1 Cover Page

Propell Energy is a full service energy company located in Jaffrey, NH. We are 100% wholly owned by New England Wood Pellet which is also headquartered in Jaffrey, NH. Propell Energy sells, installs and service state-of-the-art pellet heating systems that deliver proven technology and reliability for municipal and commercial applications such as schools, hotels, office complexes, government and manufacturing facilities. Our pellet boilers provide heating solutions for large applications that range from 500,000 BTU/hr to 10,000,000 BTU/hr.

Propell Energy is initiating the two separate demonstration pellet boiler projects for consideration as one proposal for the Greenhouse Gas Emission Reduction Fund. The demonstration partners are very excited about use of our pellet boilers in their facilities.
We feel that any money from the Greenhouse Gas Emission Reduction Fund will help these projects materialize. Part of the reason for the request is for the support of the economic model. With the current price of #2 heating oil below $2 per gallon, the return on investment has caused the payback model to extend to about nine years. With the assistance of the Greenhouse Gas Emission Reduction Funds the payback model is about six years. The use of Greenhouse Gas Emission Reduction Funds towards these two projects are critical since it puts the payback model within reach of the client's financial needs.

1.1 Program Title

1.1.1 New England College – Science Building

New England College is looking to install a pellet boiler in their Science building.

1.1.2 JBI Helicopter Services

JBI Helicopter Services (JBI) is adding to its existing facility so that it can expand its service of operations.

1.2 Program Type

Propell Energy's pellet boilers fit into a couple of the PUC 2604.01 requirements for program types. Our pellet boilers fit into item #5, *Energy efficiency related industrial process and control system* and item #8 *Programs to improve the electric and thermal energy efficiency of new and existing commercial buildings.* Our pellet boilers run at a 90-92% overall efficiency and they modulate their output. Unlike traditional boilers that are either 'On' or 'Off', our pellet boiler conserves energy by modulating their energy output to exactly match the demand heat load required by the facility, thus reducing the CO_2 output even further.

1.3 Program Summary

RGGI funds are requested for these two commercial pellet boiler projects to demonstrate the use of this efficient, clean, local, and renewable and carbon neutral energy source. The demonstration projects will together reduce the use of heating oil by an estimated 30,000 gallons per year, equating to a reduction in net CO_2 emissions of 336 tons per year- the equivalent of permanently taking 46 average passenger cars off the road. In addition to direct greenhouse gas reduction, the projects will serve to demonstrate highly efficient, fully automated commercial pellet boilers of 680,000 BTU/hr (200 kW) and 1,000,000 BTU/hr (300 kW), significantly larger than other pellet boilers currently operating in New Hampshire.

Why do the projects need the assistance of RGGI funds to proceed? The price of fossil fuels is so low at this point that the avoided cost of #2 oil versus the price of bulk pellets does not currently portray an attractive return on investment. While we believe fossils will continue to rise and that the fuel cost differential between fossil fuels and pellets will provide sufficient economic justification for growing this market segment, this and other factors are hampering our efforts to introduce commercial pellet boilers at this time. In addition to relatively inexpensive fossil energy, the current economic situation and the lack of high-profile demonstration projects to stand as proof of the many benefits of technology and the use of biomass for heating in the Northeast Region are probably the biggest factors preventing market growth. Financial assistance from the RGGI funds will make this project viable by shifting the paybacks go from nine years down to six years.

We therefore are requesting a 25% grant ($96,500) from the RGGI funds to make both of these projects viable for all parties involved.

1.4 Low Income Residential Customer Qualification

1.4.1 New England College

Not applicable

1.4.2 JBI Helicopter Services

Not applicable

1.5 Identification of Applicant Organization

1.5.1 Propell Energy

The full name of the applicant is:

Propell Energy
PO Box 522
415 Squantum Road
Jaffrey, NH 03452

Propell Energy is organized under the laws of the State of New Hampshire and is registered with the New Hampshire Secretary of State. The President of Propell Energy is Jake Goodyear and he can be reached at 603-532-0114 or **jgoodyear@propellenergy.com** .

