**ECBS SWATeam Meeting**

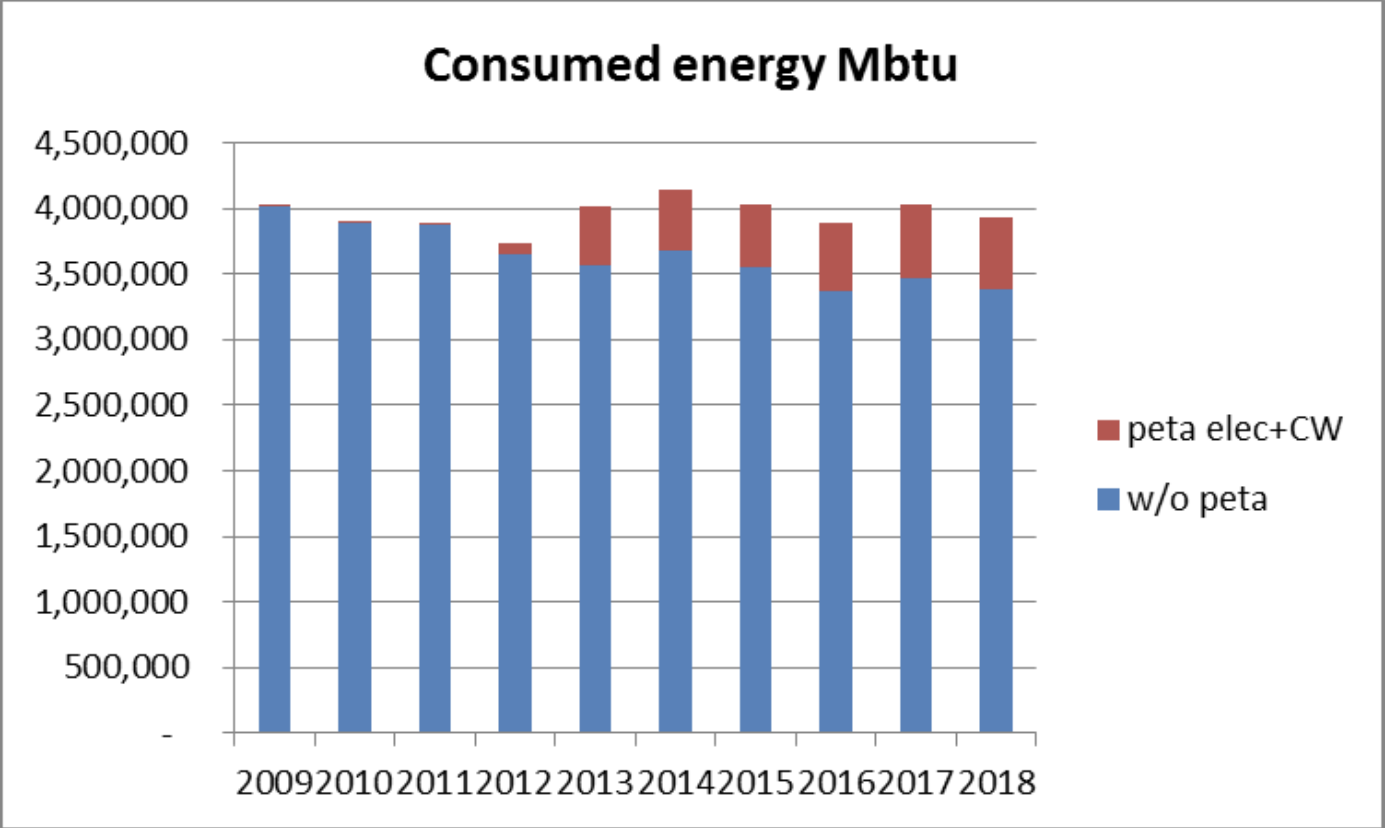
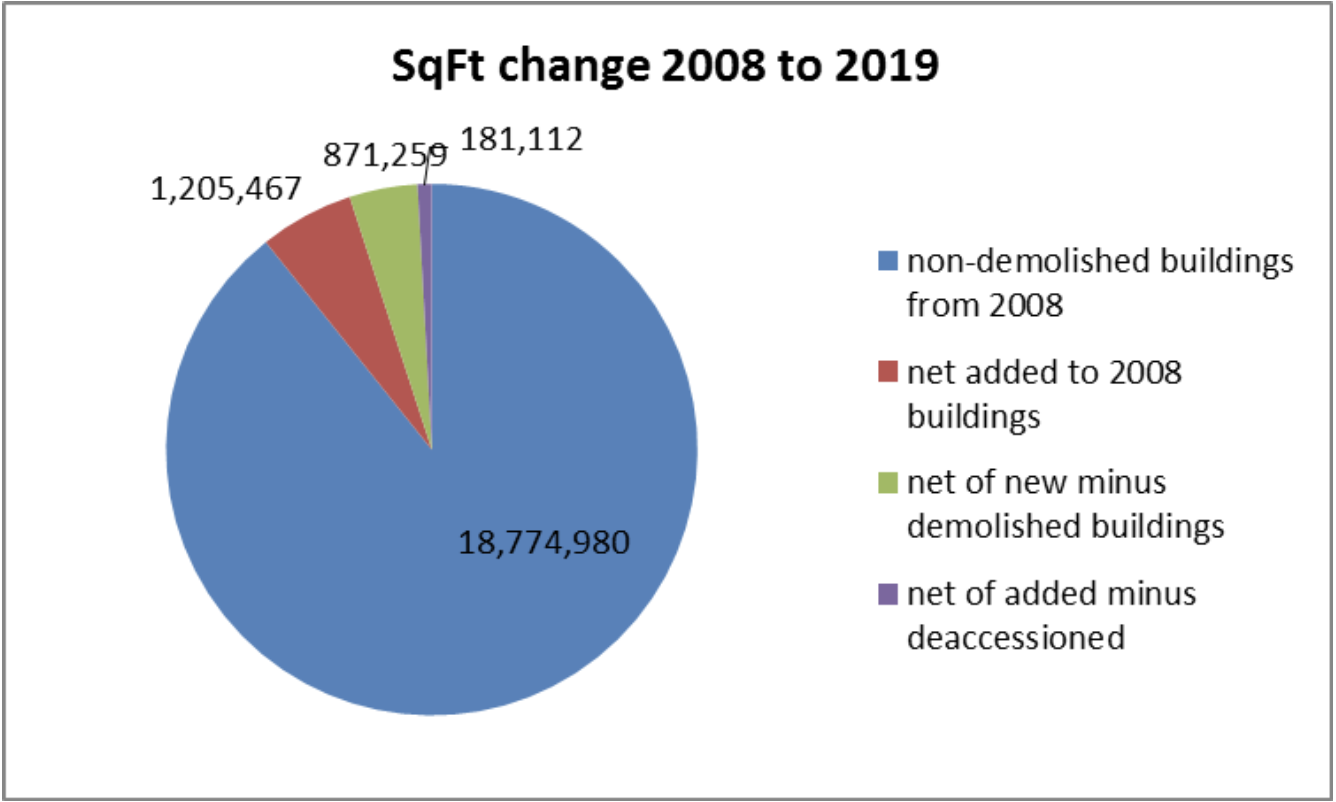
March 8th, 2019

