UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Campus Recreation
Activities and Recreation Center
Suite 1430, MC-556
201 East Peabody Drive
Champaign, IL 61820

March 20, 2009

Student Sustainability Committee
ATTN: Suhail Barot

RE: Campus Recreation Sustainability Proposals

Dear Committee Members:

Campus Recreation has actively engaged in the effort to be a more energy conscious unit on the University of Illinois Campus. On February 27th, we submitted a letter of intent for 12 projects. Since that time, our internal green team has spent countless hours researching, meeting, and discussing these projects while prioritizing where we could make the biggest impact. Our operations are listed in the Big 80 energy users for this campus. Given that listing, we realized that we could make an impact almost immediately, and it was with that knowledge last summer that we began to make changes. Attached is a listing of the actions we have already taken, as well as those that are currently in process.

We hope that you realize that Campus Recreation understands the seriousness of the efforts needed and supports the university in its efforts, and that you will assist us with funding support for the proposals attached. If you should need further information, please feel free to contact either myself, Brian Baxter, or Mike Litchford. We would like to thank you all for your efforts with these reviews and hope that together we can all work toward a more responsible and efficient campus.

Sincerely,

Robyn M Deterding/k

Robyn M. Deterding
Campus Recreation Green Team Chair

Campus Recreation

Sustainability Statement
Campus Recreation is striving to reduce its energy consumption and cost, along with its carbon footprint by eliminating waste and increasing energy and water efficiency. While accomplishing these goals, we hope to promote awareness for and educate our users about their effect on the environment. Furthermore, Campus Recreation is resolute in supporting companies offering "green" products and services through our purchasing power.

Initiatives Campus Recreation has already taken:

- **Facility Controls**
  - Worked with Facilities and Services in preparing CRCE to be part of the "Runtime Reduction Program" regarding heat/air usage. ARC is on the list for this project.
  - Meters installed at CRCE and ARC
  - Installed 18 separate switches for lighting at CRCE
  - Computers being configured to sleep earlier when not in use, including monitors
  - Fitness equipment sleep mode set at 2 minutes
  - Hosted two conferences in which materials were placed on website vs. paper copies
  - Ice Arena has Astro-foil ceiling: it is reflective, providing additional light while not absorbing heat.
  - Ice Arena replaced 122 lights with the energy-efficient T8 lights
    - Between new cooling towers, a new ceiling, new lights and a low-emissivity foil system, the energy load at the Ice Arena should be reduced by 30-45%.
  - All outdoor lighting has been changed to fluorescent, metal halide or mercury vapor.
  - Installed two synthetic turf fields which help cut down use on seed, water, fertilizer, pesticides and herbicides.
  - Installing all native Illinois plants in outside landscaping decreasing use of water and fertilizers.
- **Reduce, Reuse, Recycle**
  - Ice Arena locker room and lobby benches are made from recycled plastic.
  - Adventure Center countertop made from 100% recycled wood.
  - Semester guides, annual report, aquatic brochures, and ice skating brochure all printed on recycled paper.
  - Recycling all waste materials through Facilities and Services.
  - Recycled the old multipurpose room 6 wood floor by giving it to Dance Department.
  - Installation of digital signage throughout ARC to help reduce need of paper posters for promotional materials.
- **Cleaning and Maintenance**
  - Installation of automatic towel dispensers and foam soap dispensers at all facilities. Foam soap is a green product.
  - Switched to green cleaning chemicals when possible, as well as installing automatic dispensers to insure we are getting the right ratio of water to chemical instead of depending on each person to always use the right ratio.
  - Snow-melt for ice, snow, etc is a green product.
  - Replaced paper towels with cloth toweling to clean fitness equipment.

- **Education/Awareness Initiatives**
    - Developed "Go Green" campaign with educational posters, digital signage, and web site displaying what Campus Recreation is doing and what users can do.
    - Hosted an event in fall semester where we distributed 100% recycled water bottles so people could stop using their plastic water bottles.
    - Internal Green Team Committee
    - Participate in the Student Affairs Green Team Committee
    - Two staff serve as Energy Liaisons to Campus Sustainability Office
    - Collected 32-pounds of used electronics and then took to appropriate recycling centers.
    - Taking part in Earth Hour on Saturday, March 28, when Campus Recreation will turn off lights and televisions at the ARC for one hour.

Initiatives Campus Recreation has activated:

- **Energy Reduction**
    - Work orders have been placed to reduce the number of active ballasts in the ARC while still providing adequate and safe lighting
    - Current research on a reduction effort on CRCE
    - Ice Arena currently operates on half-lighting
    - Research done on solar panel roofing system for the ARC, CRCE, and Ice Arena

Occupancy Sensor Project – Campus Recreation Facilities

Project Lead Contact Information
Name: Brian Baxter
E-mail: bbaxtr@illinois.edu
Phone: 217.333.2677
Title: Assistant Director
Organization/Department: Campus Recreation

Address: 201 East Peabody Drive,
Champaign, IL 61820

Secondary Contact Information
Name: Michael Litchford
E-mail: litchfor@illinois.edu
Phone: 217.244.9534
Title: Coordinator
Organization/Department: Campus Recreation

Address: 201 East Peabody Drive,
Champaign, IL 61820

I. Detailed Project Description:

The goal of this project is to install occupancy sensor controls to reduce energy consumption in restrooms, conference/meeting rooms, offices, and storage rooms in the Activities & Recreation Center (ARC), Campus Recreation Center – East (CRCE), and the Ice Arena. Lighting in these areas of each facility is often left on for extended periods of time leading to a waste of energy. We would like to eliminate this wasted energy and better educate patrons and employees of our facilities of the importance of conserving energy. The sensors that will be installed are dual technology sensors taking advantage of both ultrasonic and passive infrared detection. A complete brochure can be found at: http://www.hubbell-wiring.com/Press/PDFS/H5240_H_MOSS.pdf. Campus Recreation will accompany each one of these sensors with educational signage that explains the importance of this lighting efficiency and will note the funding source of Student Sustainability Committee.

Facilities and Services has recommended the installation of the Hubbell Motion Sensing Switches from Hubbell Wiring Device-Kellems. Facilities and Services has visited all three facilities and all of the spaces within these facilities to determine the most effective quantity of sensors needed to eliminate this energy waste. We feel we can reduce our lighting use by 13% to 90%, depending on the type of room the sensors are being installed in. Restrooms should show us the most energy savings followed by storage rooms and conference rooms. The office spaces will show us the least amount of energy savings, but should still provide us with approximately 65% savings. It is hard to figure the exact amount of savings due to the fact that lighting patterns for these rooms are inconsistent. Currently the restrooms in our facilities have their lights on from the time the building opens to the time the building closes every day of the week. These lighting sensors should drastically cut down on the amount of time these restrooms are lit. In addition, many student groups utilize our multipurpose rooms and conference/meeting rooms and forget to turn off the lights throughout the day. The lighting sensors should help immensely in limiting the amount of time these lights are left on when the room is not occupied. We also have numerous storage closets within our facilities that are not accessed routinely and are often found with the lights left on for more than 24-48 hours which consists of a lot of our wasted energy. The Hubbell Occupancy Worksheet was completed to give us our estimated savings for this project. Taking into account all of these instances, we feel this project would serve to quickly impact energy consumption while helping to eliminate energy waste energy conservation.

II. Budget & Fundraising:

Facilities and Services has developed a quote to install 146 (94 ARC, 18 CRCE, 34 Ice Arena) of the Hubbell Dual Technology Occupancy Sensors in our three facilities for $25,626. This work includes all of the hardware and labor to install these sensors in the ARC, CRCE and the Ice Arena. The majority of this work involves just a simple wall switch replacement (142 - $20,678) but there will be some work at the Ice Arena that involves some additional raceway (4 - $4,948) that will be needed to relocate the switches to more optimally take advantage of the occupancy sensor technology.

Due to the fact that we have so many different styles of rooms and different lighting patterns for all of the rooms, it would be hard to determine the exact payback period for this project. We are estimating a payback of 4 years for this project based off of the Hubbell Occupancy Worksheet. We are anticipating an annual savings of $7,500 and with the overall project costing $25,000 equaling the 4-year payback figure. In addition, from previous occupancy sensor projects on Campus and manufacturer estimations, we should expect our payback to be under 5 years for this project. We have asked Facilities and Services to assist us with figuring this exact payback period, and they agreed that it would be hard to determine this figure for this project as this isn't a typical application of an office building or classroom building and a lot of factors are unknown; therefore, it would just be an estimate. We will be more than willing to share with you updates in terms of our energy savings once the project is completed to reflect these energy savings.

The occupancy sensor project is just one aspect of our project to conserve energy within our facilities as we have already started a lighting reduction project within our facilities, which Campus Recreation will be funding. This project includes removing 453 – 40 watt fluorescent bulbs and 90 – 80 watt fixtures from the ARC to eliminate about 25,000 watts per year, saving us about $12,000 annually. Our next plan would be to reduce the lighting in CRCE. In addition, just last year Campus Recreation funded a lighting and ceiling project at the Ice Arena that reduced utilities by 35%.

We are asking for the Student Sustainability Committee to fund this occupancy sensor project in its entirety, but would be willing to fund a portion if necessary. Campus Recreation is in the process of creating a line item pertaining to Sustainability within our budget but this wouldn't happen until the next budget year as this years budget is already set and almost complete. Our Executive Team would have to evaluate which projects and how much money they could assist with funding based on the available money. If the Student Sustainability Committee can only fund a portion of this project, our Executive Team will meet to determine if they can then come up with the remainder of the cost. This decision can be made rather quickly during their bi-weekly executive staff meeting and would have to come from the operating budget or from reserves.

III. Timeline:

If the Student Sustainability Committee can fund this project, the work could start immediately as Facilities and Services has already evaluated all sites and would just need approval to purchase the hardware. We would expect to have this project completed by the summer of 2009, so we can start conserving energy as soon as possible. This work can be completed at any time as the work should not affect normal operational use by our patrons.

IV. Energy, Environmental, Social and Economic Impact:
We anticipate a $7,500 annual savings on this project. It is hard to determine the lifespan of these sensors as it is dependant on how many on/off cycles these sensors experience, and the manufacturer has not performed this study and could not provide us with this number. We would hope that these sensors would last 10 years. Over the 10 year lifespan we would save approximately $75,000. We are estimating that this project will save 194,000 kWH/yr.

Campus Recreation believes that by installing occupancy sensors in combination with our other lighting reduction projects in our facilities we would be showing the campus community that we are serious about conserving energy. Our hope would be that users of our facilities will be more aware of turning out lights at home and other places on campus as this is the new expectation. Campus Recreation will be taking the money that is saved from this project and placing it back into our new sustainability budget to be able to fund future projects.

V. Outreach and Education:
This project will be highly visible as a very large and diversified population utilizes our facilities on a daily basis. We will accompany the lighting sensors in our multi-purpose rooms, conference/meeting rooms and restrooms with educational labels explaining the purpose behind the lighting sensors. Please see the attached sample of our "Go Green" campaign and the lighting sensor and lighting reduction messages that will be placed above the light sensors. Our hope is that this will educate our patrons of the importance of energy conservation and the importance of turning off lights. This will also stress the fact that Campus Recreation cares about Sustainability.

These lights are controlled by sensors as part of Campus Recreation's energy-saving initiatives. Project funding from th Student Sustainability Committee.

Racquetball Court Energy Reduction

Project Lead Contact Information
Name: Michael Litchford
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Title: Staging and Building Coordinator
Organization/Department: Campus Recreation

P Phone: 244-9534
A Address: 201 E. Peabody Drive
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Secondary Contact Information
Name: Brian Baxter
E-mail: bbaxtr@illinois.edu
Title: Assistant Director of Strength and Conditioning
Organization/Department: Campus Recreation

P
A Phone: 333-2677
Address: 201 E. Peabody Drive
Champaign, IL 61820

I. Detailed Project Description:

This project is designed to eliminate a significant amount of energy waste by automatically turning off lights in unoccupied spaces. The racquetball and squash courts at the ARC are currently on a single switch through our main building lighting control computer, and all of these courts have the lights turned on as a part of the facility opening procedures. They currently remain on until the building closes. These lights are also turned on during the overnight cleaning shift, resulting in a daily burn time of approximately 20-22 hours a day.

