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SOLAR ENERGY INTERNATIONAL

Renewable Energy Education for a Sustainable Future

2004 Annual Report

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SEI's MISSION

Solar Energy International (SEI) was founded in 1991 as a non-profit educational organization to help others to use renewable energy resources and natural building technologies through education and technical assistance.



THE NEED FOR RENEWABLE ENERGY EDUCATION

SEI provides information, education and training to people who want to shape a sustainable future.

A sustainable future requires an investment of knowledge and skills in the people who will shape that future. The renewable energies of sun, wind and water are clean and abundant, yet underutilized resources. Renewable energy technologies are mature, but few are skilled in their use. Decision-makers need information to make appropriate choices with confidence. Technicians need skills and experience to service the technologies. End-users must learn how to operate and maintain self-reliant renewable energy systems.



SEI IS A LINK BETWEEN PEOPLE AND THEIR RENEWABLE ENERGY RESOURCES.

Solar Energy International is an educational non-profit Colorado corporation. SEI is recognized by the IRS as a tax-exempt charitable organization under section 501(c)3 of the Internal Revenue Code.

Solar Energy International is a non-profit educational organization and an Equal Opportunity Institution and Employer. SEI is not affiliated with any manufacturer, dealer, distributor, or any other renewable energy commercial enterprise.

SOLAR ENERGY INTERNATIONAL

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RENEWABLE ENERGY EDUCATION PROGRAM

SEI's Renewable Energy Education Program (REEP) teaches the practical use of solar, wind and water power. Our workshops give individuals the knowledge and skills to design, install and maintain renewable energy systems and to build state-of-the-art solar homes that are efficient, practical and earth-friendly.

- SEI uses a how-to/hands-on approach with commercial products and field installations.
- Since 1991, over 3000 people from all 50 states and 55 countries have attended SEI's REEP Program.
- The 2004 REEP Program offered 30 hands-on workshops and six online courses.
- 621 students attended REEP 2004, including 46 international students.



REEP WORKSHOPS 2004

- Advanced Photovoltaics
- Advanced Straw Bale Construction
- Biodiesel Fuel
- Homebuilt Wind Generators
- Introduction to Renewable Energy
- Micro-Hydro Power
- PV Design & Installation
- PV Design Online
- RE for the Developing World
- RE for the Developing World - Hands-On
- Renewable Fuels
- Solar Home & Natural House Building
- Solar Home Design Online
- Solar Hot Water
- Solar Water Pumping
- Successful Solar Businesses
- Utility Interactive PV Systems
- Wind Power
- Women's PV Design & Installation



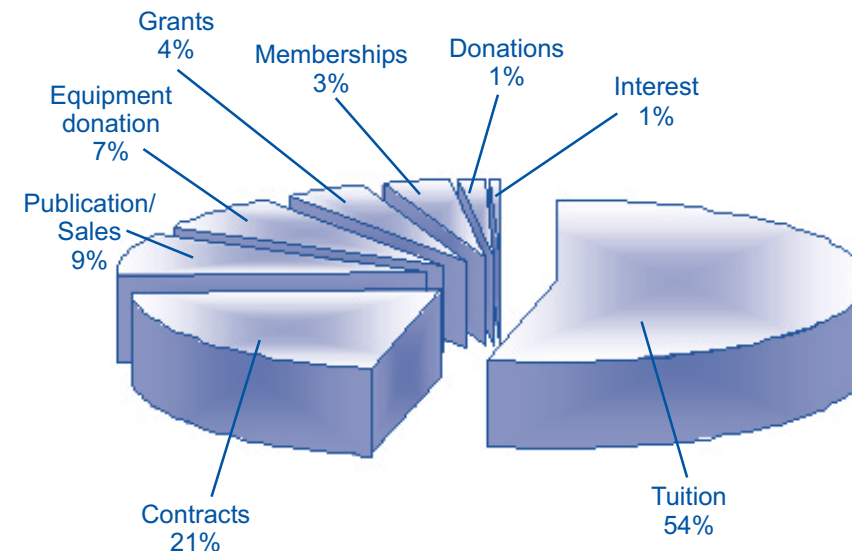
WORKSHOPS WERE OFFERED IN THE FOLLOWING LOCATIONS:

