

# Solar Array Installation Project

A Proposal for the Student Sustainability Committee

Krannert Center for the Performing Arts  
College of Fine and Applied Arts

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## PROJECT DESCRIPTION

The goals of Krannert Center for the Performing Arts' solar array project—installed on approximately 20,000 square feet of the Center's roof/plaza area—are to yield significant energy savings (an estimated 13%), increase awareness of the Student Sustainability Committee's efforts, position the Center as a national model for performing arts sustainability, reduce green house gas emissions, and to inspire and motivate individuals to reduce their individual "footprints" through education and by example.

The Center is requesting \$200K from the Student Sustainability Committee and a loan of \$600K—to be repaid after receiving an anticipated 3:1 matching grant from the Department of Commerce and Economic Opportunity (DCEO) in 2012—for a total project cost of \$800K.

Since its inception, Krannert Center recognized the social responsibility associated with its role as the nation's leading university-based performing arts center. Not only does Krannert Center stand for the very best in education, research, and public engagement in the arts, but fully leverages its unique and diverse array of physical assets and operational components to respond to larger societal issues, motivate individuals to address those issues, and serve as a model for the community, state, and nation.

When the doors first opened in 1969, the Center was not only recognized for its leadership in the arts, but for its leadership in accessibility—long before federal regulations mandated it through the Americans with Disabilities Act. This began a tradition of *leading beyond the arts* to which the Center remains firmly committed.

Now, once again, our society finds itself at a critical moment—a moment in which we must take immediate action in order to sustain our very existence. Krannert Center again recognizes the significant role it can play in motivating individuals to change their behaviors and attitudes by serving as a model for sustainability throughout its facility and operation while presenting potentially transformative artistic experiences related to the human/environmental relationship.

To date, Krannert Center for the Performing Arts (KCPA) has taken a holistic approach to sustainability—a commitment not only to energy savings, but to an overarching philosophy that values the total ecosystem and attempts to lessen its negative impact. In support of this holistic philosophy, the Center is committed to purchasing products/services whose life cycles are less harmful to the environment; actively communicating about the Center's efforts to all users in order to increase awareness of sustainability issues; and presenting artists whose work and/or messages explore the human/environmental relationship. With the assistance of the University of Illinois Student Sustainability Committee (SSC), the University of Illinois, Facilities and Services (F&S) and the Illinois Clean Energy Foundation, Krannert Center has made great strides towards its goal of becoming a model for sustainability while reducing its energy consumption by over 50% since 2004. Highlights of these efforts include:

- significant HVAC and facility-wide lighting retrofitting—including the conversion of more than 700 lobby lighting fixtures to LED technology;
- Illinois Green Business Certification of Intermezzo Café;

- phasing out of all office printers with conversion to high efficiency copy machines;
- computer back-up systems that allow users to completely cut power to computers at night;
- implementation of broad-based sustainable practices and philosophies, such as the conversion of food items to sustainable and local sources, the use of corn-based “to go” items in its café, the addition of sustainable products in the Center’s gift shop, and the use of ecofriendly cleaning products;
- use of communal bikes for use by daily “runners” for package pick-up/delivery;
- implementation of a battery, ink cartridge, and aluminum recycling program—beyond the existing campus-wide recycling program; and
- the exclusive use of Forest Stewardship Council certified printers and paper that contains a minimum of 30% post-consumer waste.

This project has been evolving for over a year through communication with representatives of the Student Sustainability Committee, Krannert Center leadership, the College of Fine and Applied Arts Dean’s Office, the University’s Facilities and Services division, and the Department of Commerce and Economic Opportunity.

A meeting was held in the Fall of 2010 to review the feasibility of the project, F&S planning processes/timelines, F&S management fees,

and information needed to proceed. As a result of this meeting, the project was deemed feasible (roof and plaza weight loads were determined to be adequate in 2009 when an engineering study was conducted by Soodan and Associates) and Albert Fliman, member of the SSC committee and engineering student, offered to conduct the initial research on appropriate solar arrays including the determination of maximum square footage and output based on funds available and potential energy savings based on kilowatt output and analysis of KCPA's energy use. Most solar arrays of this type have a lifetime of approximately 25 years and are virtually maintenance free except for the need to replace batteries 1 to 2 times during the project's lifetime (many solar companies provide battery replacement as a part of the warranty). Krannert Center has a dedicated building operations staff who can manage maintenance with proper training.

