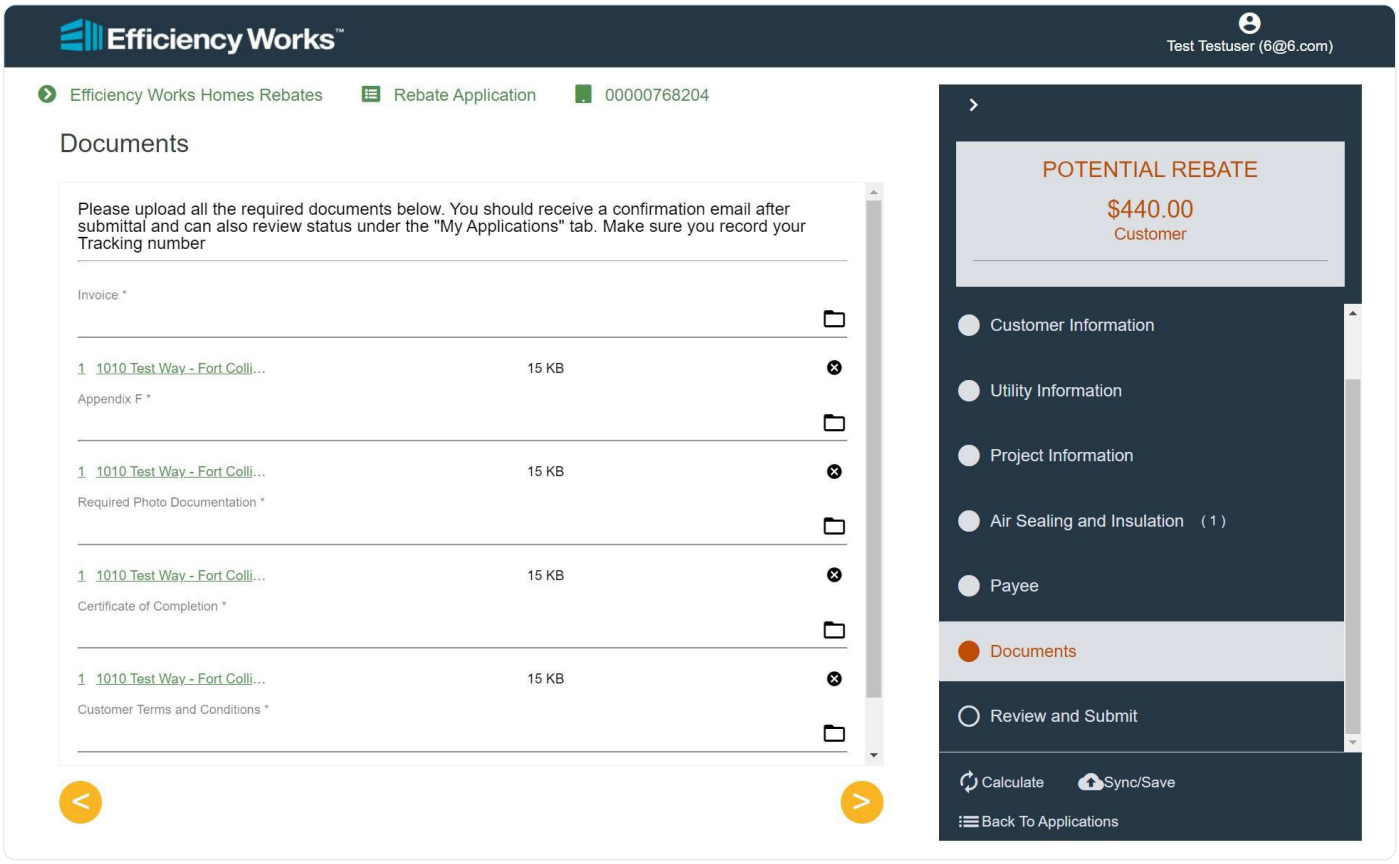


Step 10

You should now see the page above. This is the **Payee** page and is used to clarify who will be receiving the rebate based on the Project Information pages' inputs. If this is incorrect click back onto the Project Information page to adjust.

When correct, click on the orange advance button to move forward again.

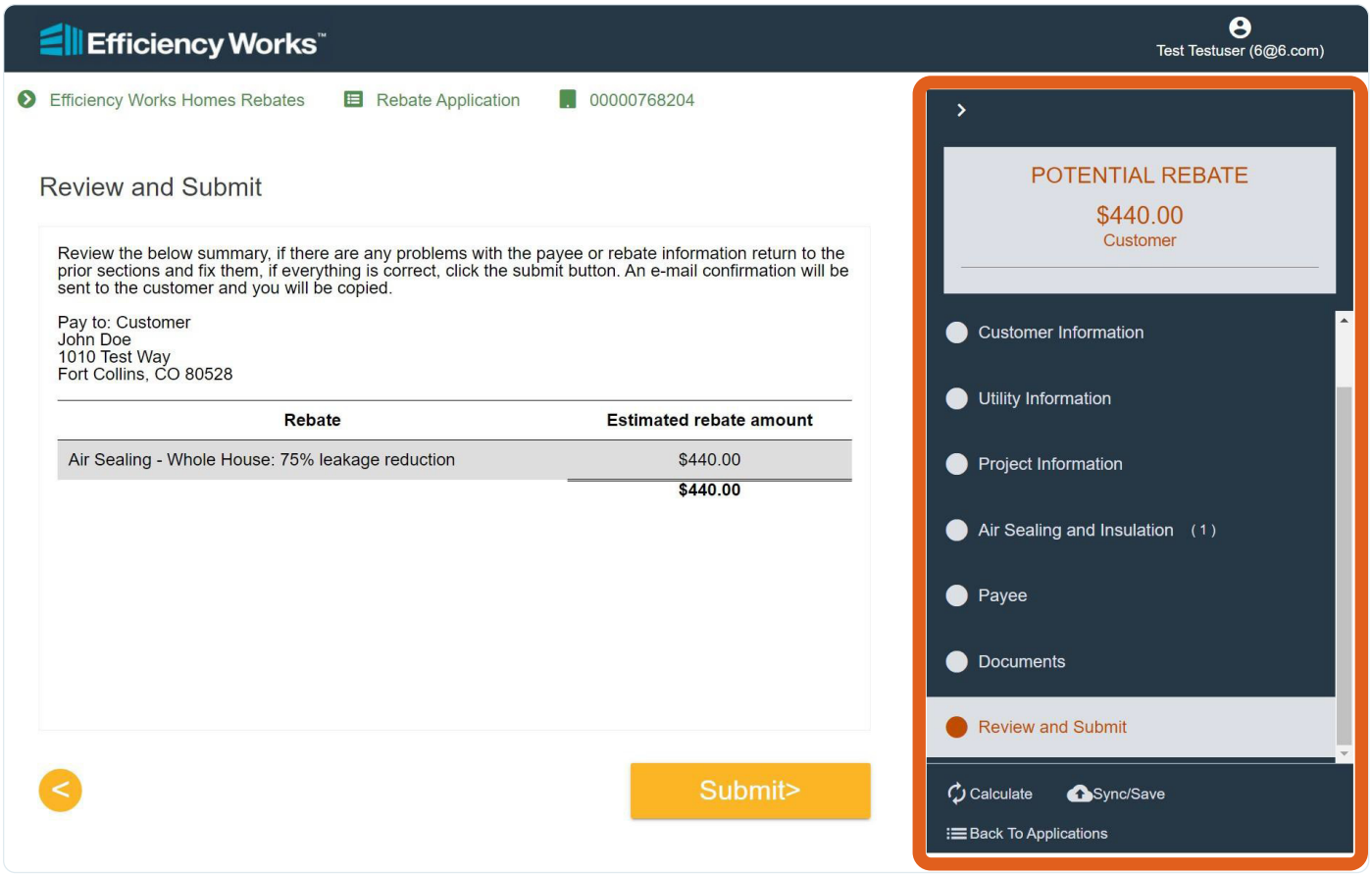
Appendix K: How to apply for a rebate in Efficiency Works Homes



Step 11

Once you have entered your measures you will be moved on to the Documents page. This is where the application will ask for specific paperwork depending on what you applied for. The **Certificate of Completion** and the **Terms and Conditions** are in the customer rebate folder that you either have in paper form or digitally (provided by the Efficiency Works team). Notice the files in this example are using our required naming scheme. Click on the orange advance button to

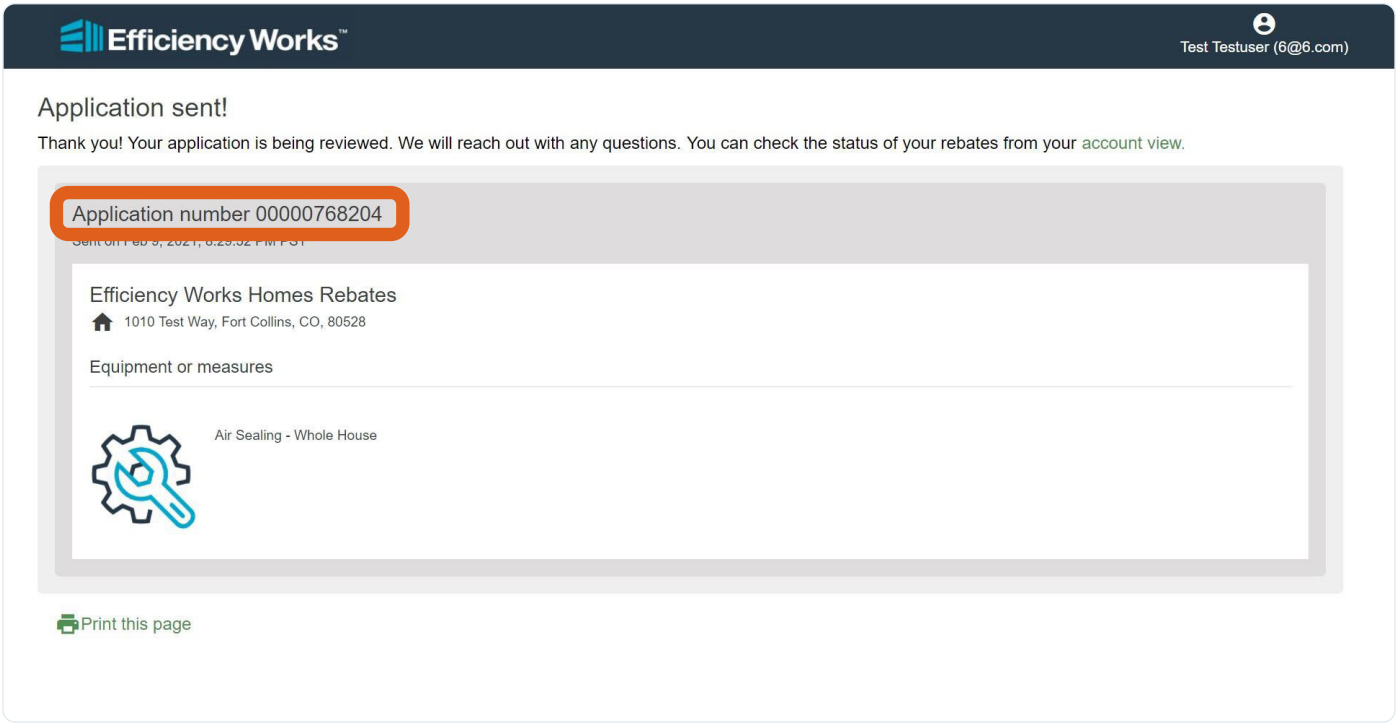
Appendix K: How to apply for a rebate in Efficiency Works Homes



Step 12

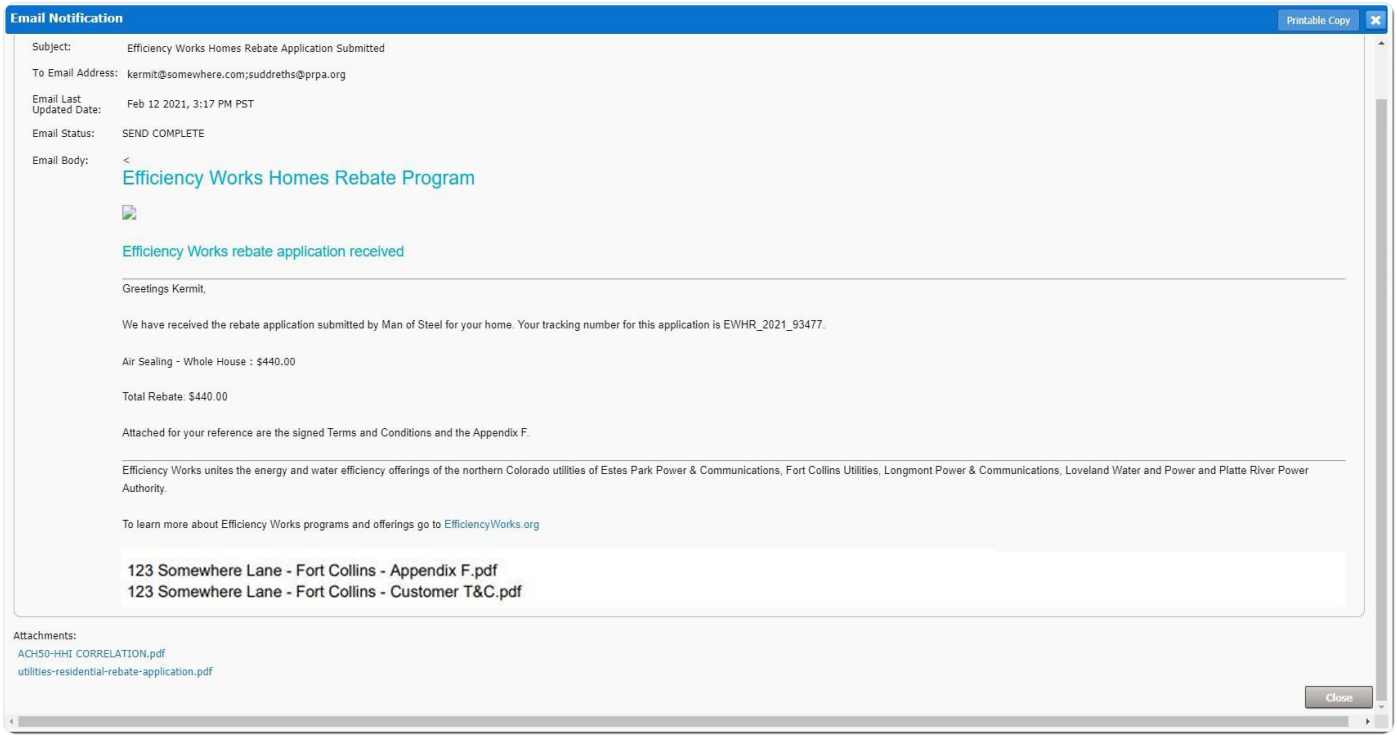
This is your review page. This should summarize every measure you have applied for, along with the eligible rebates. Make sure this is correct before submitting. If everything is correct click on the **Submit > button**. If anything is incorrect click back to the appropriate page as needed using the page titles in the navy-blue box on the right-hand side.

Appendix K: How to apply for a rebate in Efficiency Works Homes



Congratulations! You are now finished. This shows your **tracking number** and automates an email that is then sent to you and the customer to let everyone know that the rebate has been successfully applied for.