Our proposed project would entail retrofitting the 192 fluorescent troffers to a high-performance T8 system, and replacing the 96 existing recessed mercury vapor fixtures with new compact fluorescent fixtures in the 12 racquetball courts. (The squash court lighting was upgraded during the recent renovation.) In addition to the lighting retrofit, we will install occupation sensors in the 12 racquetball and 3 squash courts. The resulting system would be accessed via the existing master controls for all courts, which when ON, would allow the occupancy sensors to control lights in each court individually as needed. Our estimated energy savings from the lighting retrofit will be about 16,500 max watts.

II. Budget & Fundraising:

The estimate requested from F&S engineering includes material cost and labor for the T8 retrofit, fixture cost and labor for the mercury vapor light replacement, motion sensor cost and labor overhead. The retrofit would reuse existing T12 troffers and replace current ballasts with electronic ones. The mercury vapor lights will be a new compact fluorescent light, the specific type of which has not yet been decided so the price per unit is only an estimate. Occupation sensor installation includes both the product and labor expenses. The labor overhead will be used for miscellaneous wiring and installation issues not specifically outlined in the estimate.

	Number of fixtures	Estimated cost	Total
T8 Retrofit	192	$60.00	$11,520.00
Mercury replacement	96	$310.00	$29,760.00
Occupation Sensor	15	$1,500.00	$22,500.00
Labor overhead	n/a	$11,220.00	$11,220.00
			$75,000.00

The current plan is to complete this job by May 31st in order to take advantage of Department of Commerce and Economic Opportunity (DCEO) program incentives. They would yield the following amounts:

Racquetball
Fluorescent retrofit: $2,688
Mercury Vapor to CFL: $4,800
Occupancy Sensors: $1,882

Squash
Occupancy Sensors: $240

Total project incentive: $9,610

Our approximate energy savings will be approximately 16,500 max Watts or $17,200 per year with a simple payback of 4 years and 3 months.

For this project we will be requesting full funding of $75,000 to facilitate an expedited construction schedule. If the full amount is not awarded we will seek to fund this internally and seek alternative funding.

III. Timeline:

The project timeline is currently being guided by a May 31st, 2009 completion date in an attempt to be eligible for DCEO program incentives.

IV. Energy, Environmental, Social and Economic Impact:

The estimated savings for this project are around 237,771 kWh yearly. We do anticipate that the lighting reduction could be greater due to use patterns of the racquetball and squash courts during the summer months. Our annual savings will be approximately $17,500 and expect for the light retrofit lifespan to be at least 10 years. Minimum expected project lifetime savings is 2,377,710 kWh with a GHG emissions reduction of approximately 3,975,531 CO_2 lb/kWh. All efforts will be made to recycle old lamps and fixtures.

V. Outreach and Education:

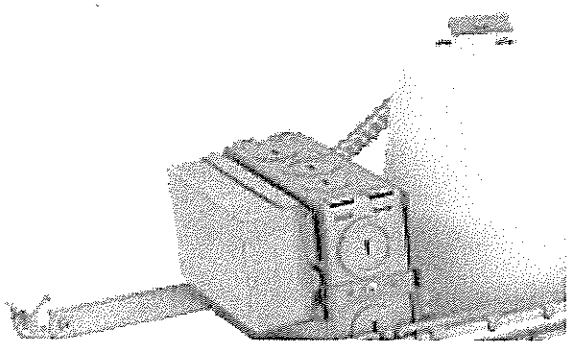
This project will be added to our Green Initiative list currently in place on our department website and will be added to the overall marketing campaign advertising our efforts. We will be seeking LEED certification for existing buildings with the ARC and this project will help us obtain that goal by reducing our energy consumption.

Product Specifications Report

sea gull lighting

Job Name:	Job Type:
Comments:	Quantity:

1170LE: Manufactured by Sea Gull Lighting



1170LE - Fluorescent Non-IC Housing

Fluorescent Mini-Recessed Non-IC Housing

UPC #: 785652011702 **Fixture Type:** Fluorescent

Finish:

Dimensions:

Length: 13 1/2"

Diameter: 4 1/4"

Width: 5 1/4"

Height: 5 5/8"

Bulbs:

1 - G24q-3 PLT26 26w max - Bulb Not Included

Material List:

Saftey Listing:

cUL Listed for Damp Locations

ENERGY STAR Qualified Title24

Features:

Instruction Sheets

•English(HC-931) •French(n/a)

Shipping Information (UPS Shipable:YES)

Individual	Weight	Length	Width	Height	Carton	Weight	Length	Width	Height	Case	Weight	Length	Width	Height
Qty: 1	3.2 lbs	14.5"	7.5"	5.75"	Qty:6	21.85 lbs	22.25"	18.75"	6.58"	Qty:180	576 lbs	48"	40"	72"

Gym 1 Energy Reduction

Project Lead Contact Information

Name: Michael Litchford
E-mail: litchfor@illinois.edu
Title: Staging and Building Coordinator
Organization/Department: Campus Recreation

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Champaign, IL 61820

Secondary Contact Information

Name: Brian Baxter
E-mail: bbaxtr@illinois.edu
Title: Assistant Director of Strength and Conditioning
Organization/Department: Campus Recreation

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A Phone: 333-2677
Address: 201 E. Peabody Drive
Champaign, IL 61820

I. Detailed Project Description:

We propose replacing existing 112 high-bay metal halide lights over the main gym floor between the mezzanine overhangs with new, high-efficiency T8 fixtures and replace 84 mezzanine-mounted halide lights with high-efficiency ceramic metal halide fixtures. Will retain and reuse existing conduit and wiring to connect the current T8 fluorescent lighting system to the new lighting control computer for greater switching control. All new lights will need to be capable of individual fixture network addressing control and 0/50/100% step-switching ability. Master control station will be programmed to allow separate, zoned controls for each of the 6 courts. The lighting changes will provide an energy savings of approximately 40,100 max watts per year. In addition to energy savings from lighting retrofit/replacement we will be able to control the lighting individually by court during normal operating hours. Currently the gym is fully lit from the time the building is opened to the time it is closed with almost no reasonable option for reduced lighting due to switching issues. We estimate that with court-by-court switch controls and a revised use schedule we can reduce lighting times by approximately 50%.

II. Budget & Fundraising:

The estimate requested from F&S engineering includes material cost and labor for replacing 196 450w high bay metal halide light fixtures with 112 high efficiency T8 fluorescent light fixtures and 84 250w pulse start ceramic metal halide fixtures. The estimate from engineering includes approximate costs for programming to tie in existing lighting control system with a new master control system to manage the Gym 1 lights without rewiring the entire gym. This effort will save us a substantial cost in material by reusing existing conduit and wire. By using addressable ballasts with our lights we can have a high level of control over the lighting in this large gym. Included in the estimate are equipment and labor costs which are meant to cover lift rentals, material removal and unforeseen wiring issues.

Fixture or system	Estimated cost	per unit	Total
Ceramic Halide High Bay	$1,000.00	84	$84,000.00
High Efficiency T8 system	$1,000.00	112	$112,000.00
Master Control System	$25,000.00	1	$25,000.00
Programming Fees	$20,000.00	1	$20,000.00
Equipment and misc. labor	$59,000.00	1	$59,000.00
Equipment and Installation Total			**$300,000.00**

We are planning this project for the summer of 2009 and will be pursuing Department of Commerce and Economic Opportunity (DCEO) program incentives for the following amounts:

Gym 1 Basketball courts:
T8 fixture option: $16,072.00
Pulse start Metal Halide option: $7,840.00
Total Project Incentive **$23,912.00**

These amounts may change with the next funding cycle and we will be investigating custom incentives available for altering the controls of this lighting system.

We are asking for full or partial funding of this project. The department will fund this project as necessary due to the relatively short return.

III. Timeline:

This project has an estimated start date of June 1st, 2009 with a completion date of no later than May 31st, 2010. This will allow our department to plan around events already scheduled in our building and allow ample time for programming of the master controls to be completed.

IV. Energy, Environmental, Social and Economic Impact:

The estimated savings for this project are around 526,914 kWh yearly. Our annual savings will be approximately $40,100 and expect for the light retrofit lifespan to be at least 5 years. Minimum expected project lifetime savings is 2,634,570 kWh with a GHG emissions reduction of approximately 4,405,001 CO_2 lb/kWh. All efforts will be made to recycle old lamps, wire, conduit and fixtures.

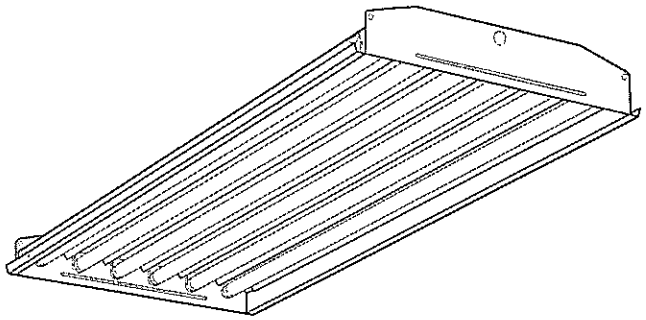
V. Outreach and Education:

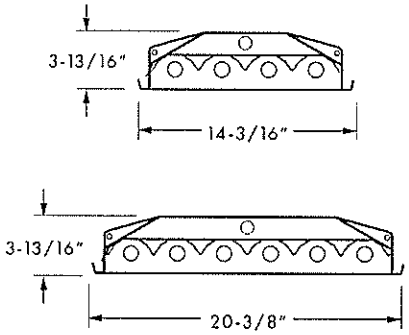
This project will be added to our Green Initiative list currently in place on our department website and will be added to the overall marketing campaign advertising our efforts. We will be seeking LEED certification for existing buildings with the ARC and this project will help us obtain that goal by reducing our energy consumption.

LOW PROFILE **T8 INDUSTRIAL**

SERIES **GL** 4 or 6 T8

VOLTAGE TYPE JOB





SPECIFICATIONS

- HOUSING – 20 gauge die-formed C.R.S.
- REFLECTIVE SURFACES – Highly specular anodized MIRO 4™ aluminum reflector.
- FINISH – 92% minimum average reflective white powder coat with multi-stage iron/phosphate prepared metal.
- ELECTRICAL – Electronic ballast standard, instant start T8, rated Class P.
- LABELS – UL/CUL listed as fluorescent luminaire suitable for dry or damp locations.
- MOUNTING – Pendant mount with VBY hanger and chain, 3" spacer brackets or single point 3/4" conduit utilizing hub and splice box adapter.

FEATURES

- Six-lamp unit consumes half the energy of 400 watt HID
- Shallow depth of less than 4" allows fixture placement near the ceiling for maximum space utilization and reduces damage incurred from material handling equipment.
- Easy access to ballast without the removal of lamps or use of tools.
- Quick-wire access plate in back of fixture housing for easy attachment of incoming power supply.
- Variety of mounting options.

ORDERING INFORMATION

Submittal

	SERIES	NOM. LENGTH	TOTAL LAMPS	WATTAGE/ TYPE	OPTIONS	BALLAST	VOLTAGE
EXAMPLE:	GL	- 4	- 6	32	- OPTIONS	- EBHW3/3	- UNV

SERIES

GL	Low Profile T8 Industrial

NOMINAL LENGTH

4	4'
8	8'

TOTAL LAMPS

4 or 6	(4' length)
8 or 12	(8' length)

LAMP WATTAGE/TYPE

32	4', 32 watt T8

OPTIONS

3SB	3" Spacer Bracket (1 pair)
HUB 3/4"	Cast iron hub & junction box for single pendant mount (4' unit only)
HUB/HOOK	Mounting hook with safety screw for replacement of HID fixtures (Shipped not attached)

OPTIONS cont'd.

HOOK/CABLE	Hook & Cable Mounting Kit, 10'
VBY-2	1 pair VBY hangers & 2 pieces 2' Chains (for chain mounting)
GC2/Y18/5	Gripple® Hang-Fast Suspension System, 5' length (1 pair)
GC2/Y18/10	Gripple® Hang-Fast Suspension System, 10' length (1 pair)
S7238/B	6' Cord, No. 18 AWG, 3 conductor, black
6CPI/L5-15P/TWLK	6' cord & NEMA 15 AMP Twistlock 120V plug
6CPI/L7-15P/TWLK	6' cord & NEMA 15 AMP Twistlock 277V plug
PHSCHA118	Piano hinge steel door frame, 0.118" thick, clear high temperature acrylic glazing (non-prismatic lens)
SCHA118	Steel door frame, 0.118" thick, clear high temperature acrylic glazing (non-prismatic clear lens)
WG11	11 Ga. white powder coat wireguard
REFLWHITE	White reflector
UP5	Uplight apertures – 5% uplight
ND	Narrow Distribution
WD	Wide Distribution
OCC SEN	Occupancy Sensor (consult factory)

BALLAST TYPE

EB4	4-lamp electronic ballast
EBHW3/3	(2) 3-lamp high wattage electronic ballasts
EB4/2	(1) 4-lamp & (1) 2-lamp electronic ballast
EB4/4	(2) 4-lamp electronic ballasts
EB4/4/4	(3) 4-lamp electronic ballasts

VOLTAGE

120	120V
277	277V
UNV	120 - 277V
347	347V

Note: For more options/accessories, ballast combinations, and product details, please consult factory.

