**Testimony Submitted to**

**U.S. Senate Committee on Energy and Natural Resources**

**For the Record of the**
**Hearing on Financing Efficient Buildings**
**June 28, 2012**

**By the**
**National Association of College and University Business Officers**

This testimony is submitted today on behalf of the National Association of College and University Business Officers (NACUBO) which represents chief financial officers and their staff at more than 2,100 public and nonprofit colleges and universities. NACUBO's mission is to promote sound administrative and financial management of institutions of higher education.

In 2009, NACUBO, in collaboration with Second Nature, published "Financing Sustainability on Campus," a resource detailing a range of financing strategies and options available to campuses responding to the challenges of financing sustainability efforts. The full range of financing options are examined in the publication, including internal resources, grants, bank loans, bonds, leases, energy performance contracts, tax incentives, power purchase agreements, energy hedges, renewable energy certificates, and carbon offsets.

In a more recent report, "Higher Education: Leading the Nation to a Safe and Secure Energy Future," published in June of 2012 by the National Association of College and University Business Officers, Second Nature, and the American College & University Presidents' Climate Commitment, the organizations explore how the federal government can develop and enhance clean energy incentives and investments that are specific to the higher education sector and how these federal policy options could further stimulate deep energy-efficiency and renewable-energy investments at colleges and universities.

This testimony reflects the five federal policy options presented in that report and explores how federal support, with state and local government initiatives as well as with institutional funds and private-sector investments can expand possibilities and mitigate or eliminate barriers to furthering energy efficiency goals at colleges and universities across the country.

**Building on a Solid Foundation**

Higher education institutions are on the forefront of advancing efficient and renewable energy production—from wind and solar generation, to natural gas cogeneration, to geothermal and biomass heating and cooling systems. Equally impressive are the dramatic measures taken to maximize the operating efficiency of campus infrastructure. During the past decade, institutions have systematically curtailed energy consumption through multiple rounds of lighting upgrades, weatherization initiatives, and energy audits and system controls, and have implemented

institution-wide Energy Star procurement policies. Buildings that adhere to advanced levels of energy-efficient performance criteria are commonplace on many college and university campuses. The sector has also embraced aggressive programs for water conservation, waste minimization and recycling, alternative-fuel vehicle fleets, and local food production—each with direct and indirect impacts on campus energy demand.

All these changes are spurred in part by a growing environmental consciousness among students, but they also represent higher education's commitment to equip graduates to be future leaders and problem solvers within a starkly different energy economy than that of decades past. The pursuit of substantial energy savings and new energy sourcing also reflects a strong and growing commitment to energy efficiency among presidents and campus business administrators and a mounting consensus that such shifts in campus operations are necessary to contain costs. Ensuring long-term energy reliability and financial security of the academy are crucial in advancing the educational mission of America's colleges and universities.

According to the National Center of Education Statistics (NCES), colleges and universities annually expend more than $14 billion in operations and maintenance of buildings and grounds. They also expend between $6 billion and $7 billion each year on energy and utilities, about three quarters of which is directed toward electricity generation, transmission, and use.

Estimates from APPA, the national association representing higher education facilities officers, suggest that America's colleges and universities collectively own and manage more than 250,000 buildings and heat and cool more than five billion square feet of space on a daily basis—no insignificant expenditure. For every college and university, stewardship of energy resources bears a direct impact on the institution's ability to be a good steward of its financial resources.

In many ways, institutions of higher education represent the ideal partner to engage in advanced energy solutions.

- **Small-scale cities.** Many higher education institutions are, in effect, small-scale cities. Through the built infrastructure of their campuses, colleges and universities operate as mini-municipalities of several hundred to tens of thousands of individuals. Many campuses have their own power plants in addition to academic and research buildings, dormitories, cafeterias, athletic facilities, transportation fleets, and more.

