

## Scientific American Reports on Solar Grand Plan That Could Supply Majority of U.S. Energy Needs by 2050



Roger Stoutenburgh 031305061

In the January issue of *Scientific American*, Vasilis Fthenakis, a BNL senior scientist, co-authored the cover story proposing an ambitious plan to free the U.S. from dependence on fossil fuels through a massive switch to solar power.

In "A Solar Grand Plan," Fthenakis and his collaborators Ken Zweibel of PrimeStar Solar (previously with the National Renewable Energy Laboratory), and James Mason of the Hydrogen Research Institute, argue that by 2050, solar energy

could supply 69 percent of the country's electricity and 35 percent of its total energy needs.

"Solar energy's potential is off the chart," Fthenakis said. "On an annual basis, the energy in sunlight striking the earth is 10,000 times greater than global energy consumption."

The plan calls for a vast area of photovoltaic systems to be built in the Southwest, along with large solar concentrator power plants. Excess daytime energy would be stored as compressed air in underground caverns to be tapped during nighttime hours. A new direct-current power transmission backbone would deliver solar electricity across the country.

"The technologies are established, needing only incremental improvements," Fthenakis said. "The efficiency of photovoltaics and the cost of producing them are constantly improving as a direct effect of support given by the Department of Energy's Office of Energy Efficiency & Renewable Energy to research and development and to industry." In the article, the authors also suggest that if wind, biomass and

geothermal sources were also developed, renewable energy could provide 100 percent of the nation's electricity and 90 percent of its energy by 2100.

"If new, third generation photovoltaics and new storage systems — enabled, for example, by nanotechnology, one of the Department of Energy's major initiatives, are developed in the future, then the Solar Grand Plan we propose will be even easier and cheaper to implement," added Fthenakis. "However, the good news is that we do not have to wait for new technologies, we can start a massive switch to solar right now."

The cost of producing photovoltaic cells and modules has dropped significantly in recent years, making vast photovoltaic farms in the desert southwest possible. Photovoltaic plants require no water, and environmental concerns are expected to be minimal. Compressed-air energy storage, another established technology, will allow excess power produced during sunny hours to be stored for use during dark hours.

(continued on page 2)

## Suffolk Legislator Stern Gives Update On County-Wide Senior Citizen Task Force Issues

Sponsored by the Brookhaven Retired Employees Association (BREA), Suffolk County Legislator Steven Stern, Chair of the Veterans and Seniors Committee, visited BNL on January 17, to give an update on the progress of Suffolk's County-Wide Senior Citizen Task Force that he has established. The Task Force, which involves all ten county townships, has been gathering data and is now exploring ideas for solutions to issues important to seniors, such as affordable housing, accessible transportation, and health care.

Ideas being investigated include better ways to bring services to seniors in their own homes, which is less costly and preferable to moving the seniors to long-term care facilities. Improving the network of public transportation, especially between towns, is another important goal. Home-health care could be easier to obtain if more personnel were available: creative ways are being considered to encourage more home-health aides to get trained and qualified, and their time more efficiently shared among the seniors they visit.

Suffolk's plans to use county-owned land for affordable housing, for seniors and also for young people, was another topic discussed. Stern explained that Suffolk has a strong open space



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Suffolk County Legislator Steven Stern (right) is welcomed by Myron Strongin of the Brookhaven Retired Employees Association.

policy and that the hope is to strike a balance between needed affordable housing and equally important open space. Stern also announced that a veterans' facility would be opening in Riverhead in a matter of months, so that veterans from the East End of the county would not have to travel so far for health care. — Liz Seubert

## Atmospheric Measuring Device Invented For Better Understanding of Smog Formation

**Quantitative assessment could lead to more effective smog-control strategies**

Stephen Springston of the Environmental Sciences Department and BNL guest scientist Judy Lloyd of the State University of New York at Old Westbury have developed a new tool for measuring hydroperoxyl radical — one of the many atmospheric chemicals that play a key role in the formation of photochemical smog. With this measurement, scientists can make calculations that will help them understand how smog forms. Various groups have developed other detectors for similar purposes, but the new device is comparatively small, lightweight, and inexpensive. It also has low power requirements, and gives a sensitive, fast response.