- Austin, Texas
- Carbondale, Colorado
- Mastatal, Costa Rica
- Grass Valley, California
- Kingston, New Mexico
- Paonia, Colorado
- San Francisco, California
- San Juan Islands, Washington
- Santa Cruz, California
- Summertown, Tennessee
- Woodstock, New York



Financial Report Summary 2004

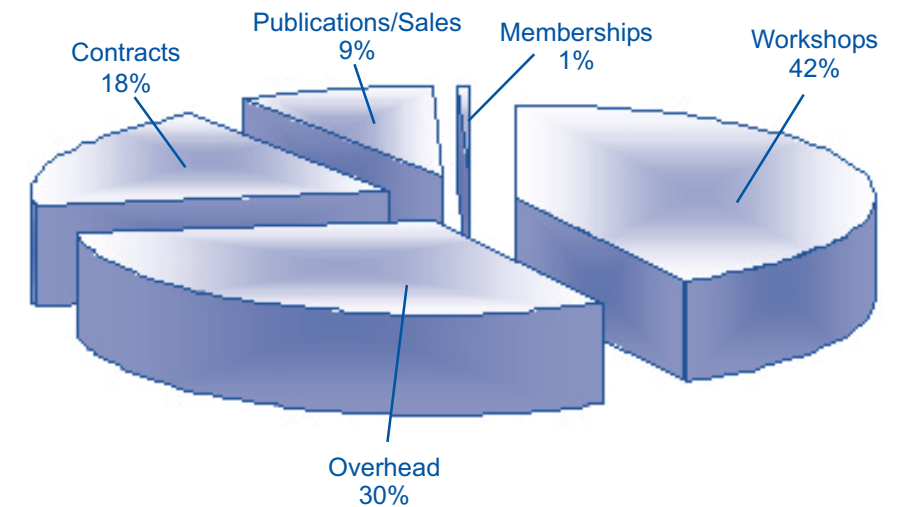
INCOME



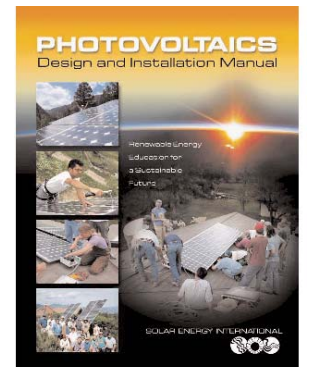
Tuition	\$376,471
Contracts	\$144,908
Publication/Sales	\$ 61,563*
Equipment donation	\$ 50,540
Grants	\$ 30,455
Memberships	\$ 23,313
Donations	\$ 10,283
Interest	\$ 3,578
Total	\$701,111

EXPENSES

Workshops	\$290,819
Overhead	\$207,076
Contracts	\$123,779
Pub/Sales	\$ 61,360*
Membership	\$ 3,924
Total	\$686,089



* SEI co-published a new PV Manual this year with New Society Publishers. Initial sales of *Photovoltaics: Design and Installation Manual*, a 300 page textbook, amounted to \$25,000 for 2004, starting in July. SEI expects sales of our new Manual to be an additional revenue stream throughout the years.



SEI BOARD OF DIRECTORS

Barbe Chambliss

Barbe works as a therapist, mediator, and special advocate. She has been the Director of the Center For Conflict Resolution in the Roaring Fork Valley and she works with Restorative Justice programs. Formerly, Barbe coordinated the Mesa County Alternative Energy Program in Colorado and was the Director of the Colorado Small Scale Hydropower Program where she published Water Over The Dam, and Guide To Negotiations Between Small Power Producers and Utilites.

