Query 3

Overview
Do a manual energy audit: use a set of measurement devices and measure various types of energy use and assess various space performance criteria with respect to energy use. Specifically, you will make the following kinds of measurements:

- Air temperature
- Light level
- Thermal leaks
- Plug loads
- Occupancy

You will assess the following performance:

- Occupant thermal comfort
- Adequacy of occupant general air quality
- Adequacy of lighting level

Finally, you will compare your audited measurements, occupant assessments and BMS data that you extract using SEE IT for the spaces you audit.

We will consider three types of spaces: common spaces such as kitchens; group spaces such as conference or class rooms and individual offices.

What to submit

1) (5 points) For an assigned type of space, energy audit at two time periods separated by at least four hours:
   a. Air temperatures: Measure the temperature in a room of your choosing in Y2E2.
      i. Collect the temperature at these locations: near the window, in the middle of the room, near the sensor and near a door.
      ii. Collect the temperature at each location at the different level: ground, head height while sitting and ceiling.
      iii. Plot each data point and the measurement from the BMS.
   b. Light level
   c. Thermal leaks
   d. Plug loads
   e. Occupancy
   f. Occupant assessment in three different spaces.
   g. Question occupant(s) on the performance criteria above on a scale from 1-5. Define the meaning of values on your 1-5 scale.
   h. Report the data available in the BMS for your spaces.
Query 3: Measurement Analysis

i. Discuss findings and actionable conclusions. (100 words maximum).

2) (4 points) Discuss strengths and weaknesses of the current BMS vs. the manual audit you performed. (200 word maximum)
   a. Address how audits and the BMS complement and duplicate each other in regard to value and cost of the energy system for the owner. Consider measured and assessed performance from the perspectives both of the owner seeking productivity from the space and paying the energy bills and the occupant who is trying to be productive.
   b. Describe situations when you would choose either an audit or a BMS to analyze building energy performance. What do you miss when you have to choose?

3) (1 point) ORID analysis. Please briefly summarize
   a. Objective: What facts did you see this week? What factual statements can you make based on the data?
   b. Reflective: What surprised you? What encouraged or discouraged you?
   c. Interpretive: What sense to you make of what you did this week?
   d. Decisional: What are our proposed next steps? What is your action plan for next steps?

Due Date
1:15 pm Thursday, April 26. Please submit the analysis through the wiki page.
Plot with BMS data point.