Email notification for a rebate application



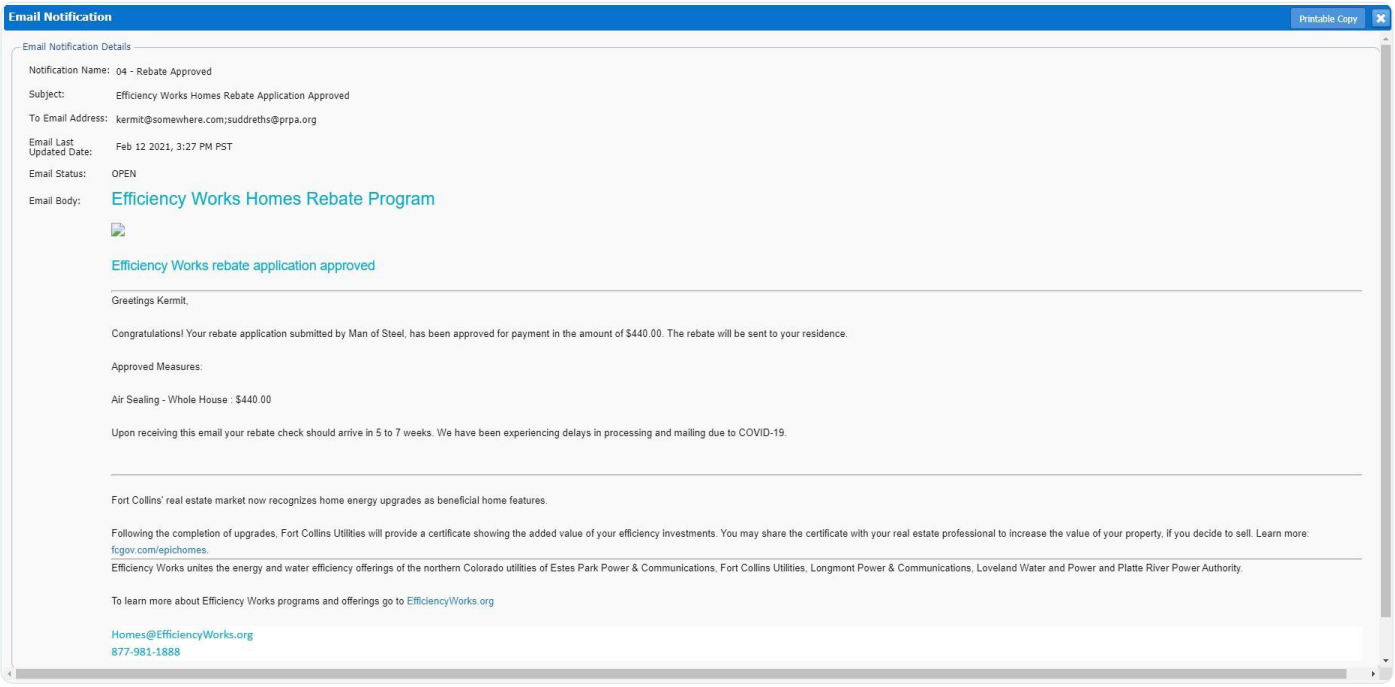
This is an example of the email notifying the service provider and the customer that the rebate application has been received by the program.

Take note of the tracking number in the first sentence after the Greeting. That number will allow you to find the job in your portal if necessary

Due to the need to protect customer personal information, we will only be using the first name to distinguish this application from any other.

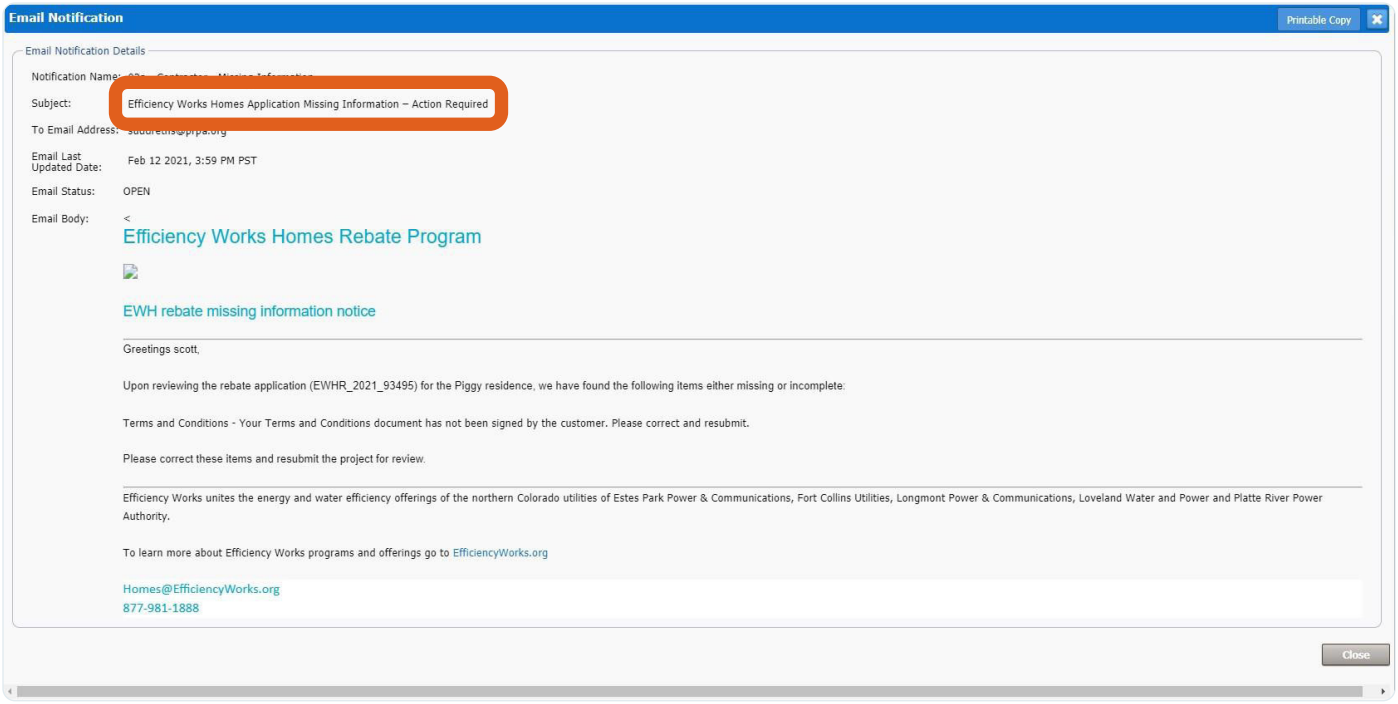
Note that **Appendix F** and the **Terms and Conditions** document are attached to this for the customer's records.

Email notification for an approved rebate application



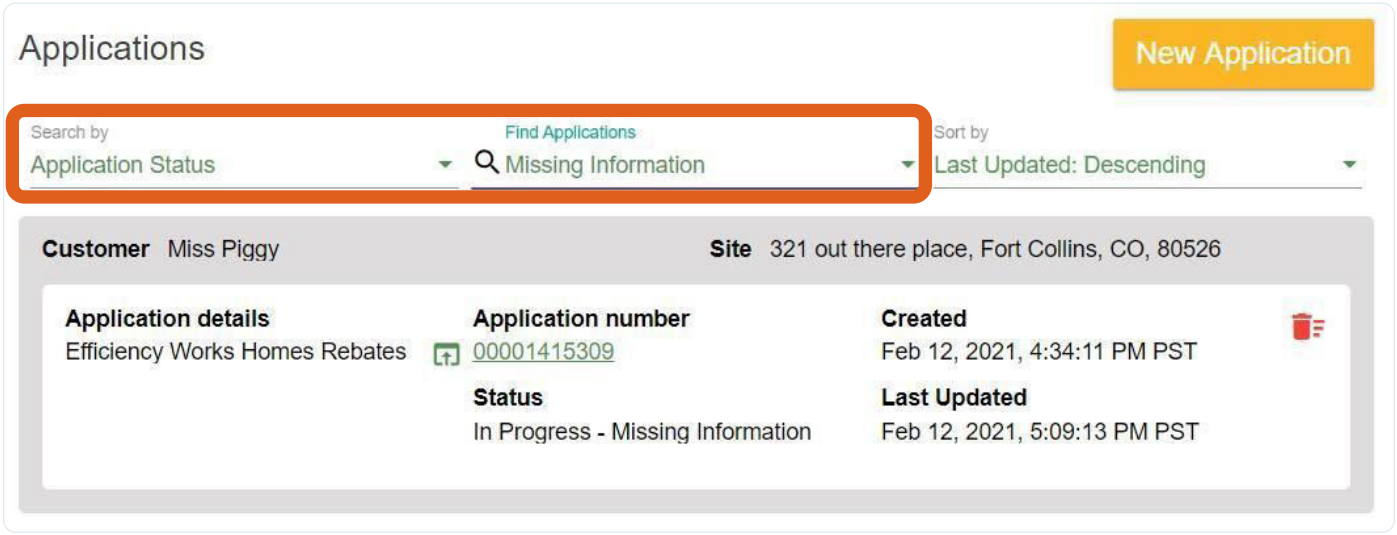
This is the email that will show up once the rebate has been approved. This keeps the customer, service provider, and the program on the same page as to the status of any rebate in the program.

Rebate application returned as Missing Information

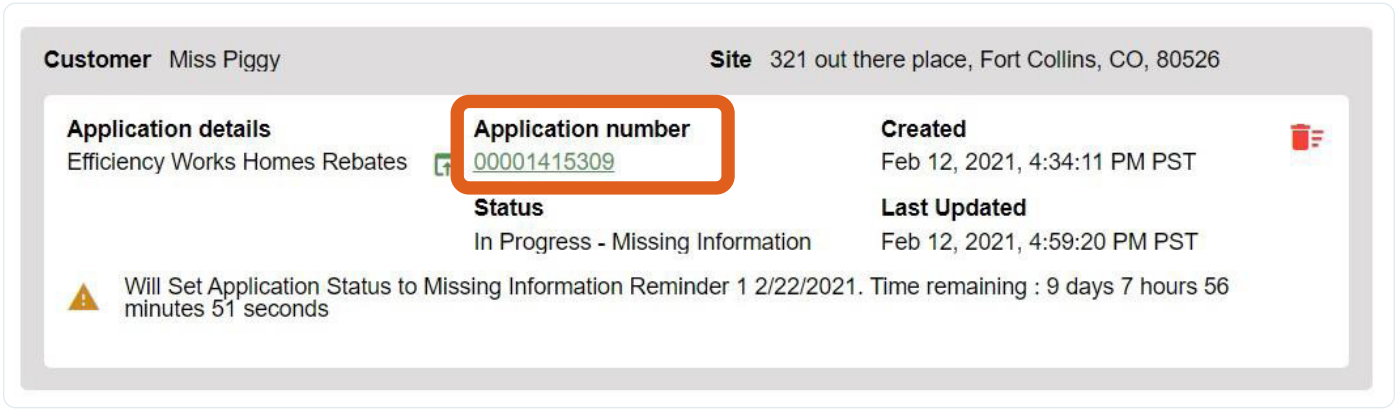


On occasion, a rebate application will be returned to the service provider with the status **Missing Information** if something is found incorrect, missing, or confusing. This will be indicated by an email sent to the key contact person at the company. If you receive one of these emails you need to go back into your portal and update the application with the relevant info and then resubmit.

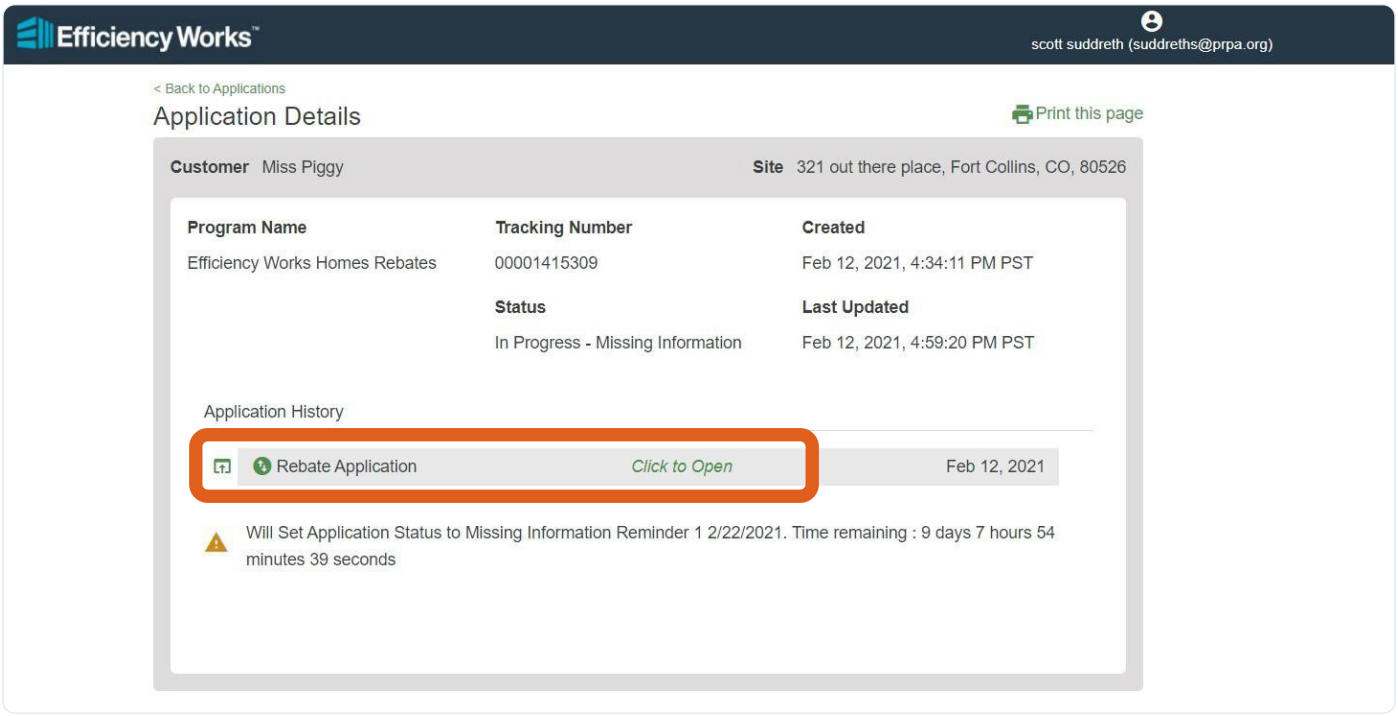
Rebate application returned as Missing Information cont.



Use the search filters directly above your applications to search by "Missing Information" as the Application Status. Click on the Application number in green font to make your corrections.

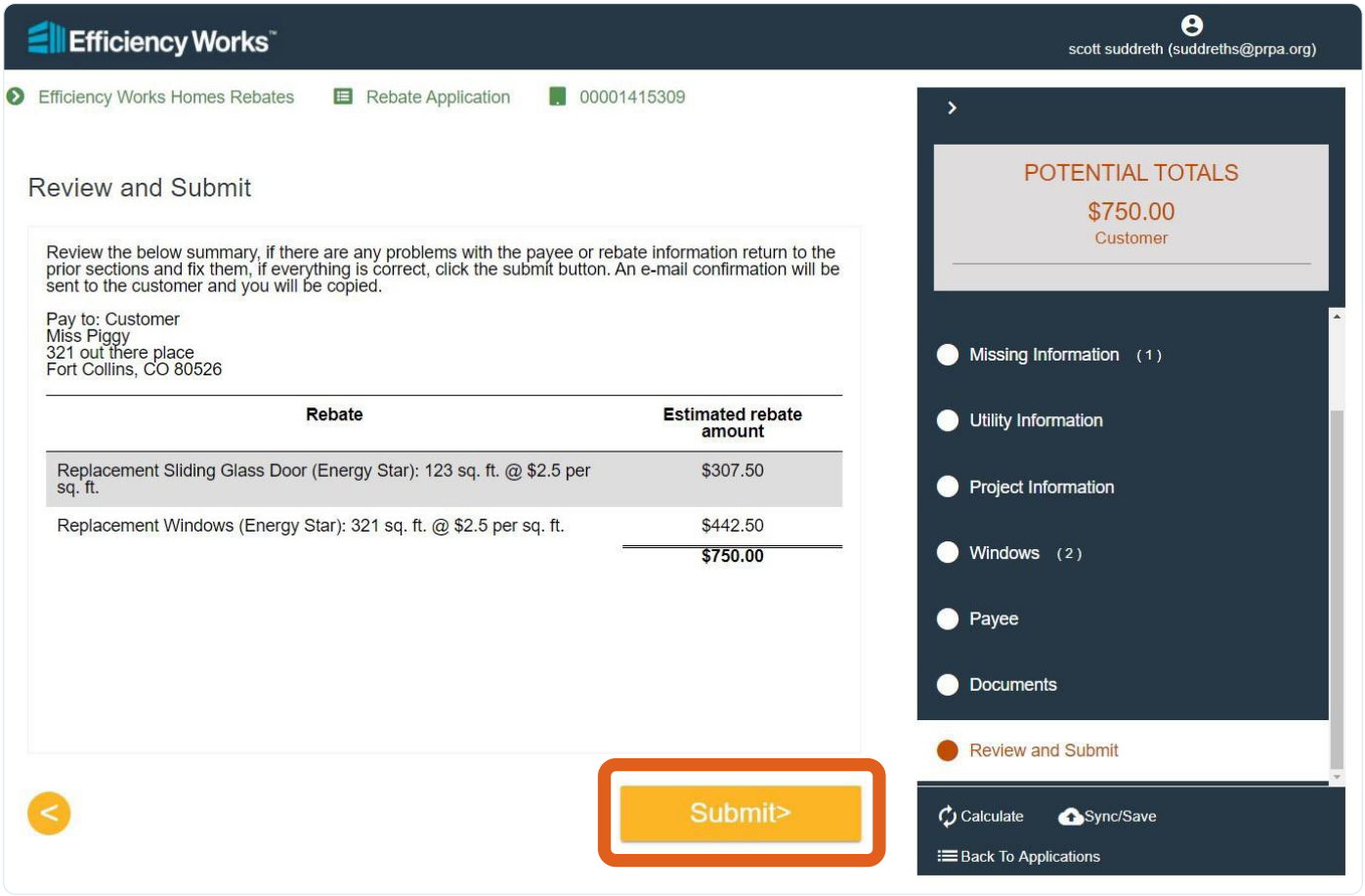


Rebate application returned as Missing Information cont.



