

UCSB Energy Projects Summary, 2000 through 2005						UCSB Proposed Energy Projects, 2006 to 2008					
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Project Type		Energy Saved	Heating Energy Saved	Gas Emission	Reductions	Project Type	Description	Energy Saved	Heating Energy Saved	Gas Emission Reductions	
Installation Yr	Description	KWH/yr	Therms/yr	CO <sub>2</sub> lb/yr				KWH/yr	Therms/yr	CO <sub>2</sub> lb/yr	
	<b>****Lighting Projects***</b>						<b>****Lighting Projects***</b>				
Lighting, 2001-03	Upgrade 50+ Bldgs to T8 lamps and program start electronic ballasts. Replace HPS lights on Bldg exterior with compact fluorescent and metal halide lights. CEC AB970 Grant Program SCE Rebate on Interior Portion only	3,436,300	0	4,398,464		Lighting	Upgrade lighting systems on 19 campus Bldgs totaling 1.0 million GSF. Replace "power kut" electromagnetic ballasts with electronic ballasts and T8 lamps. Install two position dimming fixtures in 250 stairwells.	1,986,000	0	2,542,080	
Lighting, 2004-05	Upgrade 250 restrooms at UCSB with lighting occupancy sensors. Install electronic ballasts & T8 lamps on 1800 Library fixtures. Lamp & ballast work was done at Music & Davidson Library. CPUC Grant in 2004 funds 100% of project costs.	881,196	0	1,127,931		Install low press drop & long life AHU filters on 63 air handlers.	Installing low pressure drop, long life filters will save energy and reduce the change out frequency. The reduced maintenance will allow UCSB's preventative maintenance staff to focus on higher priority work.	1,674,000	0	2,142,720	
Lighting, 2004-05	Upgrade 235 traffic & pedestrian walk lights to LED from incandescent. CPUC Grant in 2004 will fund 90 to 100% of project costs.	99,864	0	127,826		Replace V-belt Drive Fans with Direct Drive fans	Replacing old V-belt drive fans (efficiency = 50%) with direct drive fans (efficiency = 72%) will upgrade UCSB's aging fans and save significant energy without changing the fan airflow.	2,519,000	0	3,224,320	
Lighting, 2005	Upgrade from "Power-Kut" electromagnetic ballast & T8 lamp to program start electronic ballasts and T8 lamps at Chemistry and Broida. This was a SCE Summer Lighting Rebate Program.	655,297	0	838,780		Bren Fume Hood Proximity Sensors	Install proximity sensors on 16 fume hoods. This will reduce the fume hood airflow by 40% during nonuse periods.	96,580	38,882	576,209	
	<b>***Chilled Water Loop Projects***</b>					Engineering 1	Retrofit two ventilation systems in Engineering 1 to dual duct variable air volume.	289,617	13,770	530,993	
Chemistry Chiller/Tower Optimization 2005/2006	On the 500 ton Chemistry chiller and tower install an optimization control that will produce colder tower temperatures and more efficient efficient chiller operation if economical CPUC Grant will fund 100% of project cost	481,202	0	615,939		Cheadle Hall	Retrofit two ventilation systems in Cheadle to dual duct variable air volume.	388,647	16,420	688,597	
Equipment Cooling, at 6 research bldgs, 2002-05	Use chilled loop with heat exchanger to provide cooling for research equipment instead of air cooled chillers, which are less efficient.	866,932	0	1,109,673			<b>****HVAC Commissioning Projects***</b>				
Engr 1 Server Rm AC, 2004-05	Replace old Server Room Split System DX Air Conditioner with "loop" chilled water AHU	65,000	0	83,200		Dual Duct Controls Optimization	UCSB proposes optimizing the hot and cold deck temperature on supply air handlers at 11 bldg.'s serving 1,373,212 GSF. Metering, data gathering, and testing control strategies is required. Some retrofit of building economizer systems is required	1,139,194	116,802	2,817,744	
	<b>***HVAC Upgrade Projects***</b>					Engineering 2 Monitoring Based Commissioning	Review the Engineering 2 Lab operation & control for seven supply and exhaust systems. UCSB estimates that 5 of the 7 systems can be reduced to 50% speed from midnight to 7am.	221,286	52,019	888,747	
HVAC Retrofit Davidson Library 2002-04	Upgrade of 5 dual duct constant volume air conditioning systems to dual duct variable volume systems with new fans, coils, VAV terminals, and controls.	885,349	116,064	2,484,231		Building Metering	Install 16 new electric meters and 35 new gas new gas meters. Meters energy usage shall be trended using Johnson Metasys & Itron software	623,121	54,498	1,431,952	
	<b>***Lab Ventilation &amp; Pump Retrofits***</b>										
VFD Upgrade at Chemistry 2004	Install VFD and energy efficient motors on: supply and fume hood exhaust fans, fan speeds will be reduced where over-ventilation occurs	848,235	0	1,085,741							
VFD Upgrade at Engr 2 2004, 2005	Install VFD and energy efficient motors on: fume hood exhaust fans, fan speeds and hp will be reduced where over-ventilation occurs	537,206	0	687,624							
VFD Upgrade at PSB N. 2005	Install VFD and energy efficient motors on: supply and fume hood exhaust fans, fan speeds will be reduced where over-ventilation occurs	483,990	0	619,507							
VFD Upgrade On Pumps at Various Bldg's 2004-05	Convert constant speed pumps to variable speed pumping systems, by installing new motors and VFD's on chilled water pumps, condenser water pumps, and equipment cooling pumps	474,727	0	607,651							
	<b>***Monitoring Based Commissioning***</b>										
Silicon Energy Mgmt Software 2001	Implementation of Silicon Energy Analyst Software to monitor bldg and equipment energy usage. Payback is estimated at 3 years based on software's alerting us to problem areas with high energy usage. CEC grant was \$240,000. A minimum energy savings of \$60,000/yr is estimated.	272,730	30,000	698,294							
Broida 2005 Monitoring based Commissioning	CPUC grant funds power measurement, review, and alteration of supply air handlers S1, S4, S5, and S8.	943,452	0	1,207,619							
Engr Sci 2005 Monitoring based Commissioning	CPUC grant funds power measurement, review, and alteration of supply air handlers S1, S4, S5, and S8.	164,893	0	211,063							
Chiller Staging Program 2005/2006	Develop computer program to stage chillers on/off to match chilled loop cooling demand. CPUC Grant will fund 100% of project cost	203,700	0	260,736							
		<b>Energy Saved</b>	<b>Heating Energy Saved</b>	<b>Gas Emission</b>	<b>Reductions</b>						
		<b>KWH/yr</b>	<b>Therms/yr</b>	<b>CO<sub>2</sub> lb/yr</b>							
	<b>Totals</b>	<b>11,300,073</b>	<b>146,064</b>	<b>16,164,278</b>							
							<b>Totals</b>	<b>8,937,445</b>	<b>292,391</b>	<b>14,843,361</b>	