ET Summit 2019

Presented by

ET CC EMERGING TECHNOLOGIES COORDINATING COUNCIL

Site-Level NMEC

Challenges and Best Practices

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Overview

- Site-Level NMEC projects
  - Incentives based on savings achieved (P4P)
  - Savings based on meter-based analysis
  - NMEC (& HOPP) Programs
- Example Projects
- Challenges & Best Practices

Available Programs in CA

- Southern California Edison
  - Public Sector (HOPP)
- Southern California Gas
  - Public Sector Monitoring and Performance Based Retrofits (HOPP)
- Pacific Gas & Electric (NMEC)
  - Public Sector
  - Commercial Whole Building
- Emerging Technologies evaluation methodology
  - Integrated monitoring and control devices for SMB
- Third Party Programs (Bidding Stage)
  - > 50% of proposed programs are NMEC (rumor)

Baseline Period

1. Project Pre-Screening
   - Facility condition
   - Savings potential (e.g. deep savings)
   - 'Predictable' energy use patterns
   - Non-routine events (NREs)
2. Develop Energy Audit / Energy Management Plan
   - Documentation of baseline equipment and conditions
   - List of measures, savings, costs, measure life
3. M&V Plan
   - Define baseline period
   - List data to be collected
   - Describe analysis procedures
     - incl. NRE treatment
   - Savings reporting & frequency

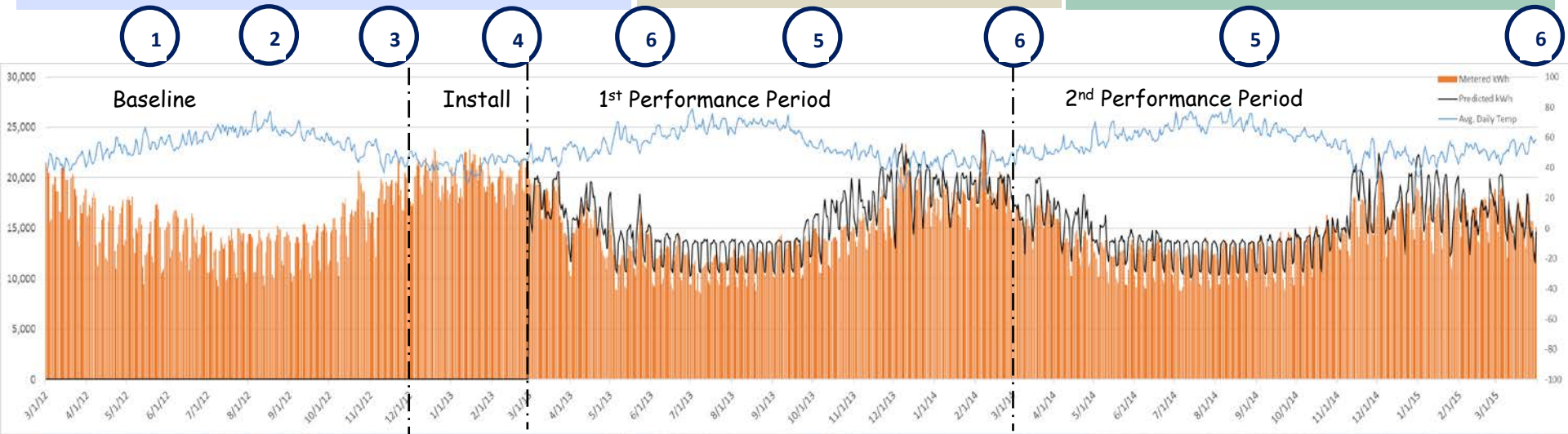
Installation Period

4. Measure Verification
   - Document installation & proper operation
     - Inspection
     - Functional testing
     - Trend analysis

