

Testimony of Rhone Resch, President, Solar Energy Industries Association
Before the Subcommittee on Energy and Environment
Committee on Science on Technology
U.S. House of Representatives
Tuesday, June 19th, 2007

Thank you, Mr. Chairman and Members of the Subcommittee, for providing me the opportunity to testify today.

On behalf of over 500 companies and more than 20,000 employees in the US solar energy industry, I would like to express support for the Solar Energy Research and Advancement Act of 2007, legislation that would help solar energy to make major strides in contributing to a clean, domestic, renewable supply of electricity that is of, by, and for the American people. SEIA applauds Congresswoman Gabrielle Giffords for her visionary leadership in introducing this bill.

My comments today will focus on the importance of a solar check-off program, or “Got Solar,” to the future utilization of solar energy resources in the US. Aside from cost, the greatest obstacle to solar reaching a wider domestic market is education and public awareness. With respect to a “Got Solar” program, I would like to convey the following points:

- Greater use of carbon-smart, domestic solar energy would have myriad energy security, economic, and environmental benefits for the American public.
- While the public broadly supports the greater use of solar energy, most Americans do not have a basic understanding of solar technology products or how to purchase them.
- Educating the public on solar energy is primarily the responsibility of the solar industry, but most solar installers are small businesses that lack the means to reach a broader swath of consumers.
- Building on dozens of US industries’ successful examples, Congress should establish a coordinated program of promotion and research, funded by industry at no cost to the government, to increase consumer education about solar energy.
- Finally, a check-off program will only succeed if appropriate incentives are in place, including an eight-year extension of the federal investment tax credits (ITC).

Public Benefits of Solar Energy

The US solar energy industry is growing and providing more carbon-smart, domestic energy every year. Solar energy technologies can provide major energy security, environmental, and economic benefits to the American public, all of which will be realized with broader consumer awareness and adoption of solar.

Energy Security

As Congress looks to increase the use of carbon-smart renewable energy, it is critical that priority be placed on technologies that also improve US energy security. Solar energy, in all of its forms, is a technology that can greatly improve the US’s ability to have a secure and reliable energy supply.

The electricity infrastructure in the US is aging and energy consumers are increasingly subject to outages that affect critical infrastructure and disrupt business. The blackout of August 2003 in the Northeast, triggered by a tree limb landing on power lines, cost consumers and businesses tens of billions of dollars. Unfortunately, this event is not unique and will occur with greater frequency if Congress does not take steps to diversify our energy portfolio.

The good news is that this event could easily have been avoided through greater use of solar energy. A 2004 Department of Energy (DOE) study entitled *Solution to the Summer Blackouts?* concludes that if solar energy had met just one percent (1%) of local peak demand, we would have avoided the August 2003 blackout and other local brownouts. DOE's explanation was simple: high air conditioning loads stressed the grid and created the circumstances for the blackout. This extreme load occurred on one of the hottest and sunniest days during the summer – the exact time when output from solar systems is greatest. DOE also concluded that over reliance on central generating stations led to grid fatigue and failure. This infrastructure vulnerability could have been minimized through greater reliance on distributed solar energy.

Photovoltaic (PV) and solar water heating systems are distributed generation (DG) technologies. Like other DG technologies, they provide energy at the point of consumption rather than at a central power plant hundreds of miles away. As such, DG does not rely on vulnerable regional transmission lines and local distribution networks. By producing energy at the source of consumption, solar power alleviates stress and vulnerability on the grid.

The DOE study also concluded that investing in solar energy is a more economically efficient and cost effective way to improve our energy infrastructure than capital intensive and often community-opposed transmission line upgrades and brand-new transmission lines. In sum, using solar energy is a cost-effective, affordable way to alleviate stress on the electricity grid and improve the overall reliability of our electricity infrastructure.

Solar is also the most reliable source of energy. This reliable track record has resulted in wide deployment of the technology in applications where power interruptions are unacceptable, including: oil and gas industry use of solar energy to power pumps and meters at remote locations; telecommunications industry use of solar to power relay stations and remote equipment; and, every satellite that has been sent out into space in the last 30 years has been powered by solar energy.

