

# GREENHOUSE GAS EMISSIONS REDUCTION FUND

## Quarterly Progress Report Form

Organization Name: NH Department of Resources & Economic Development / Lakes Region  
Community College (DRED/LRCC) and supporting partner, Plymouth Area  
Renewable Energy (PAREI)

Program Title: Efficiency Training Program (ETP)

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Reporting Period: 01/01/2012 – 03/31/2012 – Calendar Year 2012, Quarter 1

### 1) Summary of Work Completed During This Reporting Period

#### 1a) Narrative Summary of Activities

DRED in partnership with LRCC and supporting partner PAREI provide job training classes to prepare New Hampshire's workforce for green energy jobs in the energy efficiency sector. Classes are supported by a Mentoring Program to give qualified candidates supervised hands-on experience with both energy audits and installations. This program helps to educate locally-based contractors and businesses who can deliver weatherization installations in a safe and sound manner. To meet the market demand, trainings are offered to students at different skill levels (from do-it-yourself homeowners to experienced professionals) throughout the state.

#### 1. BUILDING ANALYST TRAINING COURSES

The Efficiency Training Program held a Building Analyst course in February 2012. In addition there were three students during the quarter who took the Fast-Track Building Analyst certification option. The Fast-Track option provides a streamlined way for experienced energy auditors to become certified or recertified as a BPI (Building Performance Institute) Building Analysts.

After determining there was sufficient interest in an advanced energy auditor BPI "Envelope Professional" course, this class was offered in March 2012, both as a regular course and through the Fast-Track certification option. Because of the interest in this class, and the lack of interest in the Weatherization Installer course (see below), the Envelope Professional class is substituting for one of the Installer class offerings. There were also four students who re-took BPI certification exams, both written and field, that they were not originally successful with. GHGERF grant funding enables these students to re-test at the lower course rate. BPI certification is very important for many of these people. The responsiveness to energy professionals needs, and the breadth of BPI certification options are examples how the Efficiency Training Program provides useful services to New Hampshire's energy professionals.

#### 2. AIR SEALING AND INSULATION INSTALLER CLASSES

After last quarter's development work, the Weatherization Installer class was again offered this quarter in January and February. This class was held in classroom/warehouse space in Plymouth, with assistance from PAREI. The emphasis with Weatherization Installer is hands-on air sealing

and insulation installer skills (including, blower door guided air sealing, duct sealing, dense pack and loose-fill insulation, and overviews of specialized diagnostics tests and safety considerations) as compared to building assessment skills with Building Analyst. As before, the course was tied with a BPI Air Leakage Control Installer (RBE-WH-ALCI) certification testing. PAREI provided the course/students with a residential home to practice their air sealing and insulation skills in Thornton, New Hampshire. The scope of work for the students was designed primarily as a prep day for PAREI's Housewarming and included installing a new bathroom fan and vent, air sealing the attic for dense pack and loose-fill insulation, and beginning the dense pack process.

Despite widespread awareness and publicity about the class, it was not well attended. In an effort to further broaden the network of potential students and training locations, LRCC teamed up with Atlantic Green Energy (AGE) of Seabrook, NH to co-offer a Weatherization Installer class at the AGE training facility in Seabrook. LRCC will provide the instruction and BPI certification testing, and AGE will provide the training location, props and materials. This March 2012 course was rescheduled to late April 2012 due to lack of enrollment. There have been discussions to hold Weatherization Installer classes as a custom class for a large insulation company, in the Monadnock region, as well as in the North Country, but again this is dependent on sufficient interest in the classes.

### 3. BOOT CAMP TRAININGS

Plans are under way to hold a boot camp combined Building Analyst / Weatherization Installer training in Berlin in May and June. This program will be sponsored by BetterBuildings Berlin and by White Mountains Community College. There is clearly a need for more trained, BPI-certified energy auditors and weatherization installers in North Country, but here again is the "lead-a-horse-to-water..." conundrum. The excellent work of BetterBuildings in Berlin as well as Nashua and Plymouth is helping to elevate the awareness of and demand for building energy efficient retrofits, which in turn should increase demand for energy auditors and installers.

