

Gorham Fire Department Pellet Boiler Project

Thank you for considering the Gorham Fire Department for the Greenhouse Gas Emissions Reduction Fund. The proposal is for the installation of a high-efficiency oil furnace and pellet boiler. This proposal supports PUC 2604.01 (c) 12: energy efficiency, conservation, and demand response program to reduce greenhouse emissions generated within New Hampshire. The equipment we are proposing for this project is more efficient than the present equipment. In combination with a high-efficiency oil furnace and a renewable energy source pellet boiler the project will use a natural renewable energy resource and reduce greenhouse emissions.

The Gorham Fire Station is in need of a new heating system, the present heating system can no longer be repaired. The chief has looked into systems that are more environmentally friendly and efficient. The chief has found the cost of the pellet boiler makes the project impossible for the Town of Gorham to finance. The project would include replacing the present oil furnace with a high-efficiency oil burning furnace which could reduce fuel consumption by 30 to 50%. We would also install a pellet boiler with a 12 ton silo which would reduce our use of fossil fuels. It is recommended that the oil burning furnace not be eliminated completely, because the pellet boilers are not completely efficient at higher seasonal temperatures and require shutdown periods for cleaning.

Project Breakdown

Oil Burner	\$13,918.00
Pellet Boiler	\$19,942.00
Accessories	\$ 4,000.00
Storage Bin & Auger	<u>\$ 8,804.50</u>
Total	\$46,664.50

The project is for the Town of Gorham's Fire Station at 347 Main St. The station is manned during the day and unmanned during the night and houses two fire truck pumpers, a tanker, a rescue truck, and two ambulances. These apparatus require a heated area for storage. The station also houses the administration offices for the Fire Department and Emergency Medical Services.

The contractor for the project will be KR Heating, Pelletier Millwrights, and the Gorham Public Works Department. We have used information and guidance from HS Tarm of 5 Main St. in Lyme NH, 1-800-782-9927, web site www.pelletboiler.com, Kevin Rines of KR Heating at 38 Spring Rd. in Gorham NH, 603-466-2984 and Pelletier Millwrights of 161 Mooseup Pond Rd. Danielson, CT 890-377-1193. The person that will be the negotiator for the Town of Gorham will be Town Manager William H. Jackson, of 20 Park St. Gorham, NH 603-466-3322.

The projected energy saving from the installation of a new high-efficiency oil burning furnace will be 30-50% less fuel oil. The Gorham Fire Station in the fiscal year 2007-2008 burned 3405 gallons of fuel oil and in 2008-2009 burned 2946 gallons of fuel oil. Using the lowest figure of 30% projected saving, the project will reduce the use of fossil fuel by an average of 952 gallons of fuel oil. With the addition of the pellet boiler, the project should reduce the use of fossil fuel by 90% or more.

The proposed project could result in a reduction in greenhouse gas emissions from the direct combustion of fossil by as much as 64,960 lbs per year. This result was figured using the chart on page 6 of the Greenhouse Gas Emissions Reduction Fund Request for Proposals issued February 23, 2008. The approximate fossil fuel savings of 2900 gallons multiplied by the Distillate Fuel Oil CO₂ Emission Factor of 22.4 lbs./gallon was used to arrive at the 64,960 lbs. reduction in greenhouse gas emissions.

The project will be completed within three months of approval. The expected life of the project should be a minimum of 25 years with a maximum of 30 years.

The total cost of the project is expected to be \$46,664.50, which breaks down to \$13,918.30 for the oil furnace and installation, \$19,942.00 for the pellet boiler and installation, \$8,804.50 for the pellet storage bin and installation, and \$4,000.00 for the accessories. The Town of Gorham has set aside in the Building Capital Reserve Fund the amount of \$12,000.00 and \$8,664.50 from the Fire Equipment Capital Reserve Fund for this project. To complete the project, the Town of Gorham is applying to the Greenhouse Gas Emission Reduction Fund will have to provide \$26,000.00.

If this project is funded it is expected that fuel oil consumption at the Gorham Fire Station can be reduced by as much as 2900 gallons of fossil fuel per year. The 2900 gallons of fossil fuel would be replaced by the use of 24 tons of wood pellets. The cost savings at this time is minimal, but the reduction in greenhouse emission gas is high. This project is timely, because the Fire Station's boiler is now 30 years old and needs to be replaced. A crack in the boiler's front plate has forced us to plan on replacing the boiler this year. The Town has \$12,000.00 set aside in the Building Capital Reserve Fund to replace the boiler. Because there is not any future capital savings from putting in the pellet boiler, the Town cannot justify the extra expense during these failing economic times.

