

SIRF:

Sustainability Initiatives Revolving Fund

FY 2013 Annual Report



SIRF provides energy savings opportunities, makes good business sense

The Arizona State University Sustainability Initiatives Revolving Fund (SIRF) invests in large energy conservation and small campus-oriented projects across its four campuses that keep the university at the forefront of sustainability initiatives. ASU is a leader in sustainable practices across its campuses and within academia.

The SIRF mission is to invest in projects that have a direct impact on expanding campus sustainability, energy conservation and renewable-resource development. It is our goal to:

- **Invest wisely in projects that promote sustainability**
- **Accelerate a sustainable campus culture**
- **Reinvest savings in future energy-savings projects**

SIRF seeks projects that address the four overarching goals of the ASU Strategic Plan for Sustainability Practices and Operations:

- **Carbon neutrality**
- **Zero solid/water waste**
- **Active engagement**
- **Principled practice**

SIRF demonstrates that sustainability *should* be and *is* good business. During FY 2013, seven energy-related conservation projects, and six student and campus-oriented projects were funded.

- **The upfront investment in the seven energy-related projects totaled \$1.9 million, and the projected annual benefits totaled \$382,326.**
- **All seven energy-related projects were supported by rebates from APS and Energize Phoenix, which totaled \$467,829. The value of the rebates ranged from \$6,004 to \$189,327.**

Since SIRF inception in FY 2010:

- **Rebates improved the average internal rate of return to more than 50 percent and contributed \$491,286 to the fund.**
- **Utility savings of nearly \$1 million are incorporated in the FY 2014 annual budget for reinvestment in future SIRF-funded projects.**
- **Through June 30, 2013, SIRF project investments total \$5.6 million. Most projects will repay the fund completely within three to five years from the time of approval.**

The SIRF revolving fund structure is based on the premise that large investments will result in cash flow savings to repay the fund within a reasonable period.

Fund Structure

The SIRF funding structure segregates proposed projects by investment size:

- **Tier 1 – University Community Sustainability Grants** (maximum \$50,000 in grants annually)
Investments are made in small projects to promote engagement and to expand a sustainable campus culture. The maximum individual award is \$5,000. No tangible return on investment is required.
- **Tier 2 – Fund Matching and Efficiency Loans** (maximum \$500,000 in grants annually)
Investments are medium-scale, capital improvements for space and equipment upgrades and/or renovations to improve energy efficiency. An ASU department is required to invest 50 percent of the required outlay. In return, the department shares in an equivalent portion of the benefits for up to five years; the remaining 50 percent of the net savings is returned to the fund.
- **Tier 3 – Capital Expansion Loans** (no maximum amount; available funds limit investments)
Investments have a significant and measurable impact on ASU's sustainability profile and provide a return on investment. All investment savings are returned to the fund. Investments may involve strategic partnerships to reduce carbon emissions.

Oversight

SIRF funds are available to all ASU students, faculty and staff through an application process. The Office of Planning and Budget in the ASU Business and Finance organization manages SIRF with oversight from a multidisciplinary review committee. Projects that require funding in excess of \$100,000 require the Chief Financial Officer's approval.

SIRF investments are thoroughly vetted, and their results are integrated into the university's annual planning process. The Facilities Development and Management Business Operations office validates the Tier 2 and Tier 3 project utility commitments for all ASU campuses. The director of University Sustainability Practices approves all Tier 1 submissions.

A committee of eight ASU senior administrators from the following disciplines provides SIRF oversight:

- **Facilities Development and Management**
- **Financial Services**
- **Planning and Budget**
- **University Business Services**
- **University Sustainability Practices**
- **W.P. Carey School of Business – Department of Economics**

As of June 30, 2013, the SIRF committee has approved \$5.6 million in investments. The following table summarizes those investments.