The Efficiency Training Program auditor/installer boot camp would provide an excellent job training platform for veterans, but demand has not yet materialized for such a program. Pursuing another vein, ETP is working with community organizations and local energy committees to organize community air sealing and insulation workshops as a follow-up to the Button Up workshops (see below).

### 4. SHORT-TERM ENERGY EFFICIENCY TRAININGS

The Efficiency Training Program continues to be active in providing a variety of short-term energy efficiency trainings, and working with other organizations to provide other trainings. LRCC and PAREI teamed up to offer an energy efficiency equipment and air sealing demonstration in January 2012, featuring ETP rental equipment from PAREI through Rand's Hardware. LRCC ETP staff gave two "Button Up New Hampshire" presentations in southern New Hampshire that were well attended. These workshops help create more demand for energy efficiency services, as well as encourage homeowners to "button up" their houses themselves with air sealing and other energy efficiency guidance.

LRCC again held a two-day "Infrared for Weatherization" course in March. This intensive course is closer to an auditor or installer course in scope, with excellent instruction by the Snell Group.

Course participants were able to use LRCC's Energy Simulator building during the course, and Snell produced a YouTube video featuring the Simulator and LRCC Energy Services & Technology (EST) professor Wes Golomb:

<http://www.youtube.com/watch?v=Nq3leH4yqko>

LRCC ETP staff also collaborated with Professor Wes Golomb to provide instruction on duct leakage testing and combustion safety theory and testing as part of his EST "Residential Energy" course. Through both PAREI and LRCC, ETP continues to work on its Building Supply stores project to highlight and encourage building supply stores that sell air sealing and other energy efficiency supplies.

PAREI conducted two hands-on Housewarmings – February 5th and March 24<sup>th</sup>. Both Housewarmings were extremely successful in the work that was accomplished and the enthusiasm among the homeowners and neighbors that turned out to help. A core group of 3-4 neighbors, who attended both Housewarmings, were eager to utilize the information gained to conduct certain weatherization projects at their own homes

Prior to the Housewarmings, PAREI collaborated with Lakes Region Community College (LRCC) Weatherization Installer Technician training course to organize two separately administered workdays resulting in significant energy reductions. By utilizing the LRCC training course, the PAREI-administered Housewarming effectively doubled its scope of work. The goal of the training course & Housewarming was to adequately air seal and insulate the homes attic.

1. Remove existing batt insulation and important floor boards to properly air seal attic eaves and dense pack floor
2. Air seal attic eaves
3. Air seal bathroom fan and install working vent
4. Dense pack attic floor boards
5. Air seal & insulate existing attic walls
6. Loose-fill on top of floor boards and all other areas of attic

The February 3<sup>rd</sup> Weatherization Installer Technician training course accomplished the removal of all batt insulation and floor boards, air sealed attic eaves with Pur-Fill 1-part spray foam, air sealed the existing bathroom fan and installed a working vent, and began dense packing the floor boards using the Accu-1 insulation machine available for rent at Rand's Hardware through PAREI's Rental Program. With a turnout of 5 people, including 2 neighbors, the February 5<sup>th</sup> Housewarming concluded the project by finishing dense packing the floor boards, air sealing and insulating existing attic walls by foaming in place 1 & 2 inch polyisocyanurate rigid foam insulation, and loose fill insulating on top of the floor boards using the same Accu-1 insulation machine available through PAREI's rental program at Rand's Hardware. The owners were thrilled with the amount and quality of work accomplished over two short days, adding, "Immediately, we noticed our home was about 8 degrees warmer after the work was done, which, aside from reducing the amount of wood we had to burn, kept us warmer and more comfortable throughout the winter."

The March 24<sup>th</sup> Housewarming in Thornton, New Hampshire, focused on improvements in the homes

basement. Following several site visits the work scope was defined as 3 primary projects:

1. Air seal and insulate all rim joists in the basement

2. Build insulated box around duct work in unconditioned space
3. Air seal and insulate 1 stick-framed basement wall

The Housewarming had a turnout of 8 people, including 4 neighbors and several other PAREI members. Using Pur-Fill 1-part spray foam, we set in place 4 inches of extruded polystyrene rigid foam insulation to air seal and insulate each rim joist in the basement. Regarding the ductwork in the unconditioned space – 2 vents supplied a 3-season porch that the homeowner did not want to heat. After removing the supply vents and sealing the ductwork, an insulated box was built consisting of 1-inch polyisocyanurate and buytl tape around the existing ductwork and sealed to the ceiling with a combination of buytl tape and Pur-Fill 1-part spray foam. Decaying rockwool insulation was removed from the one outdoor, stick-framed basement wall and was replaced with 4 inches of extruded polystyrene rigid foam insulation and air sealed with Pur-Fill 1-part spray foam.

