

April 29, 2011

Mr. Jack K. Ruderman  
Director, Division of Sustainable Energy  
Public Utilities Commission  
21 S. Fruit St., Suite 10  
Concord, NH 03301

Dear Mr. Ruderman:

Attached is LighTec, Inc.'s final Green House Gas Emissions Reduction Fund Report. We are pleased to report that LighTec's highly successful program **exceeded our carbon reduction goal by 133%**. The energy saving projects that LighTec installed saved 1,100 metric tons of CO<sub>2</sub>. Our program leveraged \$316,000 from the RGGI funds to secure \$1.53 million in project sales (Task 2) over our 18 month grant period. This represents an 18% GHGERF contribution on \$1.73 million in Program Costs; including Administration, Auditing (Task1), Energy Efficiency Project Installations (Task 2), and Education (Task 3). In Appendix 1, you will find a table, which compares the proposed benefits of the project and the actual benefits seen through the completion of the project.

While reading the details, contained in this report, it is important to keep in mind that it can take upwards of a year or more to develop a relationship with a client and sell an energy-efficiency project. Most of the projects in our RGGI program were being developed by LighTec from 2006-2009, prior to both RGGI and the ARRA-funded Energy Efficiency and Conservation Block Grant Program. The projects selected for inclusion in our RGGI grant were viable energy-efficiency projects with significant energy savings that would not be implemented by the client without additional funding.

As you read our report, it should be clear that LighTec views RGGI as a positive program that benefits all New Hampshire residents. It is our hope that our elected leaders will help RGGI and allow it to continue to improve our state's energy efficiency, along with providing savings for consumers and business owners through reducing the demand for electricity; thus reducing the cost to rate payers across the state.

Sincerely,

James M. Grady  
CEO  
LighTec, Inc.

**GREEN HOUSE GAS EMISSIONS REDUCTION FUND  
FINAL REPORT  
LIGHTEC, INC.**

**August 19, 2009 through March 31, 2011**

1. **Program Title:** Energy, Carbon Savings, and Education for Schools, Municipalities, and Business
  
2. **Program Type:** Our program includes energy-efficiency project implementation and education. It falls into the following program categories: 1.) Energy Audits; 8.) Programs to improve the electric and thermal energy efficiency of new and existing residences and commercial buildings; and 10.) Education, outreach and information programs that promote energy efficiency, conservation and demand response.
  
3. **Summary of work completed through the duration of the grant:**  
*Note: LighTec's Grant did not apply to low income residents.*

**Definitions:**

Facility - Any free standing building on a lot or campus that consumes energy.

Project - A facility or group of facilities with which LighTec has an energy-services contract. A project can consist of one or many facilities.

Task 1. Perform investment-grade energy audits in three projects, analyzing all major energy-using equipment and systems and provide engineered recommendations to clients.

- Work Performed: LighTec completed investment grade energy audits for the following projects:
  - The Town of Wolfeboro
    - Department of Public Works
    - Public Safety Building
    - Pop Whelan Ice Arena
    - Public Library
  
  - Holy Cross Hall Condo Association, Manchester, NH
    - Mount Saint Mary Academy
    - Manchester Community Music School
  
  - Town of Merrimack
    - Town Hall (East and West Wings)

For each of these projects LighTec performed the following tasks:

Sub-Task 1: Assessment of Facilities

- Analyzed 12 month energy (utility) history.

- Reviewed mechanical and electrical system design, installed condition, maintenance practices, and operating methods.
- Reviewed existing operating and maintenance problems. Determined planned building changes.
- Performed a visual inspection of HVAC systems including distribution system and noted key operating parameters.
- Recorded the existing interior and exterior lighting conditions.
- Performed visual inspection of domestic hot water system and noted key operating parameters.
- Performed an examination of other sources of electricity consumption (e.g. office automation, appliances etc.).
- Developed a list all possible and practical modifications to equipment and operations that would save energy. Prioritized the modifications in the anticipated order of implementation.

#### Sub-Task 2: Baseline Building Simulation, EEM, and Cost/Benefit Analysis

- Using the data collected in Task one, created a building baseline model using the E-Quest modeling system. This step included analyzing existing energy bill data and creating a breakdown of the total annual energy use into end-use components for a full year.
- For each practical measure, estimated the potential savings in energy cost and its Energy Utilization Index. To account for interaction between modifications, we assumed that modifications with the highest operational priority and/or best return on investment would be implemented first. This analysis was completed using E-Quest.
- Completed a cost/benefits analysis including the following:
  - Estimated the cost of each practical measure. Estimated the impact of each practical measure on building operations, maintenance costs and non-energy operating costs.
  - Estimated the combined energy savings from implementing all of the practical measures.
  - Prepared a financial evaluation of the estimated total potential investment. These evaluations included available funding sources such as utility rebates.

