Sustainability Subcouncil

Attendees: Madhu Khanna, Mike Larson, Elizabeth Murphy, Lowa Mwilambwe, Jennifer Fraterrigo, Jeff Angiel, Miriam Keep, Susan Martinis, Morgan White, Ellen Cha, Rob Roman, Tony Spurlock, Brian Bundren, Jim Hintz

Agenda:

1. Carbon neutral energy planning
    a. Question of how to reach ambitious goal of carbon neutrality by 2050. Have considered bringing in an external consultant. F&S conducted a preliminary analysis of available options. Need to consider next steps and implications for campus planning.
    b. Carbon neutrality means net zero greenhouse gas emissions.
    c. Not enough analysis to provide specific recommendations to reach this goal, but provides an overview of options. Several options align with major research areas on campus.
    d. Analysis shows we still have low hanging fruit to grab in terms of energy conservation
    e. Analysis of initial cost and expected CO2 reduction. Options analyzed based on upfront operating costs. There are also significant annual operating costs. Will need to analyze lifecycle cost of operation.
    f. High-level recommendations:
        i. Focus on retro-commissioning and recommissioning, which is currently most effective per dollar spent. Is also the only option that will address deferred maintenance backlog. Is also important to maintain the progress that we have made.
        ii. Install new gas turbine that will be more efficient and hydrogen capable and equipped for carbon capture and sequestration
        iii. Construct Solar Farm 3.0
        iv. Build a reserve to finance large carbon neutral energy project in the next 10-15 years. Costs will come down but will still come with major costs.
    g. Challenges:
        i. Need for funding
        ii. New buildings that are not carbon-neutral
            1. For the first time, energy use intensity exceeded iCAP goal – need to look at why this is.
    h. Opportunities:
        i. Donor funding
        ii. Building campus support for sustainability features so they are not removed from plans due to cost
        iii. Explore opportunities for external funding
    i. Questions and feedback:
        i. Susan: Does target neutrality date align with state of IL?
            1. We believe the goal for the state is also 2050.
        ii. Jeff: Why isn't there larger CO2 reduction?

1. A microreactor is smaller in terms of megawatts – do not benefit from economy of scale. Also, because it will be permitted as a research reactor, the amount of energy that can be produced will be limited.

iii. Madhu: How were solar costs calculated? Numbers seem high. Are we not accounting for all benefits? Does this compute with analysis related to Solar Farm 3?
   1. Mike: This is for large-scale solar farm with batteries – about 300 acres. Battery storage is about a third of the cost.
   2. Tony: Solar Farm 3 analysis included Power Purchase Agreement (PPA).
   3. Mike: We did not account for PPA because we assumed we are trying to reduce purchased analysis as much as possible, not sell excess solar credits.
   4. Mike: Important to consider what we mean by goal of carbon neutrality of the university when we consider selling back solar energy.
   5. Cost of electricity generated from solar farms varies based on time of day. On average, solar and purchased power are about the same cost. But when we build solar on campus "behind the meter" we don't pay for transportation, which also creates costs.

iv. Morgan: Next step is to identify which of these options require deeper analysis

v. Madhu: important to consider how the information is presented. Right now the costs look too high to make any sense.
   1. Mike: Bottom line is that the goal of carbon neutrality costs money – at least hundreds of million of dollars. Powers that be need to understand this.

vi. Jeff: Solar Farm would only reduce emissions 13% - what about the rest?
   1. Solar power would eliminate our purchased electricity. Still need to find alternative fuel source for power plant.

vii. Brian how scalable is retrocommissioning? How many projects can you manage at once?
   1. Rob: We can ramp that up depending on funding, using in-house labor and contractors.
   2. Brian: Important to consider costs avoided as well – projects eventually pay for themselves.

viii. Madhu: for information to be usable, we need step by step process.

ix. Susan: need to address this from beginning of design process and make sure sustainability is considered early on. Can we build sustainability into the process for capital projects? Can we say a certain % needs to go to sustainability?
   1. Jeff: would prefer more flexibility than % target, but could have other sustainability requirements.
   2. Madhu: mindset that goal is always lowest cost. This is the mindset we need to change.

x. Susan: Our office has a lot of contact with the governor's office, we can be influencers.

j. Next steps:
   i. Madhu would like to set up some meetings to learn more about what other schools are doing.

2. Plastic waste reduction
   a. Tabled

3. Carbon credit sales
    a. Modification to MOU approved.