ARIZONA STATE UNIVERSITY Sustainability Initiatives Revolving Fund

As of June 30, 2013

	Year Approved	Total Investment	FY14 Investment Returns to Fund	Investment Returns to Date
TIER 1 Grants				
Poly Gardens Wall Project	FY11	\$ 508		
Memorial Union Water Fountain Retrofits	FY12	5,000		
Custom Aeroponics™	FY13	5,000		
School of Nutrition & Health Instructional Garden	FY13	5,000		
Spatial Database of Trees	FY13	5,000		
Memorial Union and University Services Building Special Collection Bins	FY13	5,000		
Memorial Union Secret Garden Power Source	FY13	4,089		
Residential Life Special Collection Bins	FY13	3,293		
TIER 2 Grants				
Irrigation Master Plan	FY10	96,191		
TIER 3 Investments				
Energy Conservation Distributed Billing	FY11	1,774,089	\$ 164,802	\$ 164,802
ASU Energy Metering Project	FY12	1,096,613	245,000	490,000
Insultech Thermal Insulation	FY12	350,919	69,000	138,000
Weatherup Center Video Room AC Units	FY12	48,321	10,000	20,000
Central Plant Cooling Towers Separator Pumps	FY12	14,398	66,000	132,000
NHI 1 Garage Lighting Retrofit	FY12	22,565	5,412	5,412
Hayden Library Lighting Controls	FY12	174,468	30,000	60,000
West Campus Cooling Tower Nanofiltration	FY12	49,186	10,104	10,104
Mona Plummer Pool Lighting Replacement (LED)	FY12	31,088	7,358	7,358
Downtown University Center Lighting Retrofit	FY13	154,249	37,691	37,691
Walter Cronkite/8 Lighting Retrofit	FY13	114,963	29,246	29,246
Mercado Lighting Retrofit	FY13	106,777	38,659	38,659
NHI 1 Lighting Retrofit	FY13	51,862	14,962	14,962
NHI 2 Lighting Retrofit	FY13	38,035	11,769	11,769
Central Plant Variable Speed Drive Retrofit	FY13	1,385,147	234,000	234,000
Downtown University Center Window Film	FY13	73,945	-	-
Total Investments		\$ 5,615,706	\$ 974,003	\$ 1,394,003

Deeper into SIRF

Tier 1: Custom Aeroponics

Gerek Burford | ASU undergraduate student | Founder, Custom Aeroponics™



What sparked your project idea?

The proposed project was created to exhibit a working Custom Aeroponics™ system to the ASU community that highlighted sustainable agriculture, chemical fertilizer reduction and water conservation. In 2011, Custom Aeroponics formally started as a student company with the acceptance into the Edson Student Entrepreneurship Initiative (ESEI), along with \$20,000 of start-up capital. The project also received mentorship through Venture Catalyst, a unit of the ASU Office of Knowledge Enterprise Development (OKED). Prior to this, our work consisted of private contracting and advising in the fabrication and design of automated soilless agriculture systems, mostly in the urban environment of New York City and rural Connecticut. Again in 2012, Custom Aeroponics was accepted into ESEI and also was awarded the \$5,000 SIRF Tier 1 micro grant.

What are your project goals?

A primary project goal was to expose the ASU community to soilless aeroponic technology and its beneficial capabilities, through an on-campus demonstration. The Noble Science and Engineering Library was the primary project location. It provided great exposure of and accessibility to the project to facilitate education on sustainable innovation. We are very thankful to the Noble Library exhibit committee, which allowed the exhibit to grow inside the library's atrium, established a Web page and constructed multiple display cases with project information. Our next installation will be at our new manufacturing space provided by MAC⁶, a local business incubator advocating Conscious Capitalism[®].

What excites you the most about your project?

Since the project's original inception, we thankfully have been able to receive:

- Start-up capital and office space at SkySong from ESEI
- SIRF grant funding for the system construction
- Sponsorships from two local companies: Botanicare[®] and Native Seeds/SEARCH
- One national sponsorship from AutomationDirect.com
- Exhibit support from the Noble Library Committee
- Working space within a 38,000-square-foot manufacturing center from MAC⁶
- Tenant improvements and equipment from an ASU-sourced private fund
- ASU Venture Catalyst mentorship
- Well over a \$100,000 combined value, all in an effort to create, innovate and implement efficient soilless products and technology

What is your advice to others who have a SIRF project idea?

SIRF is an amazing program to work with. From a student's perspective, it allows for the implementation of innovative ideas on a small scale with an overarching focus on sustainable technologies – without stringent constraints – and allows for a very creative development.

Deeper into SIRF

Tier 1: School of Nutrition & Health Promotion Instructional Garden

Simin Levinson | Lecturer | ASU School of Nutrition and Health Promotion



What sparked your project idea?