The Application Details page then pops up with a short summary of the application. To move forward click on the circled text.

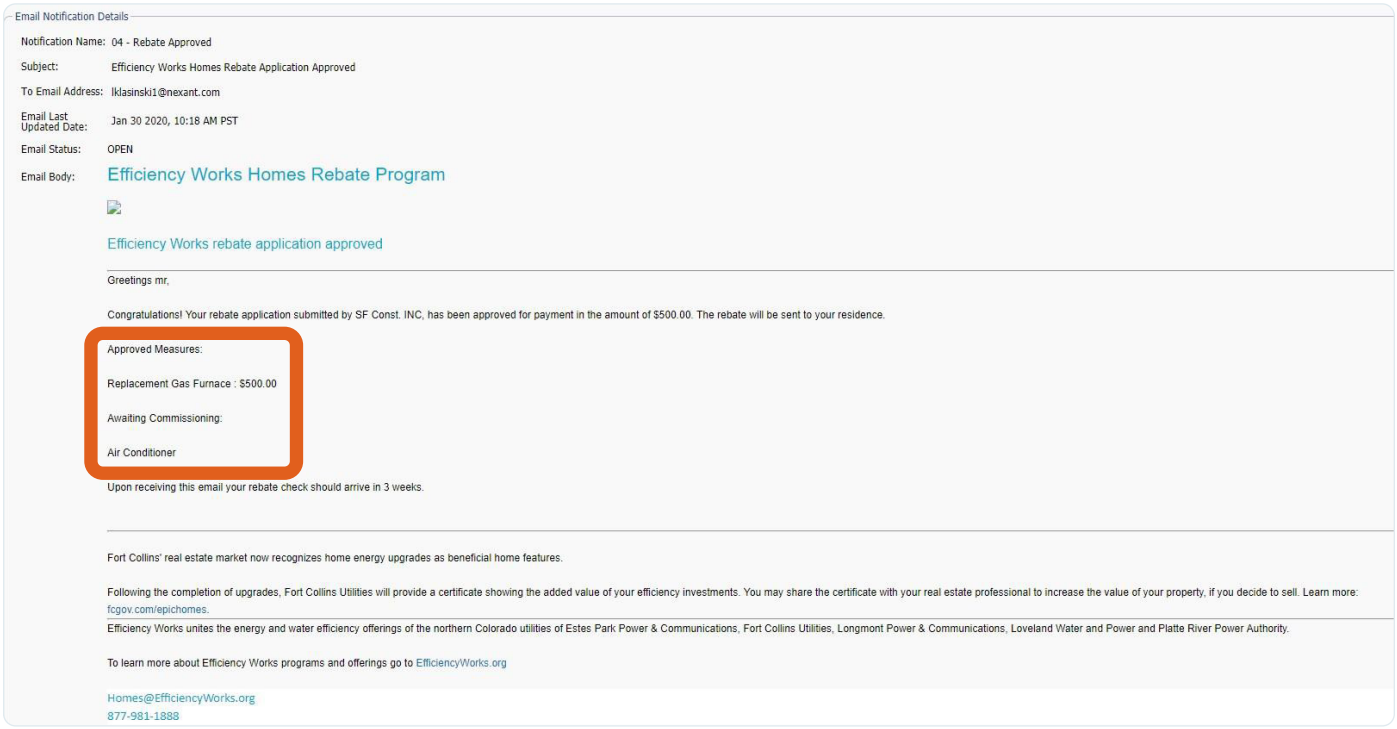
Rebate application returned as Missing Information cont.



Next you will see the Review and Submit screen. Click on the Submit button to resubmit the application.

Appendix K: How to apply for a rebate in Efficiency Works Homes

We will process the furnace rebate during our next rebate review. Our system will pay out the furnace immediately and will tell the customer that the AC is on hold "Waiting on Commissioning" – see example below.



Email Notification Details

Notification Name: 04 - Rebate Approved

Subject: Efficiency Works Homes Rebate Application Approved

To Email Address: lklasinski1@nexant.com

Email Last Updated Date: Jan 30 2020, 10:18 AM PST

Email Status: OPEN

Email Body:

Efficiency Works Homes Rebate Program

Efficiency Works rebate application approved

Greetings mr,

Congratulations! Your rebate application submitted by SF Const. INC, has been approved for payment in the amount of $500.00. The rebate will be sent to your residence.

Approved Measures:

Replacement Gas Furnace : $500.00

Awaiting Commissioning:

Air Conditioner

Upon receiving this email your rebate check should arrive in 3 weeks.

Fort Collins' real estate market now recognizes home energy upgrades as beneficial home features.

Following the completion of upgrades, Fort Collins Utilities will provide a certificate showing the added value of your efficiency investments. You may share the certificate with your real estate professional to increase the value of your property, if you decide to sell. Learn more: fcgov.com/epichomes.

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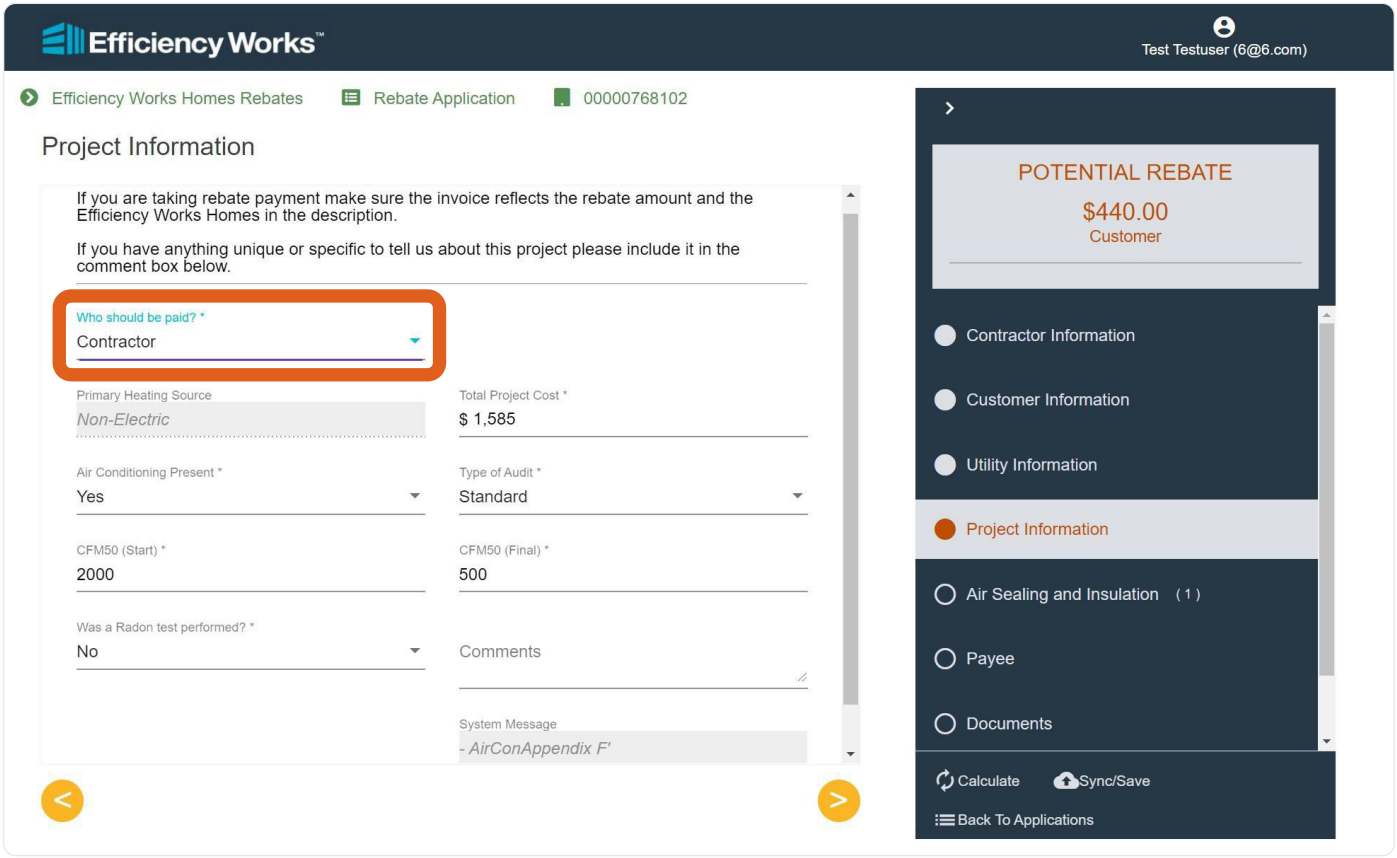
To learn more about Efficiency Works programs and offerings go to EfficiencyWorks.org

Homes@EfficiencyWorks.org
877-981-1888

How to claim the rebate as the service provider

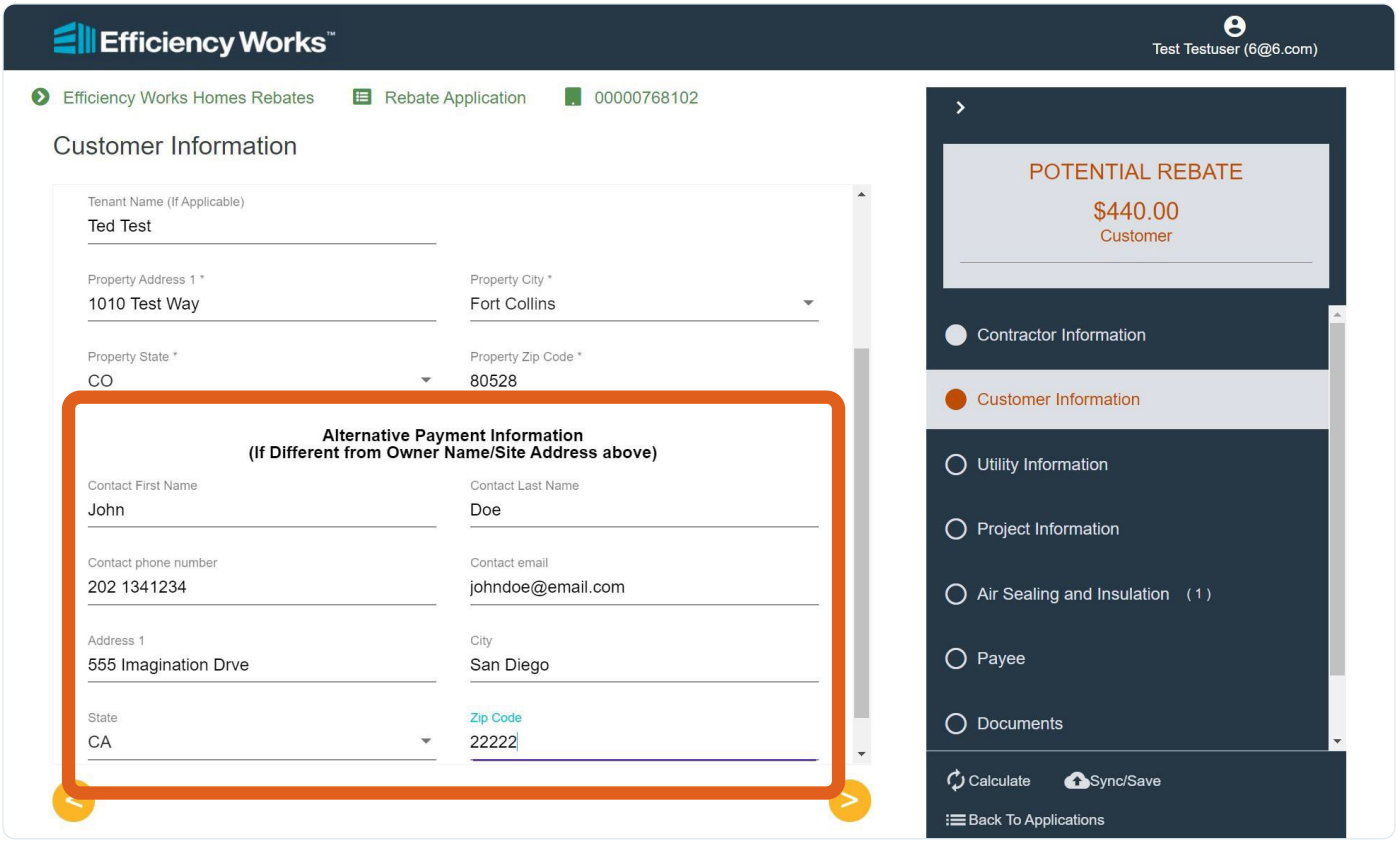
You have the option as a service provider to offer the customer the Efficiency Works Home' rebate up front as a discount. This would mean that your invoice should show this clearly and then the program will reimburse your company for that rebate when the application is processed. To choose this option toggle the "**Who should be paid?"** drop-down to **"Contractor"** on the **Project Information** page.



How to make sure the homeowner gets the rebate vs. the tenant

If you have a tenant/landlord situation then you have a couple of different steps required.

First you have to fill out the **Alternative Payment Information** section of the **Customer Information** Form with the landlord's address.

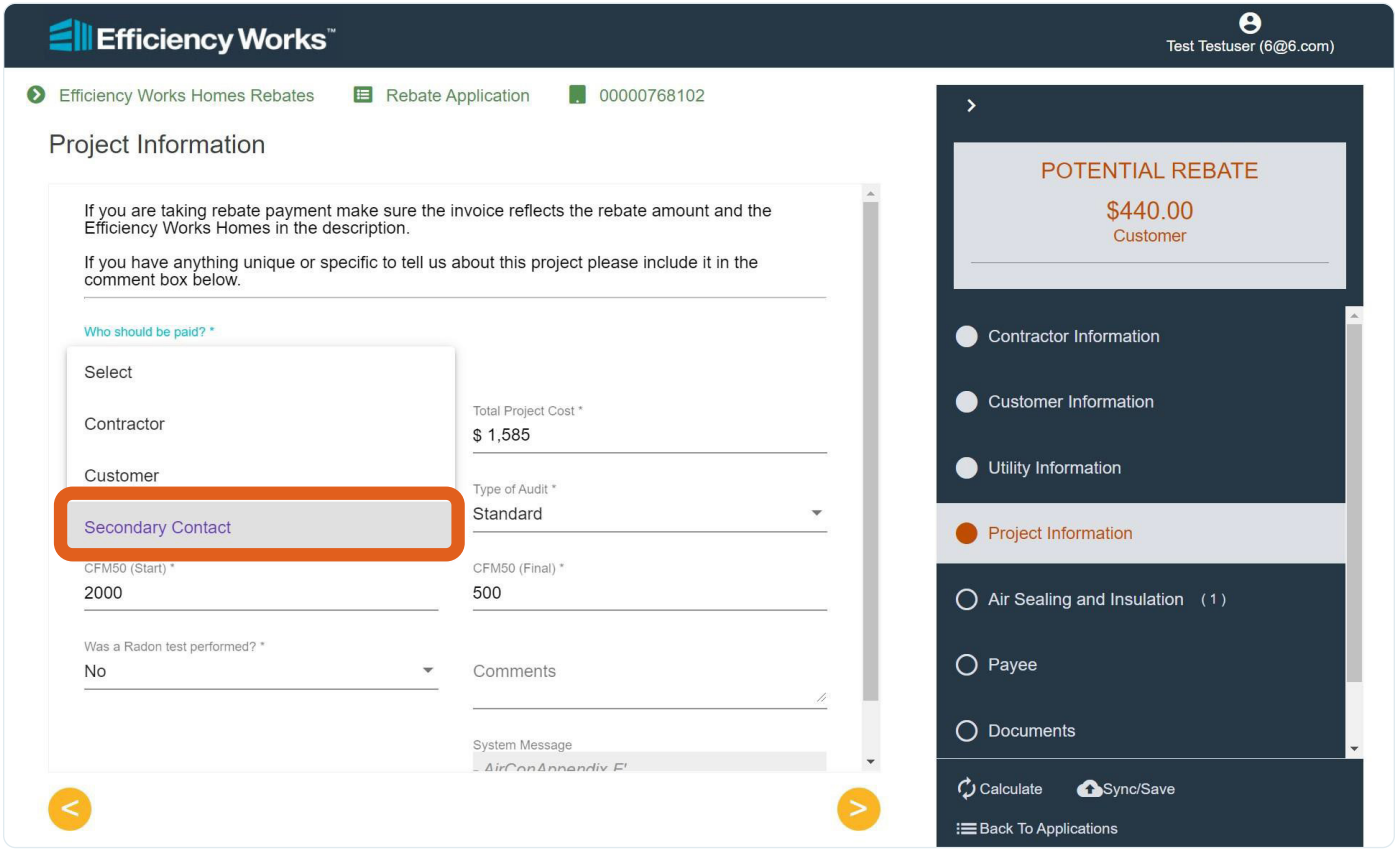


How to make sure the homeowner gets the rebate vs. the tenant - cont.