1.6 Identification of Subcontractors and Partners

1.6.1 New England College

Joe Kohler from Kohler & Lewis Mechanical Contractors will be providing the mechanical specifications for this project. His contact info is:

Kohler & Lewis Mechanical Contractors
27 Mechanic Street
Keene, NH 03431
603 352-4841
joe@kohlerandlewis.com

1.6.2 JBI Helicopter Services

Michael & Jim Bruss from Bruss Construction will be the General Contractor for this project. The contact info for Bruss Construction is:

Jim Bruss – *CEO*
Michael Bruss - President
Bruss Construction
P.O Box 456
Bradford, New Hampshire 03221
603 938-2069
jwb@brusscon.com

Mark Vincello, PE, from W.V Engineering Associates will be providing the mechanical information for this project. The contact info for W.V Engineering Associates is:

WV Engineering Associates
11 King Court
Keene, NH 03431
603 352-7007
mvincello@wvengineering.com

1.7 Authorized Negotiators

1.7.1 Propell Energy

Jake Goodyear - *President*
Propell Energy
PO Box 522
415 Squantum Road
Jaffrey, NH 03452

603-532-0114
jgoodyear@propellenergy.com .

1.8 Projected Energy Savings

1.8.1 New England College

In 2008 New England College used 22,000 gallons of #2 heating oil to heat their Science Building. At an estimated cost of $2.90 per gallon averaged over 2008, their annual expense is about $63,800. Factoring in an oil burner efficiency of about 80% yields about 2,464 MM BTU. Propell Energy's boilers operate at over 90% efficiency. To achieve the same required head load of 2,464 MM BTU with our 90% efficient pellet boiler would require about 171 tons of pellets. At a cost of $225 per ton, the estimate annual cost of pellets is $38,475 – a cost savings of $25,325 per year.

1.8.2 JBI Helicopter Services

It's projected that the JBI Helicopter Services will use about 14,600 gallons of propane to heat their office space and 3,800 ft^2 tarmac. At an estimated cost of $2.65 per gallon averaged over 2008, their annual expense is about $38,690. Factoring in a propane burner efficiency of about 84% yields about 1,128 MM BTU. Propell Energy's boilers operate at 90% efficiency. To achieve the same required head load of 1,128 MM BTU with our 90% efficient pellet boiler would require about 78 tons of pellets. At a cost of $225 per ton, the estimate annual cost of pellets is $17,550 - a cost savings of $21,140 per year.

1.9 Projected Greenhouse Gas Emissions Reductions

1.9.1 New England College

There is a reduction in the CO_2 emissions of about 246 tons per year (*22.4 lbs/gallon x 22,000 gallons of #2 oil*). The pellet fuel offsetting the use of #2 oil is carbon neutral.

1.9.2 JBI Helicopter Services

There is a reduction in the CO_2 emissions of about 92 tons per year (*12.7 lbs/gallon x 14,600 gallons of #2 oil*).The pellet fuel offsetting the use of #2 oil is carbon neutral.

1.10 Length of Program

1.10.1 New England College

The pellet boiler project is estimated to start in June 2009. The project duration for completion is about 18 weeks. With proper maintenance, it is expected that the pellet boiler will last at least 20 years. Propell Energy & NEC will collaborate to make available a web portal posting real-time and periodic data uploads of the pellet boiler operation, including fuel usage, energy output, emissions, rolling CO_2 offsets, etc, for a period of three years.

1.10.2 JBI Helicopter Services

The pellet boiler project is estimated to start in June 2009. The project duration for completion is about 18 weeks. With proper maintenance, it is expected that the pellet boiler will last at least 20 years. Propell Energy & JBI will collaborate to make available a web portal posting real-time and periodic data uploads of the pellet boiler operation, including fuel usage, energy output, emissions, rolling CO_2 offsets, etc, for a period of three years.

1.11 Total Program Costs

1.11.1 New England College

The project cost for a complete 1,000,000 BTU/Hr (300kW) pellet boiler system is $199,543.

1.11.2 JBI Helicopter Services

The project cost for a complete 680,000 BTU/Hr (200kW) pellet boiler system is $187,000.

1.12 GHGER Funds Requested

1.12.1 New England College

This pellet boiler project it requesting $49,885 which is 25% of the total project cost.

1.12.2 JBI Helicopter Services

This pellet boiler project it requesting $46,750 which is 25% of the total project cost.