Together with Lakes Region Community College (LRCC), PAREI has continued to develop curriculum for future building supply store trainings. A two-tiered process has been defined to accomplish successful store trainings:

1. Inventory energy efficient products at store location – a detailed metric is being designed with all areas of efficiency/weatherization products (i.e. lighting, insulation, air sealing, etc). By working with the store, PAREI/LRCC will generate a list of all products available at the store, identify gaps in their product list, and provide recommendations for improvement.
2. Offer specialized, in-house training – with list of “gaps”, PAREI/LRCC can develop as specialized training to inform the store of ways to improve their client offerings.

PAREI has made an initial round of contacts to certain building supply stores in the greater Plymouth area looking for interested businesses and individuals to contact for future conversations. PAREI now has contact information for several interested building supply stores.

## 5. ENERGY SERVICES & TECHNOLOGY EFFICIENCY INTENSIVE CERTIFICATE

The Efficiency Intensive certificate program is emerging as a Building Operator Certification (BOC) program, closing following an existing LRCC Energy Services & Technology (EST) certificate program. The existing “Energy Services and Technology Certificate” program is listed in the LRCC college catalog, and is patterned after the BOC program, but it has not yet been offered by the College. ETP funding will enable this program to be offered in the Fall 2012, hopefully as a pilot for future LRCC BOC trainings. While the program is oriented towards building managers, professional energy auditors may also gain useful skills from taking the BOC program and earning a LRCC certificate. LRCC also has been working with the New Hampshire Manufacturing Extension Partnership to identify common goals with energy efficiency training in New Hampshire. Organizations such as NHMEP will be instrumental in creating interest in commercial building energy efficiency programs.

## 6. MENTORING SITE VISITS

The mentoring program continued during this period with a total of seven LRCC mentorings in all three Level I, Level II or Level III mentoring levels. A Level I mentoring is essentially a job shadowing of an existing energy audit, at a location chosen by the mentor. In a Level II mentoring, the mentor spends approximately three hours helping the mentor achieve specific goals, and the

Level III mentoring is an intensive six-hour experience. Trainees at mentoring levels II and III are able to have mentors come to their jobs, so that these aspiring energy professionals can develop a customer base while still learning skills of the trade.

There are seven LRCC-affiliated mentors through LRCC's mentoring program, with a wide geographic range and broad capabilities in energy auditing and energy performance contracting. It is very helpful being able to offer these mentoring experiences to extend the practical education process beyond courses and workshops. In particular, trainees have been looking for one-on-one mentoring assistance in preparation for re-taking a BPI certification exam. There is also considerable interest in commercial energy auditing.

Following a more organized sign-up process, PAREI conducted six (6) Energy Services Field Experiences that evolved from energy audit observations to more involved "coaching" opportunities. Initially, PAREI narrowed its offerings to one type of experience – observing an energy audit conducted by PAREI's Building Performance Institute (BPI) certified energy auditors. The first participant in the mentoring program was the manager of the Energy Equipment Rental program at Rand's Hardware in Plymouth. While working on the observational experiences, PAREI staff recognized a significant gap in its marketing and began offering BPI coaching opportunities for individuals planning on taking their Building Analyst and/or Envelope Professional certification test(s). Shortly after PAREI offered the new coaching opportunity, three professionals preparing for their BPI exams signed up with great reviews. PAREI had one more sign up for an observational experience on March 19<sup>th</sup>, where afterwards, the trainee rated the value of the experience a 9 out of 10 (10=extremely valuable – highest mark).

## 7. EQUIPMENT PURCHASE AND RENTAL USE

The Weatherization Installer Technician course, taught in Plymouth, was able to use the insulation blower that PAREI purchased. The PAREI program has been a useful model for helping LRCC determine the most effective implementation of its equipment program. LRCC intends to purchase additional equipment for use in ETP programs in the near future.