The next thing you need to do is choose **Secondary Contact** from the Who should get paid drop-down list in **Project Information.**

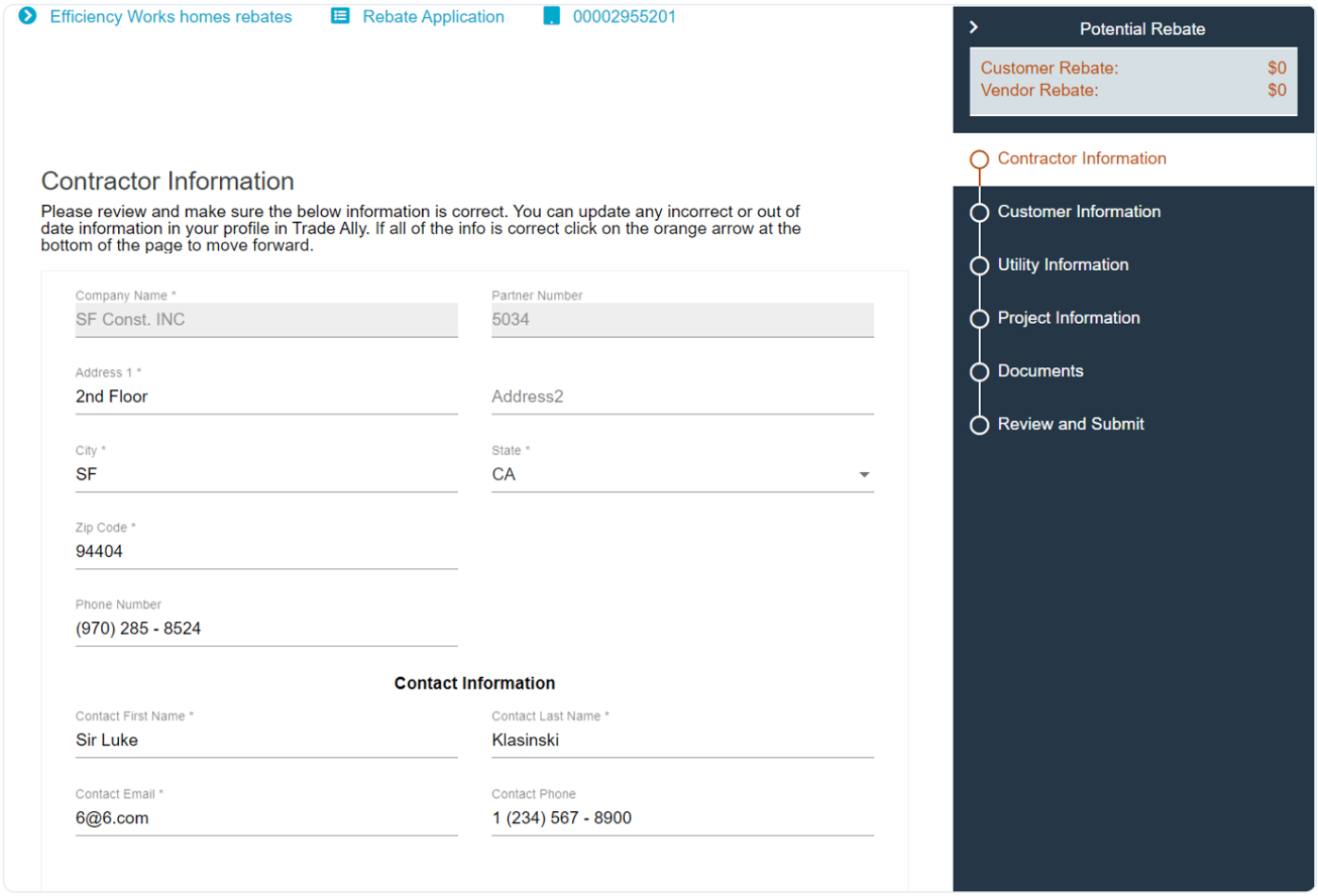
This will tell the software to pay using the secondary address provided on the Customer Information screen.

You can verify this by looking at the **Payee** section.



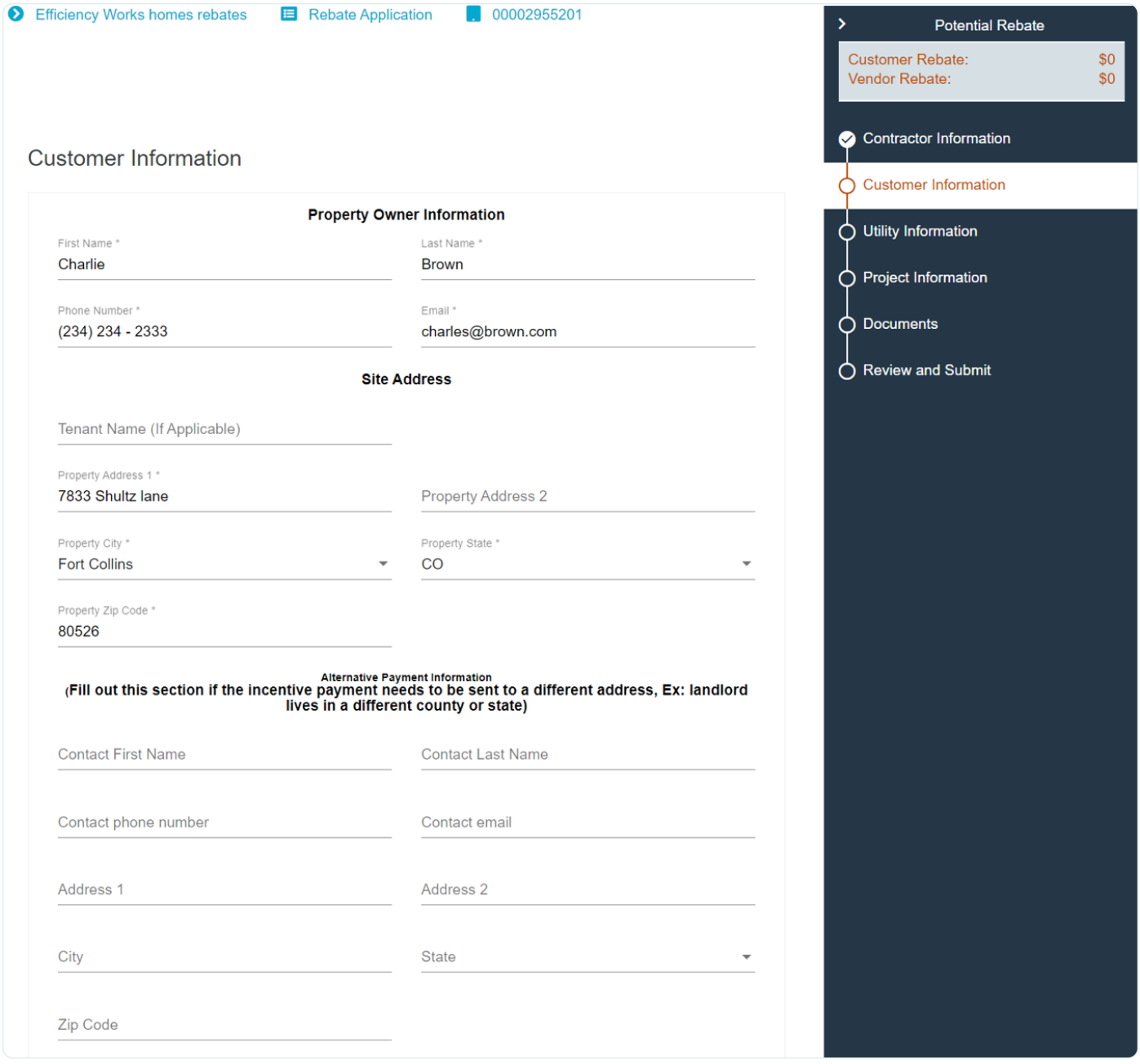
Pre-approval requirements and process

- Rebates $2,500 and over as well as available bonuses and special offerings may require preapproval
- Rebate applications without pre-approval will be capped at $2,500
- Pre-approval applications are intended to be submitted with a completed install date of less than 45 days from application date
- Approved pre-approvals will be voided out if no final application is received 45 days of original listed completed install date



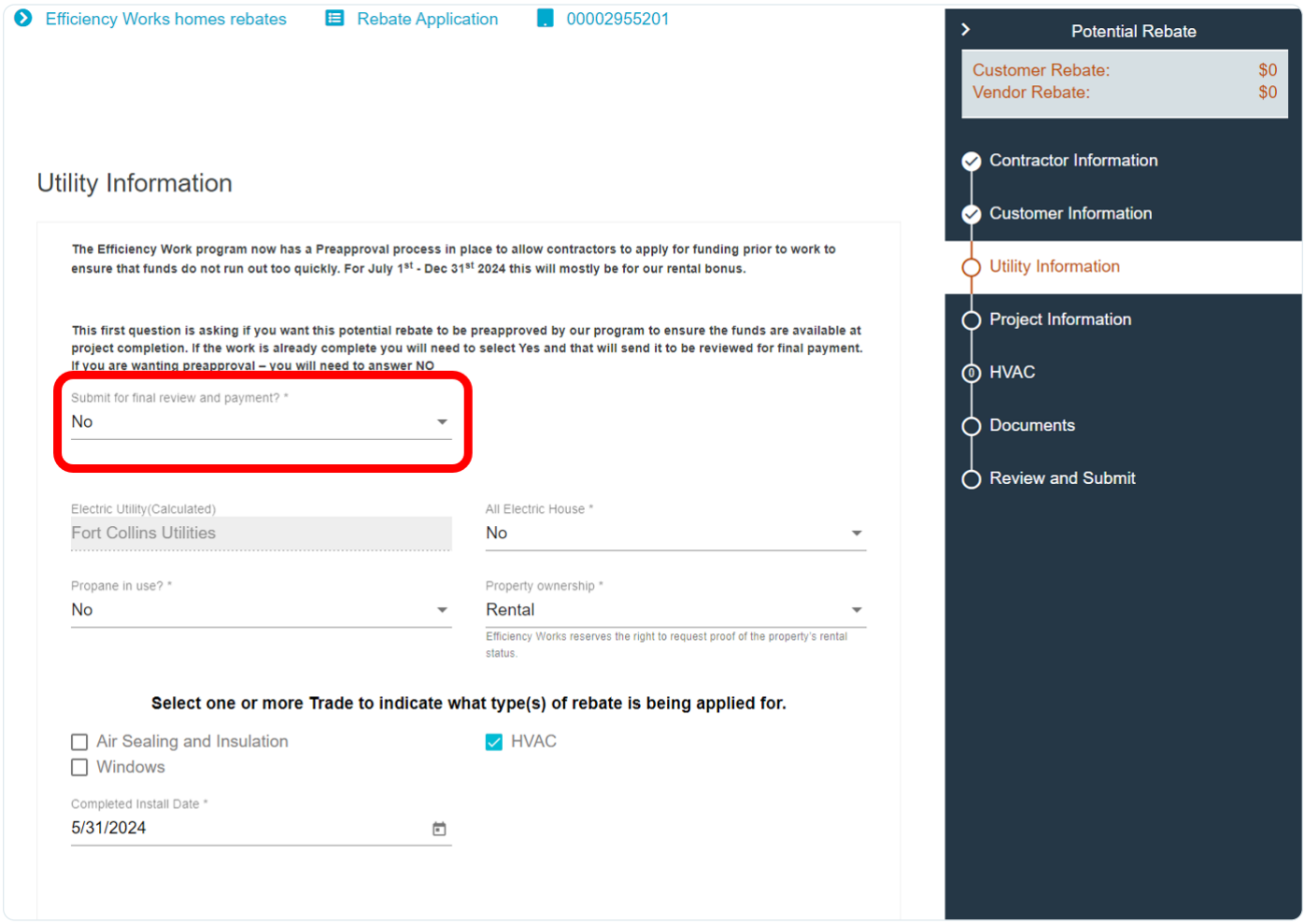
Customer information

Inform Efficiency Works who the customer is and the address for the home. The Alternative Payment information section **should only be filled out** if the rebate payment needs to be sent to a different address for a landlord.



Utility information

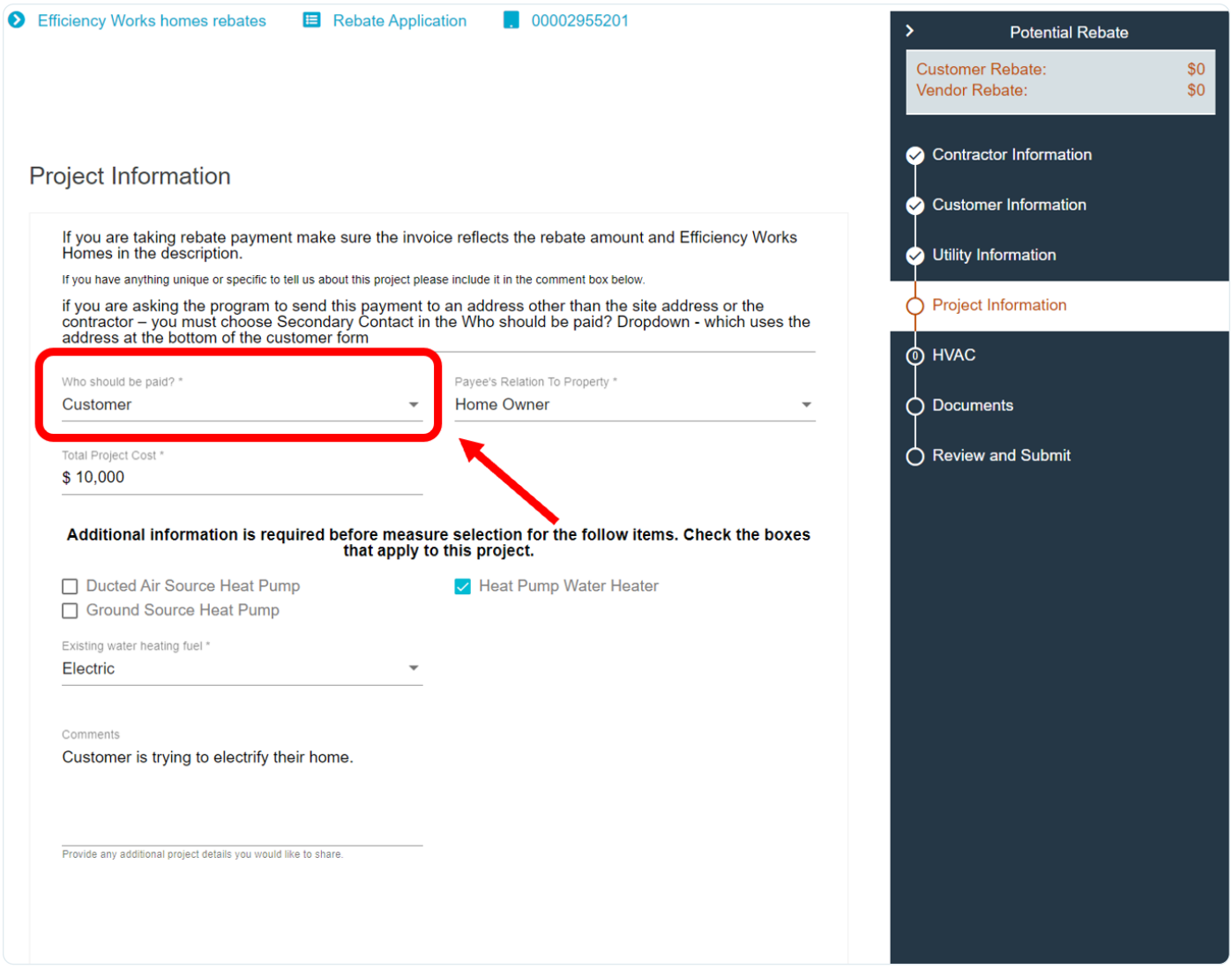
To apply for pre-approval, work cannot be started and you need to select NO (indicated below)