2 Executive Summary

Our proposal is to install two demonstration pellet boilers at separate sites (one institutional and one commercial) to increase awareness, provide operating and environmental data, and to validate our model that pellet fuel and central boiler systems provide a favorable alternative to fossil fuel-based systems in New Hampshire. In addition, these two systems alone will offset more than 30,000 gallons of #2 heating oil per year, and an estimated 336 tons of CO_2, which is approximately equal to removing 46 cars from our roads permanently! The waste wood and low-grade timber resource used to manufacture the pellets to feed these systems are sourced locally and sustainably, offsetting oil sourced from distant locales.

The two projects we are proposing at located at New England College, based in Henniker, NH and JBI Helicopter Services, based in Pembroke, NH.

New England College Project

New England College is hoping to install a 1,000,000 BTU/Hr (300 kW) pellet boiler in their existing Science center. The boiler will provide the heat and hot water required by the facility, as well as serve as an educational tool for their Science and Engineering students. The total estimated installed cost for this project is $199,543. The project is expected to begin in June of 2009. We are additionally proposing a 3 year monitoring and data-sharing period during

which time the NHPUC, the public, and any other interested party could view (through a web portal) all pertinent operating and environmental data related to the project.
Propell Energy is providing the boiler for the project on a turnkey basis. Propell Energy will work with several subcontractors to complete this project, including the equipment manufacturer (Swebo Bioenergy, Sweden), Mechanical Engineers (Kohler & Lewis, Keene, NH), Mechanical Contractors (Dublin Building Group, Peterborough, NH note: this is not yet confirmed), Electricians (Grace Electric, Jaffrey, NH), Plumbers (Bagley Plumbing, Jaffrey, NH). Propell has asked each of these vendors to provide their services at a discount to assist in enabling this project, and Propell has reduced its price by approximately 10%.

JBI Helicopter Project

JBI Helicopter is a private helicopter charter and service company. In addition to standard charter services, they do emergency work, such as fire fighting, search & rescue, and spraying for public health projects. JBI is planning a facility expansion, including new office and hangar space, as well as a new helipad designed to meet Class II snowmelt requirements. JBI has hired Bruss Construction to manage this project, and together they have made the decision to make the project as environmentally friendly as is possible. A key element of reducing the energy consumption, as well as the carbon footprint of the facility is a 680,000 BTU/Hr. pellet boiler. The cost of this project is $187,000. The project is expected to begin in June 2009. We are additionally proposing a three year monitoring and data-sharing period during which time the NHPUC, the public, and any other interested party could view (through a web portal) all pertinent operating and environmental data related to the project.
Propell Energy is providing the boiler for the project on a turnkey basis. Propell Energy will work with equipment manufacturer (Swebo Bioenergy, Sweden), Mechanical Engineers (Kohler & Lewis, Keene, NH). As the construction of the new building and helipad are being performed by Bruss Construction, we intend to work with Bruss and their Mechanical group and electrical and plumbing contractors for the balance of services on this project. Propell has asked each of these vendors to provide their services at a discount to assist in enabling this project, and Propell has reduced its price by approximately 10%.

3 Proposed Work Scope and Schedule

3.1.1 New England College

The pellet boiler project at New England College will be housed in a separate, permanent, weather-proof enclosure, with underground electrical and water connections to the Science Center to which it will be providing heat. Propell Energy is responsible for manufacturing and/or purchasing all the necessary components of the boiler system and enclosure, integrating all the components and for boiler startup and commissioning. From the date of order, the project is expected to take 18 weeks through commissioning to completion. Michael Mascola, Propell Energy Sales Engineer will be responsible for the general management of the project, including interface and coordination with the site host (New England College), as well as managing the demonstration aspects of the project, such as the sharing of information, etc. Bob Latour, Operations Manager for Propell Energy will

be responsible for project oversight and QA for the project. Jake Goodyear, President of Propell Energy will be responsible for financial management of the project.