## 8. SUPPORT FOR OTHER PROFESSIONAL ENERGY EFFICIENCY TRAININGS

LRCC and DRED have been working together to identify other energy efficiency training needs, and to collaborate with other organizations to help fill these needs. We are working with Manchester Community College so that they can use their heating system lab to offer a heating systems two-day course during the second quarter. LRCC will be collaborating with Keene State College to assist them with BPI Building Analyst testing and training, and have been in discussions with KSC about offering an energy efficiency design workshop. LRCC is also working with the Northeast HERS Alliance to host a Home Energy Rating System training in June on campus, with tuition discount offered to New Hampshire participants through ETP.

The Sustainable Energy Resource Group has been intensively working to prepare the "Adding Home Value through Energy Improvements" training workshops to Realtors<sup>®</sup>. The presentation has been submitted to the New Hampshire Board of Realtors<sup>®</sup> for approval as Realtor<sup>®</sup> continuing education credits. The preparation time has taken longer than expected because this is a completely new training, with a focus on energy improvements associated with the purchase and sale of existing homes. Most existing energy efficiency-related presentations to Realtors<sup>®</sup> are instead

oriented on new construction. With the majority of real estate transaction activity associated with existing homes, this workshop will be refreshing and useful.

**OVERALL PROGRAM ACTIVITIES**

The ETP program continues to spread the word about efficiency training opportunities through multiple mechanisms. The LRCC ETP program sponsored underwriting messages on New Hampshire Public Radio to announce upcoming courses. Both LRCC and PAREI continue to use targeted e-mails as a key means to reach potential participants. LRCC’s Constant Contact database now has over 420 contacts, with the ability to target people interested in specific training opportunities. For example a March mentoring opportunity was sent to 63 people with this interest rather than the entire list. Social media such as Facebook and LinkedIn is used to some extent, but they are not seen as crucial marketing mechanisms as discussed in the 2011 marketing planning report. The ETP program also uses events, such as the Local Energy Solutions conference in late March, to help spread the word about its activities.

PAREI completed the special tab on their website called Special Programs with a link to ETP announcements and forms. <http://www.plymouthenergy.org/ETP.html> This link will be utilized in all future press releases and announcements

LRCC ETP staff completed the transition to a Building Performance Institute (BPI) “Test Center” during this quarter. This involved considerable effort, including purchasing video equipment and video computer storage equipment in order to provide now required videoing for every BPI certification exam. With higher BPI testing fees and more testing requirements, the overall cost of BPI certification has increased significantly. While some of these cost increases have been passed on to students, the ability of the ETP program to reduce the net student cost of training and certification testing has been very beneficial for New Hampshire’s energy professionals.

BPI announced during this quarter four new Home Energy Professional certifications: Energy Auditor, Retrofit Installer, Crew Leader, and Quality Control Inspector. These certifications have been developed in conjunction with a multi-year effort with the U.S. Department of Energy, and will hopefully streamline the credentialing system for all residential energy efficiency professionals. Most existing BPI certifications will still be offered, but will be at a lower tier than these new certifications. The new certifications include an experience requirement. As a BPI Test Center, LRCC plans to offer these BPI certification tests when they become available in late 2012.

**1b) Activity Summary Table**

<b>Table 1: Activity Summary Table (LRCC and PAREI)</b>				
<b>Course / Event</b>	<b>Location</b>	<b>Date</b>	<b># Participants</b>	<b># Contact Hours</b>
Button Up 101	Milford	Mar. 2012	17	1.5
Button Up 201	Milford	Mar. 2012	70	2
Local Energy Solutions Booth	Boscawen	Mar. 2012	100	0.25