Project information

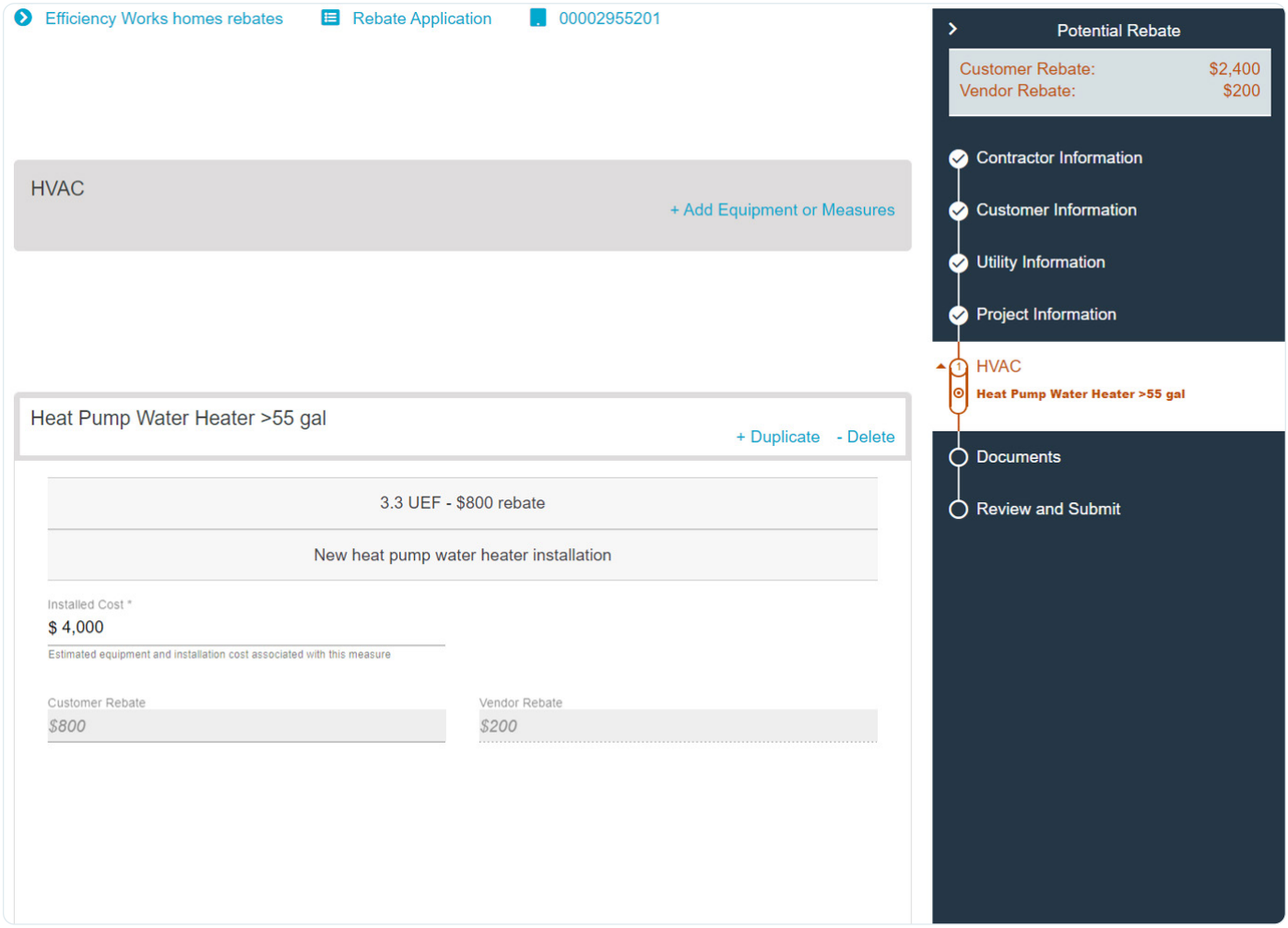
Please provide more information about the project parameters.

If you added Alternative Payment Information on the customer form to deliver the rebate funds to a different address – **you must choose** Secondary Contact from the drop-down list



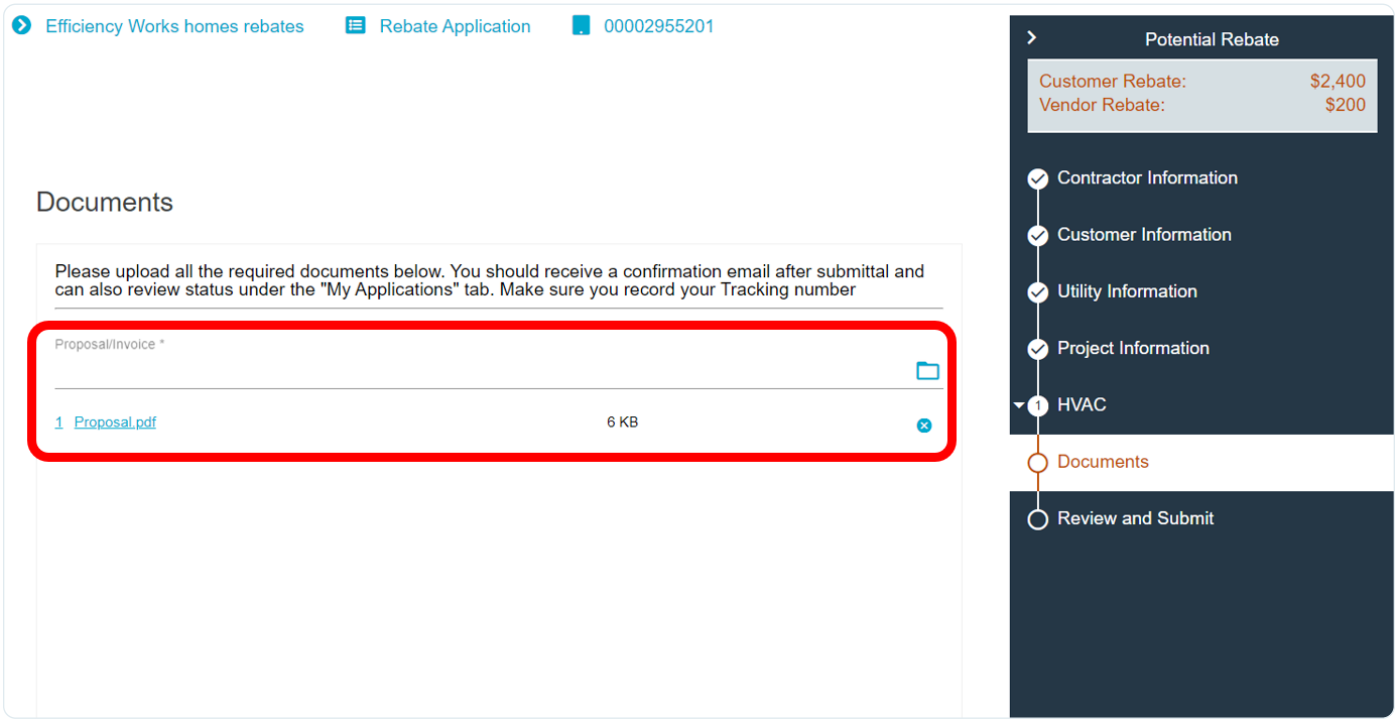
Measure page

For this section please provide the minimum measure information to allow calculations for the total rebate amount upon pre-approval. Detailed measure information will be captured at **Project Update** once work is complete.



Documents

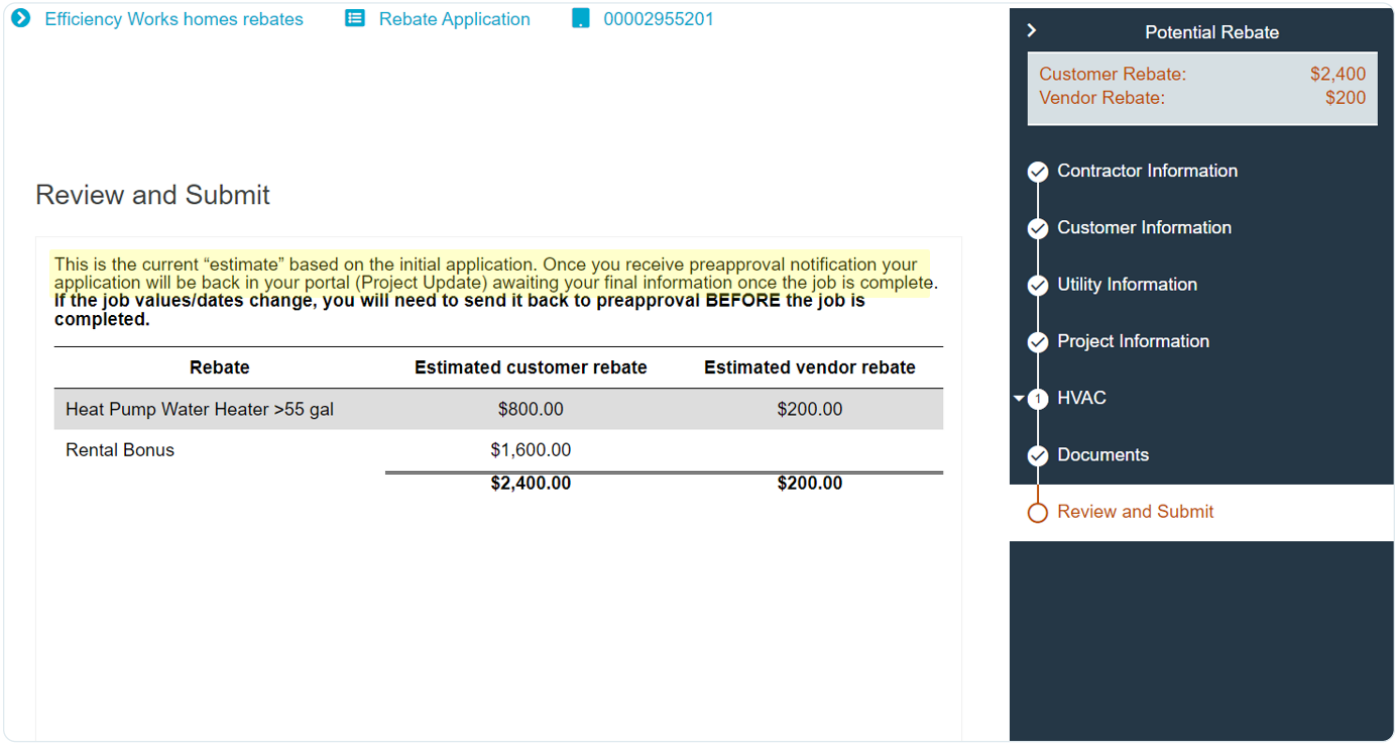
Please provide a proposal, our team will review both the proposal and application to ensure accuracy, validity, thoroughness.



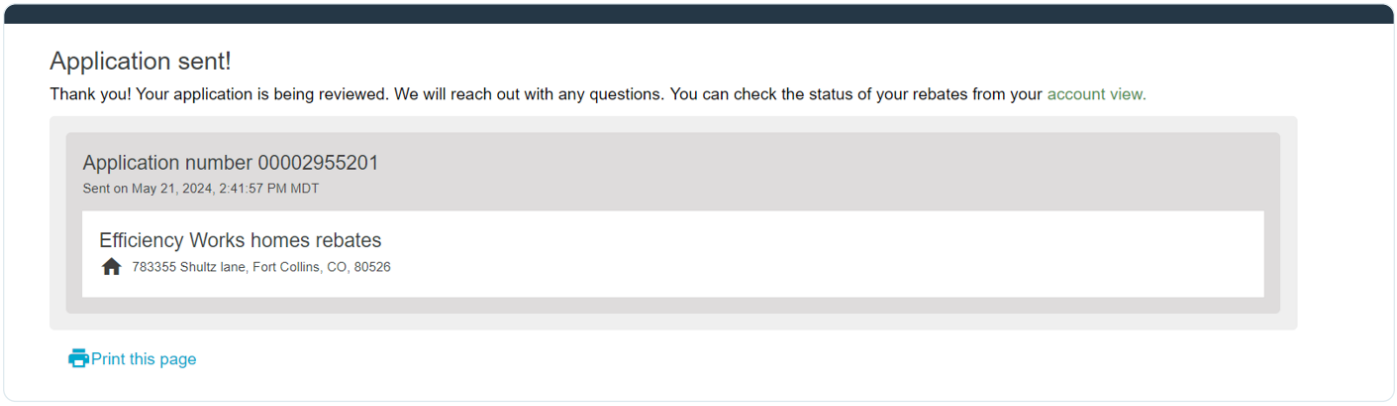
Review and submit

Please review your pre-approval application to ensure accuracy of project.

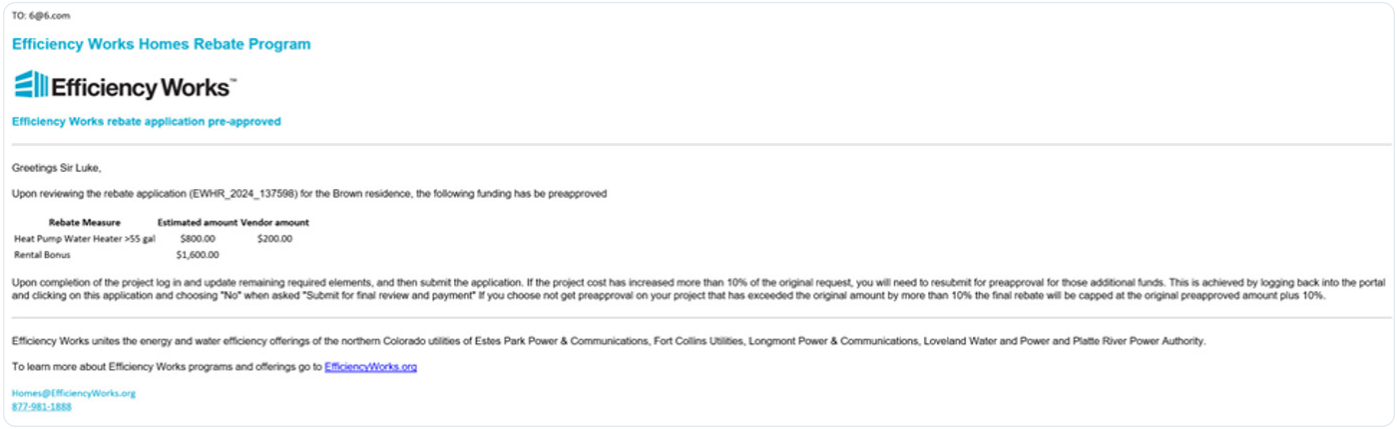
**Note - Any variance of more than 10% of the original preapproved amount will have to be preapproved again PRIOR to project completion or the project will be capped at 110% of the original amount.*



Application sent



Vendor notification



TO: 6@6.com

Efficiency Works Homes Rebate Program

Efficiency Works™

Efficiency Works rebate application pre-approved

Greetings Sir Luke,

Upon reviewing the rebate application (EWHR_2024_137598) for the Brown residence, the following funding has be preapproved

Rebate Measure	Estimated amount	Vendor amount
Heat Pump Water Heater >55 gal	$800.00	$200.00
Rental Bonus	$1,600.00	

Upon completion of the project log in and update remaining required elements, and then submit the application. If the project cost has increased more than 10% of the original request, you will need to resubmit for preapproval for those additional funds. This is achieved by logging back into the portal and clicking on this application and choosing "No" when asked "Submit for final review and payment" If you choose not get preapproval on your project that has exceeded the original amount by more than 10% the final rebate will be capped at the original preapproved amount plus 10%.