Ironically, energy industry acceptance of the technology stands in stark contrast to consumer behavior. Consumers are investing hundreds of millions of dollars in small gasoline-powered generators. During grid failure and electricity outages, electronic gasoline pumps at the gas stations do not operate, rendering many generators idle because of fuel shortage. Solar energy is a technology that can provide reliable power during power outages.

Finally, solar stabilizes volatile energy prices, a critical energy security issue affecting the US today. In the last five years, consumers have seen electricity prices escalate between 20 and 78 percent. At the same time, we have seen the price of natural gas triple and the price of gasoline routinely exceed \$3.00 per gallon. Each year the cost of energy is taking a larger percentage of a family's income than at any other time in US history. This energy inflation vulnerability especially impacts the poor and elderly on fixed incomes.

Solar can help address this vulnerability because it requires no fuel to operate. Although a solar system is more expensive up front, there are no additional costs for operating a system once installed.

Furthermore, solar panels are guaranteed for 20-25 years, allowing consumers to “lock in” their electricity prices for decades. Recognizing the upward trend in energy costs, incentivizing the use of a technology that requires no fuel inputs is an important element of any energy security plan.

Energy Independence

Solar energy is a domestic and abundant energy source in the US. The US has the best solar resources of any developed country in the world. Proportionally, US solar energy resources exceed those of fossil, nuclear or other renewable energy resources. Despite this tremendous advantage, the US has failed to capture and harness this free and readily available energy. In 2006, solar energy produced just 1/30th of one percent of all electricity in the US; Germany in contrast, with the solar resources of Alaska, installed seven times more solar energy property than the entire US.¹

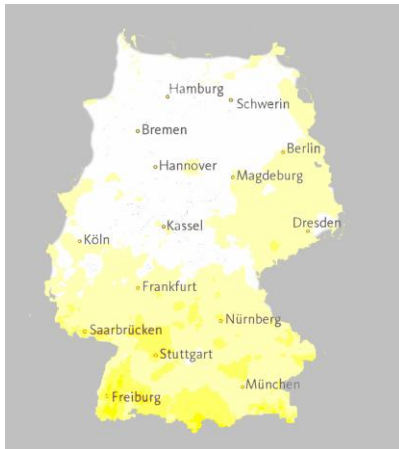


Figure 2: Germany Insolation

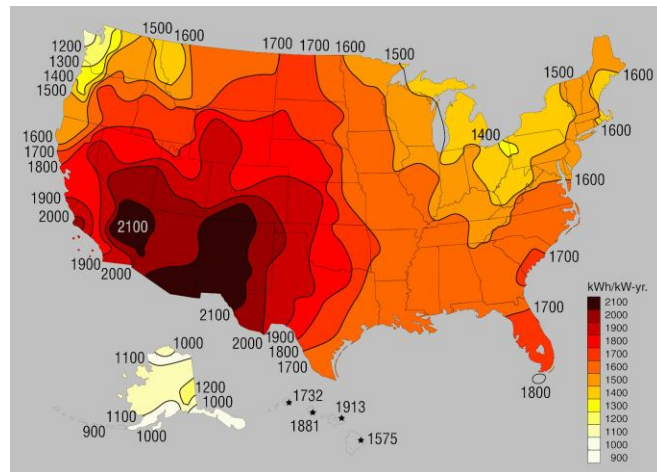


Figure 3: U.S. Insolation

The US is over-dependent on foreign sources of energy. Demand for natural gas continues to rise, primarily for electricity generation. Increasingly we are turning to countries like Algeria to provide us with liquefied natural gas (LNG) to meet our growing demand. According to the Federal Energy Regulatory Commission, 41 new LNG terminals are proposed for construction in US harbors and off US beaches. Constructing these plants will exacerbate our addiction to foreign sources of energy. Our desire for energy independence demands a different course.

Solar energy directly displaces natural gas used for heating homes and water. In a home, solar can directly replace natural gas used to heat radiant systems and can displace up to 70% of the natural gas used to generate hot water. Many countries that do not have a domestic source of fossil fuels, including Spain and Israel, mandate that all new homes must have solar water heating systems installed. The US can demonstrate similar energy independence by using market incentives that spur solar investment and market growth.

