



City of Garden Grove

Garden Grove, California
Design-Build Performance Contract – Phases I & II



Project Size: 63 buildings
Project Value: \$2,778,424 – Phase I
\$1,670,641 – Phase II
Source of Funds: California Energy Commission, Municipal Finance Corporation, Sun Trust
Contract Terms: 15 years
Project Schedule: Completed on schedule

Project Phase	Project Dates			
	Phase I		Phase II	
	Started	Completed	Started	Completed
Comprehensive Energy Analysis	July 2001	January 2002	January 2004	March 2004
Design/Implementation	April 2002	January 2003	August 2004	March 2005
Monitoring	January 2003	Ongoing	None	

Baseline Utility Budget: \$428,859

Guaranteed Annual Energy Savings:

Phase I – \$124,970 (Option A Lighting = \$54,055; Option C HVAC Mech ECMs = \$70,915)

Phase II – \$51,390

Annual Non-Energy Savings:

Phase I – \$71,600 (Stipulated, Operational, Electrical Account Correction)

Phase II – \$20,000 (Operational Savings)

Achieved Annual Summarized Savings:

Phase I – \$196,570 (Excess Energy Savings Year 1 = \$23,729)

Phase II – Currently in construction

Measurement and Verification:

Phase I – IPMVP, 1997, Option A (short-term/periodic measurement after retrofit compared to base conditions); IPMVP, 1997, Option C (entire facility-level comparison before and after retrofit, typically with utility bills).

List of Improvements:

Phase I

- Replaced air handling units
- Central energy management system – installed economizer controls
- High efficiency lighting retrofits, T-8 lamps, electronic ballast
- Changed Incandescent exit signs to LED exit signs
- Installed radio interference filters
- Replaced chillers, installed hot water piping to VAV boxes
- Skylight and solar screens
- Installed high efficiency domestic hot water boiler
- HVAC modifications (ducting modifications, duct cleaning, economizers)
- Incandescent to halogen lighting upgrades
- Removed split system, ballast disposal

Phase II

- Replaced heating and air conditioner
- Duct cleaning
- Installed/upgraded Energy Management System
- Air balancing





Project Reference:
CITY-COUNTY-STATE

City of Garden Grove, continued

Specifics include: Option A M&V – One-time pre and post kW measurements with stipulated hours of use; Option C M&V – bill comparison; stipulated savings; electrical account correction (strictly billing to have correct rates and omit "abandoned" accounts).

Phase II – Due to success of Phase I, there will not be M&V to verify savings.

Comments: A Comprehensive Energy Analysis report completed in 2002 recommended \$4.5M worth of needed upgrades and improvements. The City opted to implement the project in two phases.

The Total Annual Dollar Savings for Year 1 at all facilities exceeded the Guaranteed Savings by \$22,946. A reduction of 36.2% in electrical consumption was also achieved. It is also worth noting that our Project Manager, Agnes Leung, was recognized by the Association of Energy Engineers for her lighting design and was presented with the ASHRAE Chapter Technology Award for the innovative use of a "comfort guarantee."

For more information, contact: Steve Spurgeon, 800 475 3500 x3609
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