Efficiency Works unites the energy and water efficiency offerings of the northern Colorado utilities of Estes Park Power & Communications, Fort Collins Utilities, Longmont Power & Communications, Loveland Water and Power and Platte River Power Authority.

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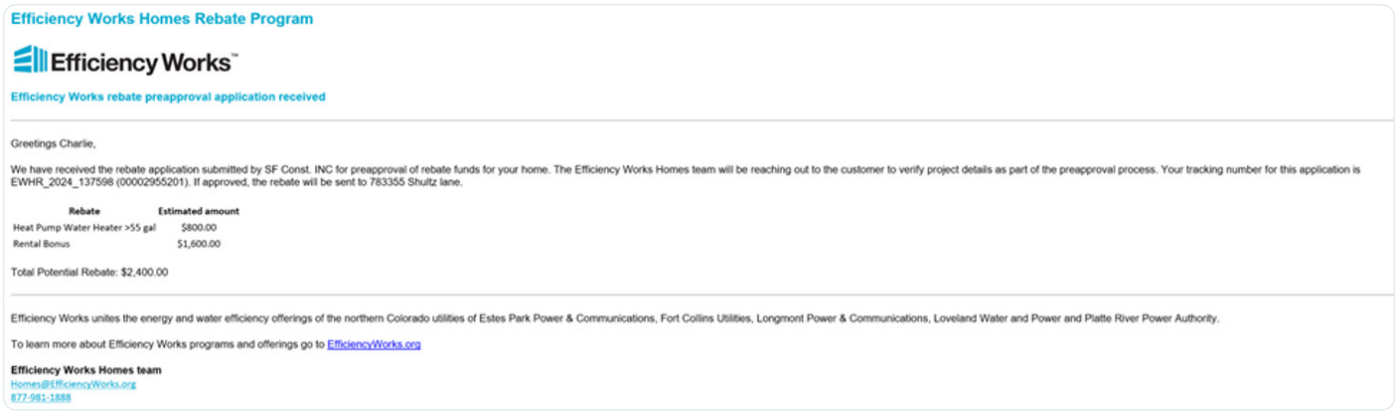
Homes@EfficiencyWorks.org
877-981-1888

Customer/vendor notification



Efficiency Works Homes Rebate Program

Efficiency Works™

Efficiency Works rebate preapproval application received

Greetings Charlie,

We have received the rebate application submitted by SF Const. INC for preapproval of rebate funds for your home. The Efficiency Works Homes team will be reaching out to the customer to verify project details as part of the preapproval process. Your tracking number for this application is EWHR_2024_137598 (00002955201). If approved, the rebate will be sent to 783355 Shultz lane.

Rebate	Estimated amount
Heat Pump Water Heater >55 gal	$800.00
Rental Bonus	$1,600.00

Total Potential Rebate: $2,400.00

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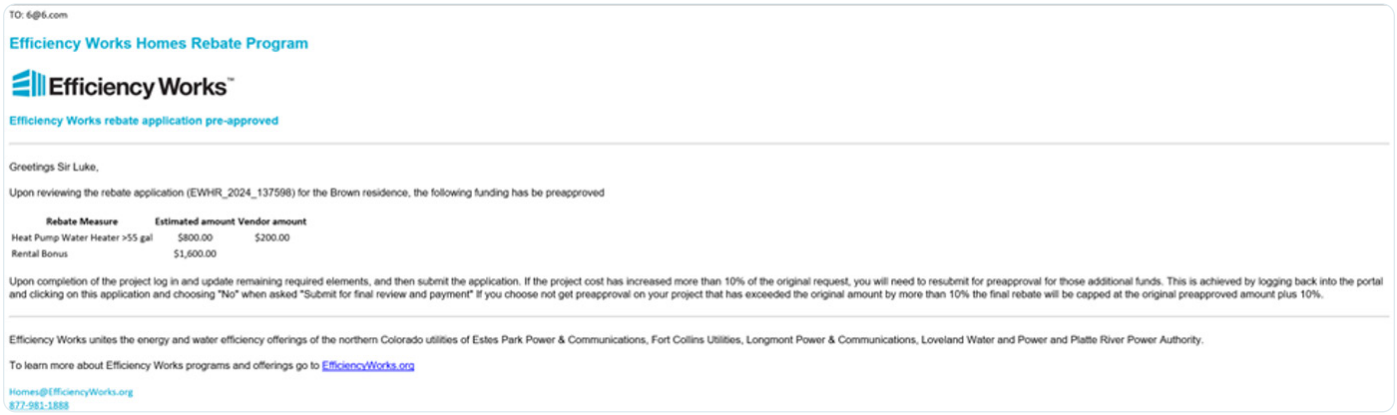
Efficiency Works Homes team
Homes@EfficiencyWorks.org
877-981-1888

Contractor notification – preapproved



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Efficiency Works Homes Rebate Program

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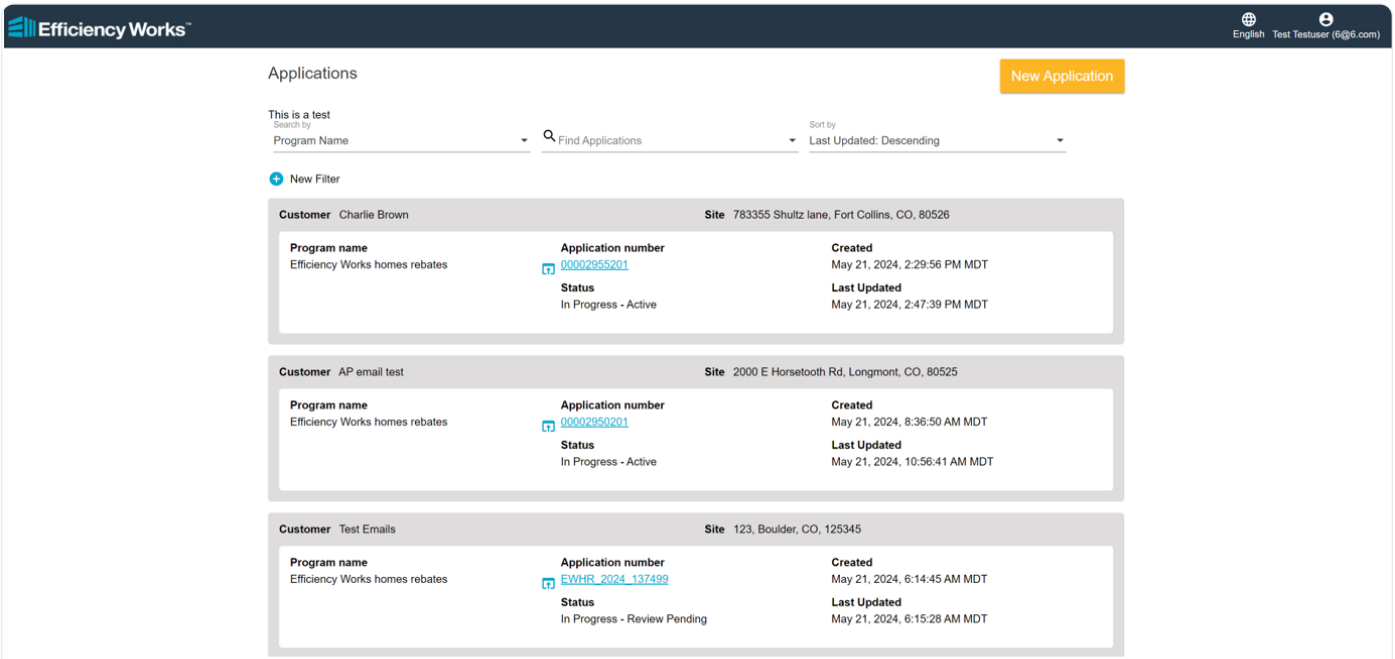
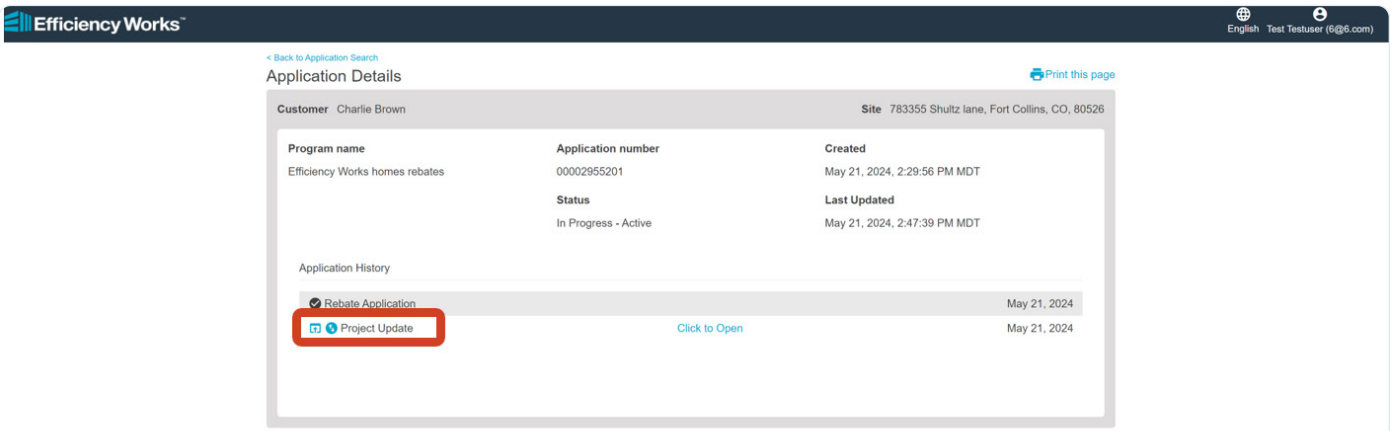
Upon completion of the project log in and update remaining required elements, and then submit the application. If the project cost has increased more than 10% of the original request, you will need to resubmit for preapproval for those additional funds. This is achieved by logging back into the portal and clicking on this application and choosing "No" when asked to "Submit for final review and payment" If you choose not get preapproval on your project that has exceeded the original amount by more than 10% the final rebate will be capped at 110% of the originally approved amount.

Applications in portal



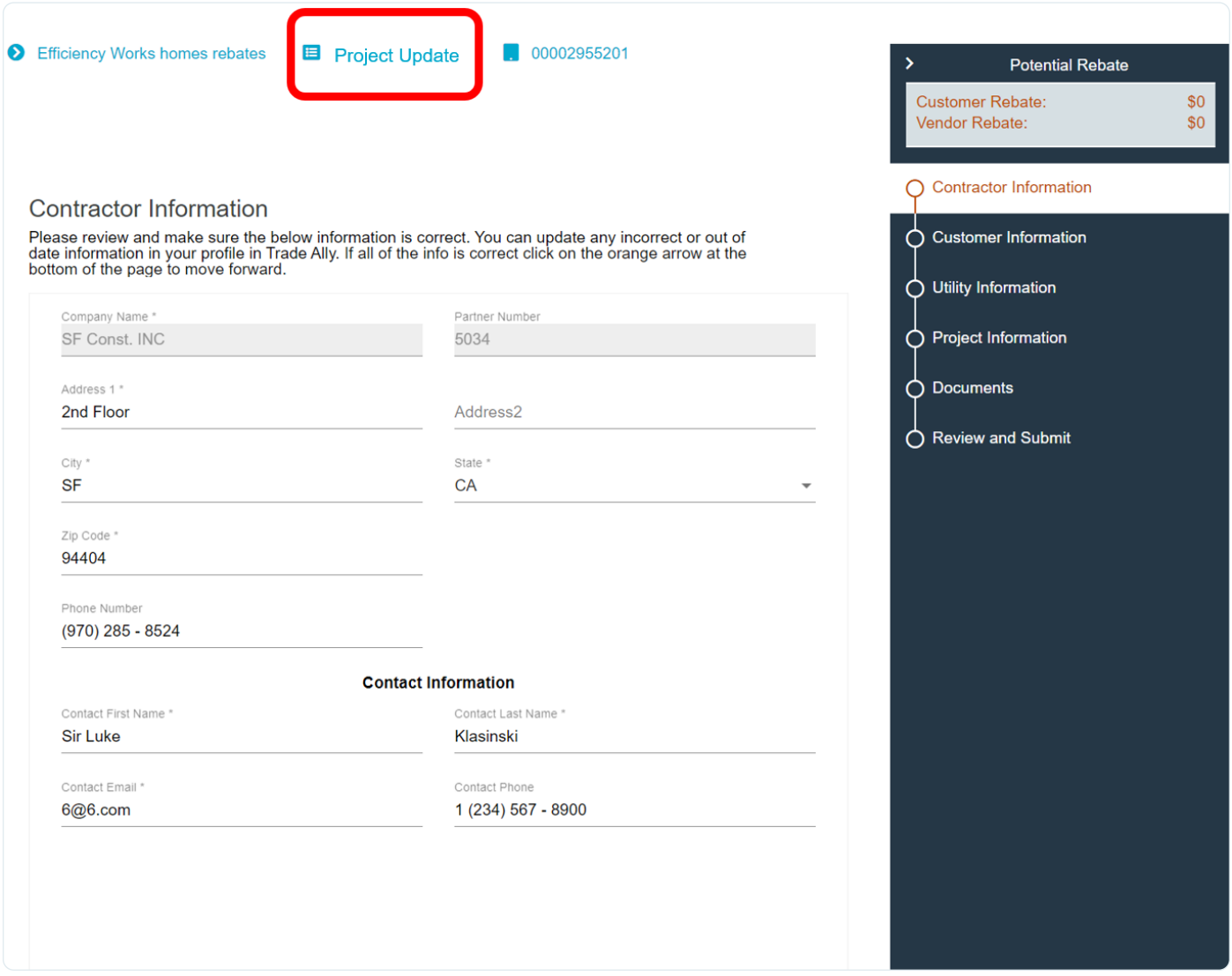
Application details

Once an application is submitted, **Project Update** will be available. Complete the indicated section once work is completed.

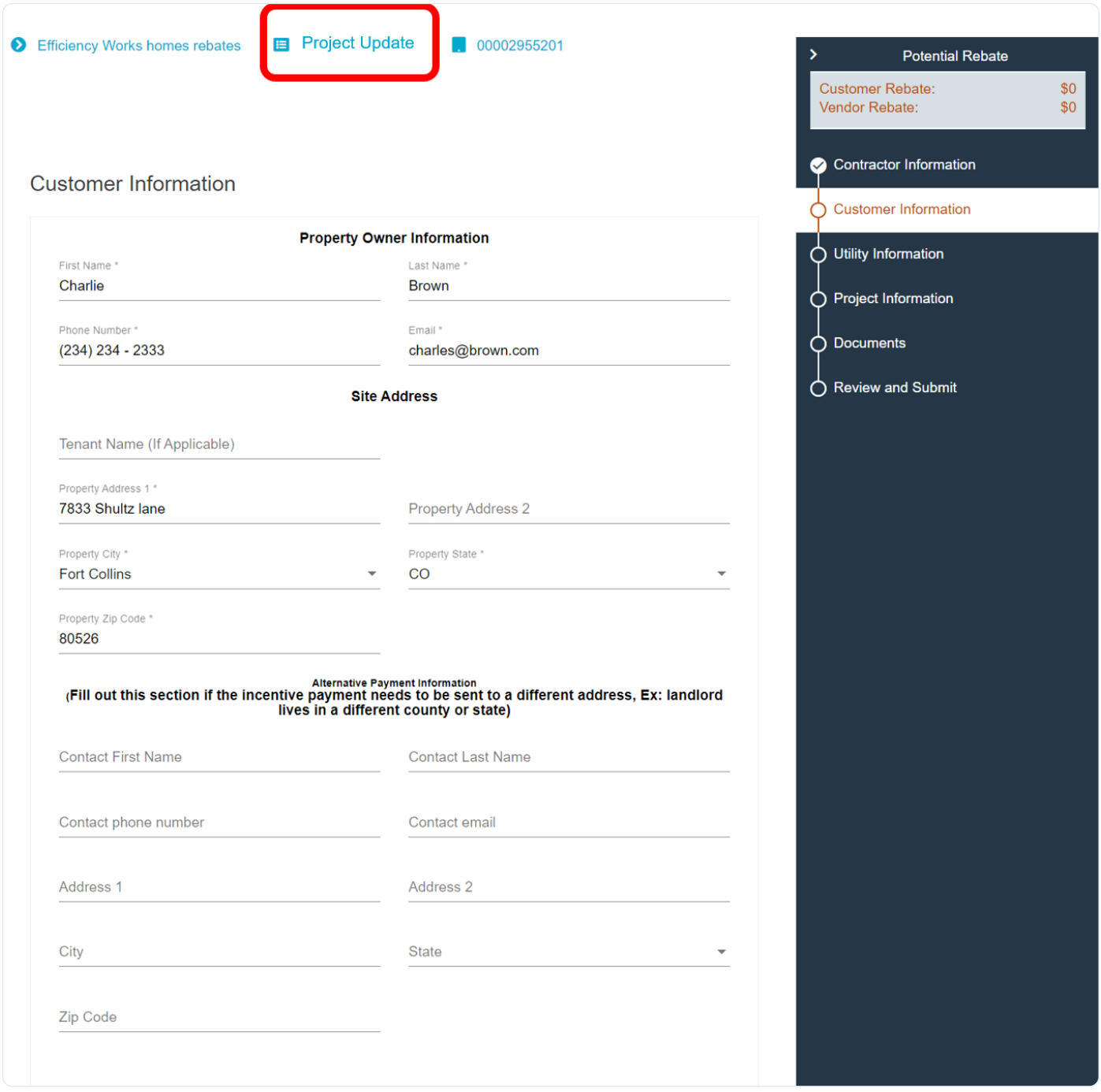


You are now in the **Project Update** form (complete for final submittal).

