Kiernan Salmon, UC Davis

Title: Scaling up Participatory Thermal Sensing Programs Across the UC System

Abstract: Heating, Ventilation, and Air Conditioning (HVAC) account for a significant portion of energy use in institutional buildings. Infrastructural solutions to optimize HVAC efficiency are available to new construction, but institutions are largely composed of long-standing buildings. Innovative HVAC control strategies are important for improving efficiency in these existing buildings. One innovative control strategy is participatory thermal sensing (PTS). PTS aims to improve energy efficiency and comfort simultaneously by crowdsourcing thermal comfort feedback from building occupants and incorporating it into HVAC management. The general procedure is to solicit thermal comfort feedback (e.g., hot, cold) from building occupants via a web or mobile app. Comfort data is then integrated into HVAC operations either automatically (using algorithms in the control programming) or manually by reading, interpreting, and responding to the feedback. The data aid in fault detection and reveal opportunities for more energy-conservative space conditioning. UC Davis's Energy Conservation Office (ECO), a branch of the Facilities Management Department, developed a PTS program called TherMOOstat (cow-themed; thermoostat.ucdavis.edu). TherMOOstat has crowdsourced over 20,000 thermal comfort feedback submissions that have been used to improve comfort and increase energy efficiency on campus through a variety of data analysis methods and applications. The University of California Office of the President funded the UC Davis TherMOOstat team under the UC Carbon Neutrality Initiative, to package their PTS program and share it with other UC campuses. This talk will describe how the UC Davis team scaled up the PTS program for broader institutional benefit across the UC system. We will share the curriculum we developed to support the program launch and operations, which can be adapted for other organizations who want to implement a PTS program.