



**SUSTAINABLE
ENERGY FUND**

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(Docket # M-00031715 F0003)

**Annual Report to the
Pennsylvania Public Utility Commission
and to the Joint Petitioners**

For the Period July 1, 2007-June 30, 2008

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EXECUTIVE SUMMARY

Sustainable Energy Fund (SEF) is a nonprofit, private organization dedicated to the use of renewable energy, clean energy technologies, energy conservation, and education. SEF was formed pursuant to a joint settlement agreement arising from the PA Public Utility Commission's electric utility deregulation proceedings in 1998.

SEF seeks out, focuses on, and invests in economically viable, energy related businesses, projects, and educational initiatives that create innovative, market-based technologies and solutions to enable environmentally sound and sustainable energy use. SEF operates in an entrepreneurial manner as a financially independent and self-sustaining non-profit enterprise, fully incorporated as a 501(c)(3) organization for charitable, educational, and scientific purposes. SEF is managed by a President who reports to a seven member Board of Directors.

SEF provides financial assistance and attractive funding options for projects that offer a strong fit with our mission. Focus areas are as follows:

- **Renewable Energy:** drawing power from naturally replenished sources, including solar, wind and geothermal power or power generated from biomass sources.
- **Clean Energy:** Producing energy using technology and processes that have minimal impacts on the environment, such as micro turbines, fuel cells, and distributed generation projects.
- **Energy Efficiency/Conservation:** Projects that save electricity or other energy, including green building technologies, efficient lighting and energy load management controls.
- **Energy Education:** Broad educational initiatives of significant impact.

Within the focus areas, SEF has developed several new programs that support its mission. While still maintaining the general financial assistance and funding options that exist in the current Program Related Investment Projects, SEF has developed several new programs: Small Business Lighting Retrofit Rebate Program, Light Emitting Diodes (LED) Financing Program, and the CEEF Program.

SEF continues the fulfillment of our mission by supporting several educational initiatives: Solar Scholars™ and a CFL Energy Education Program. Through these programs SEF advocates the integration of renewable energy studies in higher education curriculum, while contributing to the training of tomorrow's workforce. SEF also helps students and their instructors learn about practical energy concepts, conservation and emerging technology.

EDUCATIONAL INITIATIVES

SEF directs a portion of its revenue into educational programs within the Commonwealth of Pennsylvania. Emphasis is on the continuation of our college-level Solar Scholars™ program, which began in 2006. This year a new energy education program was developed for middle and high school teachers giving them lesson plans and activities to teach energy conservation and efficiency through study and comparison of incandescent and compact fluorescent bulbs.

Solar Scholars™

SEF's Solar Scholars™ program, a first-in-the nation solar education initiative that promotes the adoption and integration of renewable energy concepts and technologies into the curriculum, continued in 2008 with a new class of students and faculty. The solar energy education initiative is preparing the next generation of energy conservation leaders with the knowledge they will need to make informed decisions to promote renewable energy sources and conservation. This year, over 31 schools within the PPL territory were represented at the week-long intensive training conference hosted by Dickinson College. From July 27th to August 1st college students and faculty were informed on various topics including: renewable energy, marketing and financing of current technologies, photovoltaic (PV) science and manufacturing, and electric industry power production utilities and the grid.

Students and faculty from the following Pennsylvania colleges and universities participated in the program and are eligible to compete for one of 12 grants for funding to install a photovoltaic system on campus that generates a minimum of 3 kilowatts: Cedar Crest College, Dickinson College, East Stroudsburg University, Elizabethtown College, Franklin & Marshall College, HACC Harrisburg, HACC Lancaster, Johnson College, Keystone College, Lackawanna College, Lehigh University, Lycoming College, Messiah College, Millersville University, Moravian College, Penn State Harrisburg, Penn State Hazleton, Penn State Schuylkill, Penn State Scranton, Penn State Wilkes-Barre, Susquehanna University, Thaddeus Stevens College, University of Scranton, Wilkes University, and Wilson College.

Current plans are being made for the 2009 Solar Scholars™ program. It is anticipated that participation will be open to colleges and universities throughout Pennsylvania and offers the following benefits:

- Funding, incentives, and academic credit for students to design, build and operate a PV-powered solar installation of significant impact on their campus.
- Financial sponsorship for selected students to attend a week-long, hands-on, training and certification workshop on applied PV and design. Participants return to campus as “solar champions,” ready to advocate solar power as a viable, efficient and environmentally sound solution.