Performance Period

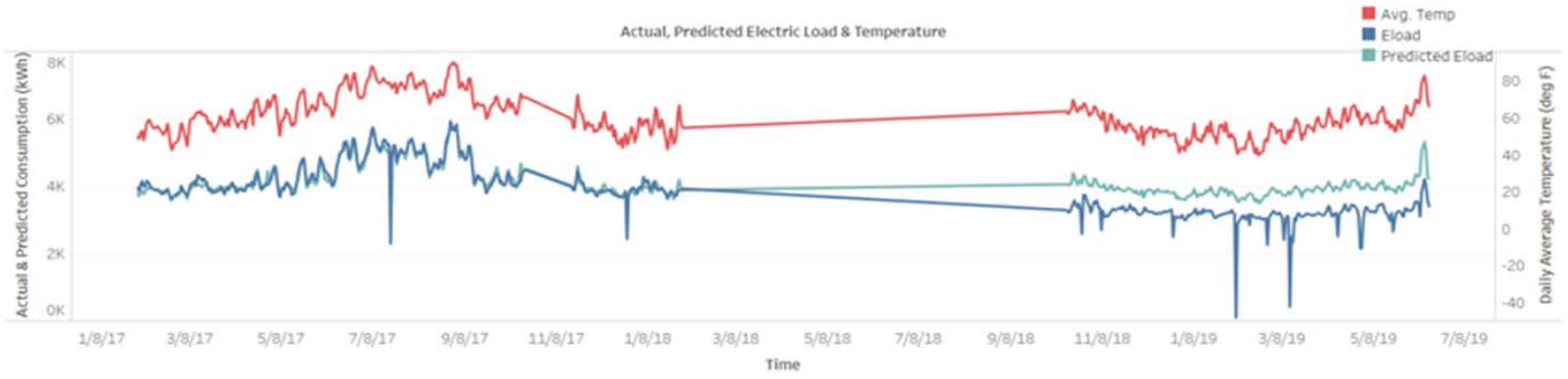
5. Savings Status Report
   - Periodically during performance period
   - QA check that savings are accruing
   - Detect presence of NREs

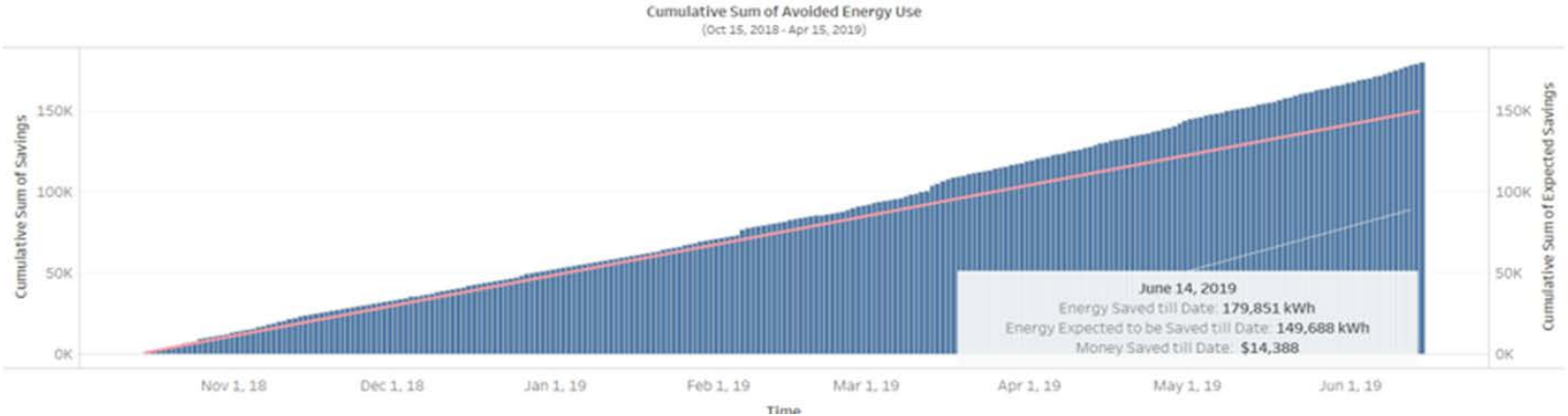
6. Savings Reporting
   - Per M&V Plan
   - A to Z report on savings
     - Raw data to final savings
     - NRE impacts included