Jeff Dickinson

Jeff has been a Practitioner of Sustainable Architectural design Alternatives for the past 15 years and has designed and built passive solar, super-insulated homes including straw-bale and Earthship homes. Jeff is an energy consultant as well as co-author and consultant for green materials and energy building codes. Jeff is currently on leave sailing around the Caribbean with his family for a year or more.



Linda Lung

Linda is the Education Program Coordinator at the National Renewable Energy Laboratory in Golden, Colorado. She works closely with the Department of Energy to design, develop, implement and evaluate educational programs to improve math, science, and technology skills of students in grades kindergarten through post-doctoral.

Don Phillipson

Don is a lawyer specializing in civil litigation. His work has involved water rights, chlorofluoro-carbon accidents, and patents with electronic fuel injections, lighting fixtures and maintenance free lead acid batteries. He also attended SEI's Hydrogen Workshop and Advanced Photovoltaics Workshop.



Randy Udall

Randy is currently the director of the Community Office of Resource Efficiency in Aspen. He writes for many environmental magazines and is the former editor of the Rocky Mountain Institute's Newsletter.

Johnny Weiss

Johnny is a co-founder of SEI, and is currently Executive Director. He initiated and directed SEI's Renewable Energy Education Program. Johnny currently serves on NREL's Education Advisory Board. From 1980 to 1990 he helped develop and teach the Solar Retrofit Training and Energy Efficient Building Trades Program at Colorado Mountain College.



REEP PROJECTS

SEI'S HANDS-ON, HOW-TO EXPERIENCES

ALUMNI OF SEI'S 2004 REEP PROGRAM GAINED HANDS-ON, HOW-TO EXPERIENCE ON A TOTAL OF 13 INSTALLATIONS. REEP PROJECTS REPRESENT PRACTICAL APPLICATIONS OF THE LATEST COMMERCIAL TECHNOLOGIES AND PRODUCTS.

EACH INSTALLATION REMAINS AN OPERATIONAL SYSTEM, PROVIDING CLEAN RENEWABLE ENERGY FOR BUSINESSES, INSTITUTIONS, RANCHES, HOMES AND COMMUNITIES. FUTURE PARTICIPANTS WILL VISIT AND LEARN FROM THESE PROJECTS BEFORE MEETING THEIR OWN INSTALLATION CHALLENGES.

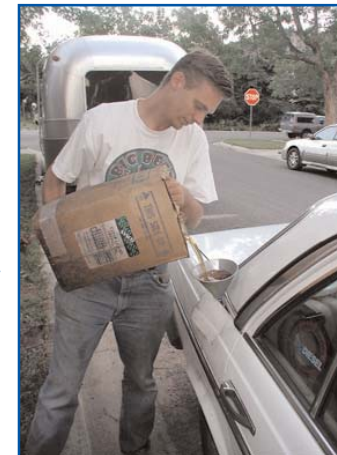
WIND POWER

This year's Colorado Wind Power workshop installation was held in Paonia, Colorado. The participants helped install a 1 kilowatt African Wind Power turbine at an intentional community with straw bale structures, a PV system, a charter school, an organic cafe, and a natural grocery store. It was installed on a 85-foot tilt-up tower, along with an anemometer to monitor wind data.

On Guemes Island, WA, Wind Power workshop participants helped install a 165-foot freestanding tower, with an African Windpower 1 kW wind generator.

BIODIESEL FUEL

Participants in the Biodiesel workshop made small batches of biodiesel out of used vegetable oil from local restaurants. They also made a 40 gallon batch of biodiesel in the "Fuelmeister" with Rudi Wiedemann, founder of Biodiesel Solutions. Rudi was present to introduce participants to the Fuelmeister, a commercially available biodiesel processor.



