Green Team Meeting Minutes

January 3, 2008

1. Reports from the three standing committees

A. Energy

Jim Kotcon reported that the Energy Committee met on Dec. 17th. They have provided feedback regarding the proposed North Side Fire Station.

B. Recycling.

Bill Wonderlin reported that the Recycling Committee had not met and needed more members and a Chair. Chris Haddox passed out some brochures on recycling which will be useful to the Committee. The question was asked of how to properly dispose of fluorescent bulbs (which contain Mercury among other pollutants) after their long life. Al Stiller pointed out the Solid Waste Authority has a procedure for this. Jim Kotcon also thought that the Sierra Club had a method. The Committee will discuss this and bring a report to the next meeting.

(After the meeting the Committee was constituted as follows: Jim Kotcon, Al Stiller, John Hall, Linda Durfberger Bill Wonderlin and Larry Harris (Chair)

C. Green Architecture

This Committee has not yet met but the membership is established: Paul Brown, Will Reilly, Bill Wonderlin, Chris Haddox and Don Spencer. (They selected Paul Brown as Chair after our meeting.)

2. Discussion of recommendations regarding the proposed North Side Fire Station.

Paul Brown submitted and presented a report, which was discussed.

a. Use of a heat pump system in connection with an in-floor water circulation system was discussed. There are apparently such systems out there so this is a viable, although somewhat more expensive heating and cooling option. We also discussed supplementing the heat pump with a gas furnace, as well as a purely gas furnace system. The Committee was concerned about which system would have the lowest CO2 emissions. The group also discussed whether a geothermal heat pump system might be integrated into the construction of the facility, rather than using a dual fuel air-source heat pump/gas furnace system.

b. Dan Boroff pointed out the painful reality that the cost estimate for this Fire Hall has increased to nearly 2.8 million dollars. He mentioned cost cutting already done: the land was donated by WVU and the County Commission, and this saved $650,000. He estimated that we have 60 days to complete the building plans and get our suggestions to the architects. We need to make sure that 1) the building meets the basic needs for a functional fire station, and b) how would we finance any future add-ons that we feel are needed.

c. The Green Team decided that we need to modify the report and try to prioritize the suggestions for what we would like to accomplish. Paul Brown suggested using the water-handling cistern as a component of a geothermal heat pump system.

d. The Team agreed that we should set our goal to reach a Silver LEED Certification level for the Fire Station.

e. Don Spencer suggested that we include the idea that this building should be constructed in such a way that future energy and other improvements can be easily done.

f. Paul Brown will make changes to his report, based on these discussions. The amended report is attached.

3. Report from the City Manager

Dan Boroff discussed the review of proposals for the upcoming Energy Audit, which may be coming up in the next 30 to 60 days. The need for

representatives from the Green Team was discussed: Pat Kirby and Will Reilly agreed to serve that role.

4. Chris Haddox reported on the development of a primer for LEED that can be used locally for training and educational purposes. He suggested that he could present this to the Green Team first and perhaps the public might be included in this educational mission. The presentation would probably take 1-2 hours and we will begin to think about an evening time and venue for this. Everyone thought this to be a fine idea. Duane Nichols expressed a concern that this effort might be misconstrued by some as a separate agenda, so we should move forward with our advisory role here: recommend this route to the City.

Pat and Chris discussed green remodeling and directed the Team to take a look at the website for Portland, Oregon, and their Office of Sustainable Development. This site will be helpful in guiding local contractors and homeowners to what is available in the area of green remodeling.

5. New Business

Pat Kirby discussed the CARE grants for sustainable development.

Next Meeting: February 7 at 4-6 pm in the Public Safety Building (corner of Walnut and Spruce)

Meeting was adjourned at 5:40 pm

Report on North Side Fire Station design

Green building committee, January 4, 2007

The committee makes the following recommendations:

* Remind the architects of points they are to check on and inform us about. These include:

* Amount of siding
* Volume and costs of water for one year for city water vs. runoff water
* Annual consumption and costs of electricity for all the features we recommend.
* Costs of

* Geothermal heat pump (see below)
* On-demand hot water heaters
* 1 kW of PV panels

* We strongly recommend that the design include all of the following:

* On-demand hot water
* In-floor heating in the equipment bay
* Geothermal heat pump for climate control and heating the equipment bay floor
* 1 kW grid-tied PV panels with the potential to add on enough for zero net consumption from the grid in the future
* The proposed water runoff management and water conservation plan
* Sufficient LEED credits for silver or gold certification

* Emphasize energy efficiency more in this model building.