CFL Program

SEF received a DEP Environmental Education Grant to reach 150 science teachers in Pennsylvania with lesson plans and activities to promote the understanding of electric generation and energy conservation via two types of light bulbs. A curriculum unit, “Investigating CFLs and Incandescent Bulbs,” was written for middle and high school grade levels, and meets various state and federal academic standards. It is available for free download on our website,

www.TheSEF.org. The unit includes lesson plans, four activities, vocabulary and formulas, and a resource page.

SEF plans to promote this program by partnering with regional school districts, non-profit, educational institutions; by attending the PA Science Teachers Annual Convention; and by posting CFL information on SEF's website.

To compliment the CFL curriculum, SEF developed a fundraising program where PA schools could sell CFLs rather than traditional fundraising products. After learning how to assess their energy and electricity use in their own homes, students are enthusiastic ambassadors to help their families save money while contributing toward reducing greenhouse gas emissions. Teachers, PTO officers, or student coordinators can sign up for the program on behalf of their schools. SEF will place orders on behalf of participating schools and will arrange to have the CFLs drop-shipped directly to the schools by the manufacturer.

PROGRAM RELATED INVESTMENTS

SEF promotes its mission by financially incentivizing projects for municipalities, school districts, manufacturing facilities, warehouses and other business. As the date of deregulation approaches, SEF is developing various programs to promote energy efficiency which will provide businesses with the opportunity to implement strategies to decrease energy consumption. All projects presented to SEF for funding are reviewed for financial sustainability, reliability, and feasibility. This past year has brought the development of several new programs which are described below.

Small Business Lighting Retrofit Rebate Program

SEF and PPL partnered together to design and implement a new rebate program that will give small businesses up to \$2,000 to help replace old or inefficient lighting with new energy efficient technology. An increased number of companies are interested in saving energy, reducing their energy bills, and protecting the environment. This program will provide a rebate to financially subsidize the lighting improvements now while providing long-lasting energy savings.

The program is for small businesses with less than 100 employees, 25,000 square feet, in good standing with PPL, and desire to replace all inefficient lighting with Energy Star products.

The program was developed over the first half of 2008 and was launched in mid-July, 2008.

Commercial Energy Efficiency Finance Program (CEEF)

One of SEF's focus areas is energy efficiency. Over the past year, staff has developed a Commercial Energy Efficiency Finance Program (CEEF) which encourages businesses and organizations to implement energy efficiency projects via a creative financial program in which the business pays for the energy efficient upgrades with the electrical savings.

SEF is working with various partners who prepare project estimates which include energy savings and projected payback. If the business is interested in SEF financing, the CEEF program

will allow the business to start loan payments 3 months after the project is completed. Loan payback periods can be increased to allow a positive cash flow while saving electricity.

The CEEF program pilot was Mt. Joy Wire, a company that manufactures and sells a variety of low and high carbon steel wire products, stainless steel and plated wire products, and specializes in applications such as plating, tempering and crimping of wire. Mt. Joy Wire upgraded their lighting at a cost of \$162,333 and projected annual energy savings of \$63,089 based on 2009 rates.

Green Build

SEF has developed a Green Build program to help fund efficient, green or LEED building projects by Pennsylvania businesses, organizations, and municipalities. This Green Build program is (1) gap financing to complete the final portion of a green building finance package (2) replacement financing for owner/developer's portion of the project funding and/or (3) financing for the energy-related portions of a green or LEED building project with traditional financing.

In 2008, the Commonwealth Financing Authority designated SEF a Fund Manager for its Building PA program. SEF's goals in administering this loan program are to leverage the Commonwealth's resources to successfully grow new businesses in the clean energy sector and to finance energy-efficient real estate improvements. Within each project, SEF may use its funds to match Building PA funds dollar for dollar in the form of a term loan. This loan will be in a subordinate lien position to both the first mortgage holder and Building Pennsylvania funds.

LED

SEF has a financing program for Pennsylvania municipalities to upgrade traffic and pedestrian signals to new LED technologies which consume up to 90% less electricity than older incandescent lights. LED bulbs last an average of 10 years, versus one to three years for incandescent bulbs, thus municipalities also save labor and equipment costs.

SEF remains on the State's COSTARS website for the purchase of State approved LED lenses. Purchasing from the COSTARS website simplifies the vendor selections and streamlines administrative procedures.

SEF's LED Program Financing options include financing the complete project or a portion of the project. SEF LED Program partners offer site analysis and energy audits, project management of equipment selection and installation, and a complete turnkey package which includes the pre-project energy audit, equipment, installation, guaranteed energy savings, and a post-project energy audit.

Recently, two municipalities purchased LEDs from the COSTARS website: Mifflinburg and Fairview Township. With the addition of these two projects, the SEF LED program has participated in the installation of almost 2,000 LED lenses; and saved almost 5 million kilowatt hours of electricity, and over 6 thousand tons of greenhouse gases.

