

UA-ASU SOLAR ENERGY INITIATIVE

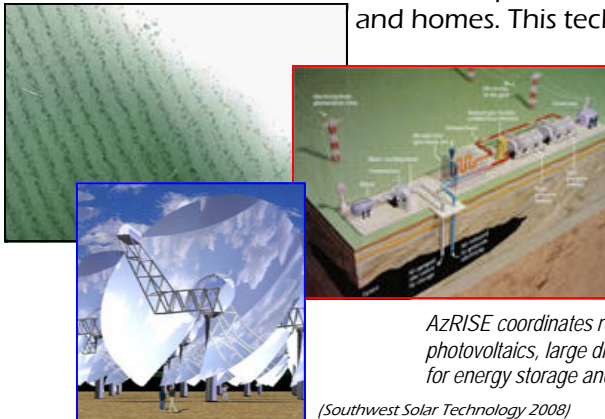
September 1, 2009



The UA-ASU Solar Energy Initiative funds the Arizona Research Institute for Solar Energy (AzRISE). AzRISE joins faculty from science, engineering, optical science, architecture, business and agriculture to pursue development of interdisciplinary revolutionary programs in Research and Development and public policy for the widespread utilization of solar energy.

Through coordination, guidance and stimulated solar energy activities in (1) research and development, (2) economic and public policy analysis, (3) education and (4) outreach, the institute supports competitive and peer reviewed projects in all four areas, putting special emphasis on innovative R&D and on economic analyses that can guide both technical IP development and public policy.

The vision is to establish a world-renown, highly interdisciplinary environment and structure that develops and translates research into useful applications in solar renewable energy. Close synergy among academia, industry, power utilities and policy will accelerate the creation and adoption of distributed renewable power integrated into the electric grid and homes. This technological and societal transformation will achieve an energy-secure, environmentally-sound 21st Century.



AzRISE coordinates research in nanostructured materials for photovoltaics, large dish concentrator optics, and various options for energy storage and desalination.

(Southwest Solar Technology 2008)

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AzRISE Director
Department Head, Materials Science and Engineering*

PERFORMANCE MEASURES

	FY08 Proj	FY08 Actual	FY09 Proj	FY09 Actual	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT (\$ in millions)						
Sponsored Awards: (\$M)	\$ 1.17	\$ 2.18	\$ 1.75	\$ 2.50	\$ 2.20	\$ 5.80
Federal Awards	\$ 0.10	\$ 1.08	\$ 0.80	\$ 2.18	\$ 1.00	\$ 3.00
Industrial Awards	\$ 0.02	\$ 0.05	\$ 0.25	\$ 0.32	\$ 0.40	\$ 1.00
Other Awards	\$ 1.05	\$ 1.05	\$ 0.70	\$ -	\$ 0.80	\$ 1.80
Gifts & Other Sources	\$ 0.00	\$ 0.05	\$ 0.30	\$ 0.64	\$ 0.60	\$ 1.00
TECHNOLOGY TRANSFER & COLLABORATIONS						
Licenses & options	2	2	2	1	2	2
New Start-up Companies	0	0	1	2	2	3
Patent Applications	0	0	2	2	4	6
Invention Disclosures	0	0	4	6	8	12
WORKFORCE CONTRIBUTIONS						
Number of graduates in solar energy	4	2	10	20	20	30
Number of undergraduates in solar energy	20	20	26	27	26	26
Number of post doctoral associates	1	0	2	2	4	6
CURRICULUM INNOVATIONS & STUDENTS SERVED						
Number of newly revised courses offered	0	0	20	2	100	300
Number of Online Courses Offered	1	1	2	0	4	10
OUTREACH & EDUCATION						
Workshops, seminars and conferences supported	2	5	4	4	4	4

Federal Grants Obtained:

Two DOE proposals were funded with matching funds:

- 1) SEEDpod Proposal for the Solar Decathlon (\$100K DOE with \$100K from the UA program)
- 2) Solar concentrators (\$980K from DOE and \$102K from the UA program)

PERFORMANCE ANALYSIS

The **Research and Technology Development** portion of AzRISE focuses on development of novel nanostructured materials for photovoltaics, organic photovoltaic technologies, large dish concentrator optics, solar PV reliability and various options for energy storage and desalination through the use of seed funding and matching funds for projects that are designed for prototyping and/or proof of concept for early stage technologies. The number of projected externally funded research awards and technology transfer transactions are direct measures of this activity.

Workforce Development is a major objective of AzRISE. The workforce development effort will consist of increasing the numbers of graduate and undergraduate students doing research and taking courses in solar energy-related topics. Additional focus will be on postdoctoral associates in solar energy research and on students in solar energy courses onsite and offered through distance learning.