* The committee recognizes the importance of water management for a fire station and we appreciate the innovative approach.
* However, we consider the energy issue be at least as important, for the following reasons:

* The building is to serve as a model to the community, and energy issues are at least as important to the community as water management concerns peculiar to fire stations.
* The energy features and substantial energy savings would garner more LEED points, with potential for achieving a higher LEED classification.

* For further details, see Proposal to Optimize Energy with a Heat Pump and Some On-Site Renewable Energy, below.

* There should be a final review by the committee of the final design.
* Investigate the possibility of donations to implement specific components of the current design or add-ons, such as

* siding materials
* on-demand hot water
* heat pump
* photovoltaics

* Some additional funding may be available through grants, philanthropy, or as donations of materials from suppliers as a way of gaining visibility for their products.

* It might be possible to reduce significantly the $40K for a commissioning agent.

* It might also be possible to cut construction costs using local contractors and suppliers, which is also advisable to minimize transportation and hence CO2 emissions.

* Part or all of the cost increase could come from the recently announced $740 thousand budget savings.

Proposal to Optimize Energy with a Heat Pump and Some On-Site Renewable Energy

In the LEED for New Construction checklist, the Energy and Atmosphere category at present earns only 4 out of a possible 17 points. We propose a relatively inexpensive approach which could add about 10 LEED points and drastically improve performance. Moving our certification to the Gold category could greatly enhance our leadership role as a model green firehouse – only one or two others have such a high level.

This proposal has two parts: the addition of a high efficiency heat pump, and the initial addition of a small number of photovoltaic (PV) solar panels.

* A heat pump could result in very substantial savings to the heat energy consumption and associated average cost.

* For example, consider Vancouver, Canada (which has nearly identical heating degree days as Morgantown at about 5300 degree days Fahrenheit):

* Heating costs are reduced on average from about $600 to $180, which represents a 70% cost reduction in heating costs.
* Since the proposed firehouse size is about 3-4 times that of an average house, the savings would be proportionately greater.
* Since heating costs are typically about 50% of the total energy cost, this results in an approximate 35 % reduction in overall energy costs.

* When coupled with the already estimated reduction of at least 14% for the current 2 LEED points in Credit 1 of the Energy section, we could obtain an overall reduction of about 49%, which would qualify for the full

10 points in this category.

* This alone would raise our overall LEED points from 30 to 38, nearly putting us into the Gold category.

* The estimated payback period for this added heat pump is about 5 years.
* It is conceivable that an underground cistern (needed for storage of filtered runoff water) of appropriate design could serve as a geothermal heat exchanger, for a particularly innovative combined-use solution that would gain additional LEED points.
* The data that this estimate is based on can be found on pages 44-45 of the booklet found in the enclosed HeatPump_Booklet.pdf, on page 26 of the pdf. The cost of such an add-on system is estimated at about $10-15K for the heat needs of the firehouse.

* We can also further improve the energy performance by adding a limited number of PV solar panels to the south roof of the building.

* For example, if we add enough solar panels to meet 12.5% renewable energy, we have calculated that it would take about $25K for the solar installation, with $5-$15K for meeting the 2.5% - 7.5% levels.

* Such additions would provide an additional 1-3 LEED points, putting us into the Gold Certification level.
* Although the payback period for solar panels is much longer than for the heat pump (20 - 30 years), they still would yield some savings in energy costs each year.
* The addition of a heat pump first would greatly reduce the needed number of solar panels, and hence costs, in future solar installations.

* The proposed PVs would provide a strong statement of our commitment to add additional renewable energy in the future as financing permits.