- The major elements of the Pellet Boiler System are:
  - 30 ton pellet storage silo with automatic feed auger
  - 1MM BTU/Hr. Swebo Pellet Boiler system
    - Control system: Fully automated, modulating, web-based
    - Burner with primary feed, primary & secondary combustion fans, Igniter, fire suppression incl.
    - Automated boiler tube cleaning & ash removal augers; container
  - Exhaust Multi-Cyclone & stack
  - Enclosure: Permanent, insulated , weather-proof boiler enclosure, 8' x 20'
    - Access door, ventilation, lighting
  - Plumbing & Electrical
    - All boiler plumbing, including pumps, valves, flow meters, etc.
    - 1MM BTU/Hr. Brazed plate heat exchanger
    - All necessary electrical systems, including breakers, power and control wiring, etc.
- Work scope, schedule, responsibility (major milestones)
  - Order boiler and major components (week 1, Propell Engineering/ Purchasing)
  - Release enclosure to in-house production (week 6 Propell Engineering, Fabricating)
  - Foundation for silo and boiler enclosure (week 12, Propell Project Management, Concrete vendor)
  - Receive boiler and major components (week 12, Propell Fabricating)
  - Complete in-house boiler integration (week 15, Propell Engineering & Fabricating, Plumbing & Electrical subs.)
  - Deliver boiler system to site (week 16, Propell Project Management, Rigging sub.)
  - Interconnect to building systems, start-up (week 17, Propell Project Management, Plumbing & Electrical subs., New England College)
  - Commissioning and training (week 18 Propell Project Management, New England College)
- Ongoing operation of demonstration project (3 years)
  - New England College will allow access (at NEC's discretion) to pre-scheduled visitors interested in seeing the pellet boiler in operation.
  - Propell Energy & NEC will collaborate to make available a web portal posting real-time and periodic data uploads of the pellet boiler operation, including fuel usage, energy output, emissions, rolling CO_2 offsets, etc.

3.1.2 JBI Helicopter Services

The pellet boiler project at JBI Helicopter Services will be housed in a separate, permanent, weather-proof enclosure, with underground electrical and water connections to the Buildings and helipad it will be providing heat to. Propell Energy is responsible for manufacturing and/or purchasing all the necessary components of the boiler system and enclosure, integrating all the components and for boiler startup and commissioning. From the date of order, the project is expected to take 18 weeks through commissioning to completion. Michael Mascola, Propell Energy Sales Engineer will be responsible for the general management of the project, including interface and coordination with the site host (JBI Helicopter Services), as well as managing the demonstration aspects of the project, such as the sharing of information, etc. Bob Latour, Propell Energy Operations Manager will be responsible for project oversight and QA for the project. Jake Goodyear, President of Propell Energy will be responsible for financial management of the project.

- The major elements of the Pellet Boiler System are:
    - 30 ton pellet storage silo with automatic feed auger
    - 680,000 BTU/Hr. Swebo Pellet Boiler system
        - Control system: Fully automated, modulating, web-based
        - Burner with primary feed, primary & secondary combustion fans, Igniter, fire suppression incl.
        - Automated boiler tube cleaning & ash removal augers; container
    - Exhaust Multi-Cyclone & stack
    - Enclosure: Permanent, insulated , weather-proof boiler enclosure, 8’ x 20’
        - Access door, ventilation, lighting
    - Plumbing & Electrical
        - All boiler plumbing, including pumps, valves, flow meters, etc.
        - 700,000 BTU/Hr. Brazed plate heat exchanger
        - All necessary electrical systems, including breakers, power and control wiring, etc.
- Work scope, schedule, responsibility (major milestones)
    - Order boiler and major components (week 1, Propell Engineering/ Purchasing)
    - Release enclosure to in-house production (week 6 Propell Engineering, Fabricating)
    - Foundation for silo and boiler enclosure (week 12, Propell Project Management, Concrete vendor)
    - Receive boiler and major components (week 12, Propell Fabricating)
    - Complete in-house boiler integration (week 15, Propell Engineering & Fabricating, Plumbing & Electrical subs.)
    - Deliver boiler system to site (week 16, Propell Project Management, Rigging sub.)
    - Interconnect to building systems, start-up (week 17, Propell Project Management, Plumbing & Electrical subs., JBI Helicopter Services)

- Commissioning and training (week 18 Propell Project Management, JBI Helicopter Services)
- Ongoing operation of demonstration project (3 years)
  - JBI Helicopter Services will allow access (at JBI's discretion) to pre-scheduled visitors interested in seeing the pellet boiler in operation.
  - Propell Energy & JBI will collaborate to make available a web portal posting real-time and periodic data uploads of the pellet boiler operation, including fuel usage, energy output, emissions, rolling CO_2 offsets, etc.