Williams
FLUORESCENT LIGHTING

GL SERIES
4 or 6 T8

PHOTOMETRY INFORMATION

STANDARD

Williams Catalog #GL-4-632-EBHW3/3 Test Report #12158.1, Dated 12/29/03 Ballast Factor: 1.2
Lamp Type: F32T8/835/RS Lumens: 2950 Lamp Quantity: 6

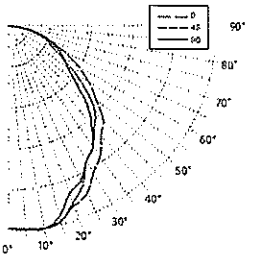
CANDLEPOWER DISTRIBUTION

VERT. ANG.	HORIZONTAL ANGLE 0	45	90	ZONAL LUMENS
0	8113.	8113.	8113.	
5	8146.	8183.	8201.	781.3
15	8101.	8137.	7937.	2298.6
25	7455.	7074.	6874.	3310.0
35	6419.	5910.	5910.	3818.3
45	5382.	4928.	4473.	3763.3
55	3945.	3255.	2909.	2959.0
65	2509.	1927.	2182.	2138.6
75	1181.	1236.	1418.	1295.4
85	144.	345.	326.	326.3
90	0.	0.	0.	

LUMEN SUMMARY

ZONE	LUMENS	% LAMP	% FIXTURE
0 - 30	6390.	30.1	30.9
0 - 40	10208.	48.1	49.3
0 - 60	16930.	79.7	81.8
0 - 90	20691.	97.4	100.0
90 - 120	0.	0.0	0.0
90 - 130	0.	0.0	0.0
90 - 150	0.	0.0	0.0
90 - 180	0.	0.0	0.0
0 - 180	20691.	97.4	100.0

TOTAL LUMINAIRE OPTICAL **EFFICIENCY = 97.4%***
SPACING CRITERIA: END = 1.3 DIAG. = 1.2 ACROSS = 1.2



* Tested with a 1.2 ballast factor

NARROW DISTRIBUTION

Williams Catalog #GL-4-632-ND-EB3/3 Test Report #13472.0, Dated 02/21/07 Ballast Factor: 1.0
Lamp Type: F32T8/835/RS Lumens: 2950 Lamp Quantity: 6

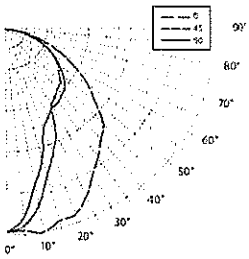
CANDLEPOWER DISTRIBUTION

VERT. ANG.	HORIZONTAL ANGLE 0	45	90	ZONAL LUMENS
0	8942.	8942.	8942.	
5	8898.	8720.	8399.	829.7
15	8748.	6749.	5999.	2012.1
25	8198.	5113.	4321.	2561.4
35	6949.	3706.	3971.	2800.1
45	5999.	3371.	3663.	2904.3
55	4385.	2785.	2907.	2627.7
65	2813.	1964.	2028.	2029.2
75	1285.	1050.	921.	1096.0
85	171.	135.	128.	166.8
90	0.	0.	0.	

LUMEN SUMMARY

ZONE	LUMENS	% LAMP	% FIXTURE
0 - 30	5403.	30.5	31.7
0 - 40	8203.	46.3	48.2
0 - 60	13735.	77.6	80.7
0 - 90	17027.	96.2	100.0
90 - 120	0.	0.0	0.0
90 - 130	0.	0.0	0.0
90 - 150	0.	0.0	0.0
90 - 180	0.	0.0	0.0
0 - 180	17027.	96.2	100.0

TOTAL LUMINAIRE OPTICAL **EFFICIENCY = 96.2%**
SPACING CRITERIA: END = 1.2 DIAG. = 0.8 ACROSS = 0.7



WIDE DISTRIBUTION

Williams Catalog #GL-4-632-WD-EB3/3 Test Report #13517.0, Dated 03/30/07 Ballast Factor: 1.0
Lamp Type: F32T8/835/RS Lumens: 2950 Lamp Quantity: 6

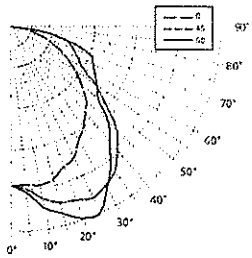
CANDLEPOWER DISTRIBUTION

VERT. ANG.	HORIZONTAL ANGLE 0	45	90	ZONAL LUMENS
0	4434.	4434.	4434.	
5	4427.	4539.	4641.	432.6
15	4398.	5063.	5379.	1409.3
25	4027.	5249.	5722.	2360.2
35	3447.	4934.	4748.	2848.6
45	2906.	4089.	3762.	2971.2
55	2162.	2838.	2872.	2531.1
65	1408.	1999.	2489.	2050.1
75	715.	1605.	1717.	1474.2
85	135.	377.	360.	374.4
90	0.	0.	0.	

LUMEN SUMMARY

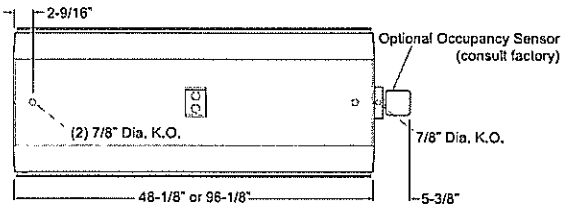
ZONE	LUMENS	% LAMP	% FIXTURE
0 - 30	4202.	23.7	25.5
0 - 40	7051.	39.8	42.9
0 - 60	12553.	70.9	76.3
0 - 90	16452.	92.9	100.0
90 - 120	0.	0.0	0.0
90 - 130	0.	0.0	0.0
90 - 150	0.	0.0	0.0
90 - 180	0.	0.0	0.0
0 - 180	16452.	92.9	100.0

TOTAL LUMINAIRE OPTICAL **EFFICIENCY = 92.9%**
SPACING CRITERIA: END = 1.2 DIAG. = 1.6 ACROSS = 1.5

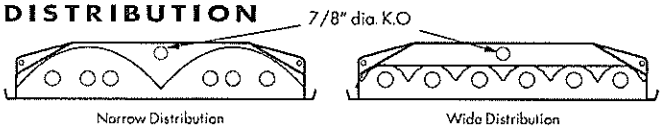


DETAILS

BACK VIEW



DISTRIBUTION



ZONAL CAVITY COEFFICIENTS (STANDARD)

EFFECTIVE FLOOR CAVITY REFL. = .20

CEILING	.80			.70			.50		
WALL RCR	.70	.50	.30	.70	.50	.30	.50	.30	.10
0	116	116	116	113	113	113	108	108	108
1	107	103	99	105	101	97	97	94	91
2	99	91	85	96	90	84	86	81	77
3	91	81	74	88	80	73	77	71	67
4	84	73	65	81	72	64	69	63	58
5	77	65	57	75	64	56	62	55	50
6	71	58	50	69	57	50	56	49	44
7	65	53	44	64	52	44	50	43	38
8	60	47	39	59	47	39	45	38	33
9	56	43	35	54	42	34	41	34	29
10	52	39	31	50	38	31	37	30	26

Williams
H.E. WILLIAMS, INC.
H.E. Williams, Inc. • Carthage, Missouri • www.hewilliams.com • 417-358-4065 • Fax: 417-358-6015

HEWJP49357 10/02/08

ROMlight INTERNATIONAL INC.

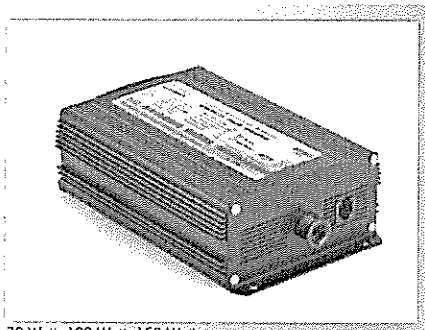
HID Digital Ballast

HIGH-PRESSURE SODIUM & METAL HALIDE

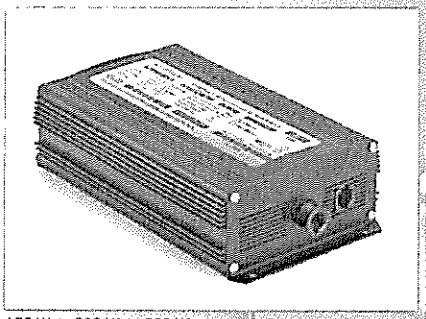
- Cuts your lighting bills by 28% to over 50%
- Extends lamp life
- Certified to UL and ULC standards
- Quiet and cool operation
- Comprehensive warranty
- Light weight
- Environmentally friendly

and much more!

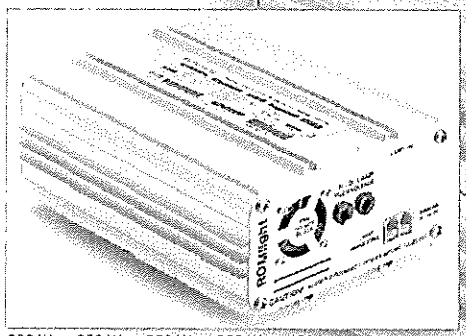
TECHNICAL SPECIFICATIONS AND FEATURES ON REVERSE



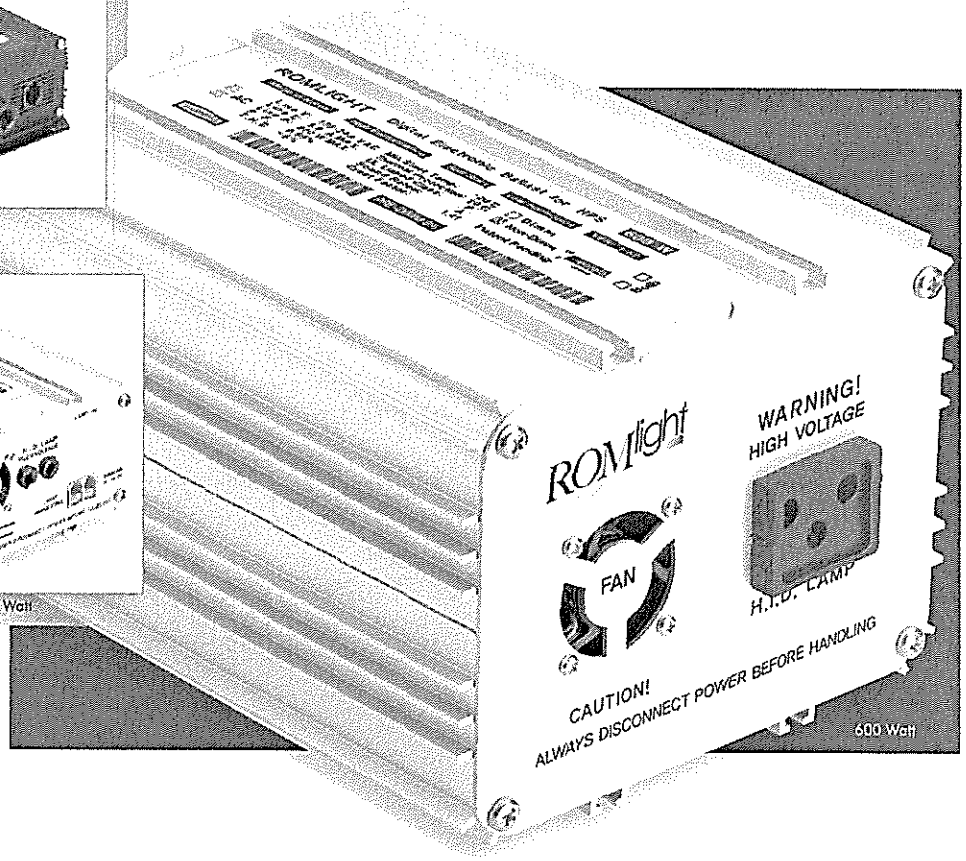
70 Watt, 100 Watt, 150 Watt



175 Watt, 200 Watt, 250 Watt



200 Watt, 250 Watt, 320 Watt, 350 Watt, 400 Watt



A NEW WAY TO SAVE ENERGY HAS COME TO LIGHT

ROMlight INTERNATIONAL INC. *A NEW WAY TO SAVE ENERGY HAS COME TO LIGHT*

DIGITAL HIGH INTENSITY DISCHARGE BALLAST
High Pressure Sodium & Metal Halide Lamps