#### Sub-Task 3: Energy Audit Report

- At a minimum the report included:
  - A summary of energy use and cost associated with each end-use.
  - A description of the buildings, including inventories of major energy-using equipment.
  - For each practical measure:
    - A discussion of the existing situation and why it is using excess energy;
    - An outline of the measure;

- Calculations performed and/or the name and version of software used;
  - A table listing the estimated costs for all practical measures, the savings, and financial performance indicator; and
  - Overall project economic evaluation including funding sources and financing options.
- Problems or delays.
    - The Town of Wolfeboro
      - This project was developed with the Wolfeboro Town Administrator. As the project was being developed, the Wolfeboro Local Energy Committee became involved, as it was working on writing an ARRA-funded Energy Efficiency Block Grant proposal. During this process, LighTec's Client, The Town of Wolfeboro, deferred ownership for the project to the LEC. However, LighTec did not fully appreciate this and continued to communicate with the Town Administrator without developing a strong relationship with the LEC. Communication issues resulted. LighTec was also competing with the ARRA proposal deadline and asked to deliver a final draft for use in the grant application. To the best of our knowledge LighTec's recommendations were not included in their grant application with the exception of the Pop Waylen Ice Arena, where we recommended further study. At that point a final draft was no longer required or requested and the delivered draft reports stand.
    - Holy Cross Hall
      - None to Report
    - The Town of Merrimack:
      - This project also had a direct conflict with the ARRA monies. In this case, The Town of Merrimack was one of the ten New Hampshire towns that received the first ARRA grants from the Federal Government. Their grant was to upgrade their furnaces' to energy-efficient versions and add lighting controls. LighTec attempted to develop a design/build energy-efficiency project in tandem with conducting the energy audits. We proposed leveraging of GHGERF, ARRA and Utility incentives to provide the Town with a comprehensive, design/build, energy savings project that would address several energy using systems within the building(s) with a positive cash flow. LighTec presented a draft audit report to the Town Manager.

The Town Manager was prepared to move forward with this plan and presented it to the Merrimack Board of Selectmen, but wanted LighTec to work under his General Contractor (GC). This GC had been hired to do a renovation on one of the two wings of the Town Hall under study by our level II energy audit. This conflicted with the rules of our GHGERF contract, in that we needed a contract from the Town of Merrimack, not an agent for the Town.

However, even if it had been approved, the project may still have had problems because the GC seems to have viewed the efficiency measures as an unfunded change in Scope of Work. We did try to explain that the GHGERF and utility rebates would pay for this change in scope. It is our understanding that the GC

did implement our recommendations for certain high efficiency equipment. Specifically new condensing gas furnaces for the Town Hall West Wing and more efficient PTAC's for the east wing were installed. Because the Town implemented a project, a final draft of our Energy Audit was no longer required or requested and the delivered draft report stands.

- Deviation from the work-plan
  - None to report.

Task 2: Increase the energy efficiency of 13 educational facilities, 3 municipalities and 2 industrial corporations in New Hampshire.

- Work Performed/ Project Benefits:
  - Through this grant LighTec implemented 21 energy-saving projects within 60 facilities. These 21 projects included 20 educational, 36 municipal and 4 industrial facilities and represent a combined annual energy savings of 2,075 MWh and reduced 1,100 metric tons of CO<sub>2</sub> emissions from the atmosphere. The majority of the projects were energy-saving lighting and lighting control installations, however LighTec also installed two energy management systems and one motor performance controller.

Table 2: Program Summary, below, provides a summary of projects and their associated program cost, funds leveraged, energy savings achieved and avoided greenhouse gas emissions by project.

