SWATeam Recommendation

Name of SWATeam: Energy Conservation and Building Standards

SWATeam Chair: Marian Huhman Date Submitted to iSEE: 5/17/2016

Specific Actions/Policy Recommended (a few sentences): Funding of Energy Conservation Efforts

We recommend continuing to fund critical projects that are key to energy conservation efforts at UIUC. Given the budgetary constraints of the University of Illinois, the team has developed a prioritized list to guide decision makers about funding priorities. Please see noted references for additional rationale for our recommendations.

Priority 1 (Top—Most important): **RESTORE** funding for energy conservation work to FY 15 levels **(total of ~$2M)** to allow the recommission teams to continue their work. Specifically:

- Restore $610K in Systems & Controls / Energy Conservation FY 16 cuts (includes $250K Quick Payback.)
- Provide funding to maintain the $1.15M needed for the 3 existing Recommissioning teams.
- Protect this initiative from FY 17 budget cuts (including another $ 250K proposed cut in Quick Payback.)

Priority 2: **INCREASE** the Recommissioning and Preventive Maintenance (PM) teams. **IMPLEMENT** systematic upgrades of building control systems.

- Increase Recommissioning teams from 3 to 4 for FY2017 (increase of $ 350K for FY 17).
- Provide funding for systematic building control upgrades at $1M/year to allow further conservation.

Priority 3: **MAINTAIN** the State Utilities Budget (currently ~$65M/year). This will allow campus to reinvest energy savings in more conservation work while maintaining the ability to cover possible future fuel and power price increases. Future Energy Performance Contracts with ESCOs could be supported by this reinvestment, as well as providing funding support for debt service payments on borrows. We anticipate that another ~$100M will need to be spent on future ESCO/deferred maintenance projects.

Priority 4: **COORDINATE** with the Campus Master Plan to retire campus space and reduce overall campus square footage. New capital projects must be optimized for energy conservation. Coordinate campus deferred maintenance estimated at (~$750M) with deferred maintenance projects, campus energy conservation efforts, and campus master plan efforts.

Rationale for Recommendation (a few sentences):

Priority 1: Restoring funding and allowing recommission teams to continue their work is critical because if we neglect systems and don't provide sufficient maintenance funding, our realized savings **will *regress* and we will spend *more*.**

Energy efficiency upgrades have saved the University millions of dollars in utility bills. Comparing FY07 to FY15 the campus reduced energy costs by $8M per year. Through conservation and retro-commissioning efforts, the university has successfully reduced the energy consumption per square footage from 314 to 226 kBtu/SqFt/year between 2007 and 2015. A number of projects have contributed to these savings including campus projects, ESCO's, lighting retrofits and retro-commissioning work. Data show that if improvements, such as is needed with HVAC systems, are not maintained, costs begin to increase at about 5 years after retro-commissioning was done. When properly maintained, these initiatives preserve energy cost savings that are already in place and provide stability to keep costs from increasing in the future. The recommissioning effort needs replacement funding lost from allocations from the State Utility Budget's energy cost savings and lost DCEO energy conservation grant opportunities. The composite crew's makeup

of highly skilled service mechanics with time invested in training and experience will be difficult to restore if there is any lapse in continuing this effort at its existing level.

Priority 2: Increasing the Recommission and PM teams is essential to helping to strengthen conservation efforts in building systems. With the current Recommission and PM teams it will take 10 years to get through assigned buildings, far longer than the established 5 years required to maintain the systems and cost savings. Growing the PM teams will increase square footage coverage and decrease the number of years buildings go without preventive maintenance. Unintended consequences could include:

- Decreases in efficiency of HVAC systems, which leads to higher, unpredictable energy usage;
- Unmanageable deferred maintenance backlog;
- Planned work gets deferred or cancelled, reducing productivity;
- Uncomfortable temperature and humidity conditions; impacting conferences, meetings, etc.