NATURAL HOUSE BUILDING

Participants in the Solar Home Design & Natural House Building workshop built a load-bearing straw bale shed for a local Carbondale resident. The shed has a rubble trench foundation, with gravel and sand filled earthbags for the first four courses. It is finished with natural plasters.

SOLAR HOT WATER

Students in the Solar Hot Water workshop helped install a solar hot water system with SEI associate Mike Tierney of Aspen Solar. The system is for domestic hot water and radiant floor space heating.

SOLAR WATER PUMPING

Participants in the Solar Water Pumping workshop installed two separate systems that comprise a complete water system for a typical residence. The first system pumps water from a shallow well to multiple storage tanks with two 80-watt Shell PV modules. The second system provides water delivery and pressure to multiple dwellings, with two 102-watt PV modules, and is battery based in order to provide water regardless of weather conditions.

STAND-ALONE PV

In August 2004, participants in SEI's PV Design & Installation workshop helped install a 600 watt stand-alone PV system for a home in the mountains of Colorado. The PV modules are part of a PV/micro-hydro/generator hybrid system that includes four inverters and a 48 volt, 846 amp-hour battery bank.

On Guemes Island in WA, participants helped install a 1.7 kW Sharp PV array on the tower that the Wind Power workshop installed the previous week. The PV workshop also installed six L-16 batteries, two OutBack FX inverters, an MX-60 charge controller for the PVs, and metering. The project was directed by Whidbey Sun & Wind and Lance Moore Electric.



Participants in the PV workshop in Olivebridge, New York installed a 600 watt stand-alone system.

GRID-TIED PV

Participants in SEI's PV Design & Installation workshops in 2004 installed eight grid-tied PV systems.

- In May, Scott Ely, an SEI associate and owner of renewable energy companies Sunsense and Earthsense, updated his home stand-alone battery based system. SEI participants helped add another 1 kW of BP PV panels and a Sunny Boy™ inverter to Scott's ground-mounted system, and tied it into the grid.

- In July, participants installed a 1 kW system for straw bale builder Jock Jacober, who lives outside Carbondale.

- SEI's Women's PV participants installed a 1.5 kW of Kyocera modules on a grid-tied system in Paonia, Colorado.

- Women participants in the Wisconsin Women's PV workshop, held in conjunction with the Midwest Renewable Energy Association, installed a 1.8 kW system on a dual axis Wattsun tracker.

- Grid-tied PV systems were also installed by workshops in Tucson, San Francisco, Austin, and Salt Lake City.



DOMESTIC PROJECTS & INTERNATIONAL TECHNICAL ASSISTANCE

SEI PROVIDED TRAINING AND TECHNICAL ASSISTANCE TO GROUPS WORLDWIDE

SOLAR IN THE SCHOOLS

SEI's Solar In the Schools program (SIS) targets grade school youth and focuses on experiential learning of energy concepts and issues. The goal is to have students understand energy as it relates to all living things on the planet. SIS emphasizes critical thinking skills by exploring energy choices, costs, and solutions within individual communities. In 2004, SEI presented in different classrooms throughout the Roaring Fork and North Fork Valleys of Colorado teaching over 600 students about renewable energy.



SCHOLARSHIP PROGRAM

Travel to the United States has become increasingly hard for our international students due to visa requirements and the cost of airfare. We try to help offset these costs to eligible developing country residents by offering partial tuition scholarships. SEI also offers scholarships to women to attend our women's program.

"Student scholarships at SEI gives an opportunity for those who can't afford this valuable education, but have a great need for it, such as the majority of the world's population who live in developing countries and inner city slums. I don't think education for a better living should be only for the elite. I deeply thank SEI's members for this excellent opportunity!"

