

SAN MATEO COUNTY
COMMUNITY COLLEGE DISTRICT

California Community Colleges Chancellor's Office Energy Efficiency Statewide Partnership Program with Investor Owned Utilities

May 3, 2006



COLLEGE of
SAN MATEO



Comprehensive Energy Plan

ENERGY PLANNING GOALS

- 1. Reduce utility expenses*
- 2. Increase operational control*
- 3. Decrease exposure to price volatility*
- 4. Reduce maintenance expenses*
- 5. Renovate existing facilities*
- 6. Increase reliability of services*

Comprehensive Energy Program

Energy Efficiency Projects to Date

- Light Fixtures Retrofitted – 9,550
- Air Handlers Refurbished/Replaced – 113
- Heat/Vent Units Refurbished – 310
- EMS Controls Points Installed – 1214
- Boilers Re-tubed, Repaired – 4
- Feet of Chilled & Hot Water Pipe – 1,026
- Tons of Cooling Equipment – 820
- # of VFDs Installed – 16
- # of High Efficiency Motors – 92

Comprehensive Energy Program Summary Of Savings

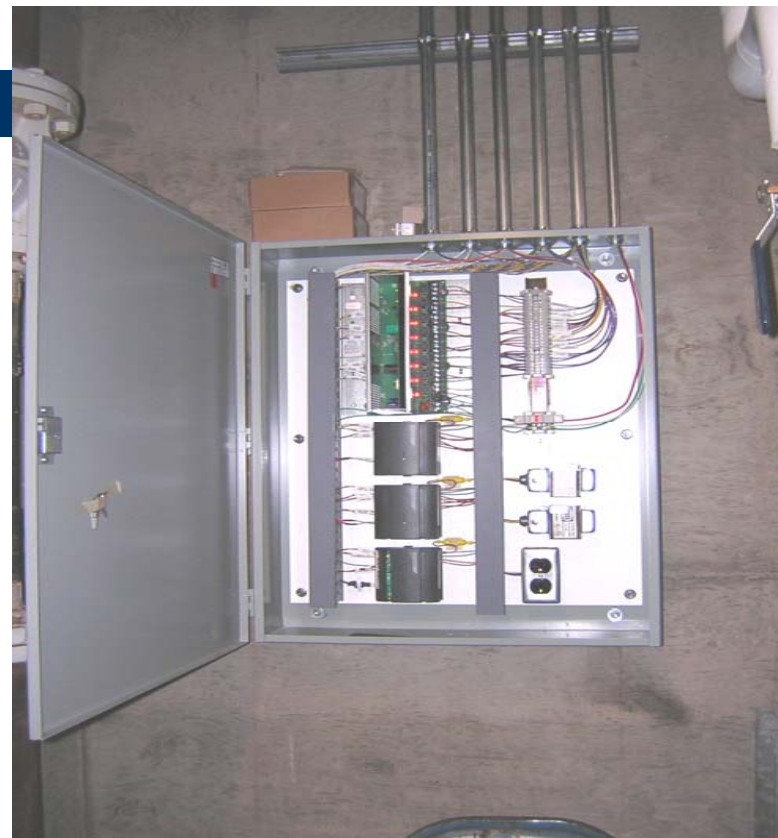
Prioritization Category	SUMMARY OF OPERATING BUDGET IMPACTS							
	Energy Infrastructure Measure	ELECTRICITY SAVINGS			NATURAL GAS SAVINGS		Maintenance & Operations Savings (\$/yr)	Operating Budget Savings (\$/yr)
		kWh	kW	(\$/year)	Therms	(\$/year)		
Repairs	M1-M8: Mechanical HVAC/Piping Repairs	609,254	0	\$ 80,625	114,521	\$ 57,261	\$ 67,200	\$ 205,086
Energy Conservation Measures	L0: Fall 2001 Lighting Efficiency Project	534,995	180	\$ 70,798	0	\$ -	\$ 4,520	\$ 75,318
	L1-7: Energy Efficient Lighting	635,870	204	\$ 84,147	0	\$ -	\$ 4,875	\$ 89,022
	M9-M10: HEff Motors & HHW VFDs	424,234	25	\$ 56,140	0	\$ -	\$ -	\$ 56,140
	C1: EMS Controls/ Backbone	433,960	0	\$ 57,427	37,536	\$ 18,768	\$ -	\$ 76,195
	M11-M13: HQ Boiler/CT/Chiller/VAV	56,813	13	\$ 7,518	6237	\$ 3,119	\$ -	\$ 10,637
Distributed Generation	DG1: Combined Heat & Power	5,622,169	280-805	\$ 651,823	(288,601)	\$ (113,278)	\$ (95,577)	\$ 442,968
	DG2: Solar PV System (218 kW)	323,500	150-180	\$ 48,525	0	\$ -	\$ -	\$ 48,525
Facility Improvements	C2: EMS Controls/ Zones	144,653	0	\$ 19,142	12,512	\$ 6,256	\$ -	\$ 25,398
	M14: UtilityVision	0	0	\$ -	0	\$ -	\$ -	\$ -
	M15: Chilled Water Plant/Loop	-1,040,508	-468	\$ (137,694)	0	\$ -	\$ -	\$ (137,694)
	M16: VTCV to VAV conversion	645,553	0	\$ 85,428	11,110	\$ 5,555	\$ -	\$ 90,983
	Total All Measures	8,390,493	385-940	\$ 1,023,879	(106,685)	\$ (22,320)	\$ (18,982)	\$ 982,577
	Total w/o C2,M15,M16	8,640,795	850-1400	\$ 1,057,003	(130,307)	\$ (34,131)	\$ (18,982)	\$ 1,003,890

