

APPLICATION: STUDENT SUSTAINABILITY COMMITTEE

April 29, 2009

Project Title: *Spotlight on Sustainability: A Student Lab Theatre*

Project Lead Contact Information

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I. Detailed Project Description

Introduction

Hundreds of small theatres across the United States, and hundreds more around the globe, rely heavily on high-wattage incandescent theatrical lighting equipment to illuminate the stage. Above a typical stage may hang dozens or even hundreds of fixtures each drawing five to ten times the electricity of a standard 100w household light bulb. Used during each performance and rehearsal and often even for cleaning, these lights constitute a large electrical draw for such spaces and create a great deal of excess heat. And while compact fluorescent bulbs are quickly replacing the incandescent bulb in homes, theatres have been slow to adopt new technologies.

Our proposal, entitled *Spotlight on Sustainability: A Student Lab Theatre*, seeks funding to retrofit existing lighting equipment in the student-run Armory Free Theatre as an important step towards bringing sustainable practices to theatre spaces everywhere.

We intend to retrofit the theatre with low-energy lighting sources including LED, HID and emerging plasma sources. The space, overseen by the Department of Theatre, is an ideal showcase for sustainability due to its relatively manageable size and its broad cross-campus student audiences. Those who attend our typically "sold-out" performances will see theatre *and* learn about emerging sustainable practices.

Project Goals

- Reduction in Power Usage: We intend to reduce the power draw of the space by as much as 40% through the use of new lighting technologies including LED and plasma sources.
- Education & Research: The project will reach departmental students, cross-campus groups, community groups, and national groups via a variety of outreach projects (see details below).

Relationship to Sustainability

We view sustainability in theatre as the ability to either maintain or increase creative opportunities while either *reducing* our consumption of resources. For *Spotlight on Sustainability: A Student Lab Theatre*, we apply this theory towards the reduction of physical waste (such as incandescent lamps that quickly burn out), reduced labor (lamp changing), and the reduction of energy consumption- thus *sustaining* or even increasing creative abilities while drawing less on natural and campus resources. In short, we want to do great theatre while we dramatically reduce overall power and material consumption.

Longevity & Permanence

We estimate that the equipment purchased will still be in use ten years from implementation, and some items could conceivably continue on past 25 years *without a single lamp change*.

Location

The Armory Free Theatre is located in Room 160 Armory, ideally situated near large student housing complexes.

II. Budget and Fundraising

Budget

Please see the attached budget spreadsheet for tabulated data. We are requesting a total of \$28,698.00 from the Student Sustainability Committee.

Fundraising

Additional funding for the development of the project and completion will come from the College of Fine and Applied Arts (Creative Research Awards) and the Department of Theatre (staff support & computer purchase).

Private Sector Support

- Intelligent Lighting Creations, a Chicago-based theatrical lighting distributor, has donated equipment for testing for a value of \$3,333.00.
- Green Room Theatre Consulting, a Georgia-based LEED-accredited theatrical consulting firm with specific interest in environmentally-

friendly and sustainable theatrical practices, has donated consulting services in the design of this project valued at \$6,000.00.

- David Barbour, Editor of *Lighting & Sound America*, a national trade publication, has donated advisory services to the project at a value of \$2,500.00.

III. Timeline

If funding is approved prior to the end of the academic year 2008-2009, it is our intention to complete implementation of the work by August 1, 2009. The first full production use of the upgraded space would happen in September of 2009 (public performance and demonstration). A few items on the equipment list will not be publicly available until April 1, 2009, so final ordering could not happen prior to May 1.

January 1-April 30, 2009	Research (in progress)
May 1-May 31, 2009	Bidding and Ordering
June 1-July 31, 2009	Construction & Procurement
August 1, 2009	Infrastructure Complete
September, 2009	First Public Performance

IV. Energy, Environmental, Social and Economic Impact

According to the Student Sustainability Committee's website, the intent of the committee is to secure "a better, cleaner, safer, lasting sustainable environment for the University of Illinois at Urbana-Champaign." It is our belief that *Spotlight on Sustainability: A Student Lab Space* will answer these goals by providing *better* creative possibilities in the theatre, a *cleaner* planet through the reduction in energy usage, a *safer* environment through reduction in lamp changes, heat and voltage, and a *lasting sustainable environment* through the investment in 25-year technologies and a permanent reduction in emissions.

While specific data can be found in the attached Energy Usage spreadsheet, our proposal will reduce over 40% of the electrical usage for lighting and reduce the production of associated greenhouse gasses by over sixteen thousand pounds per year, all while recognizing a 40% yearly reduction in energy cost. Considered with increased capabilities for teaching and production, the new technology in the space also promises direct positive impact on the teaching mission of the University.