**Table 2: Program Summary**

Project #	New Hampshire Client	Town	Number of Facilities in Project	Project Type	Program Cost <sup>1</sup>	RGGI Contribution	Program Participant Contribution	SBC Utility Rebate	EECBG Funding	Annual Fossil Fuel Savings (MMBTU)	Peak Monthly Demand Reduction (kW)	Annual Energy Savings (kWh)	Metric Tons of CO <sub>2</sub> Reduced	% of Carbon Reduction Goal
<b>Educational</b>														
E-1	New Hampton School	New Hampton	1	Lighting & Controls	\$35,050	\$15,075	\$19,975	\$0.00	\$0	-	15	108,141	53	6%
E-2	Mount Saint Mary Academy	Manchester	1	Lighting & Controls	\$49,108	\$4,055	\$34,093	\$10,960	\$0	-	29	60,332	30	4%
E-3	Newfields Elementary School <sup>2</sup>	Exeter	1	Lighting & Controls	\$31,015	\$5,203	\$11,536	\$14,276	\$0	-	18	42,101	21	3%
E-4	New England College	Henniker	4	Lighting & Controls	\$83,656	\$15,252	\$51,440	\$16,965	\$0	-	28	90,256	44	5%
E-5	Manchester Community Music School	Manchester	1	Lighting & Controls	\$41,019	\$5,175	\$15,522	\$20,322	\$0	-	11	35,510	18	2%
E-6	Litchfield Middle School <sup>2</sup>	Litchfield	1	Lighting & Controls and EMS	\$154,287	\$42,800	\$92,383	\$19,105	\$0	1,318	44	166,830	152	18%
E-7	White Mountain Regional Highschool	Whitefield	1	Lighting & Controls	\$124,464	\$17,582	\$142	\$21,740	\$85,000	-	47	120,209	59	7%
E-8	Brookline Schools <sup>2</sup>	Brookline	2	Lighting & Controls	\$159,445	\$19,974	\$19,256	\$72,278	\$47,937	-	53	152,189	75	9%
E-9	Chesterfield Elementary School <sup>2</sup>	Chesterfield	1	Lighting & Controls	\$46,413	\$7,239	\$17,087	\$22,087	\$0	-	17	43,953	22	3%
E-10	Hollis Schools <sup>2</sup>	Hollis	5	Lighting & Controls	\$387,513	\$35,119	\$155,672	\$78,942	\$117,780	-	118	356,982	176	21%
E-11	Rivendell Academy <sup>2</sup>	Orford	1	Lighting & Controls	\$32,286	\$4,084	\$12,851	\$15,351	\$0	-	19	46,134	23	3%
E-12	Wells Memorial School <sup>2</sup>	Harrisville	1	Lighting & Controls	\$14,421	\$3,730	\$3,846	\$6,846	\$0	-	6	19,071	9	1%
<b>Municipal</b>														
M-1	Town of Wolfeboro	Wolfeboro	6	Lighting & Controls	\$59,383	\$10,334	\$49,049	\$0	\$0	-	30	76,682	38	5%
M-2	Dunbarton Town Hall	Dunbarton	1	Lighting & Controls	\$20,861	\$2,696	\$7,028	\$4,087	\$7,050	-	3	6,246	3	0%
M-3	Town of Tamworth	Tamworth	11	Lighting & Controls	\$42,629	\$5,544	\$0	\$17,468	\$19,618	-	18	25,235	12	2%
M-4	Town of Brookline	Brookline	8	Lighting & Controls	\$37,615	\$4,059	\$0	\$17,206	\$16,350	-	30	39,878	20	2%
M-5	Town of Hollis	Hollis	9	Lighting & Controls	\$63,252	\$6,738	\$3,000	\$28,293	\$25,221	-	27	49,566	24	3%
M-6	Moultonborough Town Hall	Moultonborough	1	Lighting Controls and EMS	\$45,150	\$14,450	\$30,000	\$700	\$0	87	-	246	7	1%
<b>Industrial</b>														
I-1	PCC Structurals	Tilton / Franklin	2	Lighting & Controls	\$186,945	\$25,639	\$116,496	\$44,810	\$0	-	84	538,953	266	32%
I-2	North Star Direct	Manchester	1	Lighting & Controls	\$41,324	\$5,669	\$26,625	\$9,030	\$0	-	23	90,669	45	5%
I-3	Excalibur	Contoocook	1	Motor Controls	\$6,128	\$4,283	\$1,845	\$0.00	\$0	-	1	5,772	3	0%
<b>Audits</b>					\$1,661,964	\$254,696	\$667,846	\$420,466	\$318,956					
<b>Grand Total</b>					\$74,782	\$61,304	\$13,478							
					<b>\$1,736,746</b>	<b>\$316,000</b>	<b>\$681,324</b>	<b>\$420,466</b>	<b>\$318,956</b>	<b>1,405</b>	<b>621</b>	<b>2,074,955</b>	<b>1100</b>	<b>133%</b>

<sup>1</sup> Includes Program Administration, Measurement & Verification and Education

<sup>2</sup> Financed through PSNH's Smart Start Program

Problems or delays.