"This device will make it easier to collect more data, giving a better picture of the various chemical pathways leading to smog formation," said Springston. "Understanding the relative importance of these pathways can help you tailor



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Inventors Judy Lloyd and Stephen Springston

## All-Hands Meeting

Thursday, February 7, 10:30 a.m., Berkner Hall

Lab Director Sam Aronson invites all employees to attend an all-hands meeting in which he will provide a budget update and also discuss the status of ongoing science, construction, and operations.

## Four BNL Scientists Named AAAS Fellows

Four BNL scientists have been awarded the distinction of Fellow by the American Association for the Advancement of Science (AAAS). Ilan Ben-Zvi, Peter D. Johnson, John Shanklin and F. William Studier will be among 471 AAAS members to receive this honor for their efforts toward advancing science applications that are deemed scientifically or socially distinguished. The new Fellows will be presented with their official certificate and rosette pin on Saturday, February 16, during the 2008 AAAS Annual Meeting in Boston.

The citations for the four new Fellows appear with their photos below. For more information on their outstanding contributions and experience at BNL, see [www.bnl.gov/bnlweb/pubaf/pr/PR\\_display.asp?prID=07-113](http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=07-113). — Diane Greenberg

### Ilan Ben-Zvi

Ilan Ben-Zvi (left) was cited for "distinguished scientific and technical contributions to the field of accelerator physics and service to the physics community."



Roger Stoutenburgh 02541007

### Peter D. Johnson

Peter D. Johnson (right) was recognized for "outstanding contributions to our understanding of the electronic structure and associated dynamics of two-dimensional condensed matter systems."



Joseph Rubino 00051107

### John Shanklin

John Shanklin (left) was cited for "outstanding research contributions that have opened the way toward using crop plants to produce new types of oils and chemical feedstocks."



Roger Stoutenburgh 02511007

### F. William Studier

F. William Studier (right) was cited for "distinguished contributions to the field of molecular genetics, particularly for work on bacteriophage T7 genetics and DNA conformations and interactions."



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mitigation strategies. For example, are you better off spending money to reduce hydrocarbon emissions or nitrogen oxide emissions?"

"Our measurements will help predict which strategy would be most successful for a particular set of atmospheric conditions — and make modifications to the strategy as those conditions change," said Lloyd.

This work was funded by the Office of Biological & Environmental Research within DOE's Office of Science and by the National Science Foundation. The two inventors have been issued a U.S. patent for their apparatus, which is available for licensing.

For more information on the new device, go to [www.bnl.gov/bnlweb/pubaf/pr/PR\\_display.asp?prID=07-114](http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=07-114). For licensing information, contact Dorene Price, (631) 344-4153, [price@bnl.gov](mailto:price@bnl.gov). — Karen McNulty Walsh

## CALENDAR OF LABORATORY EVENTS

- The BERA Store in Berkner Hall is open weekdays from 9 a.m. to 3 p.m. For more information on BERA events, contact Andrea Dehler, Ext. 3347, or Christine Carter, Ext. 2873.
- Additional information for Hospitality Committee events may be found at the Lollipop House and the laundry in the apartment area.
- The Recreation Building #317 (Rec. Hall) is located in the apartment area.
- Contact names are provided for most events for more information.
- Events flagged with an asterisk (\*) have an accompanying story in this week's Bulletin.

### — EACH WEEK —

#### Weekdays: Free English for Speakers Of Other Languages Classes

Beginner, Intermediate, Advanced classes. Various times. All are welcome. Learn English, make friends. See [www.bnl.gov/esol/schedule.html](http://www.bnl.gov/esol/schedule.html) for schedule. Jen Lynch, Ext. 4894

**Mondays: BNL Social & Cultural Club**  
Noon-1 p.m., Brookhaven Center, South Room, free beginners dance lessons. Rudy Alforque, Ext. 4733, [alforque@bnl.gov](mailto:alforque@bnl.gov)

**Mondays: Pilates**  
Noon-1 p.m. Rec. Hall. Ext. 5090

**Mondays & Wednesdays: Pilates**  
5:15-6:15 p.m. Rec. Hall. Ext. 5090

**Mondays: Jiu Jitsu Club**  
6:30-7:30 p.m. B'haven Center. All levels, ages 6 & up. \$10/class. Tom, Ext. 4556

**Mondays & Thursdays: Kickboxing**  
\$5 per class. Noon-1 p.m. in the gym. Registration is required. Ext. 8481

**Mon., Thurs., & Fri.: Tai Chi**  
Noon-1 p.m., B'haven Cntr N. Rm. Adam Rusek, Ext. 5830, [rusek@bnl.gov](mailto:rusek@bnl.gov)