Technology Transfer and Industry Outreach is defined by collaborations with our industry partners in the



AzRISE Solar Racing Car Team

development and commercialization of new technology, affiliate sponsorships, fee for service work, development of industry related training courses and distance learning program, and new start-up companies.

GOALS

AzRISE will promote solar energy through research, education and strategic partnerships to:

- Discover, innovate and develop to market evolutionary and revolutionary science and technology in solar energy utilization
- Develop the local economy by providing technology solutions and economic incentives/drivers that are transitioned to partner companies

and industries, as well as support an environment that stimulates and nurtures startup efforts.

- Educate the next-generation workforce and prepare citizens for the renewable energy society.

FINANCIAL INFORMATION

	FY07 Actual	FY08 Actual	FY09 Revised Budget	FY09 Actual	FY10 Revised Budget	FY11 Revised Budget
REVENUE						
Carry Forward	\$ —	\$ 979,762	\$ 825,124	\$ 825,124	\$ (15,648)	\$ —
New TRIF Revenue	\$ —	\$ 70,238	\$ 700,000	\$ 547,400	\$ 611,272	\$ 611,272
TOTAL REVENUE		\$ 1,050,000	\$ 1,525,124	\$ 1,372,524	\$ 595,624	\$ 611,272
EXPENDITURES						
Personal Services	\$ —	\$ 148,944	\$ 1,525,124	\$ 956,765	\$ 519,224	\$ 611,272
All Other Operating Expenses	\$ —	\$ 75,932	\$ —	\$ 431,407	\$ 76,400	\$ —
Capital	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
TOTAL EXPENDITURES	\$ —	\$ 224,876	\$ 1,525,124	\$ 1,388,172	\$ 595,624	\$ 611,272
Return on Investment	-	9.9:1	1.3:1	2.3:1	4.7:1	11.1:1

MANAGEMENT

Dr. Joseph H. Simmons, Director of AzRISE, reports to Dr. Leslie Tolbert, Vice President for Research, Graduate Studies, and Economic Development, for the TRIF Solar Energy Program.

ADVISORY BOARDS

Dean's Advisory Committee

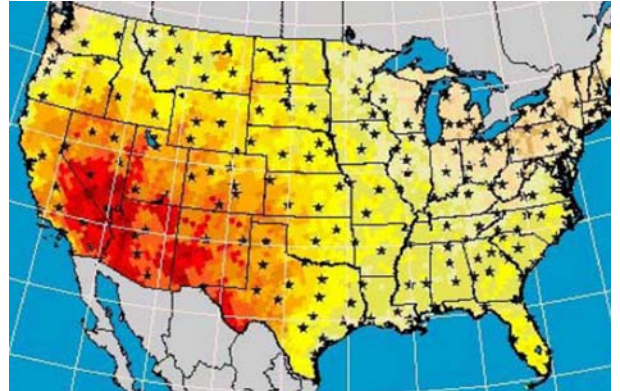
Leslie Tolbert, Vice President for Research, Graduate Studies, and Economic Development; Thomas Peterson, Dean, College of Engineering, Professor, Chemical & Environmental Engineering; Joaquin Ruiz, Dean, College of Science, Professor, Geosciences.

Technical Review Committee

Roger Angel, Regents' Professor, Astronomy, and Optical Science; Neal Armstrong, Professor Chemistry and Optical Sciences, Ardeth Barnhart, Associate Director, AzRISE; Eric Betterton, Head and Professor, Atmospheric Sciences; Dale Clifford, Assistant Professor Architecture; Nasser Peyghambarian, Professor; Optical Sciences, Materials Science & Engineering, Chair; Lasers & Photonics; Barrett Potter, Associate Professor, Materials Science and Engineering

External Advisory Committee

John Madocks, President, General Plasma, Inc.; Adam Honea, Provost, University of Phoenix; Herb Hayden, President, Southwest Solar Technologies; Sarah Kurtz, National Renewable Energy Laboratory; Jim Gentile, Director, Research Corporation; Dick Hayslip, Associate General Manager, Salt River Project.



AzRISE / Tucson Electric Power (TEP) Solar Test Yard, an interdisciplinary research project to acquire and distribute data in the measurement of solar panel performance, PV production models and studies in techniques that increase the energy yield from PV systems.

LEARN MORE

- Contact Dr. Joseph H. Simmons, Director, AzRISE, and Department Head, Materials Science and Engineering, at simmonsj@email.arizona.edu or 520-621-6070
- Contact Dr. Leslie Tolbert, Vice President for Research, Graduate Studies, and Economic Development, at tolbert@email.arizona.edu or 520-621-3513
- Contact Ardeth Barnhart, Associate Director, AzRISE, at ardethb@email.arizona.edu or 520-322-2970
- Visit the AzRISE Website at www.AzRISE.org