- The ARRA grant process severely dampened our sales momentum in the following ways:
  - As towns pursued ARRA funding, often in collaboration with their school districts, they put efficiency projects on hold in hopes of receiving ARRA funding for them. Even after the award announcement, most clients would not move forward on the project until the TRC contracts were published.
  - Further delays were caused as Clients realized that projects that were developed on speculation, with vendors, such as LighTec were required to be competitively bid. This led to unforeseen administrative delays associated with the competitive bid process.
  
- Deviation from the work-plan:
  - In LighTec's original grant application, we provided a list of "Shovel-Ready Energy-Efficient Lighting Projects" that we anticipated working with, in our program. In reality, some of these projects sold prior to our grant award, while others did not sell at all. This is the nature of this business, the sales process can take years. It should be noted that LighTec did not use any grant funds for the preliminary sales step and the projects chosen for GHGER funds are those, otherwise viable projects, in need of rescue. Table 3, below, lists those projects in our original scope and their status.

**Table 3: Original Project List and Status**

Project Name	Sold Prior to Grant Award	Part of This RGGI Program	Project Not Sold	Notes
Wilton Lyndeboro High School	X			
Town of Gorham	X			
Town of Moultonborough	X			
Excalibur Shelving (Lighting)	X			
Mount Saint Mary's Academy		X		
Manchester School of Music		X		
Town of Wolfeboro		X		
New England College		X		
New Hampton School		X		
White Mountains Regional High School		X		
Francistown Elementary School			X	Part of Peterborough School system. The School District was not responsive.
Greenfield Elementary School			X	
Lancaster Elementary School			X	Client is seeking competitive bids. Will likely be built this summer.
Moultonborough Academy			X	The NH Electric Cooperative Account Rep recommended that the board wait for LED technology to mature. In addition, the School Board perceived that the RGGI fund was part of the Stimulus fund and they did not want any part of it.
Moultonborough Central School			X	
Wadleigh Library, Milford			X	Library Directors declined to approve the project.
Segway			X	Decided against project due to recession.

Task 3: Provide education and training to students, faculty and maintenance employees regarding the energy-efficiency projects taking place in their buildings. The training will help to empower individuals so they can make similar efficiency improvements in their homes.

- Work Performed: LighTec offered the following three educational options to our clients:
  1. Conduct a presentation for staff (customized to the client's preference, but no more than an hour in length); and/or
  2. Create a display for the lobby or other prominent location describing the project and its energy saving and environmental benefits; and/or
  3. Write a "newsletter like" project description to post on their website (or link to our site) along with the specific Power Point presentation we would otherwise have given in person.

In addition to the options provided above, at the end of each project installation, the LighTec Project Manager's conducted project reviews with the Client's maintenance staff. During this review process, LighTec provides a binder of product specification sheets so that the energy savings can be sustained.

Table 4: Education Options, on the following page, details the options chosen by each client. Examples of these materials exist on our website at [www.lightec.net](http://www.lightec.net) and the University of New Hampshire GHGERF web site at [ghgerf.sr.unh.edu](http://ghgerf.sr.unh.edu).

- Problems or delays.
  - It should be noted that there were several clients who did not respond to our education offering. In these instances LighTec wrote a Newsletter, provided this to the client and posted the newsletter to our Website.
- Deviation from the work-plan
  - To accomplish this task, LighTec's initial concept was to provide our clients with an in-person presentation that described both the energy efficiency project that took place in their building and ideas how they could make similar efficiency improvements in their homes. As time went on, it became apparent that the onsite training was not an appealing option for most of our clients. Thus we reevaluated how best to accomplish the goals of this task and midway through our grant began to offer the options described above.



**Table 4: Education Options**

Project Number	New Hampshire Client	Live Presentation	Lobby Display	Newsletter and/or Power Point for Website	No Response - Provided Newsletter	Notes
E-1	New Hampton School			X		Will be using powerpoint presentation in science classes.
E-2	Mount Saint Mary Academy		X			
E-3	Newfields Elementary				X	Were pleased with the newsletter.
E-4	New England College			X		NEC intends on using powerpoint in their Science Classes.
E-5	Manchester Community Music School		X			
E-6	Litchfield Middle School		X			
E-7	White Mountains Regional Highschool		X	X		Requested 2 Posters: One at building entrance and one at the entrance to the café.
E-8	Brookline Schools	X	X	X		Live presentation for the School Board - open session.
E-9	Chesterfield Elementary				X	
E-10	Hollis Schools	X	X	X		Two presentations: Student Sustainable Energy Team and the Advanced Placement Science Class (9th and 10th grades).
E-11	Rivendell Academy		X			Will have on display at the school graduation.
E-12	Wells Memorial School		X			
M-1	Town of Wolfeboro			X		
M-2	Dunbarton Town Hall			X		
M-3	Town of Tamworth		X	X		
M-4	Town of Brookline	X	X	X		Live presentation for the Board of Selectmen.
M-5	Town of Hollis	X	X	X		Two posters: one to display at the Town Hall and the other at the Transfer Station.
M-6	Moultonborough Town Hall	X	X	X		
I-1	PCC Solutions				X	
I-2	NorthStar Direct		X			
I-3	Excalibur				X	