Priority 3 & 4: Maintaining the State Utilities Budget and coordinating with the Campus Master Plan will contribute to furthering conservation efforts. Energy consumption at the University of Illinois is already down ~30% since FY 07. We have made great gains in this area. Cutting this from the budget at the same rate as other items on campus and inhibiting future energy conservation, cost reduction and iCAP goals does not seem like a logical step in line with the long term vision of the University. It will be difficult to recover these gains in the future if we do not adequately fund them now.

Connection to iCAP Goals (a few sentences):

The University of Illinois signed the American College and University President's Climate Commitment in 2008 along with many of the universities in the Big Ten. The Commitment has now garnered over 600 signatories. The iCAP highlights energy conservation as a main category and this recommendation looks to address the following iCAP objectives:

Energy Conservation and Building Standards objectives:

***"Strengthen** centralized conservation efforts focusing on building systems to achieve a 30% reduction in total campus building energy use by FY20."*

By not meeting the priorities set out in this recommendation, the University will be ***weakening*** campus conservation efforts despite these efforts contributing to a reduction of ~30% in energy consumption. F&S base budget reduction has resulted in suspension of most work related to updating the facilities standards from the 2010 version. Energy efficient design and construction requirements have reverted to the current ASHRAE 90.1 2013 mandates and the Illinois Green Buildings Act.

"Maintain or reduce campus gross square footage."
"Identify the highest achievable energy standards for new buildings and renovations"

Coordinating efforts for campus space with the Campus Master Plan will reduce gross square footage and help retire other spaces. Optimizing new buildings for energy conservation will help reduce frequency of deferred maintenance and the workload of the PM teams.

Additionally, a financial objective of the iCAP states that:
"By the end of FY16, increase the size of the Revolving Loan Fund (RLF) to a level commensurate with our aspirational peers, expand the reach of the Fund, and increase the use of Energy Performance Contracting."
The RLF cannot be increased if reductions are made to the State Utilities Budget. At the very least, maintenance of this budget is essential.

Perceived Challenges (a few sentences):

Energy conservation initiatives are seen as a way to decrease costs given the discretionary nature of

conservation programs and the University's limited discretionary budget at this time. The challenge will be allocating sufficient funding during an austere time to support a critical, but not necessarily an immediate, cost savings set of programs.

Suggested unit/department to address implementation: Office of the Provost
Anticipated level of budget and/or policy impact (low, medium, high): High (continued funding and development of campus conservation programs and integration with Campus Master Plan).

Individual comments are required from each SWATeam member (can be brief, if member fully agrees):

Team Member Name	Team Member's Comments
Marian Huhman	Fully supportive of this recommendation. The facts that stunned me were how much we go backwards (lose ground) if we don't continue the recommissioning work. (Priority 1 & 2.)
Fred Hahn	OK as is.
Karl Helmink	This recommendation follows up on last year's recommendation. We need to press ahead and commit funding to these important items, before we regress. Energy costs can still be avoided if strategic investments are made.
Dhara Patel	I support this recommendation in its emphasis that maintaining investments in energy savings is crucial to maintaining energy savings.
Alex Dzurick	Looks great and is a very important set of recommendation to move forward.

Comments from Consultation Group (if any; these can be anonymous): We did not convene a consultation group, but we sought counsel from members of Facilities & Services with in-depth knowledge of campus energy needs.

Explanation and Background (can be supplied in an attachment):

The ECBS SWATeam acknowledges the need for spending cuts given the precarious state budget situation not only for the short-term but also for continuing university operations in the future. The recommendation put forward emphasizes the importance of a comprehensive energy plan that includes fully funded energy conservation efforts that align with the commitments outlined in the iCAP. Compared to other Big Ten schools, the University's maintenance is underfunded and space use is not utilized as well as it should be. However, campus energy usage is similar to other Big Ten schools, but has shown dramatic improvement since FY 07.

Even in these austere times, spending money to conserve energy means saving money in the long run. Other sources of funding are potentially available including Stewarding Excellence funds which could be used for these initiatives.

References: Kent Reifsteck's white paper (Utilities & Energy Services Budget) from March 2016.