			# Students	
Equipment Demo (w- PAREI)	Plymouth	Jan. 2012	15	4
Weatherization Installer	Plymouth	Jan/Feb 2012	3	28
BPI Installer Testing	Plymouth	Feb. 2012	2	6
Building Analyst Class	Concord	Feb. 2012	6	48
BPI Building Analyst Field Exams	varies	Feb/Mar 2012	9	2
BPI Building Analyst Fast-Track	varies	Feb/Mar 2012	3	10
Envelope Professional Class	Concord	Mar. 2012	2	28
BPI Envelope Pro. Fast-Track	varies	Mar. 2012	4	10
BPI Envelope Professional Testing	varies	Mar. 2012	2	2
EST Class Guest Instruction	Laconia	Mar. 2012	5	5.5
Infrared for Weatherization	Laconia	Mar. 2012	6	16
Energy Mentoring (LRCC)	Varies	Jan-Mar 2012	7	3
Pre-Housewarming Field Experience	Thornton	Feb. 2012	6	7
February Housewarming	Thornton	Feb. 2012	5	1.5
Pre-Housewarming Audit Experience	Thornton	Mar. 2012	3	4
March Housewarming	Thornton	Mar. 2012	8	6
Independent Field Experience	Regional	Jan-Mar 2012	6	3
		<b>Total</b>	<b>92</b>	<b>864</b>

## 2) Projected Annual Energy Savings

ETP is a training program. Direct energy savings cannot be measured as part of the training. Therefore, there is no "Table 2: Projected Energy Savings Summary." ETP participants will use the knowledge they gain through ETP trainings to recommend and install energy efficiency improvements in homes and businesses throughout New Hampshire.

## 3) Labor Hour Reporting

Table 3: Labor Hour Reporting

<b>Table 3: Labor Hour Reporting (calendar year)</b>							
2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4
LRCC	719	751	697	687.5			
PAREI	165	116	310	210			
DRED	30	60	72	74			
Totals	914	927	1079	971.5	0	0	0

These numbers are total direct labor hours associated with the project per quarter (calendar year), including ETP full-time and temporary employees, estimated hours of ETP independent contractors,

and estimated unbilled cost-share hours of staff conducting ETP tasks. It does not include the hours associated with indirect activities, homeowner volunteers or other volunteers.

#### **4) Obstacles, Problems and Delays**

We are disappointed that the demand for the Weatherization Installer course and associate BPI installer certification is not greater. There are still relatively few skilled professional air sealing installers in New Hampshire, despite the tremendous amount of energy waste from air leakage in New Hampshire's buildings. It is an elephant in the room, and ETP is adapting by offering more community/DIY hands-on trainings, but this will not entirely make up for the need for air sealing professionals.

Likewise, demand for energy efficiency professionals, while still in a long-term positive trend, has moderated in recent months. A mild winter and less government stimulus spending are forces tending to reduce demand for energy efficiency services, while high heating oil prices and continued utility and BetterBuildings program incentives are forces helping to sustain demand. Probably an even more important factor is the "frozen tidal wave" in consumer market demand for building energy efficiency, primarily from lack of awareness. Button Up workshops, Housewarmings, Realtor trainings, and other ETP-associated activities are helping to chip away at this lack of awareness, but it is a long-term challenge.

LRCC invested in new ultra-portable video camera equipment over this quarter, and spent additional time to comply with the new requirement that all BPI certification exams – written and field – must be videoed. There were also other new BPI Test Center requirements that LRCC staff spent time complying with, such as new disclosure forms BPI candidates must now read and sign. This is on top of the considerable effort LRCC staff already spend to locate and vet volunteer homes for instruction and BPI certification testing. Other states have actual training and testing facilities, complete with combustion appliances and hidden dampers, to provide BPI certification testing. A similar New Hampshire energy efficiency training and testing facility would considerably improve the instructional and certification experience. It is also worth noting again that BPI announced four new Home Energy Professional certifications forthcoming later in 2012. There is concern that New Hampshire's ability to offer these new certifications will be impacted by the winding down of the ETP grant program in late 2012.

The energy equipment rental program has been under-utilized to date. PAREI plans to increase the marketing program in the second quarter through hands-on demos, mailings and phone calls to contractors.

#### **5) Summary of Work to be Completed Next Quarter**

The Efficiency Training Program through LRCC will continue to offer a number of training programs, BPI certification testing, workshops, and other programs as mentioned previously in this report. Additional Other Trainings will be offered, and additional equipment acquired. There will be continued efforts to provide mentorings and other support for the energy performance infrastructure in New Hampshire. PAREI's planned ETP activities are outlined in the following table.

