

Monitoring-Based Commissioning (MBCx): An Early Success Story for the California Green Building Initiative

University of California / California State University

Pacific Gas & Electric/Southern California Gas/San Diego Gas & Electric/Southern California Edison

- Permanent monitoring systems expand scope and energy use reduction for retro-commissioning, increase persistence of savings, and enable ongoing commissioning.
- Benchmarks obtained through monitoring facilitate energy management and continuous improvement in MBCx program deployment.
- Facility staff trained in enhanced operations and maintenance as well as monitoring.
- Based on a decade of RD&D and groundbreaking efforts by the program partners, the CEC PIER Program, SMUD, and pioneering university campuses across the country.

2004-05 Program Scope: 37 building projects (half labs) and 9 plant projects on 25 campuses
\$5.2 million funding
Portfolio targets of 1.0 MW, 9.3 million kWh/year, 580,000 therms/year
3.6 year simple payback period on funding @ \$0.093/kWh & \$1.00/therm

2004-05 Program Results: Projects reporting to-date on initial commissioning achieved 138% of targets (34% of funding produced 47% of targeted savings)
10% average energy use reduction (cost basis) from initial commissioning
Identified potential for program improvement (e.g. better project design)

Potential Scaling: 2006-08 UC/CSU/IOU effort doubling activity to reach 15% of floor area
Community colleges, private colleges and universities
K-12 schools
Other institutional buildings
Hospitals, medical facilities, & other commercial buildings with lab space
Other commercial facilities

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Brown, K. 2006. "Enhanced O&M through Building Performance Monitoring and Benchmarking." Presented at *the 2006 National Symposium on Market Transformation*. Washington D.C.: ACEEE. Available at:
<http://www.aceee.org/conf/mt06/mt06annc.htm>

Brown, K., and M. Anderson. 2006. "Monitoring-Based Commissioning: Early Results from a Portfolio of University Campus Projects." Submitted for publication in *Proceedings of the 13th National Conference on Building Commissioning*. Portland, Ore.: PECEI. Soon available at:
<http://www.peci.org/ncbc/ncbc.htm> or <http://ciee.ucop.edu>