Southern California Grocery Store

- GI





UCSB – Chemistry and Physical Sciences

- Large laboratory with two wings: Chem and PSBN
  - Regularly scheduled and temperature sensitive
- Each wing has: (6 energy sources/meters total)
  - Electric meter
  - Gas meter
  - Chilled Water System serving campus loop (not just building)
    - Chem: Existing CHWS (poor baseline model)
    - PSBN: CHWS installed during project
- Campus has large PV generation
- Ample sub-metering

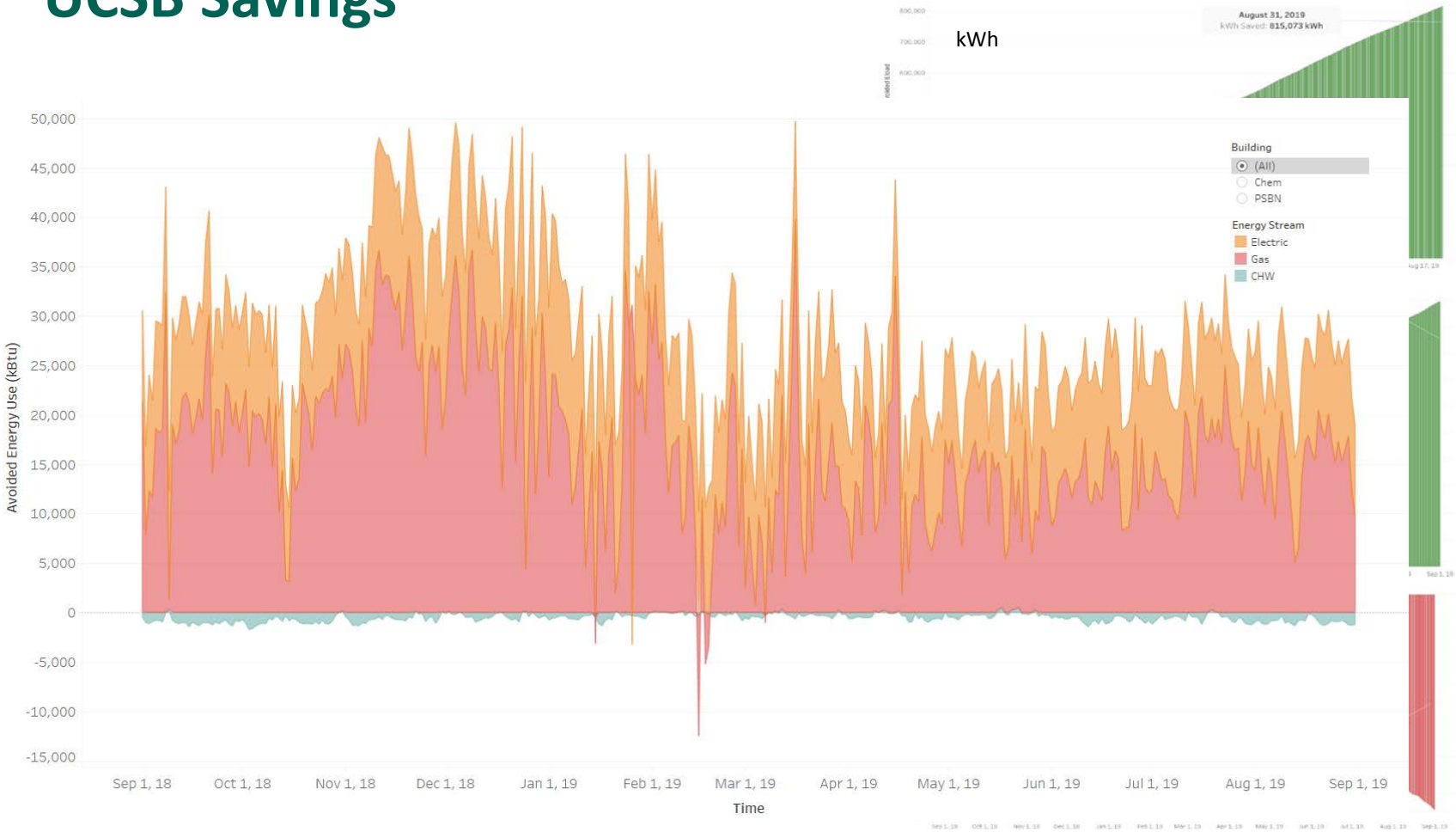
UCSB - Measures

Measure	Description	Installed in	
		PSBN	Chem
RCx-1	Rebalance Constant Volume Hood Airflow	X	
CIM-1	Install Wireless Pneumatic Thermostats	X	
RCx-2	Implement Supply Air Temperature Setpoint Reset	X	X
RCx-3	Implement Heating Hot Water Setpoint Reset	X	
RCx-4	Implement Nighttime Space Temperature Setbacks	X	X
CIM-2	Machine Shop LEDs		X