4 Project Benefits

4.1 Reduce greenhouse gas emissions from all fuels used to provide electricity, heating and cooling in New Hampshire.

The projects proposed would reduce greenhouse gas emissions by eliminating the use of #2 fuel oil for heating the Science Center at New England College, as well as the buildings and helipad at JBI Helicopter Services. Our estimates indicate the combined offset in CO_2 emissions will be approximately 336 tons per year. In addition, Propell commercial boiler systems operate at efficiencies of slightly over 90%, which is significantly higher than the existing boilers at both locations. Therefore, not only will the energy needs be met with carbon neutral pellet fuel, less overall energy input will be required to meet the heating demands of the facilities.

4.2 Be cost-effective

On a long-term basis, we believe both proposed projects will be cost effective. Commercial pellet boilers remain substantially higher in price than a fossil fuel boiler of the same size, but two major factors offset the additional up-front capital. Pellet fuel pricing has increased but has remained remarkably steady over the years and is currently available for about $225 per ton delivered, which is the energy equivalent of just under $1.90/gal. #2 heating oil. While future relative pricing is unknown, historical data would suggest that pellet pricing will not only remain lower than oil, but that the price of oil will increase faster than that of pellet fuel.

The second major factor impacting cost-effectiveness is the efficiency differential between our pellet boiler systems and the systems we are proposing to replace. Both boilers we are proposing are 90+% efficient, while we estimate the systems we are replacing are operating at a maximum of 80% efficiency. Based on this estimate, just the efficiency increase will reduce the energy input required to meet the heat load by the equivalent of almost 4,200 gallons of oil per year.

Assuming avoided heating oil pricing of $3.00/gal, we estimate a combined annual fuel cost savings of $40,897/year against an approximate capital investment by the project hosts of $300,000. This assumes the projects receive the RGGI grant.

4.3 Reduce New Hampshire's peak electric load.

The proposed projects will not directly reduce New Hampshire's peak load.

4.4 Promote market transformation.

We strongly believe using the region's renewable biomass resource for building heating and combined heat and power is the best use of this valuable resource. These projects will stand as examples of what is possible in terms of the best available technology to heat New Hampshire using pellet fuel. With over 5 billion gallons of heating oil being consumed annually in the Northeast region (the Northeast burns over 80% of all the heating oil used in the US), an enormous opportunity exists to convert to this renewable, clean and local fuel and retain literally billions of dollars that are currently being exported to other countries and regions.

4.5 Promote innovative technologies.

Propell's systems represent the state-of-the-art in commercial pellet boilers and these projects will allow all interested parties to scrutinize all aspects of converting to biomass heat. The market in Europe has embraced systems such as the ones we are proposing, yet very few such systems have been installed or are operating in this country. We feel that these demonstration projects represent a tremendous opportunity to showcase this state-of-the-art technology.

4.6 Promote economic development.

The proposed projects will promote New Hampshire's economic development in a number of ways. The construction projects will be performed using local contractors. The fuel is manufactured by New England Wood Pellet of Jaffrey, NH so on an ongoing basis, monies that are currently flowing out of the region for imported fossil energy (and likely the country) will stay local and stimulate the economy. Perhaps most significantly, the growth of the biomass heat and Combined Heat and Power could provide a huge economic boost to New Hampshire, as the State has significant biomass resources and a history of forest-based industries that are unfortunately waning.

4.7 Promote energy cost savings.

As previously noted, the delivered price for pellet fuel is approximately $225, or the equivalent of $1.90/gallon #2 oil. Also, the proposed boilers and over 90% efficient are replacing boilers that are operating at a maximum efficiency of 80%, and possibly lower.

4.8 Promote collaboration and provide useful information for future program evaluation and improvement; and

A primary reason for these demonstration projects is to allow interested parties access to pertinent data and information to learn more about the use of biomass for commercial heating. The applicant and the project hosts are committed to sharing the results for at least three years through allowing pre-scheduled visits to the project sites, and through maintaining a web portal with project data and results.

4.9 Otherwise be consistent with the public interest and the purposes of RSA 125-O; 19. This section could include the identification of and other benefits of the program otherwise not addressed.