The area surrounding Gorham has been in an economic downfall for several years. Hundreds of jobs have been eliminated leaving several hundred people still unemployed. The town has been doing everything they can to keep the tax rate down so as to not burden the tax payers. The town has the funds to maintain the infrastructure, but does not have the extra funds to put into projects that do not have a payback to reduce property taxes.

There are several stages to the project that will need to be accomplished.

- The first stage: to remove the existing boiler, will be handled by KR Heating (8 Hours).

- The second stage: to install the oil-fired boiler, will be handled by KR Heating (12 Hours).
- The third stage: to install the pellet boiler, will be handled by KR Heating (12 Hours).
- The fourth stage: to install a chimney for the pellet boiler, will be handled by KR Heating (8 Hours).
- The fifth stage: to install a concert pad for the pellet silo, will be handled by the Gorham Public Works Department and volunteers from the Gorham Fire Department (8 Hours).
- The sixth stage: to install the pellet silo and auger, will be handled by Pelletier Millwrights (12 Hours).
- The seventh stage: to install a new fuel line and eliminate the day tank, will be handled by Gorham Public Works Department and volunteers from the Gorham Fire Department (8 Hours).

Gorham Fire Chief Rick Eichler (603-466-2549) will have complete oversight of the project and will be responsible for quality assurance measures. Director of Finance and Administration, Denise M. Vallee (603-466-3322) will be responsible for all financial arrangements.

The pellet boiler will help reduce greenhouse gas emissions according to The Wood Pellet Guide <http://woodpelletsguide.com/>. The guide states: *“Environmental Friendly Wood fuels which include fuel derived from wood pellets release lesser amount of ashes and emissions that are harmful to the environment and to human beings. The carbon dioxide that is released during the combustion of wood pellets is being used by the growing plants. Thus, it does not add up to the problem of global warming. Moreover, there would be no worries on how to dispose wood pellets which are basically waste products because they can still be utilized as an alternative fuel. This would greatly reduce problems on waste management.”* The proposed project could reduce greenhouse gas emissions from the direct combustion of fossil by as much as 64,960 lbs per year. This result was arrived at using the chart on page 6 of the Greenhouse Gas Emissions Reduction Fund Request for Proposals issued February 23, 2008. The approximate fossil fuel savings of 2,900 gallons multiplied by the Distillate Fuel Oil CO₂ Emission Factor of 22.4 lbs./gallon to arrive at the 64,960 lbs. reduction in greenhouse gas emissions per year.

The project will be cost-effective based upon the amount of fossil fuel emissions that will be eliminated. The project will eliminate 64,960 lbs. per year of greenhouse gases. In today's dollars of \$2.48 per gallon for fuel oil and \$280.00 per ton for wood pellets, the savings would be approximately \$572.00 per year. The project would not show any reasonable benefit unless the reduction in greenhouse gas emissions is considered. This project will not *reduce New Hampshire's peak electric load, innovation technologies, or the promoting of economic development.* The project focuses on reducing greenhouse gas emission by reducing the use of fossil fuel. The project will also promote market transformation by increasing the use of bulk wood pellets in the Gorham area.

The project is consistent with the public interest and the purposes of RSA-125-0:19 by *Increasing renewable and low-CO₂-emitting sources of energy in a long-term sustainable manner, and lead by example in government operation*. The pellet boiler uses wood pellets that are not only, a renewable energy source, but also low in CO₂ emissions. The Gorham Fire Station can also be used as an example of how government operations can reduce greenhouse gas emissions associated with heating using a renewable energy source.

The performance of the project will be measured by the reduction of fossil fuel used. There are good records of the amount of fossil fuel used at the Gorham Fire Station for the past ten years. The past history can be compared to the use of fossil fuel after the installation of the pellet boiler. After one year of service the use of wood pellets as compared to the use of fossil fuel can be charted to measure the performance and to determine the savings realized.

Thank you for considering the Gorham Fire Department for the Greenhouse Gas Emissions Reduction Fund. The Gorham Fire Station is in need of a new heating system and I believe this is the opportune time for this proposed project. If the funds are not available for the project the town will have to go ahead and install the oil-burning boiler without the pellet boiler. Funds for the complete project are not available through the town budget or capital reserve funds. The oil-burner/pellet-boiler project for the fire station would help reduce green gas emission and would be recognized by the public helping to transform the market from fossil fuel to a renewable energy source.

The Town of Gorham's Employee Identification Number is 02-6000335.