Contractor info – auto-populated from Rebate Application



Customer info – auto-populated from Rebate Application form

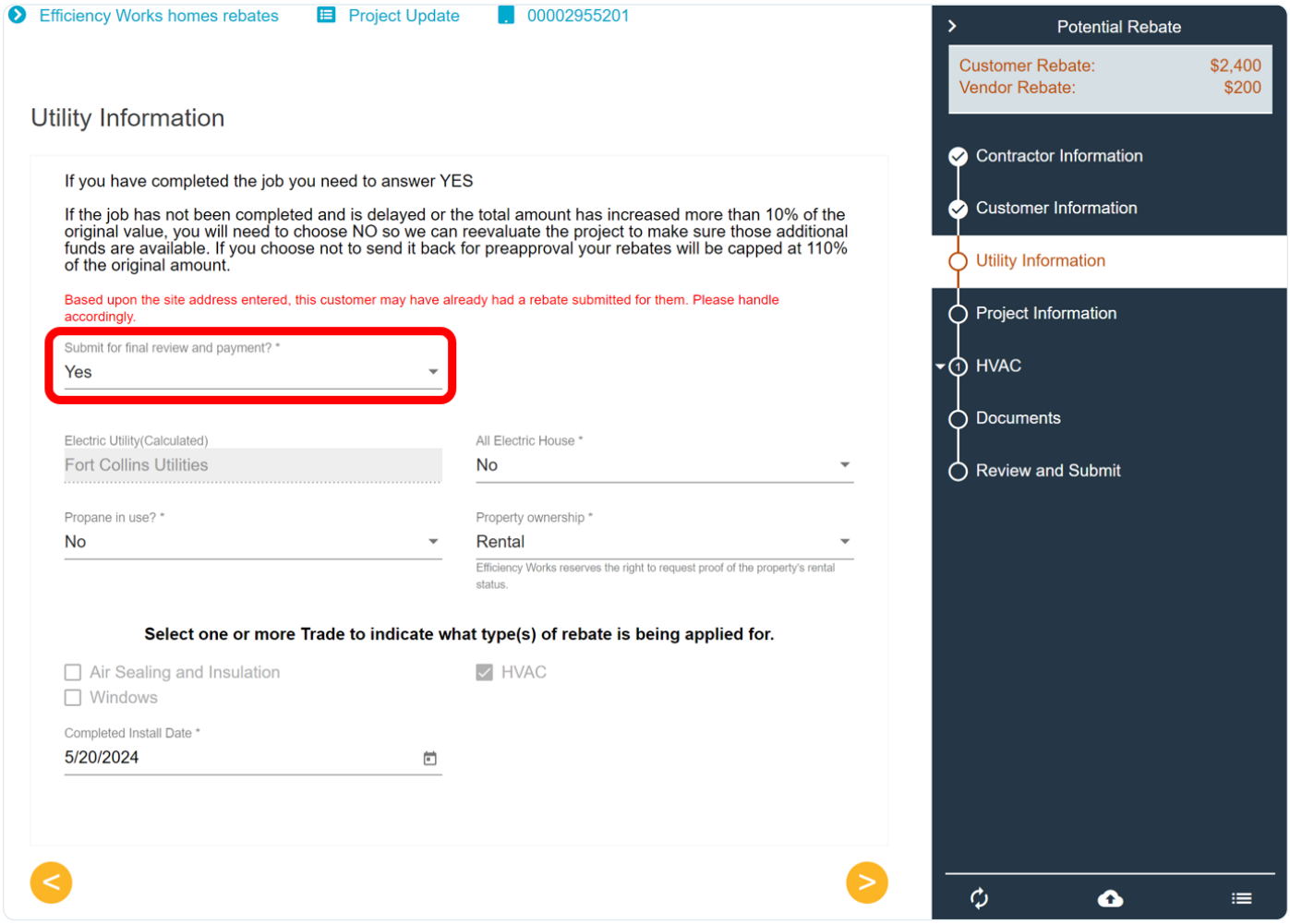


Utility information

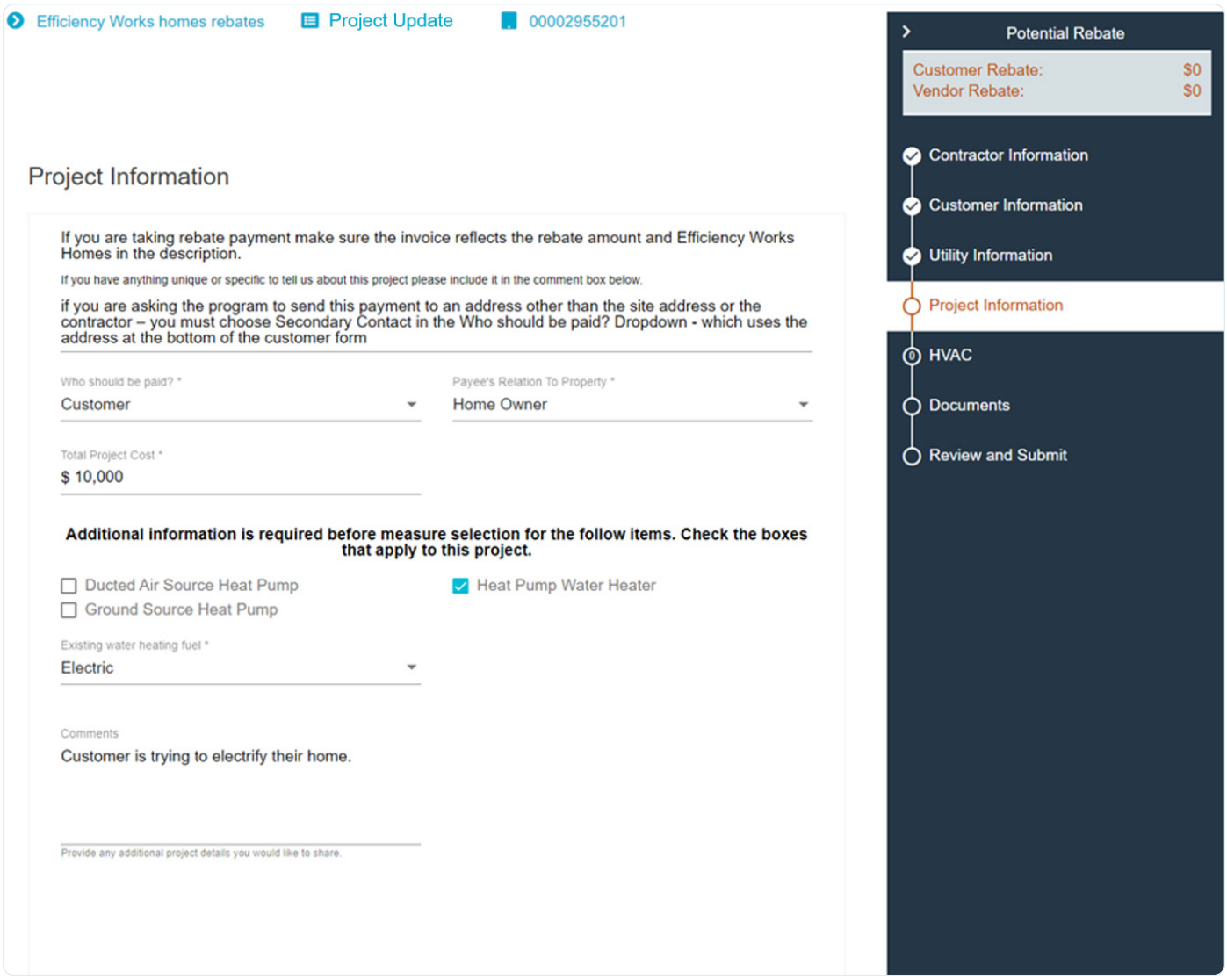
If there are no changes to the project and you are **Ready for Payment** select "Yes".

If there has been changes to the project, select "No" to insert new updated information for review.

**Note - Any variance of more than 10% of the original preapproved amount will have to be preapproved again PRIOR to project completion or the project will be capped at 110% of the original amount.*

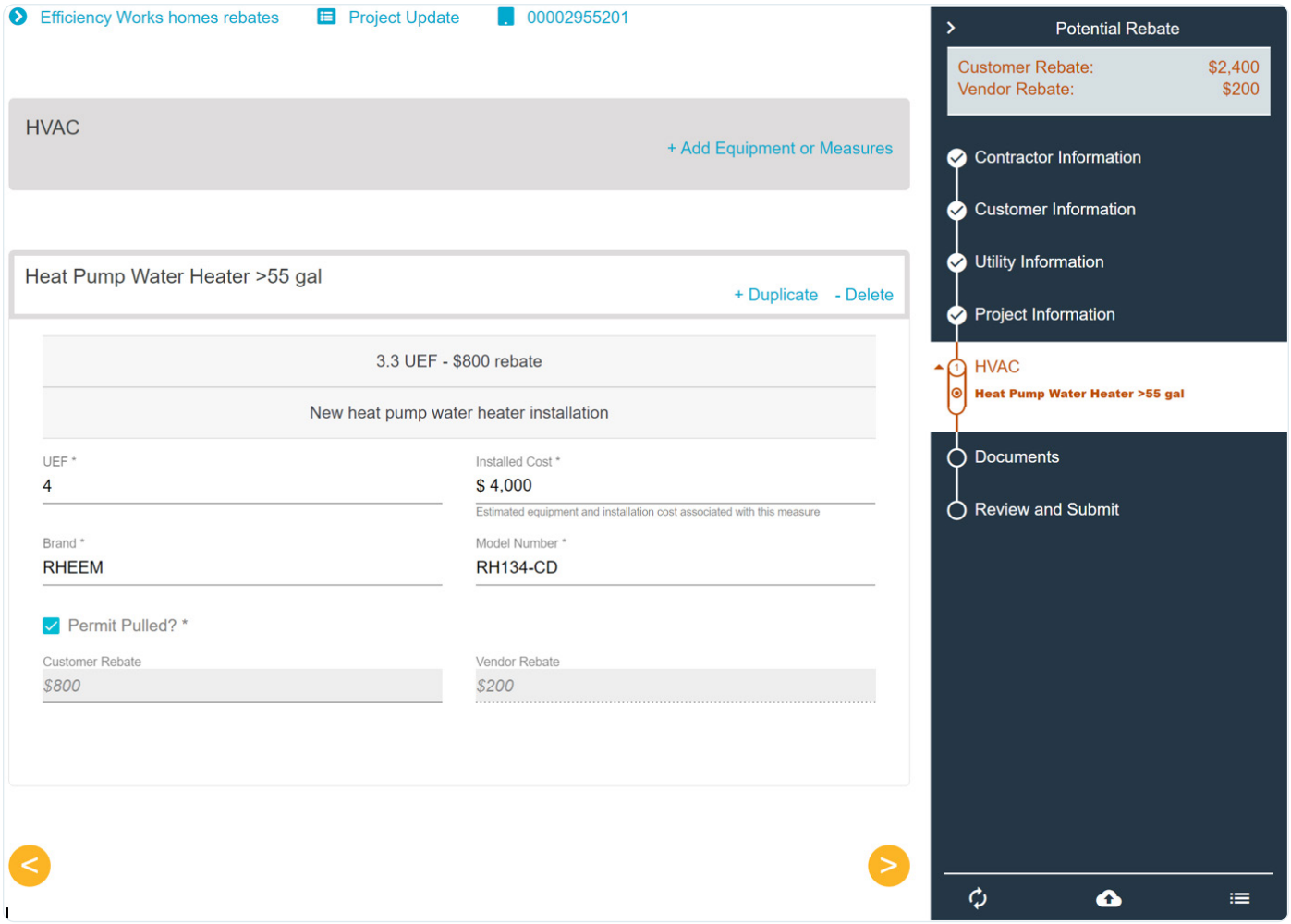


Project Information – auto-populated from Rebate Application form



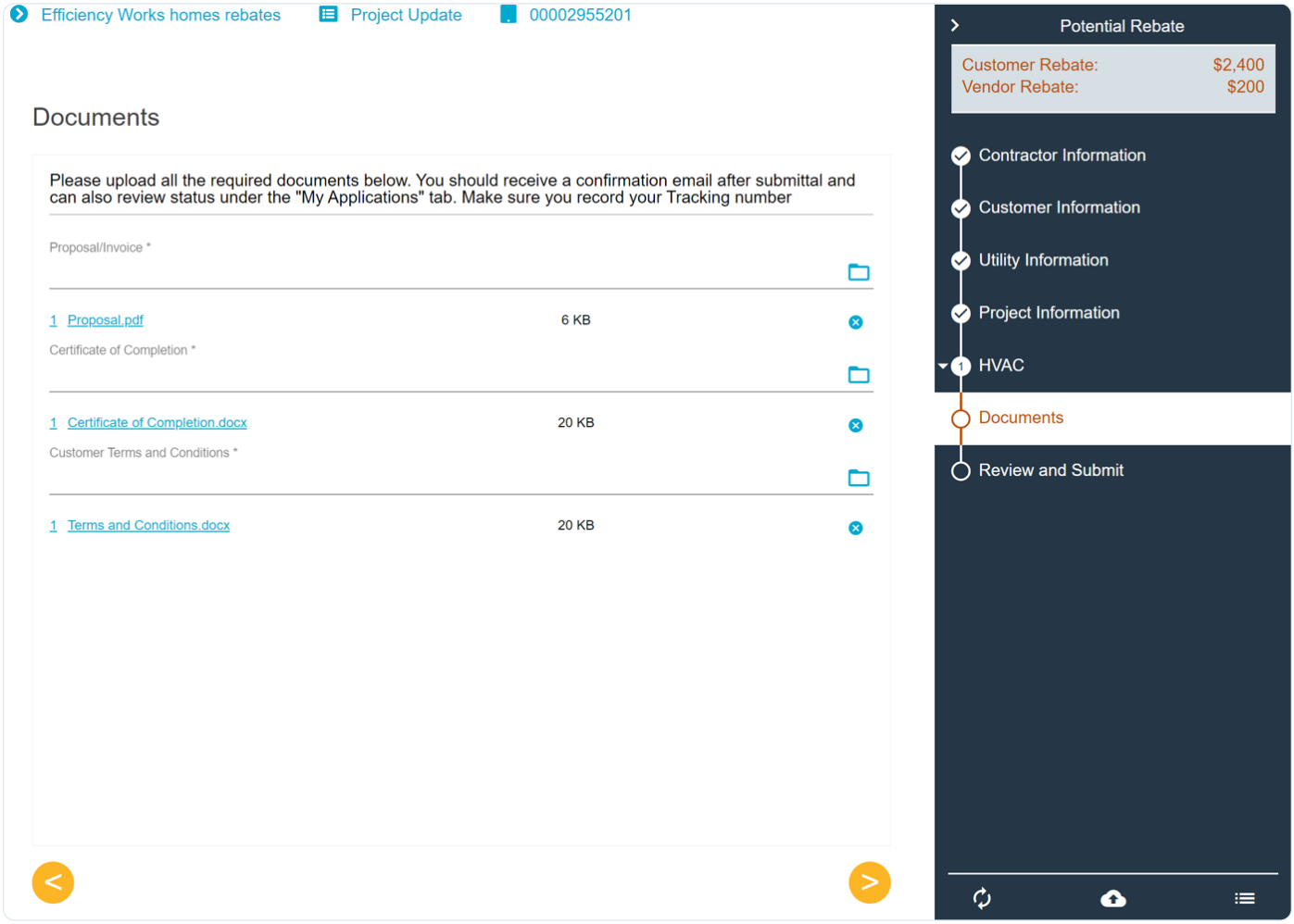
Measure page

Please provide the standard measure information.