Interestingly enough, I was asked to chair a garden committee for the nutrition program in the ASU School of Nutrition & Health Promotion during a faculty meeting. Over the course of several meetings, I came to learn that there were several groups in the downtown Phoenix area also brainstorming urban garden ideas, including the ASU University Office of Sustainability Practices. We joined forces, and began working with the ASU Office of the University Architect, which provided the landscape design plans. When the SIRF Tier 1 funds were awarded, we moved forward with the construction of raised garden beds nestled beside the Nursing and Health Innovation 1 building at the ASU Downtown Phoenix campus.

What are your project goals?

- Implement garden-centered programs that partner with the ASU School of Nutrition and Health Promotion
- Incorporate gardening and nutrition principles in ASU nutrition courses
- Demonstrate sustainability with the use of herbs and vegetables from the garden in the instructional kitchens and the Kitchen Café at the ASU Downtown Phoenix campus
- Support a Nutrition Student Garden Club
- Institute community-based garden education programs for children
- Provide research opportunities for ASU faculty and graduate students

What excites you the most about your project?

I'm thrilled to share my personal interest in urban gardening with ASU students, faculty and the surrounding communities. I'm an avid urban gardener, and gain pleasure and pride in growing some of my own food. Gardening and growing edible plants seem like a natural offshoot to me; it also demonstrates sustainable practices.

I'm also excited to work with my colleague, Tina Shepard, who is a master gardener. Together, we are promoting gardening activities on campus and supporting a Student Garden Club. Teaching others the simplicity and joy of gardening is rewarding work. Gardening is practical and tangible, and we're able to literally enjoy the fruits of our labor!

What is your advice to others who have a SIRF project idea?

JoEllen Alberhasky with the ASU Office of University Sustainability Practices has been a champion of this garden project from the initial planning stages. From project inception, she has provided insight and support. Our project holds great potential with the direct application of sustainability. The SIRF Tier 1 funding allowed this project to become a reality. I advise others who have a SIRF project idea to consider how their project promotes sustainability even if it seems indirect and unconventional. Identifying short- and long-term goals helps with the planning process as well as when applying for SIRF funds.

ASU SIRF FY 2013 Annual Report Appendix

We invite you to review SIRF projects in more detail throughout the next several pages. It is our hope that these simple, no-nonsense projects will inspire you to look at the needs within your schools, departments and groups and to seek SIRF funds to boost your energy-conservation efforts. SIRF also can enable opportunities for grassroots conservation efforts.

TIER 1 PROJECTS: University Community Sustainability Grants

Project Name

Custom Aeroponics™

Total Investment

\$5,000

An ASU undergraduate student used the funds to engineer and manufacture aeroponic growing products with an emphasis on multi-use and linkable components, water efficiency and plant growth maximization. The system mists the roots of growing plants with a nutrient solution, which eliminates the need for soil or substrate.



Project Name

School of Nutrition & Health Promotion Instructional Garden

Total Investment

\$5,000

Goals of the garden include:

1. Implement garden-centered programs on the Downtown Phoenix campus
2. Incorporate gardening and nutrition principles in existing nutrition curricula
3. Develop a Student Garden Club, community-based garden education programs and research opportunities that use the garden
4. Tie in garden programs with the instructional kitchens and the Kitchen Café at the ASU Downtown Phoenix campus



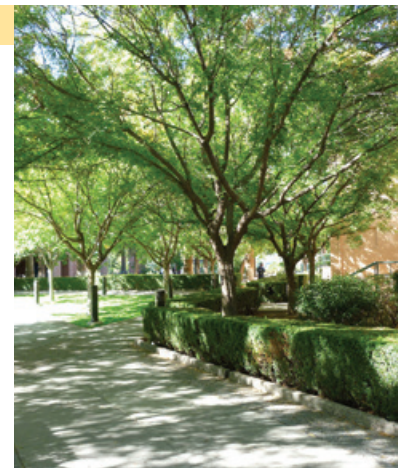
Project Name

Spatial Database of Trees

Total Investment

\$5,000

The Arc Geographic Information Systems (ArcGIS) is an Ersi suite of software products. The ArcGIS tree database is a powerful tool for storing and analyzing information about campus trees needed for sustainable land design, construction and maintenance.