- **Long-term investors.** The higher education sector's long-term perspective regarding investments, infrastructure, and buildings, combined with its willingness to adopt new ideas and technologies and to "go deep" with energy-efficiency retrofit projects underscore the fact that American colleges and universities can play a key role in leading the nation to energy independence, energy security, and energy innovation.

- **Cross section of the nation.** Geographically diverse and serving nearly every population center across the country, U.S. higher education institutions are ideal places to test unique local and regional energy solutions and markets in the drive toward energy efficiency, energy independence, and energy security.

- **Learning laboratory.** Higher education has a long tradition of equipping graduates with not only the technical skills and knowledge to meet current workforce requirements, but also the critical problem-solving abilities to discern emerging trends and to solve society's greatest challenges. Modeling a variety of energy solutions on their campuses is one way colleges and universities are preparing future scientists and civic leaders to meet tomorrow's energy challenges and opportunities.

- **Job trainer.** From the responsiveness of community and technical colleges to quickly develop and introduce training programs to retool workers' skill sets, to the systems thinking and complex problem solving offered through immersive learning opportunities that are a hallmark of so many residential liberal arts campuses, to the sophisticated and cutting-edge discovery that takes place at the nation's research universities, the higher education sector collectively holds the capacity to train the next generation of energy managers, engineers, architects, scientists, and entrepreneurs.

- **Driver of market transformation.** In addition to showcasing to society what is possible in the realm of deep energy efficiency, the higher education sector has the capacity to create new and better markets for goods and services. Consider that the U.S. higher education sector represents operational budgets totaling $350 billion annually—about 2.5 percent of U.S. gross domestic product (GDP). College and university campuses not only possess the purchasing power to encourage emerging and local energy markets, but they are also in a position to sustain these markets.

**Potential Savings in Energy Demand, Supply, and Distribution**

New opportunities exist for colleges and universities to dramatically improve their energy and fiscal stewardship by further reducing energy consumption (demand), altering and expanding their energy sourcing (supply), and maximizing infrastructure improvements that address energy storage (distribution).

**Demand.** Opportunities for higher education to lower demand through deep energy retrofits fall into three primary categories.

- **Smart labs and high-performance buildings.** As a nation, the United States takes pride in its status as a world leader in cutting-edge research. One reason that research-intensive institutions in particular have difficulty reducing overall energy consumption is because today's highly sophisticated research typically requires advanced levels of heating and cooling, illumination, and information technology (IT) infrastructure to support the research mission. The costs to build highly efficient labs and retro-commission existing labs and other campus facilities to improve their energy efficiency are extensive, yet the potential energy savings through the introduction of advanced efficiency measures are as dramatic. When considering that for many research universities, two thirds of total energy costs for the campus' core teaching and research buildings are directly associated with their laboratories, it makes sense to implement measures that safely manage "smart"

energy use. The ability to dramatically curtail research-related energy consumption—particularly in the thousands of university research labs across the country—would not only lower the overall cost of research-related education but would help maximize the federal dollars flowing into the higher education sector for sponsored research, thereby providing a direct benefit to taxpayers.

- **Illumination.** Every campus, large or small, can benefit operationally from broad incorporation of the latest developments in advanced lighting technologies to more efficiently illuminate everything from classrooms to parking lots. Today's lighting retrofits go far beyond switching out fixtures. Total redesign of lighting systems can incorporate better spacing of fixtures and the introduction of task lighting as well as circuits zoned to maximize daylighting and influence occupancy behavior. This more sophisticated approach to determining lighting requirements and efficiencies of laboratories, classrooms, office spaces, residential settings, and alongside roads, parking facilities, streets, and pathways suggests that the potential for savings is not only significant when extended across an individual campus, but is also highly scalable across the entire higher education sector and beyond.
- **IT/computers.** While computing and information technologies do not account for the biggest share of campus energy consumption, they do represent the fastest-growing energy strain on most campuses. Growing on average at a rate of 20 percent per year, IT-related energy costs could quickly eclipse those of illumination if left unchecked. For instance, computing clusters purchased with federal dollars create excessive energy demands when the equipment is not installed in an energy-efficient facility setting.

