Expansion of LBNL’s Commissioning Cost-Benefit Database

Evan Mills
Lawrence Berkeley National Laboratory

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Project Description

• Expand database originally assembled by LBNL, PECI, and TAMU in 2004
  – Currently 30.4 msf; 21 states; $17 million investment
• Think about better metrics
• Develop interactive benchmarks (integrate with AOB tool)
Main characteristics of study...

- World’s largest compilation
- Focus on energy aspects, but also non-energy impacts
- Separate treatment of existing and newly constructed buildings
- Standardized analysis (definitions, normalized energy prices, inflation) -- has significant effect on results
- Extensive statistical and correlation analyses
Wide range of deficiencies....

**Existing (N=3500)**

- Air handling & distribution: 54%
- Terminal units: 6%
- Lighting: 5%
- Heating plant: 9%
- HVAC (combined heating and cooling): 6%
- Facility-wide (e.g. EMCS or utility related): 4%
- Envelope: 0.2%
- Plug loads: 0.2%

**New (N=3300)**

- Air handling & distribution: 25%
- Terminal units: 11%
- Lighting: 16%
- Heating plant: 9%
- HVAC (combined heating and cooling): 15%
- Facility-wide (e.g. EMCS or utility related): 10%
- Plug loads: 8%

Attractive paybacks across range of building sizes and types.
Savings scale with depth of Cx

N=40

- Commissioning Scope (number of steps)
- Whole-Building Energy Savings
Deepening the database

• Under-represented building types
  – Separate project starting to add high-tech facilities
    • Labs, cleanrooms, datacenters

• Under-represented locations

• Under-represented “data”
  – e.g., peak demand savings

• New commissioning strategies
  – e.g., Monitoring-based commissioning (MBCx)
    • UC/CSU
    • 19 sites; 3.2 million square feet
Minimum data requirements

- Location (state, city)
- Conditioned floor area
- Year of data (for economic normalizations)
- Whole-building energy savings
  - by fuel
  - weather-normalized
  - actual, per IPMVP, not pure engineering estimates
  - must reflect measures actually implemented
- Total cost of (retro)commissioning
- Lots more desired (but not required) data
Communication strategy

• Last time:
  – “Thick Report” + NCBC paper -- email to ~100-person list
  – Trade Press
    • Betterbricks
    • Energy Design Resources ENews Issue #48
    • HPAC
    • Building Operating Management
    • Architectural Engineering Institute, Means, Methods, Trends

• This time:
  • Poll our audience about best forms and modes
  • Revise “Thick Report”
  • Strong two-page summary - push to 500-person list
  • More trade press
  • New media: podcast ....
  • Integrate in CEC/PIER “Action-Oriented Benchmarking” tool
Please participate in Round 2!

emills@lbl.gov