The proposal is consistent with both the public interest and RGGI. By directly offsetting the use of #2 oil, it is reducing greenhouse gasses and showcasing the use of local, clean renewable wood pellet fuel to heat institutional and commercial buildings in our State. Although biomass heating is already a growing market, progress has been slow and little has happened in the commercial sector. New Hampshire truly has the potential to become a leader in bio-energy, and the proposed projects could play a role in stimulating and educating the public and private sectors.

5 Measurement and Verification

5.1.1 New England College

New England College is willing to share its fuel oil records from the past and also the fuel records going forward for wood pellets. Propell Energy will collect information on pellet fuel usage, system efficiency, emissions, operational data and track costs. Propell Energy will make this information available on our website for all interested parties to review. Our records will also be made available for the purposes of verification.

5.1.2 JBI Helicopter Services

JBI Helicopter Services is willing to share its fuel records from the past and also the fuel records going forward for wood pellets. Propell Energy will collect information on pellet fuel usage, system efficiency, emissions, operational data and track costs. Propell Energy will make this information available on our website for all interested parties to review. Our records will also be made available for the purposes of verification.

6 Budget

6.1.1 New England College

The life cycle of the budget for this project is relatively short due to the fact that this project will only take about four weeks to complete. All of the work associated with this project can be completed within one quarter. The majority of the work is performed in our manufacturing facility where the pellet boiler system is fully assembled and then delivered in a secure and weather tight container.

Since Propell Energy only sells completely assembled pellet boiler systems, there is only a small amount of work that is required once the container (pellet boiler system) arrives at the customer's facility. Propell Energy has discounted this system by 10% from its regular selling price.

Budget Item	List price	In-Kind	Total
Boiler	$121,841	$12,184	$109,657
Mechanical Equipment	$ 44,624	$ 4,462	$ 40,162
Plumbing, Pipes, Pumps	$ 22,524	$ 2,252	$ 20,272
Assembly and Integration	$ 32,724	$ 3,272	$ 29,452
Total	**$221,713**	**$22,171**	**$199,543**
RGGI			**-$ 49,885**
Discounted Total			**$149,658**

6.1.2 JBI Helicopter Services

The life cycle of the budget for this project is relatively short due to the fact that this project will only take about four weeks to complete. All of the work associated with this project can be completed within one quarter. The majority of the work is performed in our manufacturing facility where the pellet boiler system is fully assembled and then delivered in a secure and weather tight container.

Since Propell Energy only sells completely assembled pellet boiler systems, there is only a small amount of work that is required once the container (pellet boiler system) arrives at the customer's facility. Propell Energy has discounted this system by 10% from its regular selling price.

Budget Item	List price	In-Kind	Total
Boiler	$112,600	$11,260	$101,340
Mechanical Equipment	$ 45,111	$ 4,511	$ 40,600
Plumbing, Pipes, Pumps	$ 21,000	$ 2,100	$ 18,900
Assembly and Integration	$ 29,069	$ 2,907	$ 26,160
Total	**$207,780**	**$20,778**	**$187,000**
RGGI			**-$ 46,750**
Discounted Total			**$140,250**

7 Applicant Qualifications

New England Wood Pellet LLC is the parent company to Propell Energy. Our 16 years of experience and commitment in the pellet industry has made us the largest manufacturer and distributor of pellet fuel in the northeast and one of the leading companies nationwide. Propell Energy has a fully dedicated professional staff that specializes in pellet boilers. Backed by a team with many years of experience in the energy field, we are committed to successful installations that make sense. We have installed fully operational systems in New Hampshire that have proven to be very successful financially and environmentally.

We have full support from the boiler manufacturer, Swebo. If we ever have an issue with our system it can easily be rectified either with a quick call to the customer or via our remote login in capabilities through our computer automated systems.

Our Jaffrey facility houses all of our staff, our bulk delivery trucks, a full manufacturing facility and metal fabrication shop. We offer 24/7 customer support so our customers are never left without service. In the event of an emergency, we have full access to many of the most common system components. We have full capabilities to fabricate customized metal work via Auto CAD software and equipment.

8 Additional Information

Not applicable

9 Letter of Interest

9.1.1 New England College

See attachment

9.1.2 JBI Helicopter Services

See attachment