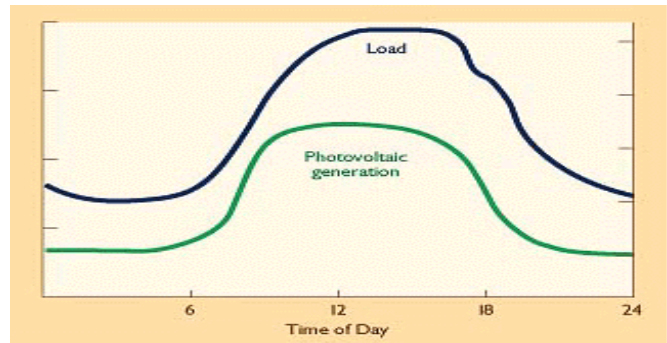
Solar energy also displaces natural gas used to generate electricity. Almost all intermediate and peaking electricity plants use natural gas as the source of energy. These plants are often very inefficient and produce expensive electricity. Solar energy, which generates electricity from 8 AM – 7 PM daily, can displace these inefficient, high cost power plants, and become a reliable source of firm, dispatchable power. Given the high price of natural gas to key industrial sectors and consumers, the US can no longer afford to neglect its abundant solar resources.

¹ Energy Information Administration, Net Generation by Energy Source by Type of Producer, October 2006.

In addition to tempering natural gas demand growth, solar can also generate electricity to be used by plug-in hybrids and electric vehicles, thereby displacing gasoline derived from foreign oil supplies. Imagine a gasoline-free electric vehicle that also uses electricity derived from the sun rather than a coal-fired plant. The technology is advancing rapidly in this direction.

Environmental Benefits

Though the environmental benefits of solar energy might be considered a given, it is worth highlighting several points. Solar is the cleanest method of energy generation, in terms of avoided air, waste and noise pollution, energy payback, water conservation, avoided radiation and harm to wildlife, or environmental risk in the event of an accident.



Utility load and PV output versus time of day.

Solar energy produces no greenhouse gases, no acid precipitation or toxic emissions, and no other air pollution of any kind. Over the 40-50 year life of a solar electric system, every kilowatt (kW) of solar electric power reduces 217,000 pounds of carbon dioxide, 1500 pounds of sulfur dioxide, and 830 pounds of nitrogen oxides emissions as compared to electricity produced by conventional generation.²

Photovoltaic solar energy generates electricity without use any water. In contrast, fossil fuel and nuclear based electricity generation use substantial amounts of water to run steam turbines. Across the western United States, approximately 40% of fresh water withdrawals are used for electric generation.³ If water-starved communities like Phoenix and Las Vegas are to continue growing, we must place greater emphasis on water-free electricity generating technologies.

Concerns have been raised whether the energy used to produce solar panels is surpassed by the amount of energy generated from the panels. This energy relationship is referred to as the “energy payback period.” Currently, the energy payback for PV panels varies from 1-4 years depending on different manufacturing variables. This means that a PV panel with a life expectancy of 40-50 years will generate between 10 and 50 times more energy than was required to create the panel. Despite this superior “energy return on investment”, the manufacturing process is still growing more efficient every year as the scale of production increases.⁴

Strong Public Support Exists for Greater Solar Development

Polls consistently reflect that the American public strongly supports the accelerated use of solar technologies. For example, a 2005 poll by the Yale Center of Environmental Law and Policy’ 2005 found that 90% of Americans support building more solar power facilities to help reduce US dependence on energy imports. A Roper Public Affairs poll conducted in May 2007 found that nearly 90 percent of Americans believe homebuilders should offer solar power as an option for all new homes constructed. And 73 percent of those surveyed in another Roper survey in 2006 said that solar energy technology is more important today than ever in responding to America’s energy challenges.

² NREL report, “Distributed Energy Resources for the California Local Government Commission,” October 2000.

