UNIVERSITY OF HAWAI'I at MĀNOA
GREEN BUILDING DESIGN AND CLEAN ENERGY POLICY
October 2006

PREFACE

This policy is first offered to the University of Hawai'i at Mānoa (UHM) campus community at the UHM Chancellor's Energy Summit on October 24, 2006. At this event Interim Chancellor Denise Eby Konan announces UHM's commitment to the Energy Policy. The Chancellor states the goals and outlines the plan as identified in the policy. She is supported by the Vice Chancellors of the Mānoa campus. The Chancellor pledges the commitment of her administration and identifies next steps of UHM community commitment.

Chancellor Konan will establish a schedule to meet in the near future with various UHM stakeholder groups. At those meetings, she will discuss the commitment, its benefits and ask the various groups to review the draft UHM Energy Policy and offer comments.

UHM Groups:

- Deans and Directors
- Faculty Senate
- Sustainability Council
- ASUH Board

Once comments are received and consensus reached, the policy will be promulgated and made available as a model .While this process is proceeding, the solicitation for the UHM Energy Manager and associated office staff will be developed and implemented.

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Hawai'i is more dependent on fossil fuel for electricity generation than any other state. Nearly 90% of the state's energy is derived by burning fossil fuel, 65% of which comes from foreign sources. This has produced the highest electricity rates in the United States and jeopardizes the state's security, economy and environment. It also contributes to global warming and associated impacts on Pacific island nations.

The University of Hawai'i (UH) at Mānoa is second only to the military as the largest consumer of electricity in Hawai'i. The UH system employs nearly 5000 people and serves an enrollment of more than 80,000 credit and noncredit students annually. The Mānoa campus serves one-half of the system's students and employs 70% of the entire system's faculty and staff.

The University of Hawai'i is the intellectual epicenter of the state and region and a widely respected Land Grant, Sea Grant and Space Grant institution that should be the engine for large-scale, long-term beneficial change.

The UHM administration acknowledges that the inefficient use of energy and associated reliance on fossil fuels is an untenable paradigm that must change. The UH system's flagship Mānoa campus has the responsibility to demonstrate cost effective energy conservation and renewable energy strategies on its campus and by so doing, protect state resources, improve the quality of life for the campus community and demonstrate solutions to the larger community. The *UNIVERSITY OF HAWAI'I at MĀNOA'S GREEN BUILDING DESIGN AND CLEAN ENERGY POLICY* is an institutional commitment to promote energy efficiency and conservation, reduce energy costs and green house gas emissions and to implement renewable energy technologies. This policy and its principles will guide all contracts and activities that concern campus planning, building design and renovation and campus operations and programs.

The overarching goal of this Policy is to achieve:

- **a 30% reduction of campus-wide energy use by 2012, based on a 2003 campus energy benchmark**
- **a 50% reduction of campus-wide energy use by 2015, based on a 2003 campus energy benchmark**
- **25% of campus-wide energy use supplied by renewable sources by 2020**
- **By 2050, the Mānoa campus will achieve self-sufficiency in energy and water, and will treat and transform its wastes into useable resources through its actions to conserve and re-use, and through its adoption of renewable energy technologies**

I. GREEN BUILDING DESIGN

a. All new and large-scale retrofit projects for UHM must meet or exceed the Leadership in Energy and Environmental Design (LEED) Silver rating as stated in the State of Hawai'i Act 96.

b. The UHM Energy Management Office will develop a Green Building Design implementation plan. This plan will include a schedule with goals, milestones and financing options for achieving the campus renewable energy goals. This plan will be coordinated with the larger campus energy plan.

c. Given the importance of specifically addressing sustainability in laboratory facilities, the UHM will design and build all new laboratory buildings to a minimum standard equivalent to a LEED Silver rating and the *Laboratories for the 21st Century (Labs21) Environmental Performance Criteria* (EPC). Energy modeling will be done in accordance with Labs21 guidelines. Such design processes will include attention to energy efficiency for systems not specifically addressed by the State of Hawai'i Act 96.

d. Any proposed exception from the standards set in the UHM Energy Policy may be requested administratively during preparation of project planning and shall require consultation by the University's Energy Management Office (see Energy Office). Any exception proposed after approval by the Energy Management Office will be treated as a scope change and shall require additional consultation.

e. The Office of the Mānoa Chancellor and the Office of the Mānoa Vice Chancellor of Administration, Finance & Operations will develop an internal evaluation and certification standard, to support the goals of this Energy Policy, based on the LEED and *Labs21* measures.