**Tuesdays: Hospitality Coffee**  
10:30 a.m.-noon, Rec. Hall lounge. All welcome. Ext. 5090

**Tuesdays: BNL Music Club**  
Noon, B'haven Center, N. Room. Come hear live music. Joe Vignola, Ext. 3846

**Tuesdays: Knitting Class**  
2 p.m. Rec Hall. All levels of skill. Ext. 5090 for information.

**Tuesdays: Toastmasters**  
1st & 3rd Tuesday of month, 5:30 p.m., Bldg. 463, Rm 160. Guests, visitors welcome. [www.bnl.gov/bera/activities/toastmasters/](http://www.bnl.gov/bera/activities/toastmasters/)

**Tue., Wed. & Thu: Rec Hall Activities**  
5:30-9:30 p.m. General activities, TV, ping pong, chess, games, socializing. Christine Carter, Ext. 5090.

**Tue., Thurs. & Fri.: Ving Tsun Kung Fu**  
Noon-1 p.m., B'haven Center, North Room. Taught by Master William Moy. Scott Bradley, Ext. 5745, [bradley@bnl.gov](mailto:bradley@bnl.gov)

**Tues. & Thurs.: Jazzercise**  
Noon, Rec. Hall. Ext. 5090.

**Tuesday & Thursday: Aerobic Fitness**  
5:15 p.m., Rec. Hall. 10 classes for \$40 or \$5 per class. Pat Flood, Ext. 7866, [flood@bnl.gov](mailto:flood@bnl.gov)

**Tuesday & Thursday: Aqua Aerobics**  
5:30-6:30 p.m., Pool. Ext. 5090

**Wednesdays: On-Site Play Group**  
10 a.m.-noon. Rec. Hall. Infant/toddler drop-in event. Parents meet while children play. Petra Adams, 821-9238.

**Wednesdays: Ballroom Dance Class**  
B'haven Center, N. Ballroom. Instructor: Giny Rae. Starts September 12 and 19. Ext. 3845.

**Wednesdays: Weight Watchers**  
Noon-1 p.m. Michael Thorn, Ext. 8612

**Wednesdays: Yoga**  
Noon-1 p.m., B'haven Center. Free. Ila Campbell, Ext. 2206, [ila@bnl.gov](mailto:ila@bnl.gov)

**Thursdays: Reiki Healing Class**  
Noon-1 p.m., Call for location. Nicole Bernholz, Ext. 2027

**Fridays: Family Swim Night**  
5-8 p.m. BNL Pool. \$5 per family

**Fridays: BNL Social & Cultural Club**  
Noon-1 p.m., B'haven Center, South Room, free beginners dance lessons. 7-11:30 p.m. North Ballroom, Dance Social, workshops. Rudy Alforque, Ext. 4733, [alforque@bnl.gov](mailto:alforque@bnl.gov)

## CIGNA Representative

A CIGNA Healthcare representative is available as needed in Human Resources, Bldg. 400, or by phone to assist with claims issues you have been unable to resolve yourself through CIGNA's Customer Service number (1-800-CIGNA24). Mary Beth Kivlen will be available by appointment only. You will need to provide all pertinent documentation. To schedule, call the Benefits Office, Ext. 5126.

## In Memoriam, Herbert Kouts

Herbert Kouts, who joined BNL on July 1, 1950, and retired as a senior physicist on October 24, 1989, died at age 88 on January 7, 2008.

The long-term value of Kouts's achievements was recognized in 2005 with the American Nuclear Society's (ANS) George C. Laurence Award for "his pioneering contributions to advancing nuclear safety and his remarkable career of leadership in initiating, guiding and executing national and international programs of great and lasting importance."

Kouts received a B.S. in mathematics in 1941 at Louisiana State University, and, after service in the U.S. Air Force 1942-45, a Louisiana State M.S. in physics in 1946. He earned his Ph.D. in physics from Princeton University in 1952.