General Program Related Investments

SEF niche market is the creativity in meeting the financial needs of businesses that support SEF's mission. There still remains a generic program that supports all types of projects that don't necessary fit into a currently defined program. This year SEF had two such projects: Plextronics and EMG.

Plextronics. In August of 2007, SEF invested \$300,000 as part of a \$20.6 million Series B Financing arrangement. Plextronics, a Pittsburgh based company, is a leading innovator of technology for printed electronics. The printed electronics market comprises next-generation light, power and circuitry products, including flexible displays, plastic solar cells and organic RFID tags. This financing will allow Plextronics to expand its research and manufacturing capabilities as well as increase its investment in sales and marketing. SEF's equity investment is in addition to the earlier \$750,000 loan which was for development of their Plexcore™ technology for organic solar cells. SEF's equity investment in Plextronics is from two sources: (1) \$200,000 of new funds and (2) a transfer of \$100,000 from loan to equity.

Environmental Management Group International, Inc. Environmental Management Group International, Inc. (EMG) located in Media, Pa, SEF, and Mains Dairy Farm collaborated to construct an anaerobic digester for manure conversion and on-farm electricity generation. The Mains Dairy Farm is located in Cumberland County, PA. SEF's Energy Harvest Grant, from the PA DEP, in the amount of \$440,854 will also fund this digester which will convert livestock manure into methane gas which will feed either a modified internal combustion engine or solid oxide fuel cell and generate electricity to the grid and to the farm. In addition to the Energy Harvest Grant, SEF funded \$166,012 for the expansion of the digester system to handle the growth of the Farm from 500 cows to 750 cows. The digester is expected to generate approximately 1,100 KW-H/day that can be used directly for farm operations. Given that Mains farm currently consumes approximately 1,000 KW-H/day, the Farm would eliminate its electricity costs (\$40,000 per year) and would have excess electricity for sale back to the power grid.

Chemicals emitted by the digester system are compounds that existed in the environment 12-months earlier and are simply recycled back to the digester by plants used as animal feed. According to the USEPA, this technology qualifies for carbon credits associated with the renewable energy it generates.

GREEN CONNEXIONS

Green Connexions, Inc. is a for-profit C corporation owned by SEF organization. The mission of Green Connexions is to provide products and services through renewable energy and energy efficiency business ventures. Profits from Green Connexions will be funneled back to SEF to help sustain its mission. Green Connexions continues to develop opportunities in the renewable energy and energy conservation business sectors.

APPENDIX A: ENERGY METRICS

ENERGY ANALYSIS FOR YEAR ENDING JUNE 30, 2008 SEF FUNDED PROJECTS

Project	Committed Funds	Kilowatt-hours generated per year	Kilowatt-hours saved per year	Greenhouse Gases Saved (metric tons per year)
Mt. Joy Wire	\$162,333	N/A	1,371,508	1,124
Plextronics	\$200,000	unknown at this time	unknown at this time	unknown at this time
EMG	\$166,012	401,500	N/A	

SEF LED PROGRAM METRICS (FIVE-YEAR PERIOD)

SEF Project Name	County	Project Cost	Lenses Installed	Kilowatt Hours Saved	Tons of Greenhouse Gases Reduced
Mifflinburg	Union	\$7,352	124	293,800	385
Fairview Township	York	\$11,063	158	374,400	491

Note:

1. The calculation used to generate the greenhouse gases reduced is based upon the national average of CO2 emissions caused by various power generation facilities. The US EPA provides this number (1.64 lbs/kw-hr).
2. The calculations for kilowatt-hours saved and greenhouse gases reduced are based upon the 8-year life of the LED lens.

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**INSERT APPENDIX B: INDEPENDENT
AUDITOR'S REPORT**

APPENDIX C: BOARD OF DIRECTORS

Chairman: Gary F. Lamont

Vice Chairman: Dennis A. Maloskey
Chairman: Green Building & Residential Committee
Member: PRI Committee

Secretary & Treasurer: Alan A. Roman
Chairman: Finance Committee
Member: PRI and Green Building & Residential Committees

Director: Eric Epstein
Member: HR, Marketing, Funding Sources, and Finance Committees

Director: Robert J. Davis
Chairman: Funding Sources Committee
Member: HR, Marketing, PRI, and Green Building & Residential Committees

Director: G. Scott Paterno
Chairman: HR & Marketing Committees
Member: Funding Sources

Director: Andrew Stein
Chairman: PRI Committee
Member: Green Building & Residential and Finance Committees