Project Name Memorial Union and University Services Building Special Collection Bins

Total Investment \$5,000

The ASU Recycling program expanded its special collection to include target wrappers, food packaging and office supplies. The program already includes athletic equipment, soft plastics, electronic waste and ink/toner cartridges. The bins will be located in high-traffic areas at the Memorial Union and the University Services Building.

The bins will serve as an active engagement tool for ASU students, faculty and staff by educating community members about ASU's Zero Waste goals and recycling program.



Project Name Memorial Union Secret Garden Power Source

Total Investment \$4,089

The Secret Garden on the ASU Tempe campus has no usable power available. A new 50-amp power service will provide enough electricity to power multiple devices or appliances, which allows for more programming flexibility within the space. The power service will provide eight individual outlets that can draw up to 20 amps per receptacle. There is an additional terminal to allow power boxes to be added if the demand for power is needed in multiple locations of the space.




Project Name Residential Life Special Collection Bins


Total Investment \$3,293


The ASU Recycling special-collection program added bins for soft plastics, electronic waste, ink/toner cartridges and bulb collections. The bins create programs that target wrappers, food packaging and office supplies as well as household hazardous waste. The bins will be located in high-traffic areas in residence halls at the four ASU campuses.

The bins will serve as an active engagement tool for ASU students, faculty and staff by educating community members about ASU's Zero Waste goals and recycling program.

TIER 3 PROJECTS: Capital Expansion Loans

Project Name	Downtown University Center Lighting Retrofit	
<p>The University Center building includes classroom, office, conference, wet lab and computer lab space. The lighting project:</p> <ol style="list-style-type: none"> 1. Retrofitted 32-watt lamps to 25-watt T8 lamps 2. Replaced ballast with high-efficiency, multi-volt, instant-start ballast 3. Added 26 occupancy sensors 4. Replaced 115 incandescent lamps with LED lamps <p>The removed lamps and ballasts will be recycled.</p>		
Total Investment	\$154,249	
Rebates	\$74,667	
Net Project Cost	\$79,582	
Net Present Value	\$86,331	
Internal Rate of Return	64.4%	
Annual Energy Savings	\$37,691	

Project Name	Walter Cronkite School of Journalism and Mass Communication/ KAET 8 Lighting Retrofit	
<p>The six-story Cronkite/8 building was completed in 2006 and achieved a LEED Silver rating from the U.S. Green Building Council. Building areas consist of television production studios, classrooms, conference rooms and open-work areas. The lighting project:</p> <ol style="list-style-type: none"> 1. Retrofitted light fixtures with 32-watt T8 lamps to high-efficiency, 25-watt T8 lamps 2. Replaced ballast with high-efficiency, multi-volt, instant-start ballast 3. De-lamped 961 bulbs and replaced 273 incandescent lamps with LED lamps <p>The removed lamps and ballasts will be recycled.</p>		
Total Investment	\$114,963	
Rebates	\$57,242	
Net Project Cost	\$57,721	
Net Present Value	\$71,018	
Internal Rate of Return	73.7%	
Annual Energy Savings	\$29,246	

Project Name	Mercado Lighting Retrofit	
<p>The Mercado Complex consists of six buildings with the College of Nursing and Health Innovation occupying the majority of the facility. The lighting project:</p> <ol style="list-style-type: none"> 1. Retrofitted light fixtures with 32-watt T12 lamps to high-efficiency, 25-watt, 4-foot, T8 lamps 2. Replaced ballast with high-efficiency, multi-volt, instant-start ballast 3. Added 83 occupancy sensors <p>The removed lamps and ballasts will be recycled.</p>		
Total Investment	\$106,777	
Rebates	\$86,461	
Net Project Cost	\$20,316	
Net Present Value	\$147,416	
Internal Rate of Return	3,917%	
Annual Energy Savings	\$38,659	

TIER 3 PROJECTS: Capital Expansion Loans



Project Name Nursing and Health Innovation 1 (NHI 1) Lighting Retrofit

The NHI 1 building includes classrooms, offices and conference rooms. The lighting project:

1. Retrofitted 32-watt lamps to 25-watt, T8 lamps
2. Replaced ballast with high-efficiency, multi-volt, instant-start ballast
3. Added 51-occupancy sensors
4. Removed 712 lamps

The removed lamps and ballasts will be recycled.

