# EGen SWATeam

# Meeting Minutes

## October 13, 2017

## 4:00-5:00 pm Location NSRL 358

**Type of Meeting:** Bi-Weekly Meeting

**Meeting Facilitator:** Xinlei Wang

**Invitees:** Mike Larson, Tim Mies, Yu-Feng Forrest Lin, Christopher Hillebrand, Yogesh Bhandari, Carol Lin (clerk), Morgan White, Kate Gardiner (Morgan’s intern)

1. **Call to order**
2. **Approval of minutes from last meeting**
3. **Open issues**

* Updates on expansion of campus solar and on Solar Farm 2.0:
  + Mike M. provided financials, and the numbers were in the ballpark of what Mike L. already predicted. Morgan needs to be contacted for confirmation if the financials should be incorporated into the recommendation.
    - Mike M. says the capital costs range from $13-18 million with a payback of 23-32 years for Solar Farm 2.0 The estimate Mike L. had was $7-26 million with an estimated payback of up to 37.3 years. The numbers are large because they are dependent on the installation costs. Land was not accounted for. The study used current utility scale costs of $1.40, commercial costs of $2-3, and $3 per kW.
    - The bottom line is the payback is more significant than estimated for the 5.8 MW system (almost double).
  + When the recommendation was done the first time, ACES was still being talked to. Mike M. needs a discussion with provost and chancellor to gauge their interest. Morgan says she was told provost is on board, but she wants to talk to the chancellor. Now is a good time to have the recommendation go through to the IWG and sent to the sustainability counsel, since the counseling meeting is in the process of being rescheduled. IWG meeting is on October 27. Morgan will have it officially sent to the sustainability counsel. Scott Willenbrock’s proposed numbers were not the same as Mike M.’s, but Morgan says to use what they have from before.
  + In the past, the team submitted a recommendation to make it mandatory for all new construction to be rooftop solar. This was too expensive, though, so the solar farm recommendation was went with instead. It is believed the sustainability counsel reviewed the recommendation and didn’t want to go through with the rooftop solars because each project would be unique and different from the rest, which would result in too many varying costs. Morgan says the chancellor wants projects that are more impactful. The team got direction to develop instructions of how the facilities would be. That’s an official task that’s been given to F&S with a to-do item that needs to be assigned to a specific person to complete.
  + Christine is working on rooftop solar for the S&H building. They need 8 panels. That project is waiting for their capital project. They’re going to be used as the basis for other buildings.
    - This building will be the first ballasted system. It will be mounted and attached to the roof. Recommendations for how to do ballasted and non-ballasted need to be prepared.
  + The vice chancellor informed the head of NCSA (Bill Gropp) about the recommendation. He is going to meet with Ximing on November 1 and Morgan is going to tag along to discuss objectives to offset pedestale emissions.
  + Solar farm 1.0’s total cost over 20 years is approximately $15.5 million, including inverter warranties. The cost per kWh on a sunny day is estimated to be $0.05, using a 3% inflation rate and a 3% escalation rate. The calculated total came to be $10.2 million. Price difference is $15.5 million – $10.2 for conventional electricity = $5.3 million extra. Actual price of electricity has since dropped to 22.5 cents per kW. The amount we’re paying for the solar farm should still come to $15.5 million, but savings might be less than expected. Mike M. does the budget analysis. We might have to ask Kent to share financials for wind PPA and solar farm, as well as ask for permission to share the financials with the SWATeam. Actual cost of first solar farm should be significantly less now because the price per module used to be $0.20 but is now $0.85.
  + If we sold Srecs, can that cut back on costs? For the solar farm, all of the recommendations have been kept. Campus can sell all of their Srecs. If we do so, we can’t claim use of clean energy, but we can buy clean energy with the money made. More information on this needs to be found, as well as the campus stakeholders’ opinions.
    - Find out who the experts on recs and clean energy accounting on-campus are. Talk to them and bring them to a meeting.
    - Scott went out and deemed an iSEE position on purchasing and short term recs. He had a consultation with professors from physics, MatSE, and policy departments. They all said it’s basically wasting money. Morgan would like a copy from Tim.
    - There is debate over the wording and meaning of objectives of “120,000 mW of clean energy per year by 2020.” If we sell our recs, we can claim to generate clean energy, but not able to claim that we *use* clean energy.
    - Xinlei asked if people/companies are actually likely to purchase recs. It turns out the school has bought recs before. We did it once in 2015 to meet the 5% goal. When we did wind PPA, part of the cost of that was to buy the wind associated rec ($38 per MWh) from a wind farm. We’re currently paying $13 per rec. Recs now go for as little as $0.50 and they do have an expiration date (typically 1-2 years). While Morgan is completely supportive of using recs, they are a gray area. General economics also say buying recs are a good thing.
    - Mike says: Climate action plan says expand clean energy. The question is, “Does a rec meet the definition of clean energy and a low carbon energy soruce?” based on the iCap’s objectives. Morgan says the iCap portal says buying recs are allowed to achieve goal as written. What we want is to buy power from non-carbon sources, but the objective is actually to look at strategies and see if we’re lowering our carbon footprint. Recs are thus a feasible and cheap way to achieve energy.
    - All wind power we buy is bundled with a rec. PPA comes with a rec and shows we have green energy. Further discussion of stock market and options is needed. Concerning the wind PPA, there is also question over physical and nonphysical delivery (i.e. financial).
    - Solar recs are expensive because there’s not enough of them out there. There’s a large number of wind recs available because there’s not enough demand for them, making them cheaper. If we bought multiple recs, that would reduce backlog and increase demand. We need to find experts/financial economist to see benefits of recs and get their feedback.
    - Yogesh recommended his professor, George Grosse, an electrical engineer who is knowledgeable in finances and the electricity market. It’s all about making sure the grid is stable.
  + Chris says, “Why not buy wind recs and sell our solar recs?”
    - Mike says there are people pursuing the. SWATeam sees this as a feasible idea and considering making a recommendation for that.
    - The only concern is there are too many differing opinions on energy commodities, such as scientists vs. economists.
    - Mike says profit made from energy generation can be used in energy conservation because that’s where the best bang for the buck is.
    - The main factor is basic economics. Demand for solar is created by industry regulations (certain amount of purchase needs to come from solar), so demand increases.
    - Mike will draft a rec for this and send it to everyone.
    - Mike will also reach out to Madhu Khanna (environmentalist and economist) for input. Chris also has a professor in energy economics (Erica Myers from ACE department). Chris and Yogesh are going to ask how much recs cost and ask if they would be willing to come to a meeting.
    - Someone should find out more about virtual PPAs for the rec.
* Donald Wuebbles was assistant director for Office of Science and Technology. He got a new assignment from the President Obama to initiate Urban Sustainability. Tests will be conducted here through three campuses. If this can get going, we might be able to join in on what they’re doing.

1. **Adjournment** (Next meeting: mid to late November)