**4. Summarize the overall project completed:**

LighTec is pleased to report that we **exceeded our RGGI carbon reduction goal by 133%**. The energy saving projects that LighTec implemented saved 1,100 tons of CO2 for an average of \$287/ton. This equates to \$1.73 million in program costs over 18 months, of which, \$316,000 (18%) came from our RGGI grant.

**5. Jobs Created:**

At the start of our program LighTec employed four FTE and two PTE. We now employ seven FTE, three PTE and three consultants on an “as-needed” basis. During the course of this grant, four interns were hired, including one from the Lakes Region Community College “Energy Services and Technology” program. Of these four interns, two are now full-time employees, one is a part-time employee (with plans to become full time in the near future), and one returned to school after the summer internship ended.

Maintained	New	As Needed	Transient
4 FTE	2 FTE – Project Managers	1 - Marketing	1 - Intern
	1 FTE – Sales/Marketing	1 - Admin	
2 PTE	1 PTE - Auditing	1 - IT	

**6. Obstacles Encountered or Milestones Not Reached:**

- Core Utility SBC funds became unavailable during August of 2009. RGGI funds were intended to leverage these projects. The loss of SBC funding prevented projects from going forward. Projects affected include: White Mountain Regional HS, Lancaster, Dublin Consolidated, Francistown, Greenfield elementary Schools and New England College. Once funds were reinstated, in 2010, LighTec sold White Mountains Regional High School and New England College.
- Employee turnover: During this grant period LighTec hired one project manager and one outside salesman. As the economy recovered, both of these hires returned to their previous fields of employment. We have replaced both of these employees since then. The turnover in staff put some strain on operations as we conducted a job search for replacements and trained those replacements.
- Third party interference: In three instances the implementation of LighTec’s projects were slowed or stopped due to third party interference. The first instance was the Wolfeboro Local Energy Committee; the second a general contractor hired by the Town of Merrimack and third was a technical services contractor hired by OEP to provide technical services to Municipalities (Conservation Law Foundation, working with the Peregrine Group). The first two issues are explained on page three in the Problems or Delays section of our Task One Summary.

The last was an unintended consequence resulting from OEP’s consultant, offering redundant (and free) technical services to one of LighTec, Inc’s RGGI clients, the Town of Moultonborough. The effect was a project slow down resulting from a “two chefs in the

kitchen” scenario. Our work could not go forward until the other “Chef” approved our menu of energy efficiency measures.

## **7. Beyond the Contract:**

### **• Business Relationships**

- As a result of this grant, LighTec, Inc. developed or continued business relationships with the following vendors: Lakes Region ThermalScan, Paul Button (energy auditor), Industrial Controls and Communication Inc, KW Management Inc, and WV Engineering.
- Met with Jim Monahan of the Dupont Group, who is representing the GHGER program for the Retail Merchants Association on potentially partnering on the implementation stage of their work.
- Met with Bob Sheppard of Clean Air Cool Planet regarding potentially partnering on the implementation stage of their work.
- At PSNH’s request, LighTec provided them a list of our clients that leveraged both the core utility efficiency program (small business) and RGGI funds to implement energy-efficiency projects.

### **• Educational Outreach**

- On two occasions, at the invitation of Wes Golem from the Lakes Region Community College, Jim Grady developed and taught a course on energy-efficient lighting technology and conducting commercial lighting energy audits.
- LighTec, Inc. employed an intern from the Lakes Region Community College Energy Services and Technology Program. This intern is graduating from the program this May and will be offered a full time position at LighTec.
- Created a presentation for the Holderness School’s Environmental AP class. The presentation included information on where New Hampshire gets its energy and how energy can be saved in the home and office. The presentation also described how the NH RGGI law works.
- Guest on NH Today with Jack Heath, a radio show on 107.7FM, for approximately 15 minutes two times per month discussing energy issues. This segment was sponsored by PSNH, and ran from the spring of 2009 through the spring of 2010.
- Guest on WSMN Nashua’s Syndicated, “Radio GreenTalk” which is a talk show addressing the nexus between economic stability and improved social and environmental impacts.