Total Investment	\$51,862
Rebates	\$25,956
Net Project Cost	\$25,906
Net Present Value	\$35,692
Internal Rate of Return	51.6%
Annual Energy Savings	\$14,962



Project Name Nursing and Health Innovation 2 (NHI 2) Lighting Retrofit

The NHI 2 building includes classrooms, offices, conference rooms and a computer lab. The lighting project:

1. Retrofitted 32-watt lamps to 25-watt T8 lamps
2. Replaced ballast with high-efficiency, multi-volt, instant-start ballast
3. Added reflector kits

The removed lamps and ballasts will be recycled.

Total Investment	\$38,035
Rebates	\$12,101
Net Project Cost	\$25,934
Net Present Value	\$23,671
Internal Rate of Return	57.7%
Annual Energy Savings	\$11,769



Project Name Central Plant Variable Speed Drive Retrofit

This project installed variable-speed drives on three chillers in the Central Plant on the ASU Tempe campus. The chillers run 24/7 for eleven months out of the year and are down one month for maintenance. The new variable-speed drives will reduce chiller run time to reduce energy use.

Total Investment	\$1,385,147
Rebates	\$189,327
Net Project Cost	\$1,195,820
Net Present Value	\$448,651
Internal Rate of Return	14.7%
Annual Energy Savings	\$234,000

TIER 3 PROJECTS: Capital Expansion Loans

Project Name

Downtown University Center Window Film

Energy reflective window film was applied to the east, south and west elevations of the University Center Building. The window-film installation will significantly reduce the solar heat gain through the existing, single-pane glass. Occupants working near the windows previously voiced their discomfort with the excessive heat infiltrating the glass. The project provides a more comfortable environment for the occupants and reduces energy use.

Total Investment

\$73,945

Rebates

\$22,077

Net Project Cost

\$51,868

Net Present Value

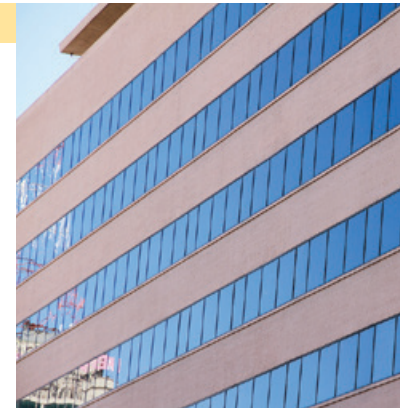
\$20,422

Internal Rate of Return

29.0%

Annual Energy Savings

\$16,190



Deeper into SIRF

Tier 3: Six DPC Lighting Retrofit projects

Ryan Byrd | Project coordinator | Facilities Development and Management | ASU Downtown Phoenix campus

Dominique Laroche | Director | Facilities Development and Management | ASU Downtown Phoenix campus

What sparked your project idea?

Our project idea originated as a way to reduce operating costs, then snowballed into a number of beneficial side effects. We knew that the technology was out there to save money, and we knew that our existing lights were nearing their expected lifecycle. The challenge was how to fund the project. Incentives from both APS and the Energize Phoenix Program enabled us to recoup more than 50 percent of the initial project costs and save substantial energy going forward.

What are your project goals?

The project goal was to reduce energy use and energy waste. The project eliminated almost 1,000 bulbs, reduced the required wattage to operate the fixtures, and installed hundreds of occupancy sensors.

What excites you the most about your project?

From a facilities standpoint, we were excited to have all new and consistent ballasts and bulbs throughout the campus. As an added bonus, we will spend fewer man-hours on lighting issues in the next few years.

What is your advice to others who have a SIRF project idea?

Dig deep into the available (and almost available) technologies related to your project. Tailor a plan that fits your need, and then ask industry experts to provide simple-term, "proof of concepts."





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SIRF and Academia

ASU is a Founding Circle member of the Billion Dollar Green Challenge hosted by the Sustainable Endowments Institute, a special project of Rockefeller Philanthropy Advisors. In collaboration with 15 partner organizations, the institute launched the challenge in October 2011 to drive energy savings with green revolving funds.

