

# Retro-Commissioning

## Southern California Edison/Los Angeles County

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### PROGRAM OVERVIEW

Southern California Edison (SCE), Southern California Gas Company (SCG), and the County of Los Angeles (LACo) contracted E M C Engineers, Inc. (EMC) to implement a facility retro-commissioning (RCx) program for 11 county buildings, encompassing 1.7M SF during 2004 and 2005.

The purpose of this RCx program was to optimize the operation of heating, ventilating, and air-conditioning (HVAC) systems. Six major phases were completed as part of this very broad and encompassing RCx Program, including:

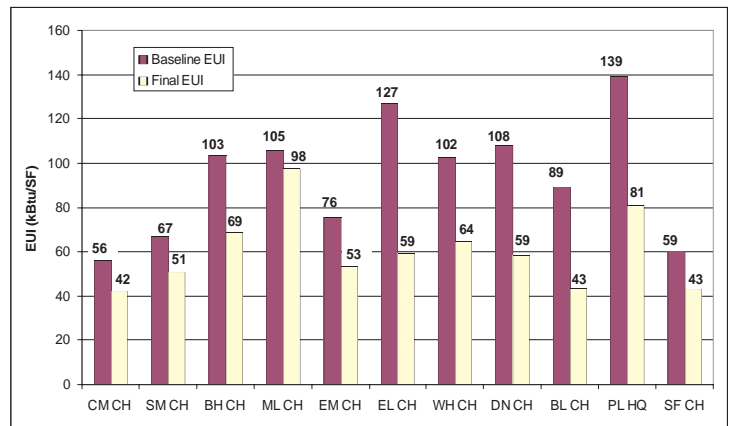
1. Benchmarking building energy use to assess current performance.
2. Planning phase to develop the RCx approach for each building.
3. Prefunctional testing of HVAC systems to confirm existing conditions and required repairs, including:
  - ❖ Verifying control sequences
  - ❖ Trending data to verify actual operation
  - ❖ Point-to-point testing of HVAC components at all devices
  - ❖ Mechanical system condition assessment using O&M checklists
  - ❖ Airflow and waterflow measurements
  - ❖ Identifying deficiencies found and repair action plans
  - ❖ Developing control sequence improvements to optimize energy performance and improve temperature control
  - ❖ Calculating economic benefits of the modifications
4. Implementation of recommended improvements measures using LACo O&M staff and outside service contractors
5. Functional performance testing to systematically verify all HVAC operations after improvements.
6. Final Report & Training Manuals to sustain the improved building performance, including developing system Operational parameters to be monitored to confirm performance. This work included short-term monitoring of mechanical systems after EEM implementation and system level benchmarking.



### RESULTS

*This program was a resounding success.*

The graph shows the baseline (before) and final (after) energy use of the buildings. Specific benefits achieved were buildings operating in an optimized fashion, providing comfortable working environments and benefits to LACo employees. During the recent heat wave in this region, these buildings received the fewest, if any, comfort complaints by LACo O&M staff.



Overall Utility Costs	\$3,500,000
Annual Savings	\$660,000 20%
Payback	<1 year

*This program is now being used as the model for SCE, SCG, LACo to pursue RCx on a county-wide scale.*

## What sets us apart?

EMC is dedicated to creating sustainable facilities. We optimize building performance through energy modeling and analysis, advanced building automation systems, creative mechanical and electrical design, construction management, and building commissioning. These methods lower energy costs, improve comfort, and increase productivity.

## Experience

Since 1976, EMC has been a leader in delivering high performance building solutions. As a multidiscipline consulting firm, we have strong credentials in mechanical, electrical, and control systems design, retrofit and modernization; energy engineering; and building systems commissioning.

## Services

**Energy Engineering**

**Sustainable Design**

**Mechanical and Electrical Design**

**Building Commissioning and Retro-Commissioning**

**LEED™ Services**

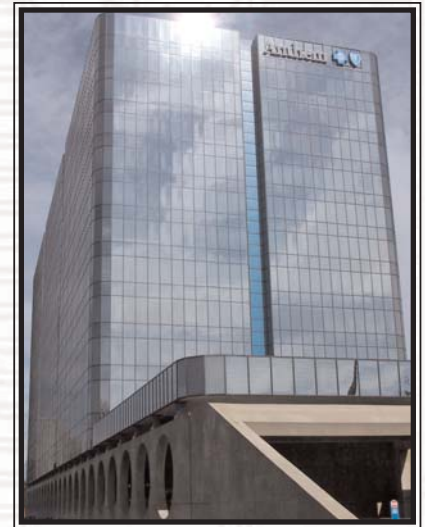
**Training**

**The Big Picture.**

**Creative Thinking.**

**Integrated Solutions.**

**The Long Haul.**



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