<b>Table 4: PAREI - Planned Activity Summary Table</b>			
<b>Course / Event</b>	<b>Location</b>	<b>Date</b>	<b># of Participants</b>
Attic & Wall Air Sealing & Insulation Training	Plymouth area	June, 2012	6-10
Net Zero Energy Building Open House	Plymouth	May 1, 2012	6-10
Introduction to Spray Foam – Basement Insulating	Campton	May 16, 2012	6-10
Attic Insulation & Equipment Demo Day	Campton	May-June, 2012	6-10
Short Term Building Supply Training	Varies	April-June, 2012	6-10
Energy Services Field Experiences	Varies	April-June, 2012	
Energy Equipment Rental Program	Varies	April-June, 2012	

a) **Installer Trainings**

PAREI is planning on conducting a hands-on training class on Attic Air Sealing and Insulation while using the specialized weatherization equipment purchased for the Energy Equipment Rental Program, to be held at the Campton Congregational Church in Campton, NH. The first of the 1-½ day training will be held in a classroom setting at PAREI’s rental warehouse, where attendees will learn building science basis including proper air sealing and insulation techniques, appropriate tools, and necessary safety measures. During the classroom training, attendees will practice their learned skills on a number of props designed to portray various air sealing and insulation techniques found in the average building. The second day, attendees will meet at the Campton Congregational Church and work to insulate a section of the churches attic using certain pieces of equipment from the Rental Program – primarily the AccuOne Insulation Blowing Machine.

Combined with the Attic Air Sealing and Insulation training at the Campton Congregational Church, PAREI will conduct a 1-2 hour energy equipment display and information session.

b) **Short Term Courses/Housewarmings**

Working with Turn Cycle Solutions, PAREI will conduct an introductory training session on the application of 2-part spray foam at the Campton Congregational Church in Campton, NH. Attendees will learn basic techniques of the spray foam application process, the costs, the benefits and other factors affecting a 2-part spray foam project.

Following continued curriculum development, a strategic plan, and a round of initial contacts to area building supply stores in the previous quarter, PAREI, along with Lakes Region Community College (LRCC), will work on creating an inventory of certain area stores’ efficiency/weatherization products, provide recommendations for improvement, and conduct at least 1 supply store training on products, distributors, etc.

c) **Mentoring Program**

PAREI will continue to offer the Energy Services Field Experience program. Considering the success of the two field experience options open last quarter – observation and coaching – we will continue to look for opportunities to offer both. With two (2) upcoming commercial energy audits for PAREI, we hope to open both to potential field experiences.

d) **Energy Equipment Rental Program**

Through the Rental Desk at Rand's Hardware, PAREI will continue to offer the Energy Equipment Rental Program. PAREI has several ideas to continue to publicize the program including updating the flier and sending out a second round of mailings to our list of contractors, including information in PAREI's member update, and conducting several informal interviews with contractors regarding the specifics of the program.

Equipment purchased for the Rental Program will continue to be used during all other PAREI events when needed. An equipment display and demo day will be scheduled to coincide with the Attic Air Sealing & Insulation training at the Campton Congregational Church.

**6) Beyond the Contract -- Activities, Partnerships, Funding or Other Synergies**

Through a University of New Hampshire administered grant, both LRCC and PAREI participated in the Button Up New Hampshire program this quarter. Modeled after a successful Vermont program, the Button Up presentations have been taking place in dozens of communities throughout New Hampshire since 2009. The presentations provide homeowners with helpful information on how to save energy, both on their own and by working with energy professionals. Through this separate but synergistic program, LRCC worked to improve the Button Up curriculum, train the workshop presenters, and provide new props for training. The single 2-hour Button Up workshop was split and expanded into a 1.5 hour Button Up 101 workshop, and a more advanced 2 hour Button Up 201 workshop.

Churches in the community continue to seek out information on how to better insulate their buildings. People who sit on building committees for churches, non-profits and office buildings are showing interest in the need to learn more about weatherizing their buildings and deserve more attention in energy efficiency training outreach. PAREI will be conducting an air sealing and insulating training at a local church with the goal of engaging the church members and facility manager.

LRCC and PAREI staff continue to work with a wide variety of partners to produce a stronger network of trained energy professionals and homeowners.

**7) Brochures, Announcements and Other Promotional Materials**

(See attachment)

**8) Invoicing Form and Budget vs. Actual Expenditures**

(Included with invoicing.)