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Energy Modeling Report

Job Name: Green Woodlands
Job #: 0551
Prepared by: Petersen Engineering
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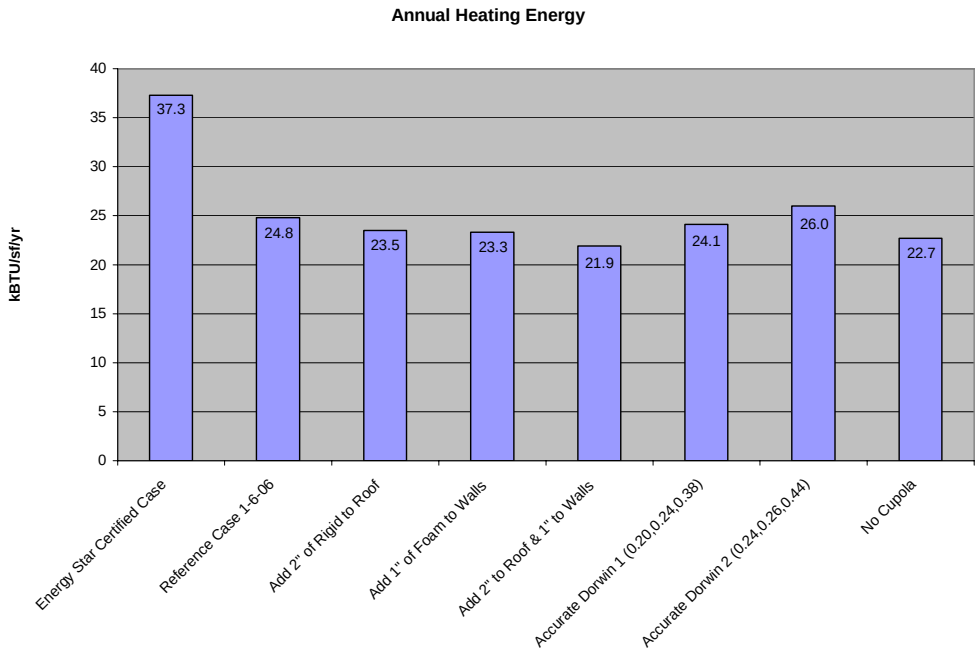
Summary
This report will summarize the results of the energy modeling performed by Petersen Engineering for the following requested items. The "Reference Case" energy model (see PE's report dated January 11,2006) was adjusted to determine the annual energy consumption implications of the following envelope modifications:

1) Add 2" of rigid foam insulation to the roof.
2) Add 1" of spray foam insulation to the walls.
3) Combine 1) and 2).
4) Use fiberglass window frames (Accurate Dorwin Windows).
5) Remove the cupola.

Discussion
In each iteration of the energy model the annual heating energy in thousands of BTU's per square foot per year were tabulated. The following graph shows the results.



Two types of Accurate Dorwin fiberglass windows were compared against the Loewen wood framed windows. The following table summarizes the window characteristics:

	U Coeff.	SHGC	VT	Frame	Panes
Loewen Glass (reference case)	0.21	0.24	0.38	wood	3
*Accurate Dorwin 1	0.20	0.24	0.38	fiberglass	3
*Accurate Dorwin 2	0.24	0.26	0.44	fiberglass	3

* Does not include increased performance for insulated sash.

Like in the reference case, the U Coefficients for the Accurate Dorwin windows were assumed to be whole window values, as opposed to center of glass values.

The following graph demonstrates, the percent reduction in annual heating energy associated with each modification. Adding 1" of spray foam insulation to the walls represents a 6 percent reduction in annual heating energy. Removing the cupola results in an 8.5% reduction. The Accurate Dorwin 2 option resulted in an increase in heating energy due to its higher U-coefficient. Note, however, that the Accurate Dorwin data does not include the increased thermal performance associated with insulation in sashes.