

## **COMMITTEE ON CAMPUS PLANNING, BUILDINGS AND GROUNDS**

### **Revised CSU Policy on Energy Conservation and Utilities Management and Energy Consumption Reduction Goal for 2004/2005 Compared to 1999/2000**

#### **Presentation By**

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#### **Summary**

This item requests Board of Trustees' approval of a revised CSU Policy on Energy Conservation and Utilities Management.

#### **Background**

In 1978, the Board of Trustees approved a policy statement on energy conservation that established a program plan for systemwide energy conservation. This initial plan established 1973/74 as the base year of recorded energy consumption and limited energy consumption measurement to electricity, natural gas and fuel oil. The total of the three energy sources was expressed in British Thermal Units (Btu). The initial goal was to reduce British Thermal Units per Gross Square Foot of building area per year (Btu/GSF-YR) by 40% by 1983/84 as compared to the 1973/74 base year. In November 1988, the trustees adjusted the comparison baseline year and established a new reduction goal of 15% to be implemented by fiscal year 1992/93 compared to 1986/87. Implementation of the policy was delegated to the campuses through CSU Executive Order No. 538.

In the 27 years since the program's implementation, the CSU has achieved an overall reduction of 33% compared to the 1973/74 base year. This achievement is particularly significant when: 1) enrollment has increased from 224,152 full-time equivalent students in 1973/74 to 281,782 full-time equivalent students in 1999/2000, a growth of 25.7%, and 2) the gross area of buildings and facilities increased from 24.98 million square feet to 52.40 million square feet, an increase of 109%. The overall cost avoidance estimated by the energy program for this period is \$350 million.

## **Proposal**

As was reported at the May 2001 Board of Trustees' meeting, energy conservation is of paramount importance considering the current energy crisis in California. As a leading public higher education institution in the state, the CSU has an obligation and a responsibility to lead the way in California's energy conservation effort. The CSU must continue to identify methodologies to render more efficient physical plant utilities operations for the years to come.

Based on a thorough analysis of the achievements of the energy program to date and the opportunities for additional gains in the future, the chancellor's office is recommending that a 15% reduction in energy consumption be established as a systemwide goal to be achieved by 2004/2005 using the adjusted comparison baseline year of 1999/2000. This reaffirmed goal is in keeping with the spirit of Governor Gray Davis' Executive Order D-15-00 directing state agencies to institute energy conservation measures that will reduce energy consumption to help avert severe electrical emergencies.

The CSU is actively participating in state sponsored demand reduction programs that will assist the state in maintaining the stability of the electrical transmission grid throughout California. These programs help avert rolling blackouts that would significantly affect the delivery of the educational programs at the CSU campuses.

With the Board of Trustees' approval of the reaffirmed 15% goal, the chancellor's office staff will develop a systemwide energy conservation database that will measure the reductions in energy consumption and provide valuable information to campus energy managers and chancellor's office staff as existing strategic energy plans are implemented. These plans would detail tactical recommendations in the areas of new construction, deferred maintenance, facility renewal, and energy projects, and contain a structured energy management plan. The success of these strategic energy plans will depend upon the identification of multiple funding sources in the public (federal and/or state) and private sector for financing the projects and programs.

Any elements associated with this policy and the subsequent action plans, which affect terms and conditions of employees, will be negotiated as necessary with the appropriate employee organizations.

## **Revised Policy on Energy Conservation and Utilities Management**

The proposed CSU policy on Energy Conservation and Utilities Management follows (changes to the previous policy shown in italics):

### ***General Provisions***

1. All CSU buildings and facilities, regardless of the source of funding for their operations, will be operated in the most energy efficient manner without endangering public health and safety and without diminishing the quality of education.
2. All CSU campuses will continue to identify energy efficiency improvement measures to the greatest extent possible, undertake all necessary steps to seek funding for their implementation and, upon securing availability of funds, expeditiously implement the measures.
3. All future CSU new construction, remodeling, renovation and repair projects will be designed for optimum energy utilization, lowest life-cycle operating costs, and in compliance with all applicable energy codes (Enhanced Title 24 Energy Codes) and regulations. In instances where a project's current funding does not include energy features consistent with lowest life cycle costing, augmentations will be sought, when warranted. In the areas of specialized construction that are not regulated through the current energy codes, such as historical buildings, museums, and auditoriums, the CSU will apply prudent standards to ensure that these facilities are designed for optimum energy efficiency. Incorporation of energy efficient design features in the project plans and specifications will receive a high priority next only to meeting health, life-safety code elements and the academic program needs of the project within the available project budget.
4. The CSU will promote the use of cost-effective renewable and non-depleting energy sources, wherever possible, both in new construction projects and in existing buildings and facilities. *The campuses will consider implementation of load shifting technologies such as thermal energy storage.*
5. The CSU will take the necessary steps to provide adequate, reliable and cost-effective utilities infrastructure at all campuses for meeting the needs of the present and planned future buildings and facilities.
6. The CSU will actively seek all available sources of funding for implementing energy efficiency improvement and utilities infrastructure renewal projects. Funding sources will include federal and state budget appropriations, federal, state and private sector grants opportunities, and other unique public/private sector financing arrangements, which have been made available through legislative actions in California and the United States Congress. In the event these funding sources are unable to meet the requirements for an approved energy program, priorities within the existing support appropriations will be examined to determine if funds could be made available for project development purposes.