CIM-3	Replace Linear Fluorescent Lamps with LED Ballast Bypass Lamps	X	X
CIM-6	Supplement Backup Generator Block Heaters with Heat Pumps	X	

PSBN Wing

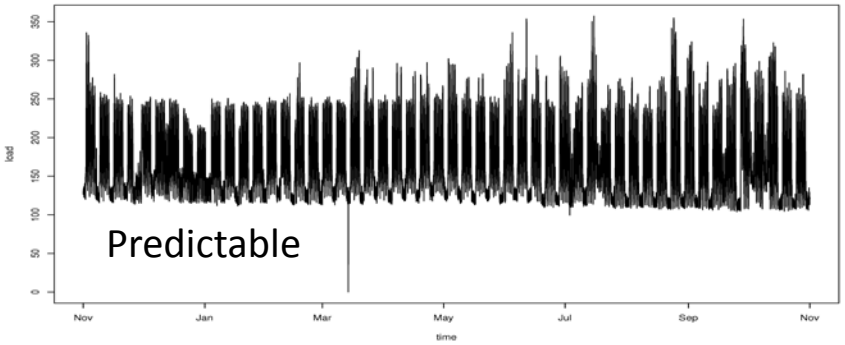
UCSB Savings

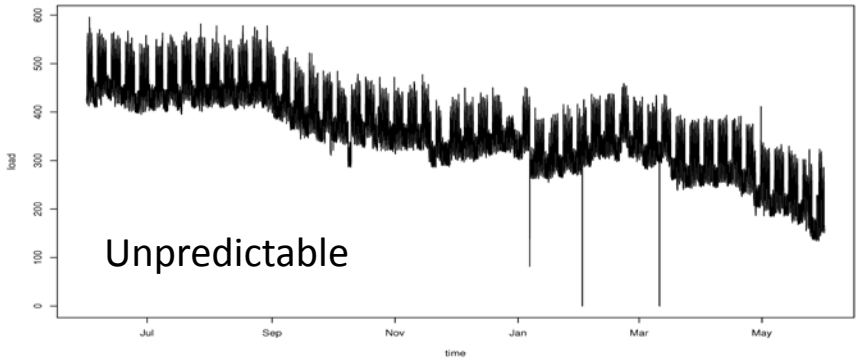
kWh



Site-Level NMEC Risks

- Building not 'predictable'
  - Energy use not explained by weather or schedule
  - Modeling algorithms insufficient
  - Too many NREs
  - Addressed through pre-screening
- Non-Routine Events (NREs)
  - Discussed by LBNL next





Best Practices

- Predictable Buildings
  - Regularly scheduled, temperature-sensitive
- Manageable NREs
- Deep savings projects
  > 10% of base year use
- Savings Persistence Tools – e.g. EMIS Platforms
- Compatible with Integrated Distributed Energy Resources (IDER)
  - Demand Response – similar meter-based approach
  - Renewables – monitor generation

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