Ballasts for High Pressure Sodium Lamps			
Model	Case Size	Lamp Wattage	Standard Line Voltage[1]
HPS-70	A	70	120 or 240
HPS-100	A	100	120 or 240
HPS-150	A	150[2]	120 or 240
HPS-200	B	200	120 or 240
HPS-250	B	250	120 or 240
HPS-250	C	250	120 to 277
HPS-310	C	310	120 to 277
HPS-400	C	400	120 to 277
HPS-600	D	600	208 to 277

[2] ANSI Code S56

Ballasts for Metal Halide Lamps			
Model	Case Size	Lamp Wattage	Standard Line Voltage[1]
MH-200	B	200	120 or 240
MH-250	B	250	120 or 240
MH-200	C	200	120 to 277
MH-250	C	250	120 to 277
MH-320	C	320	120 to 277
MH-350	C	350	120 to 277
MH-400	C	400	120 to 277
MH-575	D	575	208 to 277

[1] 347 volt circuits require a step down transformer

FEATURES & BENEFITS	
Feature	**Benefit**
Certified to UL and ULC standards	-Can be installed in all North American jurisdictions
Microprocessor Control	-Provides all protective functions -Short circuit protection -Lamp "out of circuit" protection -Provides "soft" lamp start up -Longer lamp life
Active Power Factor Correction	-Minimizes in rush current -Low Total Harmonic Distortion
High Frequency	-No flicker -Higher lamp efficacy -Cooler lamp and ballast operation -Longer lamp life -Consistent colour rendering
Exceptionally low ballast loss	-Increases energy savings
Crest Factor <1.45	-Protects the lamp
Broad Operating Temperature Range -30°C to 40°C Ambient Temperature	-Can be used in most outdoor or indoor locations
Superior Lumen Maintenance	- 90% of initial lumens at mean life
"No Lamp" feature	- Prevents "end of lamp life" syndrome that can damage the fixture
Light Weight Design	-Easy to install -Less expensive mounting details -Reduces housing, structure and pole costs.
ROMport™	-Multi-function ballast control

Specifications	
Parameter	Value
CASE SIZE – L x W x H	A – 6 3/16" x 4 1/16" x 2" (1.35 lbs) B – 7 3/16" x 4 1/16" x 2" (2.75 lbs) C – 10 5/8" x 6 ½" x 3 3/4" (7.6 lbs) D – 11 5/8" x 6 ½" x 3 3/4" (8.7 lbs)
Input Power Factor	≥0.95
THD	<10%
Crest Factor Nominal Power	<1.45
Ballast Loss	5-15 W
Operating Temperature (°C)	-30/+40 °C
Internal Thermal Cutout	75 °C

Versatile ROMport™ Ballast Control Methods		
Supported Protocol	**Means**	**Daisy Chainable**
Resistive Dimming	Potentiometer Control	No
Daylight Harvesting	Photo Sensor	Yes
Switching (Dry Contact)	Motion Sensor or Switch	Yes
0-10VDC Signal	Powered Device Control	Yes

ROMlight International Inc.

www.romlightintl.com

Energy Effective Lighting

Stingray

challenger HB

Premium Metal Electronic Ballast

Applications: Retail, Industrial and Warehouse

SPECIFICATION FEATURES

Optical System: Patented field adjustable Co-Centric™ optical system delivers even light distribution over a range of lighting applications. Outer reflector is CNC spun aluminum with a durable, 85% reflective, polyester powder-coated finish. The inner reflector is fluted, specular aluminum.

Housing: Heavy gauge, die-cast aluminum with heat-dissipation fins and integral splice-compartment. Cast Aluminum hook with safety clasp included.

Ballast: Electronic High Frequency. 3.5KV starting pulse with strike limiter. High Power Factor. Integral fusing. 100% factory tested after assembly.

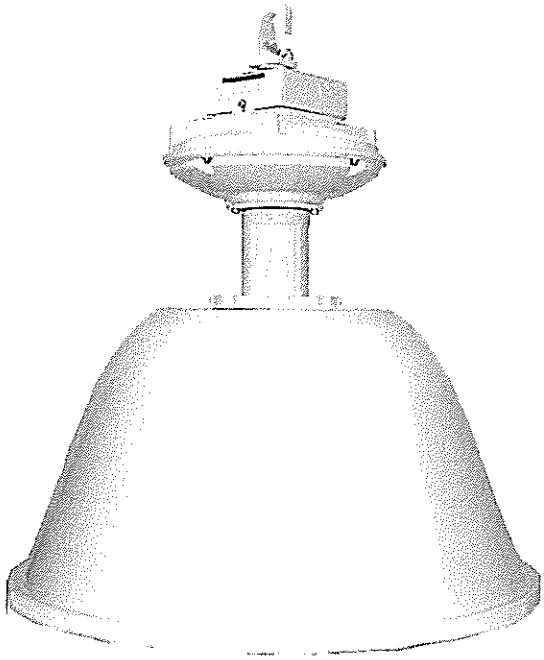
Source: Pulse Start Metal Halide, for Vertical, Open-Rated operation, with internal Quartz shroud around arc-tube, clear envelope standard.

(Lamp ordered separately).

Socket: Mogul Exclusionary Base (EX39). Porcelain, with "pink" glaze. Nickel-plated brass screwshell. Open rated, requiring extended-pin open-rated lamp.

Finish: White polyester powder coat.

Listing: UL Listed, suitable for damp locations. 50°C ambient.



Electronic Ballast, Metal Reflector

NOTE: Assembled and shipped by a U.L. certified supplier. Made in USA

ORDERING INFORMATION

		①		②
CHGE	250		VS	
Family	Wattage	Source	Voltage	Options

Please quote the catalog number (Cat. No.) by specifying the appropriate options (1 and 2) as shown below:

Family: CHGE = Challenger Electronic Metal
Wattage: 250 = 250 Watts
Voltage: VS = Voltage Sensing (200-300 volts)

① SOURCE:

PSM = Pulse Start Metal Halide
CMH = Ceramic Metal Halide

② OPTIONS:

Cord:

CB3 = 3 ft. Black cord
CB6 = 6 ft. Black cord
CB8 = 8 ft. Black cord
CW3 = 3 ft. White cord
CW6 = 6 ft. White cord
CW8 = 8 ft. White cord

Plugs (Twist-lok caps)

P61 = (NEMA L6-15P)
P62 = (NEMA L6-20P)
P63 = (NEMA L6-30P)
P71 = (NEMA L7-15P)
P72 = (NEMA L7-20P)
P73 = (NEMA L7-30P)

STINGRAY ENERGY SYSTEMS, LLC
1550 Douglas Drive
Charleston, IL 61920
Telephone 847•656•3557
Fax 217-348-5391
Web: www.stingrayenergy.com

*Project:*_____ *Date:*_____

*Type:*_____ *Email:*_____

*Prepared by:*_____

Comments/Additional info:

Web/Email Kiosk Thin Client Project – Campus Recreation Facilities

Project Lead Contact Information
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Address: 1102 W. Gregory Dr.
Urbana, IL 61801

Secondary Contact Information
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E-mail: litchfor@illinois.edu
Title: Coordinator
Organization/Department: Campus Rec.
Phone: 217.244.9534
Address: 201 East Peabody Drive,
Champaign, IL 61820

I. Detailed Project Description:

The goal of this project to purchase, deploy, and maintain six thin client computing devices. We plan to disperse these devices in three of our Campus Recreation facilities: Activities & Recreation Center (ARC), Campus Recreation Center – East (CRCE), and the Ice Arena where they will be used as Web/Email kiosk stations in high usage/availability areas. Three of the units will be available for use to the general public and the other three will be located in areas generally accessible only to Campus Recreation members. These thin client computers can be configured to run in different ways, one of which is by providing just a display and input interface to a user session running on a network server computer. Another way to use them is to have them run the operating system and applications locally off flash memory. The thin clients we are looking to use are the Xtreme PC 6500NG devices from Chip PC Technologies, and we intend to configure them to run off the local flash memory in a locked-down kiosk computer configuration. These devices use less than 5% as much power as a regular desktop computer and emit far less heat than a regular computer. Also, these thin clients have no moving parts, so they typically have a significantly longer life span than regular computers. These devices will be on and accessible whenever our facilities are open, which typically extends well before and after normal business hours - including weekends.

This project is similar to and ties into the "Chip PC Thin Client" project from Christopher Clausen and Matthew Childress which received funding from the Student Sustainability Committee. We have been working with them, and they have lent us one of their thin client units for testing. They have been a good technical resource on the subject and have offered to do so going forward. Additionally, they will allow us to use their centralized servers when and if necessary to maximize the functionality of the units.

Campus Recreation is striving to reduce its energy consumption and cost, along with its carbon footprint by eliminating waste and increasing energy and water efficiency. While accomplishing these goals, we hope to promote awareness for and educate our users about their effect on the environment. Furthermore, Campus Recreation is resolute in supporting companies offering "green" products and services through our purchasing power.

II. Budget & Fundraising:

These devices require Monitors, Keyboards, Mice, Power Surge strips and network patch cables to function. We have already obtained six 17" LCD monitors, keyboards, mice and patch cables with an approximate value of $250 for each computer (total $1500.00). The Chip PC Technologies reseller, CDW, has offered to extend discounted prices previously given for the "Chip PC Thin Client" project and Chip PC Technologies has agreed to provide software licenses at no cost for our proposed purchase if made before 4/30/09.

orig. cost	discounted cost	QTY	description	total cost
$300	$250	6	Chip PC Xtreme PC 6500NG	$1500
$20	$20	6	Terminal Server CALS	$120
$60	$0	6	XG client license	$0
$60	$0	6	XG domain authenticator	$0
$20	$0	6	MSFT Viewers license	$0
$10	$0	6	VNC client license	$0

Additionally, we would request $30 per device to be used for the materials to secure the devices and for appropriate power surge strips. So we are requesting **$1800.00 in funding**. We would be asking for the Student Sustainability Committee to fund this thin client device purchase in its entirety; if necessary, we could deploy a smaller number of thin client devices and use regular refurbished desktop computers in their place.

III. Timeline

If the Student Sustainability Committee can fund this project, the purchase and deployment could start immediately as we have the kiosk furniture for these devices already in place as well as the necessary electrical and data connections. We also have already obtained the 17" LCD monitors, keyboards and mice. We would expect to have this project completed by the Summer of 2009, so we can start conserving energy as soon as possible. This work can be completed at any time as the work should not affect our normal operational use by our patrons.

IV. Energy, Environmental, Social and Economic Impact

The following data is almost entirely from the information submitted by the "Chip PC Thin Client" proposal:

For the purposes of this request, we make the following assumptions:

- the average desktop computer uses 115 watts when it is on and 0 when it is off
  - This is based on observed measurements of a Dell Dimension 4700 powered on
- the average desktop computer is on about 12 hours per day, 7 days a week.
  - This is a low estimate, as many computers around campus are left on all the time
- the below calculations should be a considered a minimum savings
  - a single server uses about 375 watts

Since these thin clients are rated at around 3.5 Watts each and there is the single management server for these 6 devices, we estimate about 15 Watts per thin client (load per device + server load divided between 32 devices,) giving a savings of 100 Watts (115 - 15) for each computer replaced. With 6 devices, that is 600 Watts.

Additionally, these devices emit less heat than standard desktop computers thus lowering the amount of power necessary to cool the environments in which they operate. Also, as they are physically small devices (3.12W X 6.22D X 1.34H Inches) and last longer than standard computers the amount of resources to build and dispose of them is significantly less.

