**ECBS SWATeam Meeting 03**

11.01.18

TBH 115

4pm-5pm

**Attendees:** Bill Rose (chair), Karl Helmink, Yun Kyu Yi, Dave Boehm, Taylor Holin (clerk), Paul Foote, Tom Keller (guest)

1. Approval of last meeting’s minutes
2. Announcements
   1. Jonah Messinger moving to the eGen SWATeam
   2. New student coming to replace him should be at the next meeting
3. Introduction of Tom Keller
   1. LEED Committee member
   2. Writes building standards for LEED and F&S
   3. Reviews building plans
4. Discussed building codes, standards, and regulations for energy conservation (Dave Boehm)
   1. 2013 is the year used as the energy baseline for new construction in the UIUC Facility Standards
      1. Except for low-rise residential buildings
      2. Require the 25% improvement
   2. iCAP Objective #2
      1. Accomplished in October 2017
      2. To do: identify the highest achievable energy standards for new buildings
   3. Issues associated with project delivery and code requirements for UIUC
      1. 95-98% range of getting everything done correctly
   4. For new buildings or major renovations, do we get what is required?
      1. Yes - in all cases we do.
      2. Not perfect, but all fundamental elements are there
      3. Consultants meet codes and standards, provide cost analyses, life-cycle cost analyses of various options, pick the reasonable one
         1. Carry out all four categories of the life-cycle cost analysis
         2. Methods aren’t standardized
   5. General opinion of Net Zero Buildings?
      1. Great idea, funding is a big challenge
      2. Net zero is a stretch for those who haven’t done it yet
      3. Need interventions on buildings to become a net zero university by 2050
         1. We need them to accomplish this goal
      4. Code Standards and Regulation Codes found on F&S page
         1. Energy Conservation Section
   6. If requirements change what happens?
      1. Design teams usually take some time to adapt
      2. Design review teams help them adapt to new requirements
   7. Building up for discussion: BIF
      1. Weather conditions (wind, rain, snow, etc.) affect how the building comes together
      2. A lot of effects that are only seen and experienced by people in the building every day throughout the year
      3. Air leakage problem
         1. Air tightness is a key to energy savings
5. Preliminary where-we-stand on consumption and conservation (Bill Rose)
   1. iCAP Objective #3
   2. Information on total energy use on campus has 2 sources
      1. Both sources have different stocks of buildings
      2. Which ones does this team count? Ignore?
      3. Need to resolve this issue to have a solid list to get data on
   3. Utilities Master Plan recommendations
      1. Expand campus energy reduction
      2. Energy conservation
      3. Need to investigate additional renewable power purchase agreements or purchasing renewable energy credits
   4. Questions the Master Plan raised:
      1. What % renewables by 2050? Ask other SWATeam (eGen)
      2. Will 2050 energy consumption behavior be like now? (Andrea Martinez)
      3. Suppose every AHU unit was running perfectly…
         1. 20%-50% reduction from current use? Suppose we had all the money in the world to bring buildings up to code: would it be enough?
      4. Shouldn’t new buildings be “net zero” buildings?
      5. Suppose we could buy compliance with 0 Greenhouse Gas target, how much money would it take?
         1. Carbon tax - what rate? How should the money be used? How do we know how the money should be used?
         2. Should be in the University’s budget and University Master Plan
6. Petascale, total and electrical discussion
   1. $11.6M total utility billing since 2016
   2. Petascale paid $32M per year until 2016
   3. To be decommissioned in 2019?
   4. iCAP should address the Petascale burden - what would happen if the buildings were to go offline?
7. Chair’s Report
   1. Team needs more perspective on ability to deliver the recommendations and changes
   2. ESCO’s - more savings here? Maximizing savings (Karl Helmink)
      1. Potential meeting with Ximing and working group on this topic
      2. Promotion of these would be beneficial in getting the most bang for the buck
   3. Looking at 2020 and further
      1. Constant volume reheats, more modernized buildings, occupancy sensors in rooms, automating ventilation systems, etc…
   4. Temple Hoyne Buell Hall
      1. Getting energy savings here, SEDAC
      2. Proposing to change VAV system, no loop, occupant sensors, converting to DDC and seeing what savings can come of it
      3. Loan funds - doing a couple rooms and comparing results from before and after changes
      4. Next steps here:
         1. Students coming up with ideas for changes?
            1. Issue: funding
      5. Noise pollution problem
      6. Updating building
   5. In 2050, are we going to have the steam system running?
      1. Master Plan says it should be kept, but is the heat generated by this renewable source enough?
      2. Heat exchangers cannot develop high enough temperatures to generate steam.
      3. Needs more discussion
   6. Placement of small electric driven energy chillers in various locations across campus
      1. Conversion to hot water
      2. Hard to justify
8. Discussed team to-do:
   1. Start thinking about the new iCAP
      1. Review old one, see what can and should be changed
   2. Set milestones and steps to reach milestones
   3. Think about how to tackle financial issues discussed
      1. What amount is needed
      2. Sources for funds
      3. How do we get money into the programs in order to reach the iCAP goals
      4. How do we incorporate the university and administration in adaptations and funding
   4. Find a uniform number to use for total square footage in iCAP goals and data
   5. Finding a solid baseline for list of buildings that we use for data and improvements
      1. Proto-recommendation?
9. Energy Projects coming down the line
   1. 5 lab facilities EVC
   2. New building
      1. Maintaining zero net growth
10. Discussion of maintenance ideas (Karl Helmink)
    1. Getting the most energy efficiency for every dollar spent
    2. Deferred maintenance
    3. Replacing equipment instead of fixing?
    4. Closing open systems
11. Set next meeting date: November 29th
12. Adjournment