

Memorandum



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To: Liz Davey
From: Willa Small Kuh
Copy: Nat Grier, Rob McKenna, Amy Nagengast, Bill Talbert, Mike Walters
Date: May 29, 2014
Re: Ideation Meeting Notes – Energy Supply Working Group

Following are our meeting notes from the April 28 meeting with the Energy Supply Working Group. Please feel welcome to circulate these to working group members.

Working group members present: Jim Alty, Andrew Grin, Sylvester Johnson, Ricky Kramer, Brian Mitchell, Eric Smith, Ico Sulejmanagic, and Wendell Wendling.

After introductions, the consulting team offered their objective of engaging the assembled in idea sharing with an initial indication of level of interest about energy supply activities that the University might undertake to reduce campus GHG emissions in line with university goals.

The working group's conversation offered the following:

- There is interest in on-campus solar energy. Some buildings (including the Hertz Center adjacent to the stadium) are solar ready. Many third party vendors approach the University about installing solar on the campus roofs.
- Solar thermal can be used for reheat.
- There is an interest in having this process establish the optimum use of the university's combined heat and power system (Uptown Campus).
- There is interest in heat recovery chillers.
- The university needs to understand its potential need/benefit in upgrading building level chillers.
- There is interest in alternative insulation to increase the efficiency of the central chilled water system.
- Is thermal water storage a technique that should be considered, even though the local utility has no time-of-use pricing?
- Building level chilled water upgrades – is this appealing with 95+% of Uptown Campus buildings being centrally connected?
- There is interest in plate and frame heat exchangers.
- There is interest in recovery AHU condensate for reuse at the building where it is generated (assumed to be more cost effective than transmitting the AHU condensate back to the physical plant). What should the Uptown campus do relative to heat recovery? Route it back to the central plant or reuse within the buildings where it is captured? There is a big condensate reuse potential at the ESB building.
- There is interest in river water cooling, only for the riverfront campus. Permitting challenges may be formidable.
- Geothermal is of interest and has not been seriously studied for the university campuses. There is some geothermal technology use in the area, but the university is concerned that the high water table and need to balance it with provision of chilled water will make it problematic. The

group believes that the Uptown Campus is probably the better of the two campuses as candidate for this technology.

- There is interest in optimization through changing to variable flow systems in the plant and buildings.
- There is interest in university composting – discussion acknowledged that the university doesn't likely have the scale or means to make this a priority.
- What can be done to improve the efficiency of the Uptown Campus thermal distribution (same need on Downtown campus?) The University is trying a new double layered distribution pipe to improve distribution and mitigate current system's impact on the landscape.
- The University must address the problem of heating buildings in the summer to counter overcooling and the reverse in the winter months.
- It is important to install lighting control sensors and motion detectors.
- Should the university shift from steam to hot water systems? The university is prepared to study the issue for the Uptown Campus and is doing so by first asking about the value of replacing the existing steam system with an updated one.
- The absorption chiller is out of service and requires a major repair to be operational.
- There is university interest in a steam turbine generator.
- A topic for consideration is thermal energy storage.
- The University design process needs to put greater, early emphasis on opportunity for solar installations that will optimize their cost. New construction installation is more cost effective than with retrofits.
- The University design process typically challenges the return on investment of alternative energy elements, but never does so for decorative elements or the aesthetic selection of high quality/high price materials. The process and/or guidelines need to be changed so that the threshold for alternative energy elements is not so stringent. Otherwise, they stand to be value engineered out of the projects (as has been the case in the recent past).
- LED lighting should be installed more broadly on the University campuses.
- University academics with energy expertise have a range of opinions about which supply options the University should install.
- University buildings should be reflective of building design innovation as the university itself does technologically advanced research.
- The university fleet should be converted to CNG – to reduce GHG emissions and to promote visibility of the University's climate commitment.
- Has the university considered or tested its ability to raise funds for renewable energy through its development office?
- What should the university do to pro-actively engage the development community in order to solicit their interest in campus energy system investments on terms that are more favorable than have been proposed to date?
- The Johnson Controls contract has another 5-6 years remaining and its focus is on the plants, not the buildings.