- Ilan Adler, Director of International Renewable Resources Institute, Mexico City

INVEST PROGRAM

SEI offers alumni of our workshops an opportunity to participate in INVEST, International Volunteers in Environmentally Sustainable Technologies. SEI alumni can apply to volunteer overseas with one of our partner organizations to help bring renewable energy technologies to communities in the developing world. Volunteers install photovoltaic systems on rural health centers, teach rural farmers about solar water pumping, install micro-hydro and wind systems to power rural communities, or help build sustainable houses around the world. All this while meeting new people and learning new cultures.

In 2004, four alumni were placed with international development organizations in the Philippines and Honduras.

SEI INSTALLATION PROJECTS

SEI & I is a division of SEI offering renewable energy system design, equipment, installation, and end-user training both nationally and internationally. Projects are installed by SEI staff, workshop participants, interns, and invited alumni. SEI regularly works with local professional RE installers and always promotes code compliant installations.



The solar photovoltaic system installed on the Basalt, CO Middle School

GUEST INSTRUCTORS & INDUSTRY REPRESENTATIVES REEP 2004

SEI INSTRUCTORS ARE LEADERS IN THEIR FIELDS, BRINGING THE MOST UP-TO-DATE INFORMATION IN RENEWABLE ENERGY TECHNOLOGIES. IN 2004, OVER 100 GUEST INSTRUCTORS AND INDUSTRY REPRESENTATIVES PRESENTED IN OUR WORKSHOPS.

TODD BARTHOLF

Successful Solar Businesses and Renewable Energy for the Developing World Instructor

Todd is Director of Renewable Energy at CH2M HILL, where he assesses and advances the company's involvement in all areas of renewable energy.

Todd has been active in the renewable energy industry for over 20 years, beginning with the founding of a project development firm in Colorado that he operated from 1980 through 1986. He then joined Northern Power Systems, a systems integrator of high reliability renewable energy based systems. He was also a senior program officer with Winrock International's renewable energy group where he served as program manager and solar and wind energy specialist for Winrock and USAID.

Immediately prior to joining CH2M HILL, Todd operated an independent consulting practice that specialized in strategic planning, business development and program management for a range of domestic and international clients interested in expanding their activities in renewable energy. He also served as international markets specialist for the National Renewable Energy Laboratory's National Wind Technology Center.

GLEN BYROM

Solar Home Design & Natural House Building Instructor

Glen attended SEI's '95 REEP program. Since then he has been a PV and solar thermal installer, electrician and carpenter. However, his passion has long been strawbale and cob construction. Glen is now a contractor specializing in strawbale and natural building. He has worked on over 25 straw bale structures, and has instructed the hands-on section in SEI's natural building workshop for five years.



LYDIA DOLEMAN

Women's Carpentry Instructor

Lydia Doleman is an SEI alum who has been working with natural building technologies since 1997. She has worked as a carpenter and a woodworker, and has worked on many strawbale homes in several states.

Lydia currently runs a strawbale and natural construction company called Flying Hammer Productions out of Portland, OR, where she has helped build light-straw/clay dwellings for Dignity Village, a community for people who might otherwise live on the street.



HUGH PIGGOTT

Homebuilt Wind Generators Instructor

Hugh Piggott of Scoraig Wind Electric is an international authority on home-built wind generators, and has been working with small wind turbines since 1977. He has designed, built and sold small wind turbines in sizes from 3 to 15 feet in diameter to customers all over the British Isles. He has also designed small wind turbines for companies and individuals in Zimbabwe, Sri Lanka, and Peru.



KRIS SUTTON

PV Design & Installation Instructor

Kris has many years of experience working with grid-tied, battery UPS systems, and off-grid renewable energy systems. He also has experience with single and three-phase, high and low voltage inverters, industrial batteries, and all types of photovoltaic systems. He has been employed as a Project manager and directed work crews on multiple projects. He works with architects, engineers, general contractors, building departments, and homeowners through all phases of the PV design and installation process. Kris has also instructed technical trainings for groups of up to 80 students on photovoltaic systems, commercial and residential electrical systems, renewable energy overview, and OSHA safety.