### **• Political Outreach**

- Went to Washington D.C. and met with our congressional delegation to encourage passage of the climate change bill with Clean Air Cool Planet and the Environmental Defense Fund. This was under the umbrella of “Business Advocacy Day for Jobs, Climate & New Energy Leadership”.

- In collaboration with many parties, Jim Grady wrote a Pro-RGGI opinion editorial, titled “New Hampshire's RGGI Law: No Apologies Required”, that was published in the New Hampshire Business Review, The Portsmouth Herald, the Keene Sentinel, the Foster Daily Democrat and the Concord Monitor. This op-ed piece led to an interview with Christa Marshal of ClimateWire, a publication based in Washington D.C.
  - In coordination with Conservation NH, Jim Grady sent an email to all of LighTec client’s, whose energy-efficiency projects were made possible through the GHGERF program, requesting they write to the Senate leadership.
  - Posted Senator Shaheen’s PRESS RELEASE: Shaheen Calls for Energy Efficiency at Alliance to Save Energy Event to the LighTec Website and sent an email to Sarah Holmes, one of the Senator’s aids, to share LighTec’s views of RGGI.
  - At the invitation of the New England Clean Energy Council Jim Grady participated in a taped interview for the WMUR program “Close-Up”, which featured RGGI in the program that aired on March 6, 2011.
  - Published a second opinion editorial, titled “RGGI benefits all Granite Staters” that was published in the Union Leader on March 20, 2011.
- **Trade Shows**
    - Exhibited and spoke at the New Hampshire Restaurant and Lodging Associations New England Eco-Hospitality Expo on May 25, 2010 at the Grappone Conference Center in Concord.
    - Exhibited at Mount Washington Valley’s 12th Annual Business to Business Expo on May 24th, 2010 at the Omni Mt. Washington Hotel & Resort.
    - Attended the New Hampshire Local Government Center’s 69<sup>th</sup> Annual Conference on Nov 16<sup>th</sup>, 2010. The Conference was attended by 90% of New Hampshire’s municipal administrators and direct staff. Our booth was very well attended, and we explained the RGGI program to all visitors.
    - Attended the New Hampshire State Home Show at the Center of New Hampshire on March 5<sup>th</sup>, 2011 and created and delivered presentation, titled “Saving Electricity in Your Home”.
    - Attended the 2010 and 2011 Local Energy Solutions Conference. In 2010 participated in a panel discussion involving moving from a completed audit to project implementation and created and delivered a presentation on lighting efficiency at the 2011 conference.
- **Committees**
    - Participated in a sub-committee of the Municipal Energy Working Group in an effort to develop standards for municipal energy audits.
    - Participated in the Education and Outreach Committee.
    - Participated in the Local Energy Committee Working Group.
    - Participated in the Strategic Communication Planning Session held on September 8, 2010 at PSNH Energy Park.

- Participated in a legislative sub-committee.
- **ARRA**
  - The accountability process within ARRA has been difficult. Despite this difficulty, our experience to date suggests that the program may be having the desired effect, i.e. resulting in more energy efficiency than might occur without that oversight. Several projects encountered some obstacles along the way. In the case of the Hollis/Brookline Towns and Schools, changes in project details forced changes in rebate funding. In addition to this, the current years Smart-Start funding ran out prior to completing the TRC contracts. The decreased rebates threatened to send the LEC's back to the School and Select Boards for further funding. To avoid this LighTec, Inc. offered to contribute a small amount of our GHGERF grant to hold the project together. This was the intent of LighTec's grant i.e. rescuing viable projects from failure.

**8. If applicable, please include brochures, workshop announcements, or other materials developed to promote your grant activities. Attachments (and other documentation) are appreciated.**

See files attached of previously submitted quarterly reports and files posted to the University of New Hampshire GHGERF web site.

**9. Budget vs. Actual Expenditures: if you have included this with your invoicing, there is no need to repeat for the quarterly report.)**

See previously submitted invoices.

**10. Based on the results of your project, what additional steps are you now taking that you would have not otherwise taken had you not received the grant? Please be specific and provide details.**

The Grant allowed our company to offer a broader level of fuel blind energy management services to New Hampshire industrial and commercial energy consumers, including: whole building (fuel blind) energy auditing, using state of the art computer simulation tools, and a stronger emphasis on HVAC and building shell analysis.

LighTec, an energy services company, feels this ability to expand the energy efficiency industries fuel blind services is a big step forward in RGGI's overall purpose of linking energy efficiency measures towards the management of Climate Change.