Using our above estimate of 100 Watts saved per device, we can arrive at the following electricity cost savings **per computer**. We use the 12 hour a day and 365 days to obtain 4380 hours that each desktop computer is running per year and at 100 Watt savings (.1 kw,) that means **438 kwh per computer per year** is saved. The thin clients have an estimated 10 year lifespan.

	unit cost	saved per year (438 kwh)	saved in 10 years (4380 kwh)
electric	$.072/kwh	$31.54	$315.40
CO2	1.936 lbs CO2/kwh	848 lbs	8480 lbs
NOx	.00191 lbs NOx/kwh	0.84 lbs	8.4 lbs
SOx	.00635 lbs SOx/kwh	2.78 lbs	27.8 lbs

So for all 6 devices, we are looking at 6 * 438 = 2628 kwh:

	unit cost	saved per year (2628 kwh)	saved in 10 years (2628 kwh)
electric	$.072/kwh	$189.24	$1892.40
CO2	1.936 lbs CO2/kwh	5088 lbs	50880 lbs
NOx	.00191 lbs NOx/kwh	5.04lbs	50.40 lbs
SOx	.00635 lbs SOx/kwh	16.68 lbs	166.80 lbs

Thus we anticipate and annual savings of $189.24 per year and $1892.40 over 10 years. Campus Recreation believes that by deploying these thin client devices in combination with our other energy saving projects in our facilities we would be showing the campus community that we are serious about conserving energy. Our hope would be that users of our facilities will be more aware of the power used by computers in general and make efforts to turn computers off when not in use at home and other places on campus. Additionally, this will make people aware of the availability of low power consumption computing devices.

V. Outreach and Education

This project will be highly visible as a very large and diversified population utilizes our facilities on a daily basis. We plan on making at least one of the thin client devices attached to the kiosk furniture in a way that it is completely visible – this will most likely be accomplished with a secure, clear, vented Plexiglas enclosure. Additionally, we plan to attach signs on the devices or monitors which indicate how the devices tie into Campus Recreations Green initiatives and that funding is from the UIUC Student Sustainability Committee. Our hope is that this will educate our patrons of the importance of energy conservation. This will also stress the fact that Campus Recreation cares about Sustainability.

PolyChain Carbon Belt Replacement for Ai Handling Units

Project Lead Contact Information
Name: Michael Litchford
E-mail: litchfor@illinois.edu
Title: Staging and Building Coordinator
Organization/Department: Campus Recreation
P Phone: 244-9534
A Address: 201 E. Peabody Drive
Champaign, IL 61820

Secondary Contact Information
Name: Brian Baxter
E-mail: bbaxtr@illinois.edu
Title: Assistant Director of Strength and Conditioning
Organization/Department: Campus Recreation
P
A Phone: 333-2677
Address: 201 E. Peabody Drive
Champaign, IL 61820

I. Detailed Project Description:

We are looking to do a full replacement of older V-Belts for AHU fans at the ARC, CRCE, and the Ice Arena with a more efficient PolyChain Carbon Synch belt. The change will include replacement of the sheave and bushings on each fan. The new belts reduce startup slippage and provide a smoother speed transition while fan is in use; both benefits increase the energy savings of the system as a whole with an average of 5% energy savings for each belt replaced.

II. Budget & Fundraising:

The budget for this project is based off the cost of belt replacements on 8 types of Air Handling Unit (AHU) fans. The breakdown of cost follows:

Fan HP	Number of belts	Estimated cost	Savings/Year	Payback period in Years	kWh savings per year	Total savings per year	Total Cost
3	8	$307.25	$83.12	3.70	1.13	$664.96	$2,458.00
5	9	$372.51	$138.53	2.69	1.88	$1,246.77	$3,352.59
7.5	6	$462.77	$204.32	2.26	2.78	$1,225.92	$2,776.62
10	8	$913.62	$75.80	12.05	1.03	$606.40	$7,308.96
15	10	$611.75	$397.31	1.54	5.4	$3,973.10	$6,117.50
20	7	$679.03	$521.15	1.30	7.08	$3,648.05	$4,753.21
25	2	$566.74	$651.44	0.87	8.85	$1,302.88	$1,133.48
30	1	$481.21	$773.33	0.62	10.51	$773.33	$481.21
Totals						**$13,441.41**	**$28,381.57**
Overall project recovery				**2.11**			

The payback on the smaller fans is much less than the larger fans but our overall return is just 2.11 years. We would like to have this project fully funded but the department will proceed with this project FY10 regardless.

III. Timeline:

Projected time for this project for this entire project would be just one month.

IV. Energy, Environmental, Social and Economic Impact:

We expect to see a yearly energy savings of 38.66 kWh for this entire project. In addition to that savings we will be reducing our maintenance schedule from bi-annual inspections to once every two years. The failure rate for these belts averages 3 years as compared to the .8-1.5 year life span of the V-Belt, reducing our material waste of these systems. The carbon savings for this project would be 64.64 CO_2 lb/kWh yearly and 193.92 CO_2 lb/kWh for the expected life of a PolyChain Carbon belt.

V. Outreach and Education:

This project will be added to our Green Initiative list currently in place on our department website and will be added to the overall marketing campaign advertising our efforts. We will be seeking LEED certification for existing buildings with the ARC and this project will help us obtain that goal by reducing our energy consumption.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

CONTACTS

Designed For:

Provided By:
artice james
university of illinois
1507 S. oak st.
Champaign, Illinois 61820
United States
axjames@oandm.uiuc.edu
217-333-1517 Phone
217-244-6391 Fax

Application: Design #1 -

INPUT

Drive Information

			DriveR	DriveN
Speed Ratio:	1.64 Down	RPM:	1750.0	1068.8 +/-4%
Input Load:	3	Shaft Diameter:	1.13 in	1.44 in
Service Factor:	1.6			
Design Power:	4.8 hp			
Center Distance:	18.23 to 22.29 in	Bushings Checked:	No MPB	

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Hi-Power II - A**	
Belt:	8MGT-1280-12	$65.47	A65	$12.65
DriveR:	8MX-25S-12	$85.93	QD1A6.2/B6.6	$65.62
	1108 1 1/8	$16.56	SDS 1 1/8	$23.88
DriveN:	8MX-40S-12	$111.69	QD1A10.6/B11.0	$103.90
	2012 1 7/16	$27.60	SDS 1 7/16	$23.88
Design Power:	11.48 hp		7.58 hp	
Center Dist.:	20.06 in		19.83 in	
DriveN RPM::	1093.8		1039.9	
Total Drive Price:		$307.25		$229.93

RESULTS

Input Load::	3	**Efficiency:**	87.00 %
Yearly Usage:	24 Hrs / Day, 7 Days / Wk, 52 Wks / Yr		
Hours / Year:	8736	**KWh / Year:**	22464
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$1,662.30
Savings / Year:	$83.12		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$307.25	44 months
Existing V-Belt Needs Replacement:	$294.60	43 months
Existing V-Belt and Pulleys Need Replacement:	$77.32	11 months

NOTES

- The power ratings of the two drives differ by more than 30%

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

CONTACTS

Designed For:

Provided By:
artice james
university of illinois
1507 S. oak st.
Champaign, Illinois 61820
United States
axjames@oandm.uiuc.edu
217-333-1517 Phone
217-244-6391 Fax

Application: Design #1 -

INPUT

Drive Information

Speed Ratio:	1.90 Down
Input Load:	5
Service Factor:	1.6
Design Power:	8 hp
Center Distance:	25.39 to 31.04 in
Motor Standards:	NEMA Electric Motor, NEMA 184T frame

	DriveR	DriveN
RPM:	1750.0	918.9 +/-4%
Shaft Diameter:	1.13 in	1.44 in

Bushings Checked: No MPB

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Hi-Power II - B**	
Belt:	8MGT-1760-12	$79.34	B92	$25.23
DriveR:	8MX-27S-12	$90.02	QD1A7.6/B8.0	$79.29
	1108 1 1/8	$16.56	SDS 1 1/8	$23.88
DriveN:	8MX-50S-12	$158.99	QD1A15.0/B15.4	$158.58
	2012 1 7/16	$27.60	SK 1 7/16	$36.99
Design Power:	14.56 hp		13.94 hp	
Center Dist.:	28.56 in		28.28 in	
DriveN RPM::	945.0		927.7	
Total Drive Price:		$372.51		$323.97

RESULTS

Input Load::	5	**Efficiency:**	87.00 %
Yearly Usage:	24 Hrs / Day, 7 Days / Wk, 52 Wks / Yr		
Hours / Year:	8736	**KWh / Year:**	37439
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$2,770.51
Savings / Year:	$138.53		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$372.51	32 months
Existing V-Belt Needs Replacement:	$347.28	30 months
Existing V-Belt and Pulleys Need Replacement:	$48.54	4 months

NOTES

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

CONTACTS

Designed For:

Provided By:
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Champaign, Illinois 61820
United States
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217-333-1517 Phone
217-244-6391 Fax

Application: **Design #1 -**

INPUT

Drive Information

			DriveR	DriveN
Speed Ratio:	1.79 Down	RPM:	1750.0	975.4 +/-4%
Input Load:	7.5	Shaft Diameter:	1.38 in	2.44 in
Service Factor:	1.6			
Design Power:	12 hp			
Center Distance:	32.48 to 39.70 in			
Motor Standards:	NEMA Electric Motor, NEMA 213T frame	Bushings Checked:	No MPB	

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Super HC - 5VX**	
Belt:	8MGT-2240-12	$105.38	5VX950	$71.58
DriveR:	8MX-34S-12	$98.82	QD2/5V5.20	$124.41
	1610 1 3/8	$20.43	SDS 1 3/8	$23.88
DriveN:	8MX-63S-12	$210.54	QD2/5V9.00	$185.93
	2012	$27.60	SK 2 7/16	$36.99
Design Power:	21.81 hp		12.41 hp	
Center Dist.:	36.43 in		36.30 in	
DriveN RPM::	944.4		1002.8	
Total Drive Price:		$462.77		$442.79

RESULTS

Input Load::	7.5	**Efficiency:**	88.00 %
Yearly Usage:	24 Hrs / Day, 7 Days / Wk, 52 Wks / Yr		
Hours / Year:	8736	**KWh / Year:**	55521
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$4,086.33
Savings / Year:	$204.32		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$462.77	27 months
Existing V-Belt Needs Replacement:	$391.19	23 months
Existing V-Belt and Pulleys Need Replacement:	$19.98	1 months

NOTES

- The power ratings of the two drives differ by more than 30%

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

CONTACTS

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Application: IMPE -

INPUT

Drive Information

Speed Ratio:	2.74 Down
Input Load:	10
Service Factor:	1.6
Design Power:	16 hp
Center Distance:	19.34 to 23.63 in

	DriveR	DriveN
RPM:	1750.0	638.6 +/-4%
Shaft Diameter:	1.38 in	2.44 in

Bushings Checked: No MPB

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Hi-Power II - B**	
Belt:	8MGT-2000-12	$89.19	2-B75	$40.98
DriveR:	8MX-60S-12	$206.26	QD2A5.0/B5.4	$79.29
	2012 1 3/8	$27.60	SDS 1 3/8	$23.88
DriveN:	F8M-168S-21	$545.02	QD2A15.0/B15.4	$229.67
	SF 2 7/16	$45.55	SK 2 7/16	$36.99
Design Power:	42.31 hp		14.68 hp	
Center Dist.:	20.71 in		21.48 in	
DriveN RPM::	625.0		638.9	
Total Drive Price:		$913.62		$410.81

RESULTS

Input Load::	10	**Efficiency:**	91.00 %
Yearly Usage:	10 Hrs / Day, 5 Days / Wk, 50 Wks / Yr		
Hours / Year:	2500	**KWh / Year:**	20486
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$1,515.98
Savings / Year:	$75.80		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$913.62	12.1 years
Existing V-Belt Needs Replacement:	$872.64	11.5 years
Existing V-Belt and Pulleys Need Replacement:	$502.81	6.6 years

NOTES

- The power ratings of the two drives differ by more than 30%

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

CONTACTS

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Application: ice rink E01 -

INPUT

Drive Information

			DriveR	DriveN
Speed Ratio:	2.22 Down	RPM:	3450.0	1555.9 +/-4%
Input Load:	15	Shaft Diameter:	1.38 in	1.5 in
Service Factor:	1.6			
Design Power:	24 hp			
Center Distance:	28.55 to 34.90 in	Bushings Checked:	No MPB	

