

## **SPHS Renovation & Addition Project Estimates of Energy Usage & Green Building Design Features**

The following data is based on Harriman's conservative opinion of probable cost. It is assumed that the energy savings systems outlined have been implemented using natural gas only. Utility costs for the new school are based on current prices. Cost for natural gas is for total building consumption and accounts for domestic water, kitchen equipment, and science labs.

### **Energy efficiencies / Green building design**

- Heat recovery units
- Natural gas fired condensing boilers
- Variable frequency drives
- Radiant floors
- Displacement ventilation
- Variable kitchen hood exhaust
- Low flow plumbing fixtures and electronic faucets
- Lighting and power controls
- Occupancy room sensors for lighting control and demand based ventilation
- CO<sub>2</sub> sensors
- Continuous daylight harvesting
- Sun shades
- Exterior wall design
- Window replacement
- Roof replacement

### **Specifics on fuel costs -- dual fuel system -- burns natural gas or oil**

- Dual fuel systems were researched with Greg Marles, Director of Building & Grounds and the decision was made to proceed with natural gas based on the following:
  - Dollar for dollar, natural gas is a more efficient fuel source.
  - Costs associated with providing an oil storage tank are removed from the project.
  - The school is able to negotiate a 5-year contract with the natural gas supplier compared to a one year contract with oil providers.

### **Fuel cost per sq ft**

- Total energy cost for the new school will be approximately \$1.26/sq-ft. This includes natural gas and electrical costs. The current school spends about \$1.69/sq-ft for oil and electricity.

### **Won't it be expensive to heat such a big building?**

- Please see attached chart.

### **More sq footage in building = more money spent on fuel – Not True**

- Refer to table for a summary of current and future comparisons. Oil data was available for the fiscal year 2009-2010 when the price of oil (\$1.89/gal) was not as

volatile as previous years. Electrical data was available for the fiscal year 2008-2009 and was used for this comparison.

**Explanation of ESCO / Alternate heat credits**

- ESCO is an acronym for energy service company. Essentially it's a consulting firm that provides energy analysis of buildings and design of energy efficient systems. I personally have not heard of the term alternate heat credits.

**Plan is to have solar hot water**

- Solar hot water heating will be implemented to pre-heat hot water to the school which will maximize the energy savings.

**LEED certifiable**

- LEED will be used a guideline when designing this project, and certification is the goal.

South Portland High School Opinion of Probable Energy Cost Comparison								
	Fiscal Year	Area sqft	Electrical Cost	Fuel Cost	<b>Total Cost</b>	Electrical Cost per sqft	Fuel Cost per sqft	<b>Total Cost per sqft</b>
Current School	2007-2008	208,528	197,687\$	213,223\$	<b>410,910\$</b>	0.95\$	1.02\$	<b>1.97\$</b>
	2008-2009	208,528	192,675\$	278,473\$	<b>471,148\$</b>	0.92\$	1.34\$	<b>2.26\$</b>
	2009-2010	208,528	191,710\$	183,614\$	<b>375,324\$</b>	0.92\$	0.88\$	<b>1.80\$</b>
	3 year average	210,000	194,024\$	225,103\$	<b>419,127\$</b>	0.92\$	1.07\$	<b>1.99\$</b>
Future School		307,192	202,747\$	184,315\$	<b>387,062\$</b>	0.66\$	0.60\$	<b>1.26\$</b>