MKK
CONSULTING ENGINEERS, INC.

September 13, 2007

Dear LEED Reviewer:

This letter and the provided documentation are intended to satisfy the LEED submittal requirements for Energy and Atmosphere – Optimize Energy Performance credits 1.1 through 1.6.

We are using the ASHRAE Energy Cost Budget Method to calculate the energy cost saving of our design as compared to ASHRAE 90.1 1999 requirements. Our base model (Alternate 1 in the attached energy model information) is based on the envelope requirements set forth in chapter 5 of ASHRAE 90.1 and the system requirements set forth in chapter 6. Based on the LEED 2.1 Reference Guide, we have used the LEED EMP exception (based on a total cooling load of under 150 tons) and have modeled air-cooled condensers in the base case.

Budget Building Energy Model
As noted above, the budget building energy model is based on Package Roof Top HVAC units with air-cooled DX cooling and gas heat. The SEER rating of the equipment meets the requirements of chapter 6. The units are modeled with economizer and the operation schedules match the design case system (Alternate #4 in the attached energy model information).

Design Building Energy Model
The Design Building has the following energy saving features incorporated into the design documents and the energy model.

- Upgraded wall and roof insulation as compared to the 90.1 minimum requirements.
- Upgraded window insulation and shading coefficient as compared to the 90.1 minimum requirements.
- Day-lighting control through the use of continuous dimming based on measured light levels.
- High-efficiency ground source heat pump system.
- Air-to-air heat recovery for the dedicated ventilation air-handling units.
- Occupancy controls at the zone level to allow the user to disable the zone heat pump and open windows to utilize natural ventilation.
- Variable air volume ventilation air control to allow the system to reduce ventilation airflow to the classrooms when zones are utilizing natural ventilation.
- Demand control ventilation.
- Variable speed condenser water pumping.

The following load information will be provided in .pdf format:

1. Input data for the Budget Building and the Design Building.
2. Wall and Roof R-value calculations.
3. Summary of the unmet load hours for the Design Building.
4. Summary of the monthly equipment energy usage and associated utility costs. The data has the regulated and non-regulated loads separated as required by the LEED 2.1 reference guide, however the component utility costs (lighting, space heating, space cooling, etc.) are not separated as line items due to the structure of the utility rates. Both the demand and usage charge change based on a graduated scale. Breaking the loads down into individual components and applying a utility charge based on the graduated scale would results in a situation where the sum of the individual component utility costs do not match the calculated building utility costs.
5. Regulated energy saving calculation per LEED reference manual.

Additional information

The reviewer may notice the square footage for the base and design case do not match. An additional room was added to the design case to facilitate the energy model. In the base case the cafeteria was modeled using a packaged roof top unit serving the space. In the design case the cafeteria receives ventilation air from a ventilation air-handling unit and the space is conditioned by a zone heat pump. An additional room (called cafeteria ventilation) with no heating or cooling load, only a ventilation air requirement, was added and assigned to the Gym H&V unit to appropriately model this system arrangement.

Sincerely,

Kevin G. Pope