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Hi-Power II - B**	
Belt:	8MGT-2240-12	$105.38	2-B90	$48.98
DriveR:	8MX-50S-12	$158.99	QD2A4.8/B5.2	$76.56
	2012 1 3/8	$27.60	SDS 1 3/8	$23.88
DriveN:	8MX-112S-12	$292.18	QD2A12.0/B12.4	$136.71
	2012 1 1/2	$27.60	SK 1 1/2	$36.99
Design Power:	64.43 hp		20.09 hp	
Center Dist.:	31.18 in		31.87 in	
DriveN RPM::	1540.2		1501.9	
Total Drive Price:		$611.75		$323.12

RESULTS

Input Load::	15	**Efficiency:**	91.00 %
Yearly Usage:	24 Hrs / Day, 7 Days / Wk, 52 Wks / Yr		
Hours / Year:	8736	**KWh / Year:**	107381
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$7,946.18
Savings / Year:	$397.31		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$611.75	18 months
Existing V-Belt Needs Replacement:	$562.77	17 months
Existing V-Belt and Pulleys Need Replacement:	$288.63	9 months

NOTES

- The power ratings of the two drives differ by more than 30%

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

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Application: IMPE -

INPUT

Drive Information

			DriveR	DriveN
Speed Ratio:	1.81 Down	RPM:	1750.0	968.8 +/-4%
Input Load:	20	Shaft Diameter:	1.88 in	2.44 in
Service Factor:	1.6			
Design Power:	32 hp			
Center Distance:	37.89 to 46.31 in			
Motor Standards:	NEMA Electric Motor, NEMA 256T frame	Bushings Checked:	No MPB	

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Super HC - 5VX**	
Belt:	8MGT-2600-21	$199.01	2-5VX1120	$169.54
DriveR:	8MX-41S-21	$156.36	QD2/5V6.30	$149.01
	2012 1 7/8	$27.60	SK 1 7/8	$36.99
DriveN:	8MX-75S-21	$262.11	QD2/5V11.30	$218.74
	2517 2 7/16	$33.95	SK 2 7/16	$36.99
Design Power:	50.84 hp		35.09 hp	
Center Dist.:	42.01 in		42.10 in	
DriveN RPM::	956.7		968.8	
Total Drive Price:		$679.03		$611.27

RESULTS

Input Load::	20	**Efficiency:**	92.00 %
Yearly Usage:	24 Hrs / Day, 7 Days / Wk, 52 Wks / Yr		
Hours / Year:	8736	**KWh / Year:**	141618
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$10,423.10
Savings / Year:	$521.15		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$679.03	16 months
Existing V-Belt Needs Replacement:	$509.49	12 months
Existing V-Belt and Pulleys Need Replacement:	$67.76	2 months

NOTES

- The power ratings of the two drives differ by more than 30%

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

CONTACTS

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Application: Design #1 -

INPUT

Drive Information

Speed Ratio:	1.67 Down
Input Load:	25
Service Factor:	1.6
Design Power:	40 hp
Center Distance:	36.98 to 45.20 in
Motor Standards:	NEMA Electric Motor, NEMA 284T frame

	DriveR	DriveN
RPM:	1750.0	1047.0 +4%/-4%
Shaft Diameter:	1.88 in	Unspecified

Bushings Checked: No MPB

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Super HC - 5V**	
Belt:	8MGT-2600-12	$114.38	5V1320	$100.13
DriveR:	8MX-53S-12	$165.14	QD2/5V10.90	$213.27
	2012 1 7/8	$27.60	SK 1 7/8	$36.99
DriveN:	8MX-90S-12	$232.02	QD2/5V18.70	$410.13
	2012	$27.60	SF	$45.55
Design Power:	39.52 hp		31.04 hp	
Center Dist.:	39.88 in		42.57 in	
DriveN RPM::	1030.6		1016.1	
Total Drive Price:		$566.74		$806.07

RESULTS

Input Load::	25	**Efficiency:**	92.00 %
Yearly Usage:	24 Hrs / Day, 7 Days / Wk, 52 Wks / Yr		
Hours / Year:	8736	**KWh / Year:**	177023
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$13,028.87
Savings / Year:	$651.44		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$566.74	10 months
Existing V-Belt Needs Replacement:	$466.61	9 months
Existing V-Belt and Pulleys Need Replacement:	$0.00	0 months

Note: Synchronous drive costs less than V-belt drive.

NOTES

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Industrial Belt Design - Energy Savings Report

Design Flex® Pro by the Gates Corporation

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Application: Design #1 -

INPUT

Drive Information

			DriveR	DriveN
Speed Ratio:	1.89 Down	RPM:	3450.0	1826.5 +/-4%
Input Load:	30	Shaft Diameter:	Unspecified	1.5 in
Service Factor:	1.6			
Design Power:	48 hp			
Center Distance:	34.67 to 42.37 in			
Motor Standards:	NEMA Electric Motor, NEMA 284T frame	Bushings Checked:	No MPB	

DRIVES

	Selected Synch Belt		Selected V-Belt	
Belt Type:	**Poly Chain Carbon - 8M**		**Hi-Power II - B**	
Belt:	8MGT-2400-12	$109.42	3-B105	$85.41
DriveR:	8MX-39S-12	$108.92	QD3A6.0/B6.4	$103.90
	1610	$20.43	SD	$28.71
DriveN:	8MX-75S-12	$214.84	QD3A12.0/B12.4	$196.86
	2012 1 1/2	$27.60	SK 1 1/2	$36.99
Design Power:	48.47 hp		41.96 hp	
Center Dist.:	38.23 in		38.52 in	
DriveN RPM::	1794.0		1826.6	
Total Drive Price:		$481.21		$451.87

RESULTS

Input Load::	30	**Efficiency:**	93.00 %
Yearly Usage:	24 Hrs / Day, 7 Days / Wk, 52 Wks / Yr		
Hours / Year:	8736	**KWh / Year:**	210143
Energy Cost / KWh:	$0.07	**Total Energy Cost:**	$15,466.53
Savings / Year:	$773.33		

Pay-back Analysis

	Total Cost Difference	Payback Period
Existing Drive is Operational:	$481.21	7 months
Existing V-Belt Needs Replacement:	$395.80	6 months
Existing V-Belt and Pulleys Need Replacement:	$29.34	0.5 months

NOTES

- Energy savings are only realized if both the V-Belt and the Synch Belt drives are well-designed.
- Please Contact Gates Product Application for more details.

Campus Recreation Restroom Water Reduction

Project Lead Contact Information
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Secondary Contact Information
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Champaign, IL 61820

I. Detailed Project Description:

Campus Recreation is interested in reducing the water consumption of its patrons without interfering with their perceived comfort or routine. To accomplish this goal, we propose replacing the currently installed flush valves with dual-flush valves, installing new pint-flow urinals, and motion-sensor water faucets in our three largest buildings. The high water consumption of our buildings during various events also provides us with an excellent opportunity to educate our patrons on our facility reduction efforts and their collaborative role in reducing waste.

All toilet flush valves will be retrofitted with a WES-213 Dual-Flush handle and Diaphragm kit that maintains a 1.1 gallons per flush (gpf) by lifting up for liquid waste and the normal 1.6 gpf flush by pushing down for solid waste. The handle itself is green with small written instructions on the fixture, and we will post instructions within the water closet for proper use. We propose to replace 64 flush valves at the ARC, 25 at CRCE, and 16 at the Ice Arena for a total of 105 valve replacements. We believe that this effort will not only reduce the amount of water used during normal use, but will also help educate the general public about the importance of water reduction as a daily practice.

Restroom sink faucets in all three buildings will be replaced with 62 4" and 38 8" Zurn Model Z6915 AquaSense faucets. These faucets are battery operated with an infrared convergence-type proximity sensor and will include a .5 gallon per minute vandal resistant aerator. By combining both the motion sensor fixture with a lower flow aerator, we believe that we can maximize water reduction at our restroom sinks.

We propose replacing 32 urinals from the main Campus Recreation buildings with the Zurn Z5758 .125 gpf Ultra Low Consumption Urinal System. This product provides significant reduction in waste water by reducing urinal flow from 1gpf to .125gpf.

Originally we also planned to propose battery operated soap dispensers, but this line item was removed over concerns of a greater upkeep cost and wasteful battery use. Simple push handle foam soap dispensers will replace older units as needed by the department.

II. Budget & Fundraising:

The project budget is broken up into various categories for line-by-line auditing during the reviewing process.

ARC

---

50 4"-spread lavatory faucets

Zurn Model Z6915 Aquasense battery-powered with .5 GPM aerator

Material:	$329.00 ea. X 50	=	$16,450.00
Labor:	$180.00 ea. X 50	=	$9,000.00
	Total:		$25,450.00

8 8"-spread lavatory faucets

Zurn Model Z6915 Aquasense battery powered with .5 GPM aerator and 8"cover

Material:	$371.00 ea. X 8	=	$2,968.00
Labor:	$180.00 ea. X 8	=	$1,440.00
	Total:		$4,408.00

15 Urinals

Zurn Z5758 ultra low consumption urinal system with Ecovantage battery powered flush valve, uses 1/8 GPF with 85% water savings over standard 1GDF urinal

Material:	$494.00 ea. X 15	=	$7,410.00
Labor:	$240.00 ea. X 15	=	$3,600.00
	Total:		$11,010.00

64 Water Closets

Sloan Uppercut dual-flush water conservation tune-up kit. Handle is green in color to inform the user it is for water conservation. Lift handle up initiates reduced flush (1.1 GPF) pushing handle down initiates normal (1.6 GPF), reduces water volume by up to 30% when activated upwards.

Material:	$54.00 x 64 ea. $60.00 x 32 ea.	=	$3,456.00
Labor:	2/Hr	=	$1,920.00
	Total:		$5,376.00

2 4"-spread lavatory faucets

Zurn Model Z6915 Aquasense battery-powered with .5 GPM aerator

Material:	$329.00 ea. x 2	=	$658.00
Labor:	$180.00 ea. X 2	=	$360.00
	Total:		$1,018.00

24 8"-spread lavatory faucets

Zurn Model Z6915 Aquasense battery-powered with .5 GPM aerator and 8" cover plate

Material:	$371.00 ea. X 24	=	$8,904.00
Labor:	$180.00 ea. X 2	=	$4,320.00
	Total:		$13,224.00

6 Urinals

Zurn Z5758 ultra low consumption urinal system with Ecovatage battery powered flush valve, uses 1/8 GDF with 85% water savings over standard 1GPF urinal

Material:	$494.00 ea. X 6	=	$2,964.00
Labor:	$240.00 ea. X 6	=	$1,440.00
	Total:		$4,404.00

25 Water Closets

Sloan Uppercut dual-flush water conservation tune-up kit. Handle is green in color to inform the user it is for water conservation. Lift handle up initiates reduced flush(1.1 GPF) pushing handle down initiates normal (1.6 GPF), reduces water volume by up to 30% when activated upwards.

Material:	$54.00 x 25 ea. $60.00 x 13 ea.	=	$1,350.00
Labor:	2/hr.	=	$780.00
	Total:		$2,130.00

Ice Arena

10 4"-spread lavatory faucets

Zurn Model Z6915 Aquasense battery-powered with .5 GPM aerator

Material:	$329.00 ea. X 20	=	$3,290.00
Labor:	$180.00 ea. X 10	=	$1,800.00
	Total:		$5,090.00

6 8"-spread lavatory faucets

Zurn Model Z6915 Aquasense battery-powered with .5 GPM aerator and 8" cover plate

Material:	$371.00 ea. X 6	=	$2,226.00
Labor:	$180.00 ea. X 6	=	$1,080.00
	Total:		$3,306.00

11 urinals

Zurn Z5758 ultra low consumption urinal system with Ecovantage battery powered flush valve, uses 1/8 GPF with 85% water savings over standard 1GPF urinal

Material:	$494.00 ea. X 11	=	$5,434.00
Labor:	$240.00 ea. X 11	=	$2,640.00
	Total:		$8,074.00

16 WaterClosets

Sloan Uppercut dual-flush water conversation tune-up kit. Handle is green in color to inform the user it is for water conservation. Lift handle up initiates reduced flush (1.1 GDF) pushing handle down initiates normal (1.6 GPF), reduces water volume by up to 30% when activated upwards.