7. The CSU will cooperate with federal, state and local governments and other appropriate organizations in accomplishing energy conservation and utilities management objectives throughout the state; and inform students, faculty, staff and the general public of the need for and methods of energy conservation and utilities management.
8. Each CSU campus will designate an Energy/Utilities Manager with the responsibility and the authority for carrying out Energy Conservation and Utilities Management Programs. The Chancellor's Office will have the responsibility to coordinate the individual campus programs into a system-wide program.
9. *The CSU will monitor energy usage on all campuses and the chancellor's office monthly, and prepare a system-wide annual report on energy utilization. The chancellor's office will maintain a systemwide energy database in which monthly campus data will be compiled to produce system-wide energy reporting. Campuses will provide the chancellor's office the necessary energy and utility data for the system-wide database in a timely manner.*
10. *Each CSU campus will develop and maintain a campuswide strategic energy plan, which will include tactical recommendations in the areas of new construction, deferred maintenance, facility renewal, energy projects, and a structured energy management plan. This plan will drive the overall energy program at the given campus and should be renewed at 5-year intervals.*
11. To monitor the effects of energy conservation efforts on instructional programs and environment, the campus energy/utilities managers shall solicit and evaluate feedback from faculty, staff, and students. *Training on new energy management concepts and programs will be provided as necessary.*
12. *Campuses will maintain a portion of their emergency plan that takes into consideration short-term electrical outages, large-scale grid failures, and natural gas curtailments.*

### **Operations and Maintenance Provisions**

1. Purchased energy resources on CSU facilities will not be used to heat above 68°F or cool below 78° F. Domestic hot water temperatures will not be set above 115° F. These limits will not apply in areas where other temperature settings are required by law or by specialized needs of equipment or scientific experimentation.

2. *Each campus shall operate and maintain a computerized energy management system that will provide centralized reporting and control of the campus energy related activities.*
3. Campus energy/utilities managers will make the necessary arrangements to achieve optimum efficiency in the use of natural gas, electricity, or any other purchased energy resources to meet the heating, cooling, and lighting needs of the buildings and/or facilities. Except for areas requiring special operating conditions, such as electronic data processing facilities, or other scientifically critical areas, where rigid temperature controls are required, buildings and/or facilities temperatures will be allowed to fluctuate between the limits stated above. Simultaneous heating and cooling operations to maintain a specific temperature in work areas will not be allowed unless special operating conditions dictate such a scheme to be implemented.
4. Scheduling of buildings and/or facilities (building) usage will be optimized consistent with the approved academic and non-academic programs to reduce the number of buildings operating at partial or low occupancy. To the extent possible, academic and non-academic programs will be consolidated in a manner to achieve the highest building utilization. Further, the scheduling of buildings will be implemented in a manner to promote central plant and individual building air conditioning system shutdown to the greatest extent possible during the weekend and other holiday periods. Campus energy/utilities managers will make all attempts to change or update building operating schedules to match the changes in the academic programs on a continuing basis.
5. All air conditioning equipment, including supply and return air fans, are to be shut off on weekends, holidays and for varying periods each night, except where it would adversely affect instruction, electronic data processing installations and other scientifically critical or 24-hour operations.
6. *Campuses will participate in State sponsored demand reduction programs, where practical, during periods of CAISO Stage Alerts. Reductions in non-critical loads will be made in an effort to aid in the state electrical grid integrity.*
7. Outdoor air ventilation will be set at *10 CFM/person* or such other higher limits as prescribed by State law or regulations. This restriction does not apply to situations where 100% outside air is called for by properly installed and tuned economizer cycles and in designated smoking areas where the rate may be as high as 15 CFM/person.