At BNL, Kouts's first position was as an associate physicist heading the Reactor Shielding Group at the Brookhaven Graphite Research Reactor, which operated until 1968. In 1952, he became head of the Experimental Reactor Physics Group, then headed the Reactor Physics Division in 1956. He received tenure in 1957.

In 1963, Kouts won the E.O. Lawrence Award from the Atomic Energy Commission (AEC), an agency that evolved into DOE. He was cited "For the development of new experimental techniques in reactor physics and their applications to a better understanding of theoretical models of chain-reacting systems."

Kouts was one of the five co-inventors of the High Flux Beam Reactor (HFBR), in operation from 1965 to 1999. In 1988, the ANS cited experiments at the HFBR in which "the data obtained have played a central role in the development and understanding of solutions to many problems in solid state physics, chemistry, and structural biology."

In 1968, Kouts became the

### Solar Grand Plan

Another technology being eyed is concentrated solar power, in which long, metallic mirrors focus sunlight onto a pipe filled with fluid. The hot fluid would pass through a heat exchanger and produce steam to turn a turbine.

"Concentrated solar power and photovoltaics represent two different technology paths," Fthenakis said. "Neither is fully developed, so our plan brings them both to large-scale deployment by 2020, giving them time to mature."

The plan calls for government investment of more than \$400 billion over the next 40 years, but the plan would effectively eliminate all imported oil, cutting U.S. trade deficits. The plan would also drastically reduce greenhouse gases because solar technolo-

gies are almost pollution-free.

— Liz Seubert

first head of the new Technical Support Organization at BNL, which was established to advise and assist the AEC on nuclear safeguards. Five years later, in 1973, he became the AEC Director of the Division of Reactor Safety Research. Then, in 1975, he became Director of the Office of Nuclear Regulatory Research for the newly formed Nuclear Regulatory Commission (NRC). He was honored with the Distinguished Service Award from the AEC in 1975 and from the NRC in 1976.

Kouts returned to BNL in 1976 as Head of the International Safeguards Project Office, being named Chair of the Department of Nuclear Energy in 1977. He became a member of the International Nuclear Safety Advisory Group of the International Atomic Energy Agency (IAEA) in 1985, and, following the Chernobyl nuclear reactor accident in April 1986, he co-authored the IAEA's report on Chernobyl.

In 1988, Kouts stepped down as department Chair, continuing at BNL as a senior physicist. Retiring a year later, he was named Presidential appointee to the Defense Nuclear Facility Safety (DFNS) Board, an agency that oversees the nuclear safety at DOE defense facilities. He remained there until 1997, then became a consultant until 2000. As *Newsday* quotes DFNS Chair A.J. Eggenberger, "Kouts had a tremendous influence in nuclear safety matters, essentially through the life of the industry until now."

A resident of Bellport, Herbert Kouts is survived by his wife Barbara, daughters Catherine Sigmon and Anne Golden, stepsons Francis Spitzer, Michael Spitzer, and Daniel Spitzer, and nine grandchildren. If donations are sent, the family would appreciate gifts to Planned Parenthood or a Martin Luther King Jr. scholarship fund.

— Liz Seubert

(cont'd)

The team of scientists hopes that the discussion generated by the *Scientific American* article will make more people aware of the enormous potential of solar energy.

As they state in the article, "The greatest obstacle to implementing a renewable U.S. energy system is not technology or money. It is the lack of public awareness." — Kay Cordtz  
*Note: DOE's Solar America Initiative has set goals for making solar energy cost-competitive with conventional forms of electricity by 2015. Vasilis Fthenakis, who heads the National Photovoltaic Environmental Research Center at BNL, is funded by DOE to help industry meet these goals while they are maintaining safe and environmentally friendly facilities and products.*

## Respectful Workplace For All BNLeers

A workplace that is conducive to scientific excellence is one in which there is mutual respect for all contributors. The atmosphere of mutual respect enables coworkers to share many ideas and successes, and is crucial to the Lab's mission. An updated BNL Respectful Workplace Policy, endorsed by the Lab's Policy Council, documents the fundamental expectation of how all individuals at BNL should interact with each other.