Material:	$54.00 x 16 ea. $60.00 x 8 ea.	=	$864.00
Labor:	2/Hr	=	$480.00
	Total:		$1,344.00

Facility Totals

CRCE	
Total Material CRCE:	$13,876.00
Total Labor CRCE:	$6,900.00
ARC	
Total Material ARC:	$30,284.00
Total Labor ARC:	$15,960.00
Ice Arena	
Total Material Ice:	$11,814.00
Total Labor Ice:	$6,000.00
Total DCR Material:	$55,974.00
Total DCR Material:	$28,860.00
Total Project Cost	**$84,834.00**

The proposed project can further be separated for total cost by each line item; Faucet replacement, Urinal replacement or Dual-flush valve replacement.

62-4" spread lavatory faucets	$31,558.00
38-8" spread lavatory faucets	$20,938.00
32-urinals	$23,488.00
105-water closets	$8,850.00

Campus Recreation is committed to reducing our water consumption in our restroom areas. There has been little effort to find alternative sources of funding for this project to date, but we are investigating what will be available. If this project were not funded, we would have to do a full evaluation of all our outstanding projects, so we would be pursuing the most beneficial project first. Our long term plan would include this project if it were not done this fiscal year.

III. Timeline:

Campus Recreation plans to have this project completed by August 21st, 2009. There are some elements of this project that require overtime and/or off hour work to be done, particularly in the women's locker rooms.

IV. Energy, Environmental, Social and Economic Impact:

Our project return varies greatly between building and fixture replacement but our overall yearly impact would be significant.

	Gallons saved per year	Cost of fixtures and Installation	Dollars saved per year	Years to Full Return
ARC				
4" Sink Faucets	1055700	$25,450.00	$1,974.16	12.89
8" Sink Faucets	1055700	$4,408.00	$1,974.16	2.23
Pint Flow Urinals	1304100	$11,010.00	$2,438.67	4.51
Dual-Flush Valve	556416	$5,376.00	$1,040.50	5.17
CRCE				
4" Sink Faucets	765000	$1,018.00	$1,430.55	0.71
8" Sink Faucets	765000	$13,224.00	$1,430.55	9.24
Pint Flow Urinals	945000	$4,404.00	$1,767.15	2.49
Dual-Flush Valve	403200	$2,100.00	$753.98	2.79
Ice Arena				
4" Sink Faucets	214200	$5,090.00	$400.55	12.71
8" Sink Faucets	214200	$3,306.00	$400.55	8.25
Pint Flow Urinals	396000	$8,074.00	$740.52	10.9
Dual-Flush Valve	799200	$1,344.00	$1,494.50	0.9
	6,438,816	**$84,804.00**	**$15,845.84**	

Only one Faucet value for Gallons saved per year is valid per building. Removed during calculation.

For the year of 2008, the ARC, CRCE, and Ice Arena combined used 18,407,000 gallons of water so the projected savings of 6,438,816 would be a 34% reduction from the previous year. Because the ARC was not open for half of that year, it would be more reasonable to project a 18-22% reduction in water use for 2009.

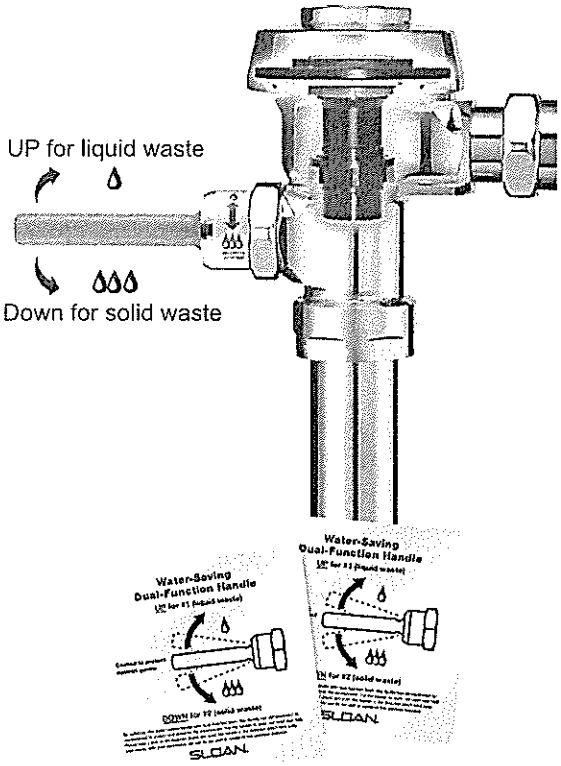
V. Outreach and Education:

Campus Recreation actively promotes their green projects. The bathroom remodel would allow us to showcase water reduction in a way that is meaningful to the student, and is fiscally responsible. Educational material will accompany all of our upgrades explaining what the devices are and their overall impact on our building function and the environment. This project will be very visible, and will be added to our green initiatives on our main website. We will continue to promote our efforts to make all of our buildings more energy efficient.

NEW

UPPERCUT™

The Fastest Way to Start Saving Water!



Water Conservation Tune-Up Kit

WES-213

Includes:

- **Dual-Flush Handle**
- **Diaphragm Kit**

Description

Dual-Flush Retrofit Handle and Dual Filtered 1.6 gpf/6.0 Lpf Diaphragm Kit for Exposed Water Closet Flushometers.

Specifications

Dual-Flush Retrofit Handle and Dual Filtered Diaphragm Kit for Exposed Water Closet Flushometers with the following features:

- Retrofits to most any existing valve
- Lifting Handle UP initiates reduced flush (1.1gpf/4.2 Lpf), eliminating liquid and paper waste, saving a ½-gallon of water
- Pushing Handle DOWN initiates full flush (1.6 gpf/6.0 Lpf), eliminating solid waste and paper
- Reduces water volume by up to 30% when activated UPWARDS
- Antimicrobial Coating on Handle protects against germ transmition
- ADA Compliant Metal Non-Hold-Open Handle with Triple Seal Handle Packing
- Distinctive Green Handle signifies Water Conserving Device
- PERMEX™ Synthetic Rubber Diaphragm with Dual Filtered Fixed Bypass (1.6 gpf/6.0 Lpf)
- Diaphragm and Handle Packing molded from PERMEX™ Rubber Compound for Chloramine Resistance
- Includes (2) adhesive backed Metal Wall Plates etched w/instructions

NOTES:

- NOT recommended for use on bowls with a flush volume greater than 1.6 gpf/6.0 Lpf.
- Does not include complete Flushometer valve. For complete valve, use Sloan Flushometer Models WES-111 or WES-115.

Patent Pending

This space for Architect/Engineer approval

SLOAN®

Made in the U.S.A.

SLOAN VALVE COMPANY • 10500 SEYMOUR AVE. • FRANKLIN PARK, IL. 60131

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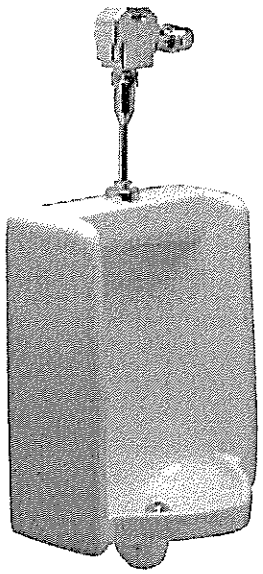
www.sloanvalve.com

WES-213 Dual-Flush Handle S.S. — Rev. 0b (11/05)

Z5758 "The Retrofit Pint" 0.125 gpf Ultra Low Consumption Urinal System

Z5758 Series – "The Retrofit Pint"

- Zurn One ultra low consumption urinal system designed for optimal performance between Zurn fixture and Zurn flush valve to save water while exceeding industry performance standards.
- 1/8 gpf [0.5 Lpf]
- Over 85% water savings over standard 1.0 gpf [4.0 Lpf] system
- Pressure compensating internal flow regulator
- Oversized footprint to make retrofit easy
- Vitreous china
- High efficiency washout flushing action
- 3/4" top spud
- 2" I.P.S. outlet flange and rubber gasket with integral trap
- 14" extended rim height for handicap compliance when installed at proper height
- Shipping Weight: 72 lbs.



Z5758 Series 1/8 gallon per flush "The RetroPint" EcoVantage™ flush valve urinal system.

Engineering Specification

☐ Z5758.205.00 EcoVantage™ High Efficiency Battery-Powered Sensor Urinal System
System comes complete with sensor-operated, battery-powered exposed ZEG6003EV high efficiency flushometer valve, control stop assembly, and vitreous china urinal. The system is designed to perform to industry standards with as little as 1/8 gallon per flush. Valve is operated by an infrared convergence-type proximity sensor with smart technology, powered by 4 "AA" batteries. Valve features an internal flow regulator to maintain constant flow rates independent of line pressures. Vitreous china urinal is supplied with 3/4" top spud, 2" outlet connection, and strainer assembly.

☐ Z5758.206.00 EcoVantage™ High Efficiency Hardwired Sensor Urinal System
System comes complete with sensor-operated, hardwired exposed ZEG6003EV-HW high efficiency flushometer valve, control stop assembly, and vitreous china urinal. The system is designed to perform to industry standards with as little as 1/8 gallon per flush. Valve is operated by an infrared convergence-type proximity sensor with smart technology, powered by 6 VDC plug-in or hardwired power converter. Valve features an internal flow regulator to maintain constant flow rates independent of line pressures. Vitreous china urinal is supplied with 3/4" top spud, 2" outlet connection, and strainer assembly.

Suffix Options

☐ UB2 Larger universal retrofit mounting bracket. Time saving urinal mounting bracket allows the urinal to be mounted to existing carrier studs and outlet piping without the need to make any adjustments behind the wall.

Fixtures meet ASME A112.19.2 and CSA B45 standard requirements.

Meets the American Disabilities Guidelines and ANSI A117.1 requirements when urinal is installed 17" [432mm] from finished floor.

See Zurn One Systems for suggested packages.

This Space is for Architectural/Engineering Approval

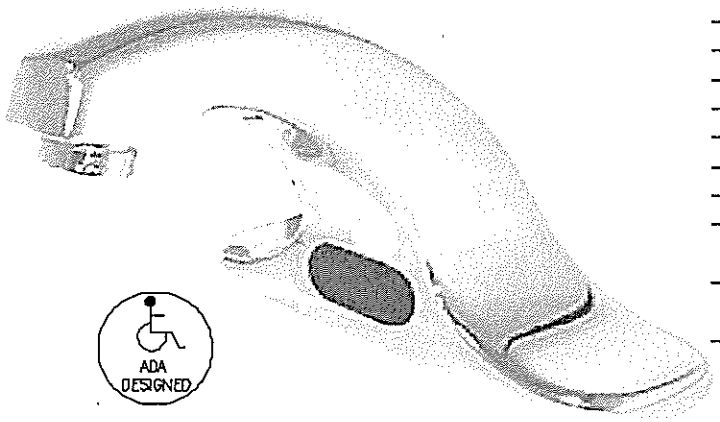
Zurn Industries, LLC Commercial Brass and Fixtures Operation
2640 South Work Street · Falconer, NY 14733 · Phone: 716 665-1132 · Fax: 716-665-1135 · www.zurn.com

ZURN®

AquaSense®

TAG _____

AquaSense Sensor Faucet



Suffix Options (Check/Specify Appropriate Options)

_____	-A	2.0 GPM Vandal Resistant Aerator
_____	-C	2.2 GPM Laminar Flow Control
_____	-F	.5 GPM Vandal Resistant Aerator
_____	-IA3	Inlet Adaptor (3/8"[10] compression)
_____	-MJ	Mini Junction Box
_____	-MT	Mixing Tee
_____	-MV	Temperature Mixing Valve
_____	-PB	Polished Brass PVD Finish
_____	-SH	Supply Hoses for Mixing Valve
_____	-SSH	Single Supply Hose
_____	-TMV	Thermostatic Mixing Valve for Multiple Faucets
_____	-TMV-1	Thermostatic Mixing Valve for Single Faucets
_____		Other

☐ Z6915 AquaSense Battery Powered Faucet

ENGINEERING SPECIFICATION: The Z6915 sensor faucet is a battery powered sensor faucet with an integral four inch cover plate for retrofit and new construction. The faucet incorporates an infrared convergence-type proximity sensor into the chrome plated cast brass spout. The faucet is furnished complete with sensor module, spout module and in-line filter, 4 "AA" batteries, a 1.5 GPM vandal resistant aerator and an inlet for a 1/2"[13] ball riser supply hose. Sensor range is factory set for optimum performance.