Date: \_\_\_\_\_  
Initials: \_\_\_\_\_

## APPENDIX 1:

Project Benefits (Proposed)	Project Benefits (Actual)
<p><u>1. Reduce greenhouse gas emissions from all fuels used to provide electricity, heating and cooling in New Hampshire</u></p> <p>LighTec, Inc. is proposing to implement 18 separate energy efficiency projects in schools and municipalities throughout New Hampshire that will, upon project start, provide immediate and verifiable energy savings and carbon reductions over the life of the equipment and beyond. LighTec, Inc. estimates that these projects will reduce greenhouse gas emissions by 824 metric tons of CO<sub>2e</sub> in the first year and 9,888 metric tons of CO<sub>2e</sub> over the equipment life (12 years).</p>	<p>At the completion of the project, our tallies show that we exceeded our proposed expectations for projects completed and metric tons of carbon saved. Lightec has completed 21 projects. These projects are expected to save a cumulative of 1,100 metric tons of carbon.</p>
<p><u>2. Be cost-effective:</u></p> <p>LighTec, Inc.'s proposal is cost-effective because it uses relatively small amounts of GHGER funds to leverage much larger client investments, in addition to the CORE distribution utility rebate funds. The result of the TRC test for our program is 1.24. See Appendix B:GHGERF Cost Effectiveness Analysis Spreadsheet</p>	<p>The result of the TRC test for our program is 1.43.</p>
<p><u>3. Reduce New Hampshire's peak electric load;</u></p> <p>The lighting efficiency projects in our program (Task One) will save a total of 531 kilowatts (see Table 1). This number was developed through our detailed lighting energy survey.<sup>1</sup> However, when using the GHGER fund cost effectiveness analysis spreadsheet the summer coincident demand reduction is reduced to 109.7 kW.<sup>2</sup></p>	<p>The lighting efficiency projects in our program (Task One) saved a total of 621 kilowatts (see Table 1).</p>

<sup>1</sup> Our detailed analysis of these power savings developed during our investment grade lighting audits is available on request.

<sup>2</sup> We believe the lighting efficiency projects in our program will save much more peak demand than is indicated above. Our calculations show a building level reduction totaling 531 kilowatts. This is not peak coincident load as seen by ISO New England; however, the load reductions are accurate as far as the typical school average load avoidance is concerned. This number was developed through our detailed lighting energy survey. For example, consider a lighting fixture replacement in a school gymnasium, where the existing total gym fixture load is 7200 watts, consisting of sixteen 450 input watt lighting fixtures. If we replace the same number of fixtures with a High Output T5 fixture that will require only 232 watts each, the new load will be 3712 watts. This is a load

<p><u>4. Market Transformation</u>  Our program will cause electrical and mechanical distributors to bring into stock state of the art HVAC, motor and lighting components that would not otherwise be available to the average electrical, mechanical contractor or building maintenance person. As this equipment eventually needs to be replaced, it will transform market trends towards the more efficient commodity.</p>	<p>A market transformation has been seen. Mechanical equipment suppliers and controls companies have been calling on LighTec, Inc describing new products they offer, to help our clients save energy. This has increased throughout the grant period and after the grant was completed.</p>
<p><u>5. Promote innovative technologies:</u>  The energy conservation measures included in these building efficiency projects represent a balance between proven effectiveness and the cutting edge in energy-efficient lighting technologies. Examples include high performance T8 lamps and ballasts, high output T5 lamps and fixtures, daylight harvesting and occupancy controls as well as cold cathode and LED lamp technologies.</p>	<p>Innovative technologies have been promoted. Occupancy sensor controls, new efficient LED light sources and state of the art building automation controls are among the innovative applications used within our program.</p>

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reduction of (7200-3712) or 3,488 watts or 3.49 kilowatts. This load is permanently eliminated from the peak and the base load of this building. As these reductions occur across a wide geographic area, Peak Coincident demand is probably going to be less. It is hard to imagine that it would be 421 kW less.

