The Case for Support of the

INSTITUTE FOR ENERGY EFFICIENCY
University of California, Santa Barbara

Highlights of the Case

As the world’s population grows and developing countries continue to advance to a higher standard of living, the demand for energy consumption threatens to outpace supplies. Fossil fuels, which currently account for 85 percent of the world’s energy needs, have a limited capacity to meet this demand and ultimately will be depleted.

Energy efficiency is the most practical, achievable, and affordable solution to this predicament. There is no better opportunity to reducing our dependence on fossil fuels, without compromising economic growth and quality of life. Less than 50 percent of all energy consumed in the U.S. does useful work. The rest is wasted. Here at the Institute for Energy Efficiency we are working on innovative, technology-based solutions that will ensure improved efficiency. Less waste = less dependence on fossil fuel and more opportunities for gains in economic performance.

The Institute for Energy Efficiency at UC Santa Barbara, one of America’s leading research universities, is flourishing. We’re on the threshold of great advances. We’re replacing incandescent bulbs and fluorescent lamps with solid-state lighting; making solar cells simple and inexpensive; using thermoelectric materials and devices to directly convert waste heat to electricity; and lowering the heat output and cooling requirements of computers and data circuits. All these innovations and more are possible when fueled by visionary supporters. Every breakthrough saves staggering amounts of fossil fuels and greenhouse gases in the years to come. Support for the Institute for Energy Efficiency is an investment in a cleaner environment, a more robust economy, greater national security, and a brighter, more hopeful future.

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THE OPPORTUNITIES ARE RIGHT FOR OUR TIMES

• Energy efficiency is economically viable; much can be achieved at net savings and without subsidies or incentives.
• Energy efficiency is beyond politics. Whether climate change is on the radar or not, greater energy security will come by reducing dependence on foreign oil. Other benefits include a healthier environment due to fewer carbon particles, mercury, and other toxic emissions, and improved economic productivity.
• Energy efficiency is good for the economy and essential to quality of life in both developed and developing countries. Successful innovations in energy efficiency enable individuals, families, and businesses to do more with less.

THE INSTITUTE FOR ENERGY EFFICIENCY HAS A UNIQUE SET OF ASSETS TO PURSUE ENERGY EFFICIENCY

• Our focus is on the science and technology needed to achieve advances in energy efficiency clear mission, uncomplicated by larger issues of energy policy and climate change.
• We have nationally recognized research strengths in materials, engineering and physical sciences, and environmental economics, which distinguish us from other comparable university-based institutes.
• In the short time that the Institute has existed (3+ years), we have established a number of successful programs to accelerate research and commercialize new technologies.
• In our first year, we secured a $19 million grant from the Department of Energy to develop innovative materials and devices for energy-efficient technologies.
• The Institute has an established record of financial support from individual donors, corporations and federal agencies.
• We have strong support and guidance of key leaders in many fields, including business, technology, and law (our Directors Council and Global Advisory Board), and strong support of the entire university community, including the Chancellor, the deans, the faculty, students and staff.
• We are an interdisciplinary organization, bringing together faculty from across colleges, departments, and disciplines to share ideas and collaborate on new science and technologies for energy efficiency. Some examples of recent research accomplishments are:
  a) a new class of organic molecules that have improved performance for low cost solar cells;
  b) embedded nanostructures produce higher efficiency LEDs for solid-state lighting;
  c) nanostructured composites for making electrodes for lithium ion batteries that have higher energy storage and discharge rates and greatly improved fatigue;
  d) hybrid optics/electronic circuits for high efficiency, high capacity terabit ethernet communication networks; and
  e) a new class of nanostructured materials for more efficient thermoelectric conversion of waste heat directly into electricity.

THE BUILDING WILL BE A “LIVING LAB” FOR THE INSTITUTE

The Institute’s building will be a unique model of an energy-efficient building, incorporating many innovative energy-efficient features, such as an intelligent energy management system, solid-state lighting, renewable energy sources, and natural ventilation.
• It will be a living laboratory—a place where innovative new technology will be developed and applied, some of it to the building itself.
• It will co-locate Institute researchers, currently dispersed over eleven buildings on campus, to provide a fertile ground for collaboration and thus accelerate the research programs of the Institute.
• Although there has been significant investment in capital for engineering and science buildings over the past ten years, UC Santa Barbara is still significantly under resourced in this area.
• A new building will enable the Institute and the University to attract new faculty with good office space and state-of-the-art laboratories – the quality and quantity of our space must be on par and meet the needs of the quality of our researchers and students.
• It will be architecturally distinct—one of the landmark buildings on campus.
• It will provide a venue for the Institute’s seminars, meetings and conferences, such as its highly successful Technology Roundtables.

SUPPORTING A FISCALLY SUSTAINABLE, PRODUCTIVE FUTURE

• For visionary supporters, this is a milestone opportunity to invest in an energy-efficient future. There are a number of ways to support the Institute—with gifts to support the new building, hire faculty, and support students and ongoing Institute operations.
• While the Institute’s signature building has already been named to honor lead donors Jeff and Judy Henley, a visionary donor could name the Institute itself. There are a number of other naming opportunities to support labs, classrooms, lecture halls, open spaces, fellowships, and faculty.
• Phase I seeks to raise:
  - An additional $25 million to complete “Henley Hall”
  - $10 million or more for faculty recruitment, retention and student support
  - $5 million for Institute operations and programs