**Supply.** Expanding energy-supply options is good not only for colleges, but for the country. Many higher education institutions are already pursuing a diverse energy strategy centered on enhanced efficiency and the transition to renewable and reliable clean energy sources as a way to stabilize long-term energy costs, provide hands-on educational opportunities for students, encourage local and regional economic growth through development of new energy markets, and reduce dependence on nondomestic energy supplies. Generating demand for renewable energy should encourage continued development of related technologies that can lower the costs of these energy sources.

**Distribution.** As the nation moves to increase its share of renewable energy production, lingering challenges include the intermittency of renewable power and the lack of an adequate energy storage and distribution system. In many respects, colleges and universities are in the best position to lead the country in developing solutions to thermal energy storage and distribution because of efforts already under way on many campuses to incorporate smart metering and design microgrids that can transfer energy across campus infrastructure based on demand.

While many colleges and universities have tackled the low-hanging fruit of quick-payback energy efficiency and conservation efforts on their campuses, deep energy-efficiency measures represent a tremendous and as yet untapped opportunity for the higher education sector to further reduce operational costs.

Herein lies a key role for the federal government: to assist institutions in meeting the initial costs of pursuing advanced energy-efficiency opportunities, infrastructure modifications, and alternate sourcing of energy. The right mix of incentives and investment could boost institutions over the hump of the current cost feasibility gap in order to invest in projects that over time would yield long-term savings dividends for taxpayers.

**Five Policy Options for Fostering Energy Efficiency and Renewable Energy at Colleges and Universities**

**1. Allow tax-exempt revenue bond financing to prepay power purchase agreements.**

The transition to renewable energy is most expensive for the first 5 to 10 years until projects begin to pay off. Because large-scale power purchase agreements (PPAs) for these projects cost more initially, one solution would be to allow colleges and universities to pre-purchase a 20-year supply of power with low-cost capital bonds and with flexibility to shape the debt (e.g., interest-only payments during the early years). The opportunity to use tax-exempt revenue bond financing for prepayment of PPAs is currently not a qualified use for the nonprofit higher education sector, although it is available to municipal utilities.

Many colleges and universities effectively constitute small municipalities, replete with infrastructures, municipal services like parking and security, and on-site energy utilities that serve an array of customers. Investing in an institution's energy infrastructure will yield certain, long-term fiscal benefits to taxpayers through downward pressure on tuition and indirectly through lower federal and state financial aid dollars spent on utility bills.

**2. Develop new energy-efficiency and renewable-energy loan options for institutions of higher education.**

Colleges and universities use term loans to fund a wide variety of projects, including energy investments. There is wide variability in up-front and ongoing administrative costs as well as interest rates, debt term and structure, and market conditions on bank debt. A federal loan guarantee program and/or a federal revolving loan fund dedicated to higher education energy-efficiency and renewable-energy efforts can take some of the variability and uncertainty off the table as institutions embark on a long-term energy strategy.

a. **Establish a federal loan guarantee program for energy-efficiency or renewable-energy projects at institutions of higher education.** One potential solution for financing advanced energy-efficiency and renewable-energy projects is to provide access to guaranteed loans. Federally backed loan guarantees are particularly beneficial to colleges and universities because these would prevent institutions from pushing beyond their debt capacity limits, which could jeopardize an institution's credit rating and adversely impact its borrowing ability, its reputation, and its cash flow while also increasing the cost of all functions that depend on financing. Providing such an option for the higher education sector to finance energy projects would also provide real value for the government, since there are few entities that are

less risky than public universities when it comes to offering loan guarantees, and since the outcome would return real savings to taxpayers.

b. **Develop a federal revolving loan fund for energy-efficiency initiatives.** Revolving loan funds (RLFs) are increasingly common on college campuses and could be used as a model for federal investment. A revolving loan fund provides capital for projects that create some level of return or cost savings, such as energy-efficiency or renewable-power projects. Some portion of that return or savings is used to repay the fund until the full project cost has been paid off. Repayment can include an interest rate or be interest-free. As the fund is replenished it can finance more projects that meet the RLF's investment criteria. According to a recent study by the Sustainable Endowments Institute, more than 50 higher education institutions have at least $66M invested in green revolving loan funds, with an average rate of return of 32 percent. Colleges and universities have generally found RLFs to be a flexible, relatively low-cost, high-return mechanism for funding energy-efficiency projects. Such a program on a national scale would result in tremendous efficiencies on campuses across the nation.