<p><u>6. Promote economic development:</u> As can be seen in Table 1: Shovel-Ready Energy-Efficient Lighting Projects, each program client receives an economic benefit through reduced operating costs that continue in subsequent budget cycles. These reductions to public school and municipal budgets will benefit New Hampshire tax payers.</p> <p>LighTec, Inc. estimates that its program will lead to the creation of 5 FTE's within LighTec, Inc., in addition to the continued and expanded employment of several electrical/mechanical contractors. See Table 4 in Section 6. LighTec, Inc. anticipates the following permanent staffing needs:</p> <ul style="list-style-type: none"> <li>• Two project managers to handle the increased project load (both from these 18 projects and additional projects that will take place apart from this program).</li> <li>• Two energy auditors/engineers to conduct walk-through and investment grade energy audits, computer-based project modeling, and pre/post measurement and verification readings.</li> <li>• One PTE customer services and marketing professional to assist with program outreach, program material, and new project development.</li> <li>• One PTE IT professional to develop and maintain any necessary reporting applications.</li> </ul>	<p>At the start of our program LighTec employed four FTE and two PTE. We now employ seven FTE, three PTE as well as three consultants on an “as-needed” basis.</p> <p>During the course of this grant, four interns were hired, including one from the Lakes Region Community College “Energy Services and Technology” program. Of these four interns, two are now full-time employees, one is a part-time employee (with plans to become full time in the near future), and one returned to school after the summer internship ended.</p>
<p><u>7. Promote energy cost savings:</u> As stated above there is energy cost savings associated with every project that this program is proposing. The total energy cost savings is \$240,661.00. Please refer to Table 1: Shovel-Ready Energy Efficient Lighting Projects to see LighTec, Inc.’s estimated energy costs savings per project.</p>	<p>The total energy cost savings is \$321,618 based on using \$0.155 per kWh.</p>



<p><u>8. Promote collaboration and provide useful information for future program evaluation and improvement;</u></p> <p>LighTec, Inc. and New Hampshire’s core electric distribution utilities are historical allies and we have worked within their programs to promote energy efficiency. LighTec, Inc. will continue to seek every opportunity to collaborate and share information with the CORE distribution utilities and any other interested party. For example, LighTec, Inc. would welcome the opportunity to provide the CORE utilities, the Public Utility Commission, and their respective consultants’ field data and perspectives regarding existing and proposed Systems Benefit Charge (SBC) programs as they relate to practical field considerations.</p> <p>In addition, LighTec, Inc. is a National ENERGY STAR Service and Product Provider Partner as well as a Retail Partner. It is our intention to use this partnership to help co-promote this program as appropriate. We also intend to develop partnerships with additional national and in state organizations such as the New Hampshire Carbon Challenge.</p> <p>Finally, LighTec, Inc. would welcome the opportunity to work with any organization that is focused on training energy-auditors. LighTec, Inc.’s interests include internship opportunities and contributing to curriculum development.</p>	<p>We provided utility information on projects when requested</p> <p>We attempted to collaborate with the Jordan Institute, Retail Merchants Association and DRED.</p> <p>Jim participated in the EESE Board and sub committees.</p> <p>We worked with Lakes Region Community College to educate faculty and students about issues.</p> <p>We shared information with Clean Air-Cool Planet on a regular basis.</p> <p>We promoted MyEnergyPlan.net, created by Clean Air-Cool Planet, through the Greenhouse Gas Emission Reduction Fund, in our educational materials.</p>
<p><u>9. Otherwise be consistent with the public interest and the purposes of RSA 125-O:19.12.</u></p> <p>This portion of LighTec, Inc.’s proposed program has the following added benefits:</p> <ul style="list-style-type: none"> <li>• Increasing energy-efficiency awareness to the general public and increasing their knowledge of how they can make cost-effective energy saving choices in their own</li> </ul>	<p>This portion of our proposed project was completed through attending various trade shows, including the New Hampshire Restaurant and Lodging Associations New England eco-Hospitality Expo, Mount Washington Valley’s 12<sup>th</sup> Annual Business to Business expo, The New Hampshire Local Government Center’s 69<sup>th</sup> Annual Conference. Members of Lightec also attended the New Hampshire State Home Show and the Local Energy Solutions Conference and delivered a</p>

<p>homes;</p> <ul style="list-style-type: none"><li>• Increasing the likelihood that the ECM's installed in the project facilities will be properly maintained over time. This will increase the useful life of equipment, maintain projected energy savings and increase the overall satisfaction of the clients;</li><li>• Informing people that energy-efficiency is a high growth industry requiring a diverse range of skills, and that there are many job opportunities in the energy-efficiency field worth looking in to; and</li><li>• Ensuring that the skills relevant to our industry needs are available in the workforce.</li></ul>	<p>presentation.</p> <p>Jim Grady worked with Wes Golem from the Lakes Region Community College to teach two courses on energy efficient lighting technology on two separate occasions. Jim was also a guest on NH Today with Jim Heath discussing energy issues.</p> <p>Created Presentations for school and municipalities' including the Holderness School's AP Environmental Class, the Hollis Brookline AP Environmental Class, the Brookline School Board and the Brookline Board of Selectmen.</p>
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