

To: Jaffrey Select Board

From: Richard Ames, Chair, Jaffrey Energy Committee

Re: Audit by SEEDS of the Town's Facilities

Date: December 13, 2010

The Town is in receipt of an exhaustive energy audit of its facilities. The audit was done by Margaret Dillon of Sustainable Energy Education Demonstration Services (SEEDS). The Audit was funded by a grant from the New Hampshire Regional Greenhouse Gas Emissions Reduction Fund (GHGERF).

My purpose today is simply to preview the key findings contained in the SEEDS audit report. I intend to return next month with the Energy Committee's recommendations for action on this report.

1. The SEEDS recommendations are based on best practices and sound building science and while the primary goal is to reduce energy use, the recommended actions are designed as capital investment upgrades, often with multiple benefits: improving comfort, air quality, and the durability of the building. Strategies and materials recommended by SEEDS are intended to be long term.

2. The SEEDS report is also designed to inform ongoing maintenance and capital improvement planning. SEEDS emphasizes that the most cost effective time to make energy upgrades is in conjunction with other necessary investments. Making envelope improvements and properly sizing heating equipment to the improved envelope optimizes investment and operational expenses.

3. Building by building highlights from the report are set out below:

Center Storage Building

- **Is it necessary to heat? Heating now requires 1,000+ gallons oil or \$2,500+^{1[1]} per year. No heat choice will save \$2,500+.**
- If heated, need to spend \$6,500+ to save 225 gallons oil or \$560+^{2[2]}.
- For deep energy savings, need to spend \$19,500 to save an additional 625 gallons oil or \$1,600+.
- Uses 760 KWH of electricity per year. Will go down significantly if no heating.

DPW Garage and Administration Building

1[1] Using \$2.50/gallon for heating oil for this approximation.

2[2] All savings figures are based on current year pricing; savings in future years will likely be greater as energy costs go up.

- Heating now requires 4,500+ gallons oil or \$11,250+ per year.
- Electricity used is 38,000+ KWH or \$6,000+^{3[3]} per year.
- **This is the worst of Jaffrey's buildings "in terms of overall working conditions including air quality, safety, comfort and space constraints."**
- **SEEDS recommends relocation or demolition/rebuilding on site.**
- Deep energy upgrade would cost \$300,000+ to save about \$10,000 per year.

Fire Station

- Heating requires 2300+ gallons oil or \$5,750+ per year.
- Electricity use is 35,320 KWH per year.
- **Solar hot water system will cost \$7,500+/- to save \$500+ in first year (savings in first year are for summer only and probably understate annual savings; savings will be more in later years as energy avoided costs go up).**
- Window and door adjustments will cost \$2,900+ for \$325+ savings per year.

Library

- Heating requires 4000+ gallons of oil or \$10,000+ per year.
- Electricity use is 53,000+ KWH or about \$9,000 per year.
- **Window, door, ceiling & thermostat interventions will cost \$40,000+/- for a \$3,800+/-^{4[4]} savings per year.**
- See Doug Waite heating system options.

Police Station

- Heating requires 1373 gallons of oil & kerosene.
- Electricity use is 46,056 KWH per year.
- Total annual energy cost is \$9,830.

3[3] Based on previous year pricing for electricity.

4[4] Not clear whether SEEDs estimated library savings includes KWH.

- Recommended envelope & lighting upgrades will cost about \$25,000 for about \$815 savings in oil costs plus additional, unquantified electric savings.
- **Building faces “slightly southwest. It has impressive solar collecting roof potential.”**

Recreation Office and Garage

- About 1000 gallons propane used for heating and hot water.
- Total annual energy cost about \$8,000 (including electricity).
- **Recommended envelope improvements will cost about \$33,000 for an annual savings of about 600-800 gallons of oil or \$1,700 - \$2,300 per year.**

Recreation Rink House

- About 700 gallons propane used for heating and cooking grill.
- **Recommended envelope improvements will cost about \$12,000 for an annual savings of about \$500 gallons propane or about \$1,200 per year.**

Recreation Contoocook Beach Concession Stand and Bath House

- Uses about 5700 KWH electricity at an annual cost of \$1,070.
- Used last year 118 gallons propane at a cost of \$295.
- Recommended equipment and usage changes for significant dollar and energy savings.

Transfer Station

- For heating, uses about 900 gallons propane annually or about \$2,000 last year.
- For heating and equipment, used 20,720 KWH last year for a cost of \$3,910.
- **It is “arguably the most inefficient building heating system in all of Jaffrey’s Municipal building inventory.”**
- **Read entire Recommendations section for the staff warming shed – potential of reducing by 97% the energy usage and costs by investing about \$5,000 in materials plus donated labor and expertise. Could include flat plate solar collector. “Preliminary analysis suggests that at a cost of \$10,000, the building could realize a simple payback of five years.”**

Waste Water Department – Administration Building

- For heating, uses a new oil burner at 970 gallons annually.

- “the components of the envelope that represent minimal conductive losses contribute the greatest to air leakage and convective losses.”
- **Recommended envelope improvements, thermostat, lighting & plumbing. changes will cost about \$18,755 for an estimated savings of about \$908/year.**

Waste Water Pump Stations & New Waste Water Facility

- Not within scope of report, but see infra-red imaging re heat loss and recommendations for including energy consultant in future construction projects.
- **need to monitor huge electricity use.**

Water Department – Office and Garage

- See report for recommended envelope improvements and energy savings.

Water Supply Wells & Pump Stations

- **“Remove both Patton electric heaters and keep one in the truck in the event a long service call is required” – for a savings of 7629 KWHs.”**