f. The campus administration, in consultation with the Energy Management Office, may choose to obtain external certification through the *LEED* process, augmented with *Labs21* criteria, as appropriate for laboratory and other campus building types and planning projects, in lieu of the internal process for a given project.

g. The UHM Energy Management Office will develop a Campus Energy Management Plan to include specific long and short-term energy strategies, a prioritization of energy conservation projects that are coordinated with the Long Range Development Plan, the campus master plan, the campus strategic and academic plans, a schedule showing yearly goals and milestones for achieving the goals of the UHM Energy Policy, which includes recommendations for financing energy conservation projects and a method to coordinate the campus renovation, repair and maintenance schedule with all energy efficiency retrofit projects.

h. The measures required by this policy will be incorporated into all new building, planning and renovation projects submitted for first formal scope and budget approval as of July 1, 2007.

i. The UHM Energy Management Office will implement an Energy Star procurement policy and an aggressive water conservation program.

j. The campus is encouraged to apply other sustainability principles, including but not limited to; best practice land use policy, reduced vehicle miles transportation demand, encourage alternative transportation modes including improved pedestrian and bicycle environments, ground water recharge, environmentally supportive landscaping, and the linkage and enhancement of exterior spaces to interior building improvements in a manner that elevates the overall quality of the campus experience.

k. The University planning and design process will include explicit consideration of lifecycle costs along with other factors in the project planning and design process, recognizing the importance of long-term operations and maintenance in the performance of University facilities. Value engineering shall be based on maximizing value and minimizing lifecycle costs to the University (vs. focused on reducing first cost).

l. An Energy Efficiency report will be submitted to the Energy Management Office for all new building and renovation projects in the preliminary design phase and updated in subsequent phases. The Energy Management Office will develop the required content of the Energy Efficiency project report, but at a minimum it will include a description of efficiency measures incorporated into the project, their impact, and a description of measures evaluated and rejected.

m. New building and renovation projects over $10 million will host a design "charrette" with all stakeholders during the conceptual design phase to identify energy opportunities for the project.

n. New building and renovation projects over $10 million shall include an independent Commissioning Authority, and shall be fully commissioned. The Energy Management Office shall develop commissioning specifications, but as a minimum, the Commissioning Authority shall assure design intent and basis of design documents are prepared, and shall perform independent review to assure that the design and constructed building meet expectations. Further the Commissioning Authority shall confirm that all project documentation, including as-build drawings and sequences of operation have been accurately prepared turned over to the University.

o. All major mechanical and electrical systems in new buildings and renovation projects over $10 million shall be metered and permanently connected to a data acquisition system. In conjunction with the Energy Management Office and the design team, performance metrics will be developed in the design phase and benchmarked at start-up and commissioning. Graphic screens and reports will allow users to easily track performance over time.

p. For existing buildings, the University will explore the development of a standard methodology for sustainable policies and standards for facilities management, including assessing the *LEED* Existing Building (*LEED EB*) evaluation tool. These policies and standards will address aspects of building cleaning, maintenance, and operation to include factors such as chemical usage, indoor air quality, utilities, and recycling programs.

q. Once the assessment method for facilities management has been established, an annual Energy Policy progress report will be submitted by the director of facilities management to the UHM Campus Energy manager. The Energy Manager Office will, in turn, submit an annual report to the UHM campus administration. The annual report will include a measured evaluation of the progress towards the goals stated in the UHM Energy Policy.

r. The University, and its designated representatives, will work closely with groups internal to the campus community as well as the U.S. Green Building Council, *Labs21*, the Department of Energy, the U.S. Environmental Protection Agency, State government, the utilities and other organizations to facilitate the successful implementation of the UHM Energy Policy and to improve methods to evaluate progress on policy goals.

s. The University will use its purchasing power to promote the availability of products that are resource-efficient, energy-efficient, water-efficient, and of recycled and rapidly renewable content for building materials, subsystems, components, equipment, and supplies.

t. The University will work with regulatory agencies and other entities to speed the development, approval, and implementation of products and technologies that improve energy efficiency and support sustainable design, construction, and operating practices.

u. The University will utilize its Center for Smart Building and Community Design to develop a program for sharing of best practices throughout the State of Hawai'i.

v. The University will incorporate the principles of the UHM Energy Policy into existing facilities-related training programs, with the aim of promoting and maintaining the goals of the policy.