☐ Z6915-ACA AquaSense Plug-In Powered Faucet

ENGINEERING SPECIFICATION: The Z6915-ACA sensor faucet is a plug-in powered electronic sensor faucet with an integral four inch cover plate for retrofit and new construction. The faucet incorporates an infrared convergence-type proximity sensor into the chrome plated cast brass spout. The faucet is furnished complete with sensor module, spout module, in-line filter, a 1.5 GPM vandal resistant aerator, 6 VDC plug-in power converter and an inlet for a 1/2"[13] ball riser or supply hose. Also included are 4 'AA' batteries that provide battery backup power to the faucet during power outages. Sensor range is factory set for optimum performance.

☐ Z6915-CWB AquaSense Hardwire Powered Faucet

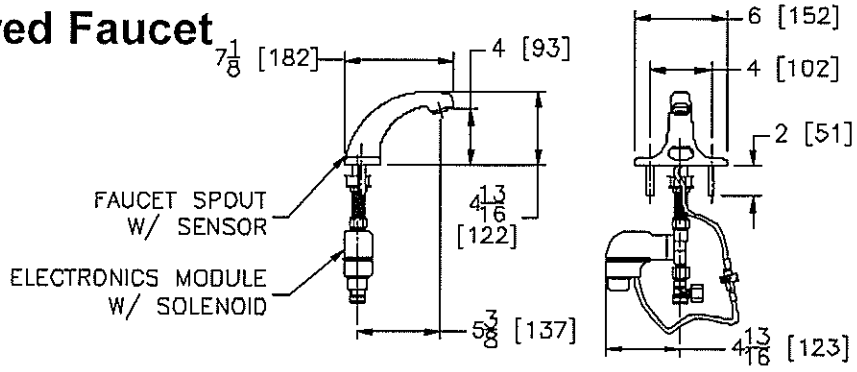
ENGINEERING SPECIFICATION: The Z6915-CWB sensor faucet is a hardwired electronic sensor faucet with an integral four inch cover plate for retrofit and new construction. The faucet incorporates an infrared convergence-type proximity sensor into the chrome plated cast brass spout. The faucet is furnished complete with sensor module, spout module, in-line filter, a 1.5 GPM vandal resistant aerator, connecting wire to power converter and an inlet for a 1/2"[13] ball riser or supply hose. Also included are 4 'AA' batteries that provide battery backup power to the faucet during power outages. Sensor range is factory set for optimum performance.

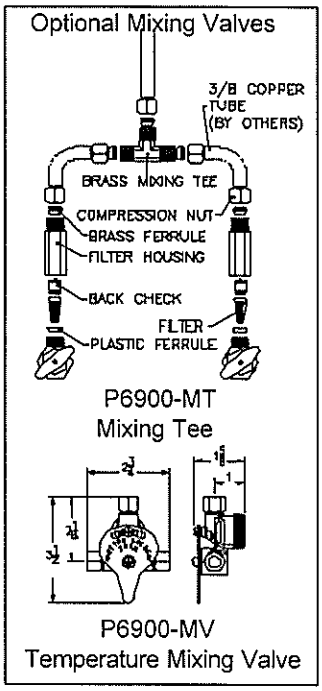
NOTE: For Hardwire applications furnish P6900-HW6 power converter. The P6900-HW6 will power up to 8 sensor faucets. Order P6900-HW6 power converter seperately.
All polished brass (PVD) products come with a limited lifetime warranty on the finish.

ZURN INDUSTRIES, INC. ♦ COMMERCIAL BRASS OPERATION ♦ 5900 ELWIN BUCHANAN DRIVE ♦ SANFORD NC 27330
Phone: 1-800-997-3876 ♦ Fax: 919-775-3541 ♦ World Wide Web: www.zurn.com
In Canada: ZURN INDUSTRIES LIMITED ♦ 3544 Nashua Drive ♦ Mississauga, Ontario L4V1L2 ♦ Phone: 905-405-8272 Fax: 905-405-1292

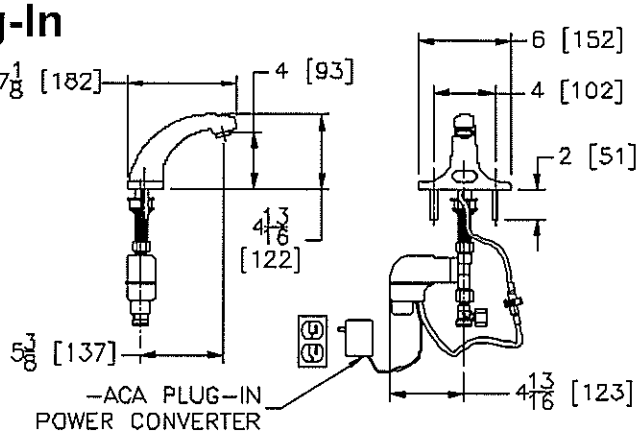
Rev. B
Dwg. No. 80689
Date: 2/27/06
Product No. Z6915

TYPICAL Z6915
AquaSense Battery Powered Faucet



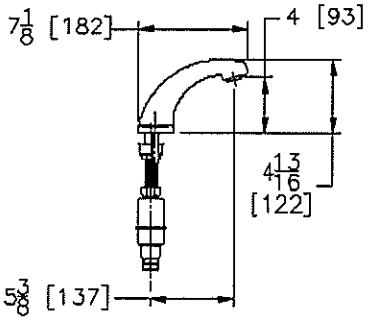


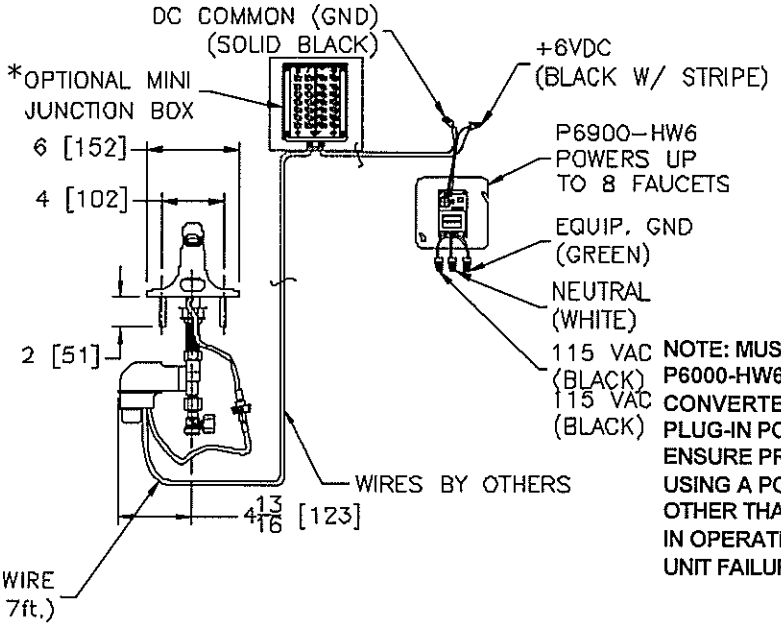
TYPICAL Z6915-ACA
AquaSense Plug-In Powered Faucet



TYPICAL Z6915-CWB
AquaSense Hardwire Powered Faucet

Optional:
* Optional -MJ mini junction box for connecting up to 8 faucets





NOTE: MUST USE EITHER ZURN P6000-HW6 HARDWIRE POWER CONVERTER OR ZURN P6000-PC6 PLUG-IN POWER CONVERTER TO ENSURE PROPER OPERATION. USING A POWER CONVERTER OTHER THAN ZURN MAY RESULT IN OPERATION MALFUNCTION OR UNIT FAILURE.

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Recycling Management System – Campus Recreation Indoor Facilities

Project Lead Contact Information
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Address: 201 East Peabody Drive, Champaign, IL 61820

Secondary Contact Information
Name: Michael Litchford
E-mail: litchfor@illinois.edu
Title: Coordinator
Organization/Department: Campus Recreation
Phone: 217.244.9534
Address: 201 East Peabody Drive, Champaign, IL 61820

I. Detailed Project Description:

Campus Recreation would like to outfit all of its Indoor Facilities with a recycling management system by providing highly visible and user-friendly recycling bins. These bins would be consistent and visible in each facility to assist our patrons in making better choices relevant to recycling. These facilities would consist of the Activities & Recreation Center (ARC), Campus Recreation Center – East (CRCE) and the Ice Arena. Our facilities serve between 5000-8000 students on a daily basis and we believe such a recycling management system will provide our patrons with a more educational option when it comes to recycling, and will then have a carry-over effect in how they dispose their trash in their everyday lives outside of the campus environment. These recycling management systems will also reduce the amount of time it takes for the University Recycling Center to sort our trash at their facility. A lot of students on campus do not understand that all of the trash is already being sorted and recycled. We currently provide signage on each of our trash cans that inform patrons of this overall recycling program on Campus, but this does not actually teach them how to recycle at their homes. By providing the recycling bins within our facilities, it will still teach them the importance of separating their trash and show Campus Recreation's commitment to "Going Green". We will still continue our current trash bin system with educational signage but will now supplement the new recycling management stations into our facilities.

We are proposing the Rubbermaid Glutton Recycling Stations in the blue color to create a consistent image for our recycling management system. These are a high-capacity, all-in-one centralized solution for waste separation and disposal. Each recycling station will have four different bays to allow different options when it comes to separating. Also, these stations will provide symbol labels to properly distinguish how the trash should be separated. Along with these stations, our Campus Recreation Marketing staff will provide educational and promotional posters that accompany each one of these stations to help better educate our patrons on the importance of recycling. Please see the attached information sheet on these Glutton Recycling Stations or visit this link for more information:
http://www.rcpworksmarter.com/rcp/products/detail.jsp?categoryCode=waste&subCategoryCode=waste_recycling_waste&rcpNum=256R-73&categoryCode_subCategoryCode_rcpNum=waste_waste_recycling_waste_256R-73

These recycling stations will add a little more time to our in-house janitorial responsibilities as they will now have more stations that will need to be emptied and have the liner replaced, but we feel this can be handled as the positive educational impact outweighs the additional work. In addition, we feel it will be more convenient for the Recycling Center if more of our trash is already sorted when it arrives.

II. Budget & Fundraising:

The budget for this recycling management system is rather simple. We are requesting funding to cover the purchasing cost of ten recycling stations (7 ARC, 2 CRCE, 1 Ice Arena). The cost for each Rubbermaid Glutton Recycling Station with shipping would be $499.00 for a total project cost of $4,990. These recycling stations would be purchased from AmSan, the preferred janitorial supplier for the University of Illinois. We are asking for the Student Sustainability Committee to fund this recycling management project in its entirety, but are willing to fund a portion if necessary. Campus Recreation is in the process of creating a Sustainability line item within our budget, but this would not happen until the next budget year as this year's budget is already set and almost complete. Our Executive Team would then evaluate which projects and how much money they could assist with funding based on the available money. If the Student Sustainability Committee can only fund a portion of this project, our Executive Team will meet to determine if they can then cover the remainder of the cost. Campus Recreation did not budget money this year for such a project, but a decision can be made rather quickly, and funding would have to come from the operating budget or from reserves. We would love to be able to see this project implemented right away to be able to start promoting the importance of recycling and to start the recycling education process within our facilities, we and are asking the Student Sustainability Committee to help fund this project so this can become a reality.

III. Timeline:

Once approved for funding, these recycling management stations could be installed and operational within a few weeks. We would need to wait for the lead time associated with the distribution of these stations from the manufacturer and figure in the amount of time it takes from the Purchasing Division. It will take minimal time for our Marketing staff to prepare educational and instructional posters for these stations as they already have posters associated with our "Go Green" campaign.

IV. Energy, Environmental, Social and Economic Impact:

Due to the fact that all of our trash is already recycled via the University Recycling Center, we may not see any measurable changes in the environmental impact of our project. The biggest impact will be on the social aspect of educating our patrons on the importance of sorting trash and recycling. This will be much harder to measure. Campus Recreation believes this project has the potential to have a carry-over effect into their daily lives and make them re-think how they handle their trash in their personal lives. We believe with the amount of students that visit our facilities on a daily basis we have the opportunity to reach a lot of people and have the ability to change behaviors in terms of recycling.

V. Outreach and Education:

We feel that we can reach a significant number of the campus community that utilize our Campus Recreation facilities on a daily basis and educate them on the importance of recycling. We will be supplementing our recycling stations with signage that can include wording that states that these units were purchased **by the Student Sustainability Committee** and the student fee money that was allocated for Sustainability. Our Campus Recreation Marketing staff will also provide educational posters with valuable information about recycling and the impact it can make for our University. We feel the social impact of this project will stress the importance of recycling and will have a great carry-over effect to their everyday lives.