

# **Solar Array Installation Project**

A Proposal for the Student Sustainability Committee

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

14 March 2012

## 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.

- 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,

## 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):

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.

Albert Fliman  
Preliminary Assessment

Below is a rough preliminary assessment of the solar project we can accomplish at Krannert. The following is with some confirmed and some estimated measurements of Krannert, calculated measurements of solar production from a supplier, and measured consumption data from F&S.

Attached you will find a map of krannert from a satellite image with roofing areas numbered 1-4 in red. The sq footage is given:

184 x 90 ft Area 1	16,500 (Confirmed)
35 x 40 Area 2	1,400 (Estimated)
60 x 70 Area 3	4,200 (Estimated)
60 x 35 Area 4	2,100 (Estimated)
Total Area =	24,200 sqft

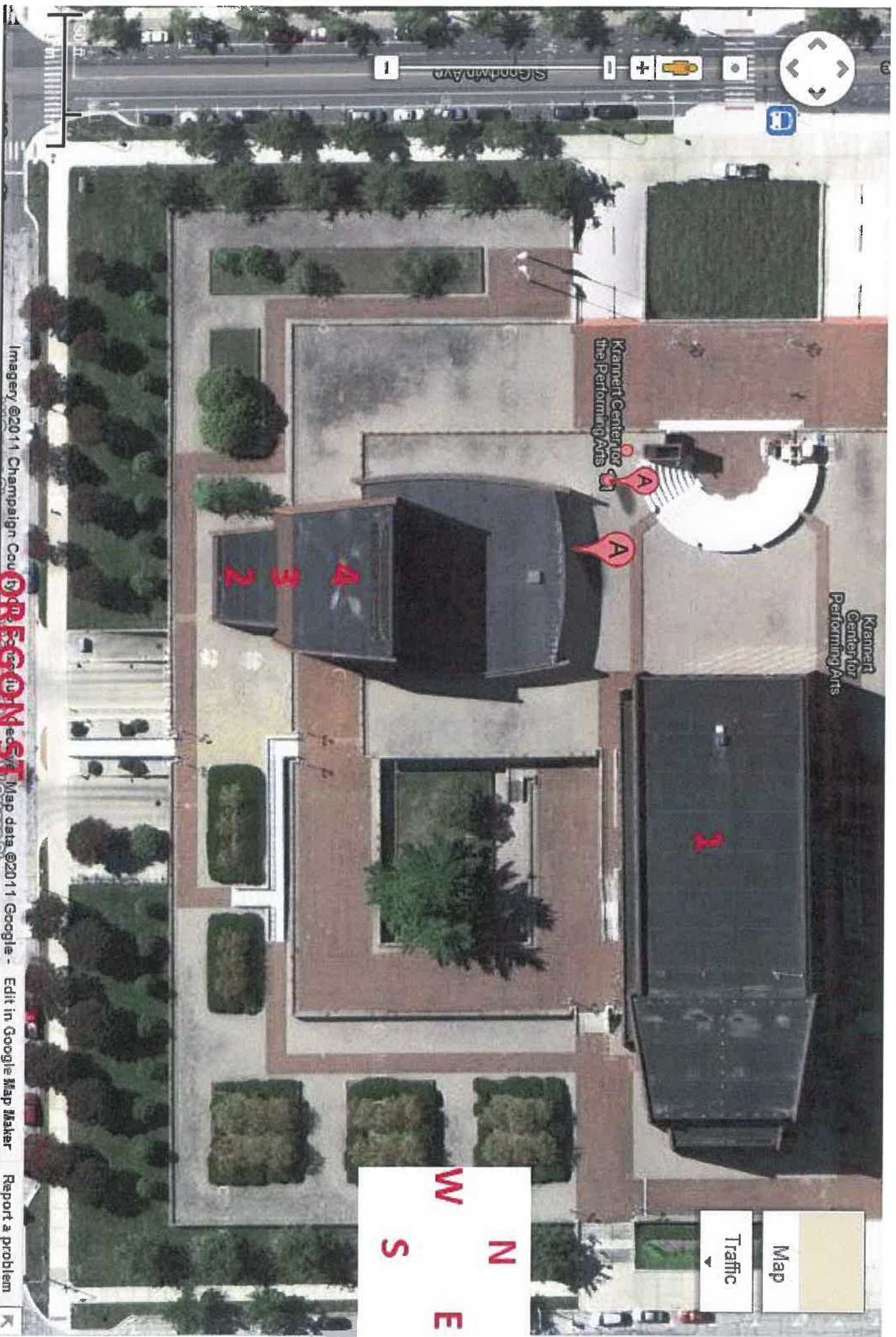
According to my quick calculations of one of the systems that looks pretty good, if we max-ed out the sq footage we have, we would need 19 of these systems totalling roughly \$735,300. if we maximize the ~\$560,000 we have in funding after all the fees and such, we could set up 14.5 systems (assuming we can find another smaller system to use up the funding) which would cover 19,227 sq ft.

In terms of energy production, we're looking at (in optimal conditions, which the supplier states as accomplishing 5hrs of sunlight daily) 46,645 kw/h per month if we use up all the area we have, and 35,597 kw/h per month if we use all the funding.

source: <http://www.wholesalesolar.com/>, <http://www.wholesalesolar.com/system/solar-sky-78-trina-grid-tie-solar-power-system.html> (THIS IS THE SPECIFIC SOLAR SYSTEM I USED FOR CALCULATIONS)

Using the electricity consumption data provided by F&S (Attached) we can see that generally the consumption has decreased over the past few years, and this year seems to be averaging about 262,780 kw/h per month, which is consistent with the average last year of 270,313 and its generally decreasing trend.

Conclusion: Given the potential for producing roughly 35,500 kilowatt hours per month, we are looking at producing roughly 13% of Krannert's electrical consumption through solar power. The Illinois average electricity



Krannert Center for the Performing Arts

Krannert Center for Performing Arts

A  
B  
C  
D

Map

Traffic

N

E

W

S

## Project Start Up Form

\_\_\_\_\_ Project Title \_\_\_\_\_ Project Number \_\_\_\_\_

\_\_\_\_\_ Planner Assignment \_\_\_\_\_ Date \_\_\_\_\_

Project Type:  Standard  Retainer W/O  Deferred Maint. In-house  Deferred Maint. A/E Selection  CDB  
 JOCS  Other: \_\_\_\_\_

\_\_\_\_\_ Project Description \_\_\_\_\_

The proposed solar system could produce 35,500 kwh of energy per month representing approximately 13% of Krannert Center's average electrical consumption. This project could significantly reduce KCPA's <sup>+</sup>

\_\_\_\_\_ Reason for Project \_\_\_\_\_

**Schedule:**

Start Date

End Date

Conceptualization	_____	_____
A/E Selection	_____	_____
Ad Dates	_____	_____
Schematic Design	_____	_____
Design Development	_____	_____
Construction Docs to 50%	_____	_____
Construction Docs 50% - Review	_____	_____
Construction Docs 50% - 95%	_____	_____
Construction Docs 95% - Review	_____	_____
Bidding	_____	_____
Construction	_____	_____
Substantial Completion	_____	_____
Warranty	_____	_____

**Budget:**

Construction	\$	_____
Bid Contingency	\$	_____
Construction Contingency	\$	_____
Furniture Fixtures and Equipment	\$	_____
Owner's Costs	\$	_____
Professional Services	\$	_____
TOTAL	\$	_____

Please Attach  
Funding  
Commitment