TBH 115

3pm - 4pm

**Attendees:** Bill Rose (chair), Karl Helmink, Paul Foote, Dave Boehm, Taylor Holin (clerk)

1. Approval of last meeting’s minutes
2. Membership Discussion
   1. Currently one student vacancy, two vacancies by the end of the spring semester
      1. **ACTION ITEM**: Email Ximing Cai about student recommendations
   2. Consulting members, copied onto the emails:
      1. Tom Keller
      2. Paul Foote
3. Progress on ESCO recommendation
   1. Reworking previous recommendation to re-submit to Working Group
   2. Budgetary
   3. **ACTION ITEMS:**
      1. Bill Rose look over set of questions, meet and begin discussion
      2. Have Morgan White at next meeting to help with this process
4. Square footage and energy usage analysis (Bill Rose)
   1. Link to spreadsheet: <https://docs.google.com/spreadsheets/d/1X1mX5FGKOsaRewGEtyNonC_KCpvgn88vjBBERoRHrL4/edit?usp=sharing>
      1. Representative for the set of campus buildings defined as:
         1. University District
         2. Minus production facilities 0120, 0232, 0276, 0352, 0401, and
         3. Including Petascale using meter 1 billing for CW
      2. Value used: 1.1 to convert lb of steam to kBtu
   2. Definition of UIUC campus:
      1. UIUC-owned buildings
      2. Within the University District
         1. North of Windsor
      3. Not counting stand-alone chilled water production facilities
         1. Abbott, North Campus CP, Library AC, Vet Med AC, Animal Science AC
      4. Includes Petascale
         1. Uses metered chilled water, not Energy Billing System chilled water
   3. Results:
      1. 11% increase in square footage from 2008 to 2019
      2. Energy consumption trends upwards (slightly), 2009 to 2018
      3. Petascale represents 12.5% of the total budget
      4. Without Petascale, the energy consumption trend would hit 50% of the 2009 consumption in year 2037 (thanks to ESCO, retrocommissioning, etc.)
         1. By 2050, we would be below 30% of 2009 consumption
      5. EUI shows a 10.5% decline from 2009 to 2018. All of this decline is attributable to increased square footage, none to conservation
         1. Jevons effect (Andrea Martinez)