Energy Program Results



Pre & Post-Retrofit Gym Hi-Bay Lighting

Energy Program Results



Pre & Post-Retrofit EMS Control Panels

Energy Program Results



Pre & Post-Retrofit Damper Actuators

Energy Program Results



Pre- and Post Piping Systems

Energy Program Results



Heating Hot Water Pumping Systems + VFDs

Energy Program – CCC/IOU Form 2

Measure Description ⁶	Total Incentives ^{8,9}	Annual Savings Electric \$	Annual Savings Gas \$	Annual Savings \$
Zone level DDC controls	\$57,202.20	\$25,077.78	\$7,548.00	\$32,625.78
Parking lot light fixture retrofit	\$27,834.90	\$23,381.32	\$0.00	\$23,381.32
VAV retrofit	\$7,678.48	\$1,461.85	\$3,915.20	\$5,377.05
VAV retrofit	\$25,031.40	\$10,106.46	\$4,624.80	\$14,731.26
Demand limiting	\$5,221.20	\$4,385.81	\$0.00	\$4,385.81
VAV retrofit	\$38,219.64	\$14,437.84	\$8,575.20	\$23,013.04
HE chiller replacement & variable flow pumping	\$36,388.48	\$14,327.96	\$0.00	\$14,327.96
Variable air volume - ventilation-controlled demand	\$27,893.48	\$10,395.25	\$6,474.40	\$16,869.65
	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00
	\$225,469.78	\$103,574.27	\$31,137.60	\$134,711.87

Energy Program – Key Factors for Success

- **Planning:** Use long term planning principles to avoid re-doing work later on, detailed savings analysis
- **Project Coordination & Communication:**
 - Bond Program Mgr, ESCO, Architects, Dist. Staff
- **Decision-making:** Ensure clear lines of authority
- **Project Impacts:** Minimize disruption to Instructional Mission
- **Partnership:**
 - Local Providers (PG&E, SCE, SDGE, SoCal Gas etc.)
 - Choose your vendors carefully, references count!
 - Long-term partnerships work best
 - Local, engineering-based ESCOs provide consistency, single-point-of contact

For More Information

- José D. Nuñez, San Mateo County Community College District
 - Nunezj@smccd.edu
 - (650) 574-6512
- Bruce Dickenson, Chevron
 - BDICKINSON@chevron.com
 - (415) 733-4517