Applying Building Technologies to Realize Savings
Thursday, June 16, 2016 10:30am

Susan Freed (County of San Diego)
Topic: Zero Net Energy at the County of San Diego (Library building)

- About 12 years to get ROI, utility bills are basically zero
- Building for the long term – 50 year lifespan for buildings
  - Preparing now for 2030 50% energy reduction mandate for existing buildings
  - New buildings now are being built with 2030 in mind
- Building lot – take into consideration when planning ZNE
  - Library plot is fortunate to have god north/south exposure to take advantage of natural lighting
  - Passive technologies
- Building function plays a big factor in ZNE feasibility
  - Loads of buildings, water usage, plug load
- Best Practices
  - Model early
    - Balance EE with other projects that have equal or more value – ex children’s story time program funding has precedence over efficiency projects
  - Maximize passive technologies
    - Lighting power density, daylighting
  - Fine tune sub-metering to really understand where the energy is being used M&V
  - M&V scrutiny - Added attention to energy use
  - Train staff on how to operate building
  - ZNE is not free - hire a good consultant helps design best possible product
    - Total cost to build was 5% higher than non-ZNE design
- Q+A
  - Why did you go with the Design-Build model?
    - Design-Build is more expensive but best for ZNE projects.
  - How do you avoid the “point trap” when getting LEED certified?
    - Created own LEED scorecard and included it in the RFP
    - Wanted specific credits for gold building status, instead of just simply having gold status

Jim Parks (Sacramento Municipal Utility District)
Topic: SMUD Net-zero Operations Campus

- Existing facility was very old and in need of many improvements
- Moved to a totally new lot after train tracks were built through middle of previous location
- Best Practices:
○ Incorporate unique characteristics of the location into plan
  ■ Ex: Geothermal cooling pipes installed in low areas of location
○ Plan for long term: Built new facility ready for future EV charging stations
○ Monitor energy use once building is operational
  ■ Many tweaks had to be made to get facility to actual net-zero status
    ● Ex installing light timers and training staff
  ■ Monitoring especially important for large buildings with many lights/technologies

Alice La Pierre (City of Berkeley)

Topic: How to Build Healthy, ZNE Buildings without Anyone Noticing
  ● How to do ZNE upgrades discretely to get around political roadblocks and pushback
  ● West Berkeley Library
    ○ Installed an EV charging station as a way to use up excess energy
  ● Upgrading existing buildings is important because you cannot tear down and rebuild everything
    ○ Ex - Historic Buildings
    ○ Mental Health Clinic case study
      ■ Many problems with infrastructure, ZNE upgrade was a way to fix problems with aging infrastructure and implement energy upgrades
  ○ Best Practices with upgrading old buildings
    ■ Start with energy monitoring to understand energy consumption
    ■ Commissioning ZNE study is helpful
    ■ ZNE best for 1-2 story buildings and smaller size because of roof to load ratio
    ■ “Building envelop” is critical - older walls and insulation are sources of energy loss

Garrett Wong (City of Santa Monica)

Topic: Smart Controls for Energy Efficient Lighting in Existing Buildings
  ● Lighting is the easiest low-hanging fruit to consider for 2030 pre-planning
  ● Consider the existing infrastructure: new LEDs fit seamlessly into T12 fixtures
  ● New lighting control and sensor technology helps with planning
    ○ Individual sensor for each light to monitor lighting demand for each light separately
    ○ Wireless controls can be controlled from a laptop - customize lighting levels for the whole day
  ● People’s behaviour is an important consideration
    ○ Manually turning lights on/off interrupts pre-planned lighting controls
    ○ Cleaning crew turns on all lights a highest level creating spike in electricity use at beginning and end of the day
• Keep track of how lighting is used in the building
  ○ Allows for easy changes in future for rearrangements of furniture, additional employees, etc.

(Ran out of time - no questions at end)