8. All windows in buildings and/or facilities that are air-conditioned will be kept closed and as secure as possible to prevent loss of conditioned air.
9. Portable electric heaters and fans are not to be used in CSU facilities unless specifically required by occupants because of medical conditions, failure of the building heating, ventilating or air conditioning systems, or when building heating, ventilating or air conditioning systems cannot be adjusted to achieve minimum comfort levels within the provisions established under Item No. 1. Campus energy/utilities managers will grant such exemptions on a case-by-case basis. Use of refrigerators for non-instructional purposes should be consistent with good energy management practices. Each campus will prepare their own guidelines on this area to discourage proliferation of personal refrigerators.
10. All lighting, except what is required for security purposes, will be turned off when buildings and facilities are unoccupied, such as at the end of the workday. Custodial personnel will turn lights back on only for the time actually required for custodial work.
11. All CSU campuses will, to the greatest extent possible, change custodial hours from evening/night shifts to day shifts to reduce custodial energy usage. Any revisions to the custodial shift schedule will be made in consultation with the energy/utilities manager. Building ventilation and lighting systems will not be operated any more or longer than what is required under health and safety codes during the low load custodial occupancy periods.
12. Indoor lighting will be reduced in number and/or wattage, wherever possible, to provide for the minimum but adequate lighting levels consistent with the needs of instructional programs and State mandated standards for the efficient and effective use of the spaces. Existing incandescent lamps for general-purpose lighting will be phased out and future incandescent lamps will not be allowed unless exempted for very limited and specialized tasks by the Campus energy/utilities managers. *New lighting systems will be in the form of the latest energy saving technology.*
13. Outside lighting on building exteriors and campus grounds will be maintained at levels necessary to provide security and safety to promote confidence within the campus community. Good energy management practices shall be observed within this guideline.

14. Purely decorative lighting on CSU campuses beyond reasonable display lighting, inside or outside, will not be added. Existing decorative lighting beyond reasonable display lighting will be eliminated on a continuing basis. In general, decorative lighting will not be used for commercial or holiday purposes unless specifically exempted by the campus president.
15. All natural gas fired boilers on the campuses will be tuned at least twice annually, and brought up to maximum efficiency unless automated combustion controls are installed. In the case of automatic controls, verification of combustion efficiency shall be conducted routinely or at least once monthly for central plant and quarterly for decentralized boilers. A permanent record of these readings will be maintained on each campus.
16. All CSU campuses will maintain their energy plant and utilities infrastructure improvements in good working order and will undertake preventive maintenance schedules to maintain highest possible system efficiencies and, hence, lowest operating costs.
17. When replacing energy consuming and/or utilities infrastructure equipment, the most cost-effective models will be selected. Life cycle costing procedures, instead of first capital cost only, will be utilized as the basis for all future equipment selection. All possible efforts will be made to secure additional funding if required to effect lowest life-cycle procurement.
18. All CSU campuses will implement a utilities charge back system to recover costs of utilities provided to self-support and external organizations.
19. All CSU campuses will take every necessary step to conserve water resources, including such steps as installing controls to optimize irrigation water, reducing water usage in restrooms and showers and promoting the use of reclaimed water. The use of decorative fountains should be minimized. In the event of a declaration of drought, the CSU will cooperate with the State, city and county governments to the greatest extent possible to effect additional water conservation.
20. The CSU will encourage continuing energy conservation and lowest utilities operating costs on its campuses by instituting appropriate fiscally responsible incentive plans designed to recognize and reward meritorious achievements by campus staff, faculty, and students beyond normal expectation. These incentive plans will be designed in such a fashion that they are adaptable to changing budget constraints from year to year.

**Action**

The following resolution is presented for approval:

WHEREAS, The Board of Trustees of The California State University have historically supported an aggressive CSU energy conservation and utilities management policy and program; and

WHEREAS, CSU campuses have performed admirably in conserving energy resources by reducing their energy consumption by 33% by 1999/2000 compared to base year consumption recorded in 1973/74, thereby avoiding an estimated utilities expenditures of \$350 million; and

WHEREAS, Energy costs in California are projected to increase significantly in the next decade and such increases are estimated to take a greater percentage of the CSU's operating budget, reducing available funds for other essential academic needs and services; and

WHEREAS, Proven opportunities and measures for additional energy conservation and utilities management are available to significantly reduce these costs by instituting and reaffirming sound energy management practices; now, therefore, be it

RESOLVED, By the Board of Trustees of The California State University, that a goal of 15% reduction in energy consumption is hereby established for 2004/2005 compared to 1999/2000 measured in British Thermal Units per Gross Square Foot of building space per year; and be in further

RESOLVED, That the revised CSU Policy on Energy Conservation and Utilities Management in Agenda Item 5 of the July 10-11, 2001 meeting of the Trustees' Committee on Campus Planning, Buildings and Grounds is adopted; and be it further

RESOLVED, That the chancellor or his designee is authorized to take the necessary steps to implement the intent of this policy.