On January 24, KCPA submitted a Capitol Project Request form to the Chancellor's Capitol Review Committee; they are awaiting confirmation of funding before acting upon this request. Brett Stillwell, project planner for F&S, created a Project Start Up Form for the project on January 27, 2012 (see attached).

## BUDGET, FUNDRAISING, AND TIMELINE

Preliminary Research has been conducted (as previously described) for a solar installation. Based on this research, a proposed 14.5 grid-tied solar systems (<http://www.wholesalesolar.com/system/solar-sky-78-trina-grid-tie-solar-power-system.html>) covering nearly 20,000 square feet (see KCPA Solar Diagram for locations) could be purchased. The following budget was prepared by Brett Stillwell, Planner, F&S:

## BUDGET

Construction	\$585000
Bid Contingency	\$29250
Construction Contingency	\$58500
Owner's Cost	\$40,784
Professional Services	\$85763
Total	\$799297

It is doubtful that the project could move forward without the support of the SSC, although the Center is committed to pursuing private and/or public funding to install a scaled down version if possible.

## Fundraising

As mentioned previously, the Center is reliant on the 3:1 matching grant from DCEO. The Center is also committed to securing funds from any and all sources, both private and public. The Krannert Center donor pool contains a number of individuals and corporations that the Center plans on approaching for donations to support the project. Additionally, the Center's development department includes a professional grant writer and we are committed to seeking support from other sources (e.g. Illinois Clean Energy Community Foundation, Environmental Change institute, Office of Sustainability, etc.)

## Timeline

The following timeline was provided by F&S, pending funding commitments (see attached):

Conceptualization	3.30.12 to 7.09.12
Design Development	7.10.12 to 10.15.12
Construction Docs 50%-95%	10.16.12 to 1.28.13
Construction Docs 95% Review	1.28.13 to 2.11.13
Bidding	2.11.13 to 5.03.13
Construction	5.03.13 to 1.09.14
Substantial Completion	12.10.13 to 12.10.13
Warranty	12.12.13 to 12.11.14

## ENVIRONMENTAL, SOCIAL, AND ECONOMIC IMPACTS

Based on initial research, this project will generate 35,500 kilowatt hours per month, representing approximately 13% of Krannert Center's average electrical consumption or a savings of \$43,200 per year (see attached "Fliman Preliminary Assessment" and "KCPA Electricity Consumption" for calculation details).

The energy inputs required to complete the project are unknown at this time. Energy inputs to maintain the project are negligible.

Greenhouse gas emission savings:

35,500 kilowatt hours per month X 1.672 CO<sub>2</sub>lb/kilowatt  
 = 59,356 CO<sub>2</sub>lb saved per month  
 = 712,272 CO<sub>2</sub>lbs saved per year

## OUTREACH AND EDUCATION

In addition to the economic impact, this project has significant potential for social and environmental impact in terms of education



and awareness. This highly visible solar array—and accompanying communication materials to be created by the Center’s marketing department—will serve as a foundation for engagement, education and performative activities that focus on the environment. The Center is deeply committed, as mentioned previously, to leading beyond the arts and plans to leverage this project—throughout its construction phase and beyond—to motivate students and faculty to explore issues surrounding sustainability.

The Center plans on creating a Student Solar Project team to develop student-centered activities related to the solar installation and to assist and advise the Center in creating and implementing a marketing plan for the construction phase and beyond. This plan will include frequent press releases, email blasts, management of social networking sites devoted to the project’s process (facebook, twitter, etc.), live web cam coverage of the construction, signage throughout the interior and exterior of the Center, creation of brief videos to be displayed across campus, busboards, newspaper advertising, etc. This Team will also work closely with KCPA staff to incorporate the project into the curriculums across campus, including science, technology, engineering, project planning, business, and more. A final celebration party will be planned for campus and the community when the solar arrays are fully functional. All materials will be branded with the SSC name. Many of these activities will attract media attention; KCPA will work closely with the University of Illinois Public Affairs to ensure a high level of local and national coverage.