³ Sandia National Laboratories, Energy-Water Nexus, <http://www.sandia.gov/news-center/news-releases/2006/enviro-waste-mgmt/mapwest.html>

⁴ NREL Report No. NREL/FS-520-24619: “Energy Payback: Clean Energy from PV”

In general, Americans would like to see the Federal government take a more active role in promoting solar development. A February 2006 poll by the Pew Research Center found that 82 percent of respondents favored increasing federal funding for research on wind, solar and hydrogen technology. A March 2006 ABC News/Time/Stanford University poll found that 87 percent favored tax breaks for companies to produce more electricity from water, wind and solar. Note that these policies would require the use of taxpayer funds, unlike a check-off program.

Finally, polling surveys demonstrate that Americans are willing to pay more for solar technologies under certain conditions. An April 2007 study by the New York Times and CBS News found that 75 percent of Americans were willing to pay more for solar electricity if it helped reduce global warming. Meanwhile, one-half of respondents in the May 2007 Roper survey said they would spend up to 10 percent more for a solar-equipped house when told that solar homes have a proven higher resale value. A majority of respondents cited the financial and energy savings of a solar system as the main benefit of buying a solar system, indicating that consumers are assessing solar for its potential savings benefits and would support a program that drives down the cost of solar.

Need for Improved Consumer Education About Solar

However, while 87 percent of respondents to the New York Times / CBS News poll supported the use of solar to generate electricity, just 3 percent of respondents said that they used solar to generate heat, hot water, or electricity. That is actually a far higher solar use percentage than amongst the American public at large, but it nevertheless illustrates the gap between broad public support for solar and its *de minimis* use today.

Though growing exponentially and constantly innovating, the US solar industry is still in a nascent period. As mentioned above, solar PV provides less than 1/30th of 1 percent of the current US electricity supply. Furthermore, PV is primarily a distributed generation technology that is installed on the rooftops of homes and businesses throughout the US – a paradigm shift from the traditional model of centralized electricity generation. Most solar installation companies are small businesses, typically employing no more than a few dozen people, and lacking the budget to reach a broad swath of consumers.

Thus, even as consumers embrace the idea of solar power, they are usually not fully aware of its capabilities and they have misconceptions about how a solar energy system works in a home. Market reports demonstrate a lack of consumer understanding that solar electricity operates just like regular electricity and is the same kind of electricity that a local utility company provides. 29 percent of respondents to the May 2007 Roper survey were not aware that solar energy can power common electric devices like computers or appliances. A number of common myths persist about modern solar technology, such as the belief that solar will not work in places outside of the Sunbelt or that solar devices require more energy to manufacture than they produce in their lifetime, and these myths often inhibit consumer consideration of solar as a viable energy source.

Furthermore, consumers lack information on how to find solar companies or what solar products might be available. On a daily basis, the most common phone calls to SEIA come from consumers who ask, “Where can I find solar for my home?” The industry has taken a number of steps to centralize this type of information, including the development of a national solar installer directory, Findsolar.com. Individually, several companies have undertaken consumer awareness campaigns that focus on basic

technology education. Yet these efforts clearly do not equate to the potential reach of a national consumer awareness campaign.

Benefits of a Solar Check-Off Program

A “Got Solar” program, based on a successful model used by other industries, would address the above concerns by creating an industry-funded national education campaign on the benefits of solar energy. Collectively, the industry would pool its resources through an industry-wide program to fund this educational effort.

SEIA anticipates major benefits both to the consumer and to the industry with the creation of a check-off program. Consumers would increasingly have the information they need to “go solar.” As the availability of market information increases, consumers would be better able to conduct due diligence on product and firm quality before purchasing a system. Educated consumers could convince their businesses, local utilities, and public representatives to adopt solar energy and promote its use. And the program would also help to drive down the costs of solar to the consumer over time, creating a market demand signal that would help companies to rapidly increase production for the US market and achieve economies of scale.

The solar industry would also reap the benefits of increased consumer education and focused demand, which would translate into industry growth. A vibrant and well-functioning market system would greatly help to make the domestic industry competitive in the global marketplace for solar energy technologies. The benefits of increased awareness of solar would accrue to a wide group of small-to mid-sized industry players (installers, local integrators, equipment suppliers), many of whom would not be able to afford this type of broad public outreach and education.

