



Energy Project Management & Process

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Energy Efficiency Projects

- Retrofitted 15,600 Lamps with T8's in 1999 and 2000
- Replaced Two Chillers With Energy Efficient Type 2000
- Replaced All Motors Over 15hp With 94% Efficient Motors 2001
- Installed Variable Frequency Drives (VFD's) on Fans and Pumps 2001



Energy Efficiency Projects

- Upgraded Various Energy Management Systems for Better Control 2001
- Implemented a 4/10 Work Schedule for our County Office Building 2001
 - Reduced energy consumption by 18% annually
 - Helped aid in commute congestion management
- Installed Energy Efficient Boilers in Three Facilities 2002



Energy Efficiency Projects

- Installed Waterless Urinals at Various Facilities 2002
- Installed a 300kW Co-Generation plant at the Maguire Jail 2005
- Retrofitted 3,200 Lamps with T8's/5000 Kelvin Lamps in COB2 2006
- Improved Fuel Efficiency of Existing Boilers (tuned up) 2007



Current Projects WITH ABAG ENERGY WATCH

- Maguire Jail – Economizer and VAV Box Adjustments, Reschedule Air Handling Unit
- Maguire Jail – Lighting Retrofit
- Maguire Jail – Chiller VFD Retrofit
- East Palo Alto Building – Lighting Retrofit to 5000K Lamps
- COB – Lighting Retrofit 5000K Lamps
- Hospital – Lighting Retrofit
- Hospital - Economizer Adjustments, Reschedule Air Handling Unit



Create a Team

- PG&E
- ABAG Energy Watch
- Consultants/Contractors
- Staff; Maintenance, Project Managers
- Boards or Councils



PG&E

- Account Rep is Key Person
- Helped Identify Options for Rebates
- Provided Information on Incentives
- Shared Project Suggestions
- Use the PG&E Processing Center



ABAG Energy Watch

- Allowed Us to Leverage Limited Staff and Resources
- Performed Comprehensive Building Audits
- Performed Comprehensive Lighting Audits
- Provided Technical Knowledge and Resources
- Provided Incentives and Rebates

**County of San Mateo
EXECUTIVE SUMMARY**

The Local Government Energy Partnership (LGE) is providing this Energy Assessment Report to help the County of San Mateo obtain a comprehensive view of the energy use in your facilities. This information will help you identify which facilities have the highest energy use, as well as have a high potential for energy savings and energy efficiency improvements. The assessment uses energy utility and cost data, as well as facility square footage information, to generate this overview. As a follow up to this assessment, LGE can help the County of San Mateo identify inefficiencies in individual facilities and assist in addressing these problems.

This study covers the County of San Mateo's facilities within the Pacific Gas and Electric Company service territory. The report includes 70 facilities with a total square footage of well over 2,636,000, (many of the building areas were not reported by the County) representing \$4,721,000 in annual energy bills.

The table below provides a summary of the most energy intensive County facilities. A table of all 70 facilities and operations is presented at the end of the report.

- The Hospital has the highest annual energy cost of \$1,336,000/yr, electricity consumption of 11,649,000 kWh/yr, demand of 2294 kW and natural gas consumption of 623,000 therms/yr. This facility is responsible for 28% of the energy costs in San Mateo County.
- The Hall of Justice has the second highest annual energy cost of \$612,000/yr, electricity consumption of 4,633,000 kWh/yr, and demand of 1064 kW.
- Maguire Detention has the second highest annual natural gas consumption of 259,000 therms/yr.

Summary - County of San Mateo facilities with annual energy costs over \$100,000

Facility Name	Address	Area (sq ft)	Peak Demand (kW)	Annual Electricity Use (kWh)	Annual Electricity Cost	Annual Gas Use (therms)	Annual Gas Cost	Annual Energy Cost
Hospital	222 W 39TH AVE	330,515	2,294	11,648,752	\$1,243,901	622,625	\$92,302	\$1,336,203
Hall of Justice	400 COUNTY CTR	319,724	1,064	4,632,689	\$573,156	224,990	\$38,491	\$611,647
Maguire Detention	330 BRADFORD ST	216,874	749	4,120,956	\$507,606	258,545	\$43,772	\$551,378
COB 1	455 COUNTY CTR	116,260	381	1,864,615	\$234,257	94	\$141	\$234,398
COE 2	555 BRADFORD ST	142,227	816	4,224,762	\$199,206	28,527	\$10,114	\$209,320
Senior Center	1150 TROUSDALE DR		255	1,181,418	\$151,329	26,741	\$27,862	\$179,191
Coyote Point	COYOTE POINT DR		294	1,328,760	\$152,379	1,769	\$4,723	\$157,102
Crime Lab	50 TOWER RD	28,500	706	468,955	\$91,976	46,104	\$54,440	\$146,416
Streetlights	Street and Traffic Lights		0	1,182,294	\$131,680	0	\$0	\$131,680
EPA Government Center	2415 UNIVERSITY AVE	55,031	205	755,500	\$108,465	6,810	\$7,494	\$115,959
Voc Rehab Services	550 QUARRY RD	30,822	181	676,812	\$94,812	8,798	\$10,827	\$105,639