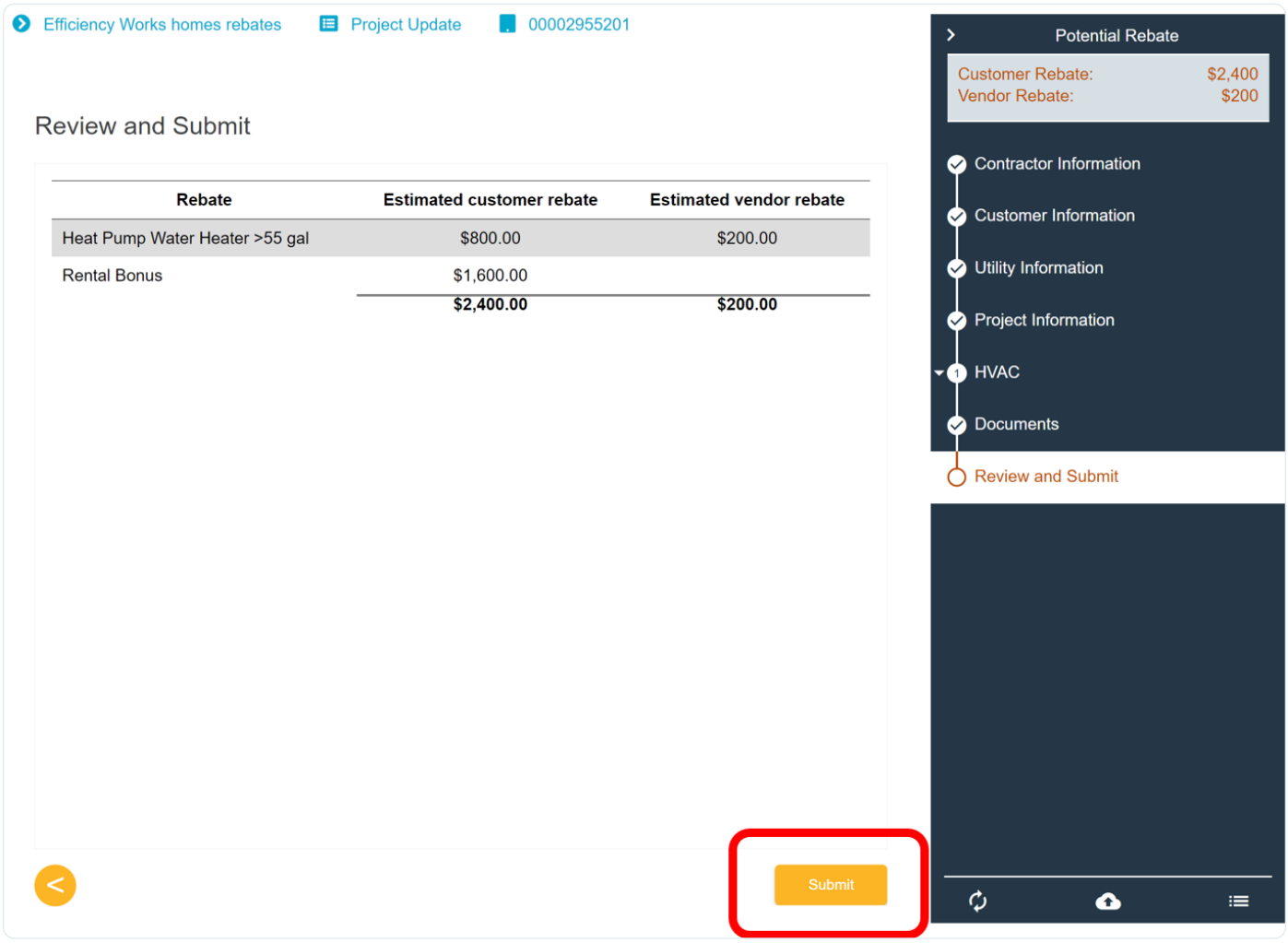
Document page

Please upload the required documentation for this project.



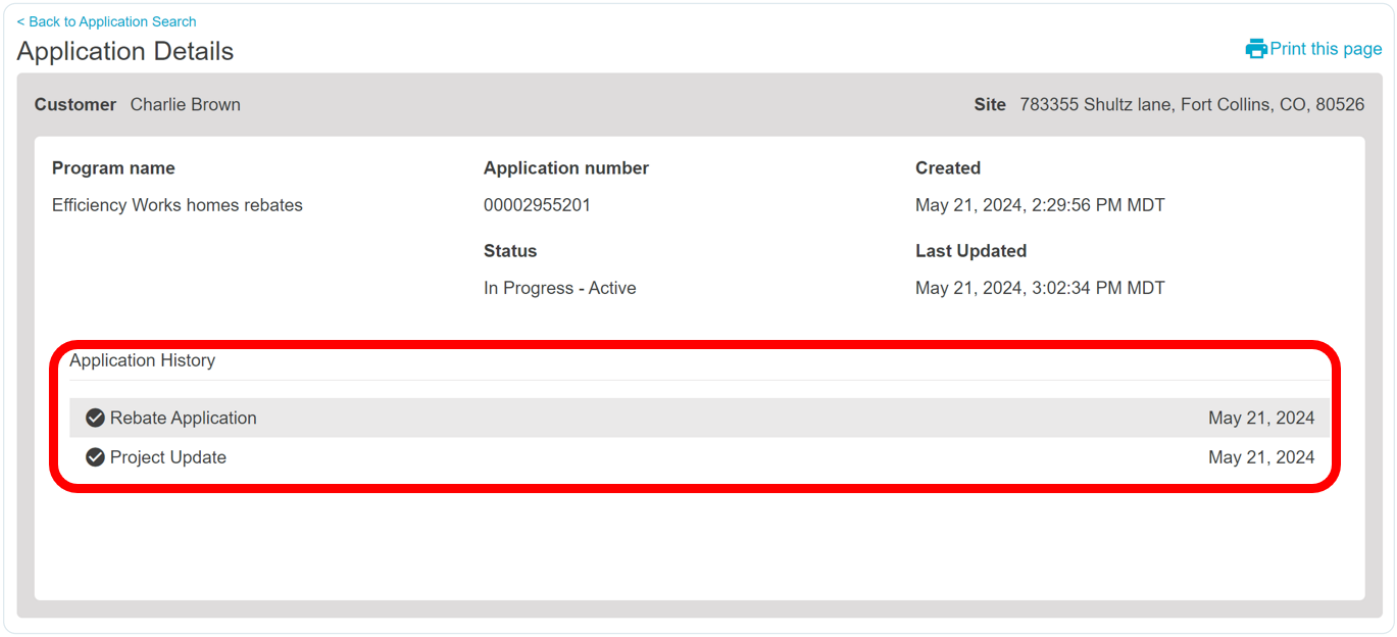
Review and submit

Please review for accuracy, before final submission.

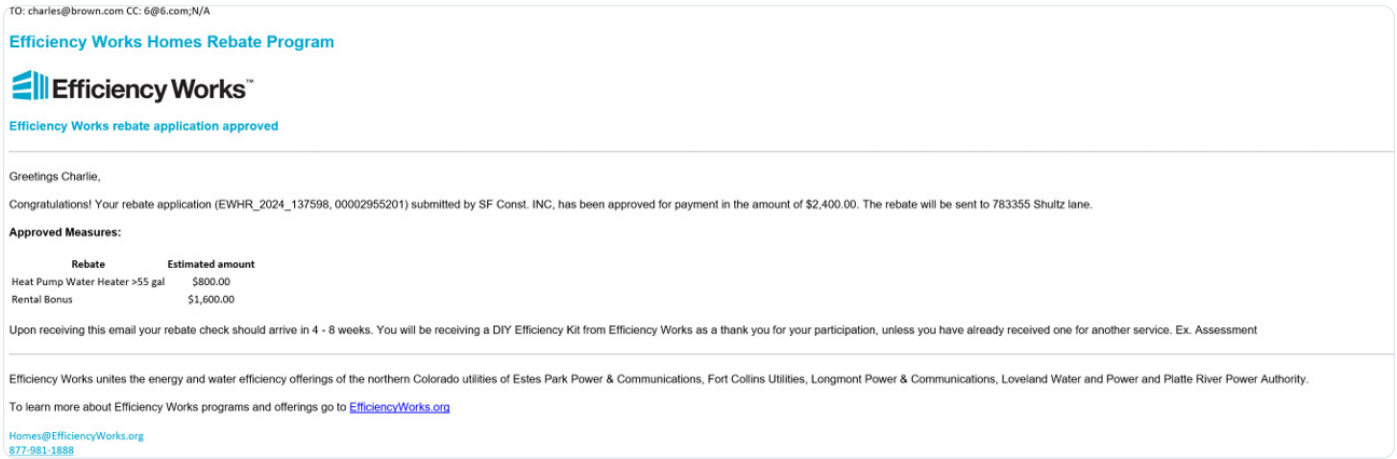


Application details

The application has been successfully submitted.



Final approval notification to customer/service provider



TO: charles@brown.com CC: 6@6.com;N/A

Efficiency Works Homes Rebate Program

Efficiency Works™

Efficiency Works rebate application approved

Greetings Charlie,

Congratulations! Your rebate application (EWHR_2024_137598, 00002955201) submitted by SF Const. INC, has been approved for payment in the amount of $2,400.00. The rebate will be sent to 783355 Shultz lane.

Approved Measures:

Rebate	Estimated amount
Heat Pump Water Heater >55 gal	$800.00
Rental Bonus	$1,600.00

Upon receiving this email your rebate check should arrive in 4 - 8 weeks. You will be receiving a DIY Efficiency Kit from Efficiency Works as a thank you for your participation, unless you have already received one for another service. Ex. Assessment

Efficiency Works unites the energy and water efficiency offerings of the northern Colorado utilities of Estes Park Power & Communications, Fort Collins Utilities, Longmont Power & Communications, Loveland Water and Power and Platte River Power Authority.

To learn more about Efficiency Works programs and offerings go to EfficiencyWorks.org

Homes@EfficiencyWorks.org
877-981-1888

Appendix L: Service Provider improvement plan

The Improvement Plan is for service providers that have been put on 'inactive' status but are willing to correct course in order to remain active. This Improvement Plan form is used to address any of the following situations: 1.) Documenting corrective actions with respect to service provider or technician performance in the program, 2.) Resolving repetitive problems or non-conformances, 3.) Identification and resolution of technical or programmatic issues with service providers.

Instructions:

Program Manager to complete this form with the service provider and obtain signature(s). Service provider to complete all actions listed in the Improvement Plan. Program Manager verifies effective implementation of the Improvement Plan. Improvement Plan must include specific actions to improve performance, how improvements will be monitored and measured, and timeframe to improve performance.

Plan Start Date: _____

Service Provider: _____

Section 1: Summarize and identify contractor performance issues, causes, and action plan

Performance Issue	Cause	Action Plan for Improvement

Program Manager Sign-off

_____ _____

Name (Print) Title

_____ _____

Date Signature

Appendix L: Service Provider improvement plan

Service Provider Sign-off

Name (Print)	Title
Date	Signature

By signing, the service provider acknowledges agreement with the identified performance issues, causes, and action plan for improvement.

Section 2: Identify Responsible Personnel

Action Item	Responsibility

Section 3: Verification of Effective Implementation of Improvement Plan – Program Manager Notes

Program Manager Sign-off

Name (Print)	Title
Date	Signature

Service Provider Sign-off

Name (Print)	Title
Date	Signature

By signing, the Program Manager and the service provider acknowledge effective implementation of the Improvement Plan.

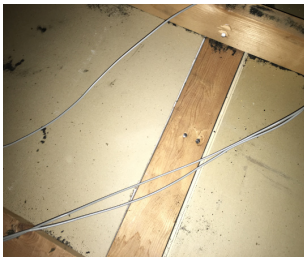
Appendix M: This document is no longer in use

Appendix N: This document is no longer in use

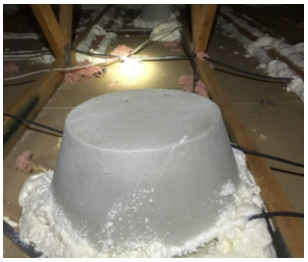
Appendix O: This document is no longer in use

Appendix P: Photo documentation guide

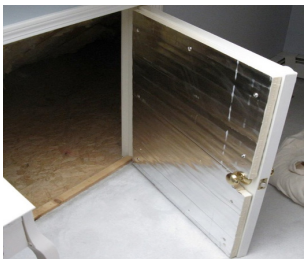
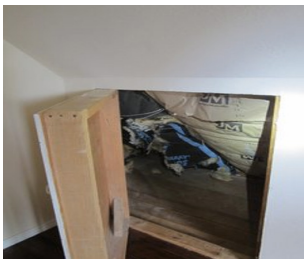
The purpose of this photo documentation guide is to establish a great paper trail of the before and after on our more important details in the program.

Energy efficiency measure	Expected photos	Example	Example	Example
Full vacuuming of the attic	Clean attic floor Top plates Bypasses Large holes			
Attic prep and air seal	Sealed top plates (Interior) Electrical penetrations Plumbing penetrations HVAC penetrations Chases Insulation rulers Insulation dams Attic hatch			
Air seal exterior top plates	Insulation dams Insulation baffles Finished top plates			

Appendix P: Photo documentation guide

Energy efficiency measure	Expected photos	Example	Example	Example
Air sealing non-IC rated can lights	Unsealed can lights Sealed can lights			
Attic insulation	Finished shots with: Rulers Dams Insulation chart			
Install new or replace existing bath fans	Photos of installed fan - below & above Make sure to capture clear view of exhaust to exterior			
Bath fan ducting	Photos of installed duct Make sure to capture clear view of exhaust to exterior			
Accessible knee walls	Before After A photo of the air barrier under the wall if added			

Appendix P: Photo documentation guide

Energy efficiency measure	Expected photos	Example	Example	Example
Skylight shafts	Before After			
Install attic access garage ceiling	Finished photos Show how door is insulated and			
Knee wall access	Finished photo Show how door is insulated and			
Floor over garage dense pack	Pictures of: Drilled holes Action shot Packing Finished plugs Removed Drywall and air sealing			
Pipe freeze protection insulation in garage (walls and ceilings)	Photos of the water pipes before "tenting" and after			

Appendix P: Photo documentation guide

Energy efficiency measure	Expected photos	Example	Example	Example
Drywall replace and firetape	Drywall opened up Drywall finished with firetape			
Drywall replace with full finish and texture	Finished photos - with close ups to capture full finish and texture			
Seal return cavities	Sealed returns			
Cantilevered floor dense Pack	Two options:			
Drill and fill	Pictures of the process and finished surface			

Appendix P: Photo documentation guide

Energy efficiency measure	Expected photos	Example	Example	Example
Drop the soffit	Pictures of the process and finished surface			
Spray foam crawl space rim joists	Unsealed rim joists Sealed rim Joists Ignition barrier			
Spray foam basement rim joists	Unsprayed rim joists Sprayed rim joists Ignition barrier			
Insulate crawl space walls	Uninsulated walls Insulated walls Ignition barrier			
Insulate basement walls	Before and after			

Appendix P: Photo documentation guide

Energy efficiency measure	Expected photos	Example	Example	Example
Window replacement	Picture with trim removed			
Duct sealing (outside air or thermal boundary)	Unsealed ducts Sealed ducts			
Duct sealing (inside air and thermal boundary)	Unsealed ducts Sealed ducts			
Whole house fan cover	Installed product			
Wall insulation, dense ack cavities, 2 x 4	Photos of process and finished surface			

Appendix P: Photo documentation guide

Energy efficiency measure	Expected photos	Example	Example	Example
Install moisture/soil gas barrier in crawl space	Close up of connection to wall Wide angle shot of installed barrier			
Air seal between house and garage	Photos of air sealing Bottom of drywall Drywall penetrations around electrical panel Around door to house			

Appendix Q: This document is no longer in use