Successful Precedents for a Solar Check-Off Program

The “Got Solar” program is based on a very successful model used in other industries to increase consumer awareness of their product. Check-off programs have helped fund the dairy industry’s “Got Milk” campaign, the American Egg Board’s “Incredible Edible Egg,” the America’s Cotton Producers and Importers’ “Cotton, the Fabric of Our Lives,” and the National Pork Board’s “Pork, the Other White Meat.” In each case, a piece of legislation similar to the “Got Solar” program created a board that collects a small assessment from each of the industry’s members.⁵ The funds are then directed toward education and public awareness campaigns.

⁵ Examples of statutes establishing check-off programs include: National Oilheat Research Alliance Act, 42 U.S.C. §§ 6201; Commodity Promotion, Research, and Information Act, 7 U.S.C. §§ 7401; 7411-7425; Cotton Research and Promotion Act, 7 U.S.C. §§ 2102-2118; Potato Research and Consumer Information Act, 7 U.S.C. §§ 2611-2627; Egg Research and Consumer Information Act, 7 U.S.C. §§ 2701-2718; Beef Research and Information Act, 7 U.S.C. §§ 2901-2911; Wheat and Wheat Foods Research and Nutrition Education Act, 7 U.S.C. §§ 3401-3417; Floral Research and Consumer Information Act, 7 U.S.C. §§ 4301-4319; Dairy Production Stabilization Act, 7 U.S.C. §§ 4501-4538; Honey Research, Promotion, and Consumer Information Act, 7 U.S.C. §§ 4601-4613; Pork Promotion, Research, and Consumer Information Act, 7 U.S.C. §§ 4801-4819; Watermelon Research and Promotion Act, 7 U.S.C. §§ 4901-4916; Pecan Promotion and Research Act, 7 U.S.C. §§ 6001-6013; Mushroom Promotion, Research, and Consumer Information Act, 7 U.S.C. §§ 6101-6112; Lime Research, Promotion, and Consumer Information Act, 7 U.S.C. §§ 6201-6212; Soybean Promotion, Research, and Consumer Information Act, 7 U.S.C. §§ 6301-6311; Fluid Milk Promotion Act, 7 U.S.C. §§ 6401-6417; Fresh Cut Flowers and Fresh Cut Greens Promotion and Information Act, 7 U.S.C. §§ 6801-6814; Sheep Promotion, Research, and Information Act, 7 U.S.C. §§ 7101-7111; Canola and Rapeseed Research, Promotion, and Consumer Information Act, 7 U.S.C. §§ 7441-7452; National Kiwifruit Research, Promotion, and Consumer Information Act, 7 U.S.C. §§ 7461-7473; Popcorn Promotion, Research, and Consumer Information Act, 7 U.S.C. §§ 7481-7491; Hass Avocado Promotion, Research, and Information Act, 7 U.S.C. §§ 7801-7813.

Two examples of well-functioning check-off programs can be found in the oil heating and beef industries. The oil heating industry pushed for passage of the National Oilheat Research Alliance (NORA) Act of 2000, which assesses a charge of \$.002 per gallon produced on members of the oil heating industry. The program has allowed an otherwise fragmented industry to pool its resources for advertising and also for crucial research and development. NORA uses the funds to help development new oil heating technologies, bringing better products with higher efficiencies to the public.

In another well-known example, the Beef Promotion and Research Act of 1985 charges cattle producers and importers \$1 per head of cattle, with the assessments overseen by the Beef Board and going to fund the National Cattlemen's Beef Association. The program brings in millions of dollars per year to fund public education and advertising campaigns, including the popular "Beef, It's What's for Dinner" campaign. This check-off program has been the backbone of the modern beef industry in the United States.

The beef industry's check-off program has undergone close economic analysis since it was established. The most recent report, by Dr. Ron Ward of the University of Florida, studying the check-off program from 2000-2004, showed the program to be an exceptionally good method of growing an industry's market. The study found that for every dollar invested in the check-off program, there was an industry return of \$5.⁶

Need for Legislative Authority

For a solar check-off program to be effective, it must be established through the legislative process. Historically, industries have organized *voluntary* check-offs, but they account for only a small share of all funding for generic efforts. Hundreds of mandatory farm commodity promotion programs have been legislated by states or the federal government. Nine out of ten U.S. farmers were contributing to one or more of these efforts by the mid-1990s.⁷

The adoption of a check-off program would ensure that all companies, both domestic and foreign, participate in a campaign to educate consumers on solar energy technologies. Authority to collect assessments is facilitated by the government for the practicalities of dealing in interstate commerce and the realities of enforcement to eliminate the problem of "free riders," or nonpaying companies that might otherwise benefit economically from programs that others have funded.