V. Outreach and Education

Departmental Students

Effective for the Fall of 2009, all incoming theatre freshman will have their **introduction to theatre course** in the Armory Free Theatre. This means their first exposure to theatre at the University of Illinois will be in a cutting-edge sustainable environment! Other departmental courses take place in

the Armory Free Theatre, which will provide further hands-on exposure to sustainable practices.

Campus & Community

The project, when completed, will not only benefit departmental students but will reach a wide audience across the campus and community. We will begin the semester with an **OPEN HOUSE** to introduce the new technologies, and will immediately utilize the sustainable setup with a **special production** in the theatre. An additional 4-6 shows (about **20 performances** total) in the first semester will kick-off outreach to the local community. **Flyers** explaining the new technologies will be given to every attendee. Additionally, local theatre groups from on and off campus (such as the Krannert Center, the Station Theatre, and the Virginia Theatre) will be invited for **special tours** to see the new practices in place. With the combined efforts, we plan to reach several thousand individuals each year.

National Exposure

The results of this project will be published online, in reports sent to small theatres around the nation, and in national print media. Professor Warfel, previously published in the important trade magazine *Lighting & Sound America*, has already procured initial **publication** agreement with this magazine.

The best possible outcome of this project will be a grounded and tested recommendation that wholesale adoption of emergent technologies would not only reduce electrical consumption and environmental degradation, but perhaps even improve the creative possibilities of theatre. Such a report could be eagerly embraced by the multitude of smaller theatres nationwide and worldwide, contributing to the most monumental shift in theatrical lighting since the advent of electric light.

VI. Summary

A student-run space with a high degree of curriculum involvement coupled with exciting new technology will make the Armory Free Theatre an outstanding showplace for better theatre practices. Once the highest user of electricity, the lighting rig will suddenly become an inspiration for thousands of patrons and hundreds of emerging theatrical artists and technologists. The lessons learned in the Armory will be taken around the world as students graduate and seek to “green” theatres globally, and the University of Illinois will continue to be recognized as a visionary leader in sustainability.

Will you help us turn the spotlight on sustainability?

CURRENT ENERGY USAGE

\$ 0.07 Cost Per kwh (Given by SSC)

QTY	Description	Watt Ea.	Watt Total	Life/hrs	Yearly Hours	kwh/yr	Cost/year
21	Incandescent Houselights/Classroom Light	150.00	3150.00	1000.00	2870.00	9040.5	\$ 669.00
16	Theatrical PAR Spotlights	500.00	8000.00	2000.00	504.00	4032	\$ 298.37
8	Theatrical Ellipsoidal Spotlights	575.00	4600.00	2000.00	504.00	2318.4	\$ 171.56
4	Theatrical PAR Spotlights, Type 2	575.00	2300.00	2000.00	504.00	1159.2	\$ 85.78
Total kwh/year, Total Cost						16550.1	\$ 1,224.71

CURRENT EMISSIONS

GHG	Description	kWh	Total
1.672	CO2 lb/kWh Given by SSC	16550.10	27671.77 lb/kwh

PROPOSED ENERGY USAGE

\$ 0.07 Cost Per kwh (Given by SSC)

QTY	Description	Watt Ea.	Watt Total	Life/hrs	Yearly Hours	kwh/yr	Cost/year
21	Incandescent Houselights	150.00	3150.00	1000.00	2870.00	9040.5	\$ 669.00
4	LiFi Plasma "Nemo" Spotlights	100.00	400.00	15000.00	504.00	201.6	\$ 14.92
3	Altman LED "SpectraPars" Spotlights	100.00	300.00	50000.00	504.00	151.2	\$ 11.19
22	Chauvet LED Panels	12.00	264.00	50000.00	504.00	133.056	\$ 9.85
2	DELL 5100MP DLP Projectors	400.00	800.00	2000.00	504.00	403.2	\$ 29.84
Total kwh/year, Total Cost						9929.556	\$ 734.79

CURRENT EMISSIONS

GHG	Description	kWh	Total
1.672	CO2 lb/kWh Given by SSC	9929.56	16602.22 lb/kwh

Spotlight on Sustainability: A Student Lab Theatre
University of Illinois at Urbana-Champaign
Student Sustainability Fund

David K. Warfel

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Detailed Budget

Quantity	Item	Vendor	Unit Price	Bought	Total
Equipment for Installation					
4	Seachanger NEMO Fixtures	BMI Supply	\$3,000.00		\$12,000.00
3	Altman LED Pars	BMI Supply	\$2,000.00		\$6,000.00
16	Chauvet LED Panels	BMI Supply	\$200.00		\$3,200.00
1	Hog PC Programmer	BMI Supply	\$2,600.00		\$2,600.00
6	Chauvet LED Pars	BMI Supply	\$150.00		\$900.00
2	DLP Projectors	Dell	\$1,999.00		\$3,998.00
REQUESTED FROM STUDENT SUSTAINABILITY FUND					\$28,698.00