### Respectful Workplace Policy:

BNL is committed to providing a work environment that promotes learning, research, and productivity through working relationships based on courtesy, civility and respectful communication. This commitment calls for a workplace where the following beliefs are upheld:

1. All employees at BNL, without exception, have an important contribution to make toward the overall success of the Laboratory's mission.
2. The Laboratory's mission is best carried out in an atmosphere where employees at all levels value each other and treat each other with respect, even in urgent and high pressure situations.
3. Managers, supervisors and others in positions of authority should behave as role models in promoting such an atmosphere, while continuing to hold employees accountable for effective performance.
4. All employees should be able to discuss issues of concern without fear that those discussions will result in retaliation from any other employee or manager.

"Everyone in the Lab community should demonstrate common courtesy and civility and expect to be treated the same way in return," said Lab Director Sam Aronson. "I encourage anyone who feels that they are not being treated in accordance with the terms of this policy to bring their concerns to the attention of their line managers."

## Random Acts of Kindness

This article is written by Nancy Losinno, Employee Assistance Program (EAP) Manager.

In the course of my job as EAP Manager, the most common problem I experience with those who come to EAP is that they are having a conflict. In many cases, it is a problem with someone on the job, those people we live with every day for eight or more hours: our coworkers, supervisors and managers. Our "job family" can be a potent support system, or conversely, a constant drain of energy or source of negative emotions. Especially at BNL, where people may have worked side-by-side with the same coworkers for many years, a dysfunctional work relationship can be just as damaging to morale as a bad marriage. Sometimes it is difficult to look at a bad situation in a different way because people can be resistant to change, preferring to see the situation through the same "emotional lens."

In an interesting book titled *Feeling Good*, David Burns, Ph.D., identifies at least ten ways in which a person can cognitively distort his or her perception of a problem. The initial perception includes assumptions, hypotheses, conclusions, as well as how you use your memory. In a problematic relationship, whether at work or at home, if you never bother to check your perceptions using more flexible thinking, you may keep having the same predictable outcome in your interpersonal transactions. In many cases, a situation can be helped by your choosing to look beyond the obvious, to less obvious causes of perceived negative behavior.

Why be kind to someone who irks you? It is good mental health to not hand over your peace of mind to someone else, and it is a good practice to try to flip a troubled situation into something more benign. As a start, during Random Acts of Kindness Week, February 11-17, you can participate by doing any, or all, of the following:

- Offer to help a coworker who is overloaded
- Get to know the new person in the department
- Show your appreciation to others
- Participate in the Blood Drive on 2/14
- Refrain from negative or hostile remarks
- Take food to a soup kitchen or homeless shelter.

No act is too small. Let the change begin with you.

## BERA Board Nomination Committee

The BERA Executive Board has appointed a nomination committee of active BERA participants to select a slate of eight candidates to run for the 2008 BERA Board elections scheduled for the last week in March.

Any employee, facility user, visitor or guest is encouraged to nominate a candidate by contacting one of the committee members listed below before Friday, February 22. Make certain that the person being proposed will agree to accept the nomination if selected by the committee.

Nomination committee members are: Susan Carlsen, [carlsen@bnl.gov](mailto:carlsen@bnl.gov), Ext. 7647; Jill Clough-Johnston, [clough@bnl.gov](mailto:clough@bnl.gov), Ext. 3173; Kay Conkling, [kayc@bnl.gov](mailto:kayc@bnl.gov), Ext. 4501; Ray Dumont, [rdu-mont@bnl.gov](mailto:rdu-mont@bnl.gov), Ext. 4263; Betty Elder, [belder@bnl.gov](mailto:belder@bnl.gov), Ext. 3562; Maureen Fazzio, [Fazzio@bnl.gov](mailto:Fazzio@bnl.gov), Ext. 5179; Elliott Levitt, [levitt1@bnl.gov](mailto:levitt1@bnl.gov), Ext. 2495; John McCaffrey, [mccaffrey@bnl.gov](mailto:mccaffrey@bnl.gov), Ext. 2075; Barbara Moebes, [moebes@bnl.gov](mailto:moebes@bnl.gov), Ext. 7159; Andy Seelin, [seelin@bnl.gov](mailto:seelin@bnl.gov), Ext. 3024; and Marie Van Buren, [vanburen@bnl.gov](mailto:vanburen@bnl.gov), Ext. 4727.