II. CLEAN ENERGY POLICY

a. The Campus Energy Management Office will develop and implement a campus-wide approach to reduce consumption of non-renewable energy. This will include a combination of energy efficiency projects, the incorporation of local renewable power measures for existing and new facilities, green power purchasing opportunities (when available), and other energy measures that have demonstrably positive effects on environmental quality, a reduction in fossil fuel use and associated emissions. The appropriate mix of measures to be adopted will be approved by the UHM administration in consultation with the UHM Sustainability Council. Inasmuch as the capacity of the Mānoa Campus to adopt these measures is driven by technological and economic factors, the campus will need to reevaluate their energy measures mix on a regular basis. An institutionalized program of building recommissioning will provide valuable analytical information for improving energy efficiency, resulting in an overall improvement in the University's impact on the environment and reduced reliance on fossil fuels during the next decade of capital program growth.

b. In support of the energy conservation and renewable energy goals stated in the UHM Energy Policy, the UHM Energy Management Office will develop a strategic plan for renewable power projects in existing and new facilities. The plan will include renewable energy and conservation demonstration projects for photovoltaic systems, wind power and other energy efficient systems, such as ground-source heat pumping, absorption chilling, variable-air-volume fume hoods and heat wheels among others. The strategic plan will include criteria for evaluating the feasibility of a variety of projects, such as incorporating photovoltaic systems in replacement roofing projects and in new buildings, as well as forecasting the accommodations necessary for eventual installation of renewable systems. The office will assess the progress of renewable energy technology improvements, both in terms of initial cost, life cycle cost, and technical efficiency. To achieve the renewable power goal of 25% renewable by 2020, the University will maximize the use of available subsidies and negotiate pricing reductions in the marketplace, and will develop funding sources for financing the costs of renewable energy measures.

c. Energy Management Office will develop a UHM renewable energy implementation plan. This plan will include a schedule with goals, milestones and financing options for achieving the campus renewable energy goals. This plan will be coordinated with the larger campus energy plan.

d. With a goal of reducing campus-wide non-renewable energy consumption, the UHM energy Management Office will coordinate all strategic energy planning and facilities management activities to ensure the identification of all opportunities to incorporate energy retrofit projects into major building renovations as funding is available, and to initiate standalone retrofit

projects as justified by future energy savings. The office will monitor industry progress in energy retrofits and implement technical improvements as they become available. As with energy efficiency projects, the University will develop funding sources and establish a program for financing renewable energy projects. The initial goal for energy efficiency retrofit projects will be to reduce campus-wide, growth-adjusted energy consumption by 50 percent or more by 2015 from the year 2003 base consumption level. Greater savings can be achieved as additional potential is identified and funding becomes available. Fossil fuel reliance will decrease as the campus renewable energy projects are implemented and coordinated with the energy conservation projects.

e. The Energy Management Office will continuously evaluate the feasibility of other energy-saving measures with equivalent demonstrable effect on the environment and reduction in fossil fuel usage.

f. The Energy Management Office will identify a variety of funding sources and financing alternatives for implementing energy efficiency, renewable energy, and clean energy projects.

g. The Energy Management Office will pursue carbon reduction and carbon sequestering methods and will pursue marketing of the resulting emissions credits as a means to bridge the cost-feasibility gap for green power projects.

h. With an overall goal of reducing greenhouse gas (GHG) emissions while maintaining enrollment accessibility for every eligible student, the University will pursue the development of a long term strategy for voluntarily meeting the 2030 Challenge for carbon reduction as agreed to by the US Conference of Mayors in may of 2006.

i. The Mānoa Vice Chancellor for Administration in coordination with faculty, students and other stakeholders (e.g. the Sustainability Council), will investigate options for collecting, monitoring, and certifying energy use and greenhouse gas (GHG) emissions. The campus Energy Management Office along with Campus Facilities will develop an in-house methodology by which to collect, monitor, and certify energy use and GHG emission. The campus Energy Management Office will also develop benchmarking processes to measure overall energy use over time.

On an annual basis, the Mānoa Chancellor will provide a report to the campus community detailing the impact of the University's sustainability efforts on the overall capital program, University operating costs, energy use, and campus transportation resources. The UHM Green Building Design and Clean Energy Policy will be subject to continuous review. The Policy will be reexamined every three years, with the intent of developing and strengthening implementation provisions and assessing the influence of the Policy on existing facilities, new capital projects, plant operating costs, fleet and transportation services, and campus accessibility, mobility, and livability. The University will provide means for the ongoing active participation of students, faculty, administrators, and external representatives in further development and implementation of the Green Building and Clean Energy Policy.