* 1. Notes:
     1. As an occupant, you can only affect net square footage
     2. How should we measure?
        1. Should be all encompassing
     3. You don’t necessarily decrease consumption with increased efficiency
     4. Blue (represented on the consumed energy Mbtu graph)- would hit 50% by 2037
     5. 2735 is when Red (represented on the consumed energy Mbtu graph) would hit 50%
     6. Petascale came online in 2011/2012 -- baseline started before its’ existence, hard to compare savings after the fact
     7. Graph should use net number
     8. Possibility of comparing Bill’s numbers to another analysis?
     9. Findings parallel everything that Paul Foote has found through Eco-Olympics
     10. Occupant awareness is critical

1. 10-building study (Sarthak Prasad, Bill Rose)
   1. Looking at how buildings are following energy codes and standards
   2. Building List (initial):
      1. Lincoln Hall
      2. BIF
      3. ECE
      4. Wassaja Hall
      5. Everitt
      6. Yeh Center
      7. BNAACC
      8. Football Performance Center
      9. Alice Campbell Alumni Center
      10. Addition to the Memorial Stadium
   3. Review process
      1. Submittals
      2. Energy Cost Budget (ECB - how much it would cost if the building were built to code)
         1. Submitted?
         2. Accurate, timely
         3. Create if necessary
      3. “25% better” than code
         1. Submitted?
         2. How has it been done?
      4. Comparison to actual
         1. What is modeled and what it actually is
      5. Calibrated model
         1. The infiltration tweak - changing the model so that it agrees with what the energy actually is (Tom Keller)
         2. Air infiltration in building is variable tweaked
      6. Narrative, Every building’s different
      7. Reviewing lessons learned
   4. Ten building matrix
      1. Aim: to learn lessons on improving project delivery for new and major-retrofit buildings
      2. Proposed edits/changes (Karl Helmink):
         1. Delete the following buildings:
            1. Addition to Memorial Stadium (lack of independent metering)
            2. BNAACC (metering data currently unavailable)
            3. Yeh Center at Newmark (lack of independent metering)
            4. Football Performance Center (may be okay, but current metering data unavailable)
         2. Add the following buildings:
            1. MRL (ESCO project)
            2. Vet Med - Basic Sciences (ESCO project)
            3. Natural History Building (Building just out of warranty)
   5. **ACTION ITEMS:**
      1. Communicate and discuss any changes with Sarthak Prasad on project (Bill Rose)
      2. Give any further ideas of any buildings to add/delete (keep to number of buildings at 10)
         1. Thoughts on LEED buildings?
2. Discussion on what impacts building energy use
   * 1. Conduction across the building envelope
     2. Glazing: amount, quality, distribution
     3. Equipment efficiency
     4. Left out: envelope infiltration (airtightness)
3. Discussion of an Infiltration Project
   1. Kickoff: workshop with hands-on experts
      1. What is the scale of infiltration impact?
   2. Diagnostics
      1. Experience, team, equipment, access
   3. Intervention: new skills, not new programs
      1. New buildings
      2. Major retrofits
      3. Retrocommissioning
      4. Recommissioning
      5. Occupant behavior
   4. Measure the impact
4. Discussion on what to include in the 2020 iCAP
   1. Earmarking campus budget for meeting iCAP goals
      1. Estimating monetary needs
   2. Conflict between iCAP goals and Utilities Master Plan
      1. Master Plan acknowledges space growth possibilities along with iCAP objectives
      2. Master Plan predicated on flatline energy use from now until 2020 on the best scenario
      3. Needs to be in budget in order to happen
   3. Steam, co-gen, and renewables
      1. Nuclear? Included in list of renewables under the iCAP
         1. Problem: Can’t sell nuclear
      2. Renewables are irregular, not as dependable as other energy sources
         1. Problem: depends on future battery storage capabilities
      3. Do we want the dependability and regularity like we have now? Choice will come between renewables and nuclear
   4. Occupant behavior
      1. Other programs (freezer challenge, ILO, …)
   5. Current focus of discussion: on the message, not dollar amounts yet (this is for future planning and discussions)
5. **ACTION ITEMS**:
   1. Email Ximing Cai about student recommendations (Taylor Holin, Bill Rose)
   2. Bill Rose look over set of questions regarding recommendation resubmittal, meet and begin discussion
   3. Communicate and discuss any changes with Sarthak Prasad on 10 building project (Bill Rose)
   4. Give any further ideas of any buildings to add/delete to the 10 building project list (ALL)
   5. Regarding future meetings::
      1. Meeting(s) with Kent Reifsteck and Mike
      2. Meeting with Executive Director of F&S, Mohamed Attalla
      3. Having Morgan White at next ECBS SWATeam Meeting
   6. Review and add input to Chapter Evaluation Sheet (ALL)
      1. <https://docs.google.com/document/d/1YE5T1y9nj_2kXuAzGRFdBz1qEaa3e5mpCNCpFrqlVMs/edit?usp=sharing>
6. Next meeting:
   1. TBD - after spring break
   2. If not the next meeting, one of them to take place at the Indoor Climate and Research Facility, Bill’s office
      1. Shuttle service will be provided (Bill Rose)
   3. Poll to be sent out
7. Adjournment