The establishment of legislative authority would help ensure that a solar check-off program would succeed. Though it may be viewed as an industry-imposed "tax," it is a tax that is established by the industry, with the blessing of members of the industry, and for the benefit of the industry. Thus, the industry would have the power to periodically evaluate the effectiveness of the program, with a focus on its economic benefits to industry members.

Comments on the Solar ERA Proposal

⁶ Dr. Ronald W. Ward, "Beef Demand and the Rate-of-Return to the U.S. Beef Checkoff," September 2004, <http://www.beefboard.org/uDocs/wardstudy-2004.pdf>; Agricultural Marketing Service of the Department of Agriculture, <http://www.ams.usda.gov/lsg/mpb/beef/beefchk.htm>

⁷ Armbruster, Walter J., and John P. Nichols. *Commodity Promotion Policy*. 1995 Farm Bill Policy Options and Consequences, Texas A&M University, October 1994.

SEIA requests a few key modifications to the proposed check-off program in the Solar ERA Act. First, current language would exclude SEIA from nominating its member companies to the Board of the new organization, and SEIA would not be able to have a representative participate on the Board. As the national trade association representing the industry, SEIA would appropriately play a significant role in a national industry consumer awareness and education campaign. Therefore, we request that the criteria for eligible groups be modified to provide SEIA with the opportunity to nominate candidates and directly participate in Board activities.

Second, while we support a scheduled industry referendum on the continuation of the program, we believe that the current 22-month target date does not provide enough time for the creation of a new organizational infrastructure and the development, testing, and execution of a national campaign. We request that the target date be set no earlier than four years from the passage of legislation. Additionally, we believe that the current 10 percent threshold of companies needed to request future referenda is too low and could potentially derail the program from being effective, and we propose that the threshold be raised to a minimum of 25 percent.

Conclusion

A “Got Solar” program would be a sound investment in our country’s energy future. By providing a mechanism to increase consumer awareness about solar energy products, we can empower the American consumer to become part of the solution to the energy challenges we face as a society. A check-off program would see more of our energy purchasing dollars go towards an economically vibrant domestic manufacturing and installation base, and promote a carbon-smart, domestically produced energy source from the most abundant source on the planet - the sun.

Thank you very much for your consideration of my testimony. I look forward to answering any questions you may have.

Biography

Rhone Resch is the President of the Solar Energy Industries Association (SEIA), the national trade association of the solar energy industry. In this capacity he is responsible for managing all aspects of the trade association and ensuring their success in advancing solar energy in the U.S.

SEIA represents all solar technologies and serves as the voice of solar energy in the United States and is responsible for all market analysis and lobbying on behalf of the solar industry with Congress and the Administration. SEIA's recent successes include the creation of the residential and commercial tax credits in the 2005 Energy Policy Act and an expansion of the Department of Energy's solar program budget from \$84 million to \$175 million. SEIA also orchestrates public campaigns working with the media to help shape public support for solar energy.

Mr. Resch has over 15 years of experience in clean energy and energy efficiency, both in the private sector and the federal government. Prior to coming to SEIA, he was Senior Vice President of the Natural Gas Supply Association, a trade association that represents both major and independent companies that produce and market natural gas.

In addition he has served as Program Manager at the EPA's Climate Protection Division in the Office of Air and Radiation, where he developed and implemented energy efficiency programs to reduce greenhouse gas emissions and hazardous air pollutants from the petroleum industry.

He also sits on the boards of the Business Council for Sustainable Energy, the Global PV Solar Energy Council, and is Chairman of the Western Governors Association Solar Energy Task Force.

He holds an MPA in Management from Syracuse University's Maxwell School, a Master of Environmental Engineering from SUNY Syracuse, and a B.A. from the University of Michigan. He lives in Washington, D.C. with his wife Lisa and two children and has a 6 kW photovoltaic system on his home.