**3. Establish, alter, and fund federal grant programs.**

Section 471 of the Energy Independence and Security Act of 2007 authorized, for FY09-FY13, grants and loans to institutions of higher education to carry out projects to improve energy efficiency. Unfortunately, the program has never been funded. Congress should support the overall goals of Section 471 and consider reauthorizing and funding the program. The higher education sector recommends modifying the program to incent state-based matching grant programs, eliminating the $1 million limit on the maximum award, and enabling the federal grant to support up to 30 percent of total project cost.

Additionally, the American Recovery and Reinvestment Act of 2009 created a renewable-energy grant program that is administered by the U.S. Department of Treasury as Renewable Energy Grants, taken in lieu of the federal, business, energy investment tax credit (ITC). Only colleges and universities partnering with commercial developers can benefit from the program. Eligibility should be extended to tax-exempt entities.

**4. Allow long-term charitable deductions and tax credits for biomass and biomethane contributions.**

Solar, wind, hydro, and geothermal energy are not viable options in all parts of the country. However, biomass and biomethane, especially in agriculturally dense communities, have proven to be practicable options and of growing interest within the higher education sector for combined heat-and-power applications. These systems hold great promise not only for college and university energy generation but for transforming the nation's energy economy. Yet, construction of a bio-digester plant represents a huge capital investment—upwards of tens of millions to hundreds of millions of dollars to get up and running at scale. Likewise, assurance of a steady flow of the materials needed to power the system is essential for embarking on such a large-scale commitment. A change in the tax code to assign a charitable contribution to a

supplier of organic material (e.g., farm, canning operation, cheese maker, etc.) and make it contingent on a length of time (e.g., 10 years) would give incentive to the provider to maintain the flow of materials and would provide reassurance regarding supply to institutions contemplating such a major investment. Gift tax benefits should be offered for the imputed value of source materials if donors are willing to make a 10-year commitment.

Extending existing incentives and tax credits to biomass, biogas, biomethane, and geothermal production in addition to wind, solar, and hydro power solves a supply-side challenge and could make the difference for many institutions to take advantage of readily available renewable-energy sources in their region. Agricultural communities in particular offer great promise for institutions to partner on projects that would reduce consumption of and dependence on foreign sources of energy and would open up new possibilities for domestic fuel markets.

**5. Extend eligibility of clean and renewable energy bonds.**

The U.S. higher education sector is a national leader in renewable-energy purchasing and development. Colleges and universities in many cases are exceeding state-mandated renewable portfolio standards as part of their total power supply, some with support from Clean and Renewable Energy Bonds. The CREB program allows entities to finance renewable-energy projects at lower costs than traditional financing mechanisms. Currently, private colleges and universities are not eligible to take advantage of this tax credit bond. Extending eligibility of this financing option to independent institutions could boost participation in renewable-energy markets.

In conclusion, at a time when economic resurgence and job creation remain national priorities, incentivizing investment in infrastructure that can lead to economic productivity and markedly lower costs is not only logical, but necessary. For public institutions in particular, it is fiscally responsible for governments to take the steps necessary to make every investment in energy efficiency for the properties they own. Through bolstering incentives and investments in advanced energy efficiency and clean domestic-energy sourcing, both federal and state governments have the means to avoid waste and to pursue the wise use of taxpayer dollars applied to these efforts to ensure that precious resources are available for other critical needs.