FIXTURE & CONTROL CODES FOR 455 County Center facility (All lamps to be \$000K)						
code	existing		proposed		notes	
	description	watts	description	watts		
AA	16' section of box wrap fixture with 4 F32T8s	224	New 16' surface mount section of Amerilium Radial A-RW-18-2-S-L-X-X or equivalent with 1 F32T8 per cross section and 4-lamp .87 BF ballast	108	\$540	
AB	12' section of box wrap fixture with 2 F32T8s	171	New 12' surface mount section of Amerilium Radial A-RW-18-2-S-L-X-X or equivalent with 1 F32T8 per cross section and 3-lamp .87 BF ballast	83	\$405	Contractors could choose to use 8' fixtures instead of using 16' and 12' arrays with bank and ballasts. County could select Lithonia Avante surface mount at additional cost.
AC	8' section of box wrap fixture with 4 F32T8s	112	New 8' surface mount section of Amerilium Radial A-RW-18-2-S-L-X-X or equivalent with 1 F32T8 per cross section and 2-lamp .87 BF ballast	54	\$275	
AD	4' section of box wrap fixture with 2 F32T8s	58	New 4' surface mount section of Amerilium Radial A-RW-18-2-S-L-X-X or equivalent with 1 F32T8 per cross section and 1-lamp .87 BF ballast	28	\$175	
B	5' x 12' luminous ceiling with estimated 9 8' strip fixtures, each with 2 F32T8s. In 101, the meeting room (existing needs to be vented)	531	2 new 16' rows of direct/indirect Finelite Series 10, 12 or X1-E with 3 F32T8s per cross section and .77 BF ballasting for outboard lamps and .77 BF ballasting for inboard lamps and center controlled optics (separate circuits for inboard and outboard lamps, with rocker switch, so cannot have all 3 lamps per cross section on at same time) Also replace existing lenses with T-bar ceiling tiles.	250	\$2,000	4 of these in this room, so \$8000 total.
C1	4x4 troffer with 2 F32T8s and specular reflectors	59	2x4 basket troffer, like Lithonia Avante, with 1F32T8 & 1.15 BF ballast (also 1 new ceiling tile)	37	\$250	This recommendation is because existing do not look very good and not that many. Absorb in the ceiling may be a problem. Would cost and no asbestos problem to just retrofit lamp
C2	4x4 troffer with 3 F32T8s and specular reflectors	89	2x4 basket troffer, like Lithonia Avante, with 1F32T8 & 1.15 BF ballast (also 1 new ceiling tile)	37	\$250	
C3	4x4 troffer with 1 F32T8s and specular reflectors	30	2x4 basket troffer, like Lithonia Avante, with 1F32T8 & 1.15 BF ballast (also 1 new ceiling tile)	37	\$250	
D	2x4 troffer with 2 F32T8s	59	2 F32T8s & 2-lamp .77 BF ballast	48	\$44	Or could replace these with something like basket troffers or suspended indirects.
E	2x2 troffer with 2 F17T8s	33	2 F17T8s & 2-lamp .77 BF ballast	28	\$45	Or could replace these with something like basket troffers or suspended indirects.



Consultants

- Maintain Good Working Relationships
- Helped Determine New Technologies
- Assisted in Identifying Potential Contractors
- Shared Cutting Edge Technologies



Include Staff

- Assign Project Manager Early
- Include Your Maintenance Staff in Identifying Scope of Project
- Have Staff Involved During Installation
- Make Sure Staff Is Trained On New Equipment
 - Technical
 - Purpose
 - Safety



Boards or Councils

- November 2005 our Board of Supervisors Passed a Resolution to Reduce Carbon Dioxide CO₂ Emissions by 10% by 2010
- November 2005 Passed a Resolution to Support the Sustainable Silicon Valley CO₂ Initiative



Other Tips for Successful Projects

- Visit Facilities That Have Installed What You Are Considering
 - Talk with Maintenance Staff
 - Get Their Feedback on the Equipment
- Think of Maintenance and Stocking Issues
 - Keep Types of Lamps Consistent
- Outreach to Your Customers, Before *and* After the Project
- Maintenance Coordinator is our Department Point Person

Comprehensive Approach Case Study

- San Mateo County Law Library
 - Cool roof
 - T8 lighting with electronic ballasts
 - HVAC upgrades, boilers and A/C unit
 - Windows – segmented, double pane



New Buildings

- Think Green
- Think Efficiency
- Consider New Technologies
- Work With the Design Team, Tell Them Your Goals
- Solar, Fuel Cells, Co-Gen
- Don't Forget About Water

San Mateo County Forensic Lab



San Mateo County Youth Services Center

