TESTIMONY OF

# RHONE RESCH, PRESIDENT & CEO
# SOLAR ENERGY INDUSTRIES ASSOCIATION

BEFORE THE

## SENATE COMMITTEE ON ENERGY & NATURAL RESOURCES

### HEARING ON S. 2921, THE CALIFORNIA DESERT PROTECTION ACT OF 2010

MAY 20, 2010

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Mr. Chairman and Members of the Committee,

Thank you for the opportunity to submit this testimony on S. 2921, the *California Desert Protection Act of 2010*. We are grateful that the Committee recognizes the important role that public lands play in shaping our clean energy future.

## I. Introduction

Established in 1974, the Solar Energy Industries Association is the national trade association of the solar energy industry. As the voice of the industry, SEIA works with its 1,000 members to make solar a mainstream and significant energy source by expanding markets, removing market barriers, strengthening the industry and educating the public on the benefits of solar energy. SEIA represents solar companies across a variety of solar energy technologies, including photovoltaic (PV), solar water heating and concentrating solar power (CSP). SEIA members include manufacturers, distributors, contractors, installers, financiers and developers of solar energy projects for both utility-scale and distributed generation deployment.

Despite the recession, the U.S. solar industry grew significantly in 2009 – doubling the size of the residential photovoltaics market and adding three new concentrating solar power plants. In addition, the industry added 10,000 new solar jobs to the U.S. economy.[1]

## II. Overview of the Solar Industry

SEIA is grateful to Senator Feinstein for her long commitment to promoting the greater use of renewable energy in the United States. We commend her introduction of S. 2899, the *Renewable Energy Incentive Act*, which would extend the highly successful Treasury Grant Program for renewable energy and would create new incentives for renewable energy deployment.

While many think of solar energy as a distributed generation resource, deployment of utility-scale solar power plants is increasingly common. Utility-scale solar can create domestic jobs across the country now and quickly diversify our energy portfolio. In July 2008, this Committee held a field hearing in Albuquerque, New Mexico, on concentrating solar power technologies where this trend was discussed. In addition to the CSP plants already operating in the Southwest, many announced projects intend to use photovoltaic arrays to generate hundreds

[1] See the U.S. Solar Industry Year in Review 2009 at Attachment 1.

of megawatts of electricity nationwide.[2] Regardless of the technology, solar project developers share a common goal: environmentally-responsible solar development.

Utility-scale solar power can generate significant amounts of clean energy as part of a diverse energy portfolio, providing one of the quickest ways for states to meet their renewable portfolio standards and reduce their greenhouse gas emissions. The Southwest U.S. has some of the world's best sunlight and we should take advantage of this limitless natural resource to generate clean energy and transmit it to America's population centers.

While overwhelming support for increased use of solar energy has long been known (92% of Americans think it is important to develop and use solar energy[3]), a recent poll by Gotham Research found that the American public broadly supports the development of solar energy on public lands: three out four Americans support developing solar energy plants on public lands. This same poll shows that the most important energy challenge facing the country today is developing energy sources while protecting the environment, according to respondents.[4]

The last two years have brought many changes and an increased focus on the issue of developing solar energy on public lands. In 2008, the Bureau of Land Management initiated a Programmatic Environmental Impact Statement (PEIS) for solar development. Last year Secretary Salazar established four Renewable Energy Coordination Offices within BLM, initiated "fast-track" procedures for the permitting of 14 solar projects, and identified 24 "Solar Energy Study Areas" to undergo rigorous environmental review as part of the solar PEIS. Solar developers, Interior Department staff, and environmental stakeholders alike are adjusting to the increased activity and emerging processes for developing utility-scale solar power in the United States.

## III. The Solar Industry Is Committed to Responsible Energy Development

Development of solar energy on public lands is one important piece of the increased generation of renewable power in this country. There are numerous provisions in this proposed legislation that the solar industry supports, others that merit further review, as outlined below.

[2] See Utility-Scale Solar Projects List at Attachment 2.

[3] See http://www.seia.org/cs/news_detail?pressrelease.id=638

[4] See Gotham Research Polling Results at Attachment 3.

### A. Provisions the Solar Industry Supports

SEIA supports the establishment of a mitigation bank to be accessed by any solar developer, whether on public or private lands. California's collaboration with BLM to establish a mitigation pool could serve as an effective model for this program. Allowing developers to pool financial resources and perform mitigation on high-quality habitat is a win-win scenario.

The solar industry also supports having the Department of the Interior perform an analysis of climate change impacts. Further, we believe that this legislation should empower BLM to use those study results and take into account the positive impacts of renewable energy development on climate change when it considers right-of-way applications.

Secretary Salazar's establishment of Renewable Energy Coordination Offices last year was lauded by the solar industry, and we support the continuation and expansion of offices whose employees are expert in the permitting of renewable energy applications. Continued coordination among BLM, the U.S. Fish and Wildlife Service, and state agencies will be necessary to achieve the goal of greater renewables deployment.

Rents paid by the solar energy industry should be used to further the goals of better and faster permitting, full staffing of the Renewable Energy Coordination Offices, and a share could go to state and local government entities where these projects are located. On the broader topic of solar rents paid to BLM, SEIA supports a rental policy that provides fair, transparent, and consistent results that are comparable to private land transactions for similar uses.

### B. Provisions that Merit Further Review

The proposed legislation would prohibit BLM processing of any right-of-way application that could affect native groundwater supplies, both within and adjacent to the proposed Mojave National Preserve. The National Environmental Policy Act and other laws already require the consideration of the environmental impacts of water use by any proposed project, and SEIA believes these existing provisions to be sufficient. The additional requirement proposed in S. 2921 could serve to restrict solar development, even on lands outside protected areas.

Another provision in this proposed legislation would allow BLM to deny a right-of-way application for any project which is on "wilderness quality land" or which may impact "sensitive species listed by the BLM." SEIA is concerned that these provisions are overly broad and could unduly limit solar energy development in the Southwest.

## III. Conclusion

We cannot fight climate change without clean energy sources like solar. Solar energy is pollution-free, produces no carbon, and is fueled by an inexhaustible and renewable resource – the sun. Utility-scale solar power plants will power millions of homes with clean energy as part of a diverse energy portfolio that includes distributed generation, solar water heating and other renewable sources.

The solar industry is committed to solving our most pressing energy and environmental challenge in a thoughtful manner. Solar power plants can be developed in a way that balances environmental protection with our energy demands. The Southwest's plentiful solar resources can be harnessed in a way that safeguards water resources, habitat, and wildlife.

Again, thank you for allowing SEIA to submit this testimony. We look forward to working with the Committee to improve this proposed legislation and the process for developing utility-scale solar power in the United States.

**ATTACHMENT 1**


# US Solar Industry

## Year in Review 2009

Thursday, April 15, 2010

575 7th Street NW Suite 400 Washington DC 20004 | www.seia.org

## Executive Summary

Despite the Great Recession of 2009, the U.S. solar energy industry grew— both in new installations and employment. Total U.S. solar electric capacity from photovoltaic (PV) and concentrating solar power (CSP) technologies climbed past 2,000 MW, enough to serve more than 350,000 homes. Total U.S. solar thermal capacity approached 24,000 $MW_{th}$.[1] Solar industry revenues also surged despite the economy, climbing 36 percent in 2009.

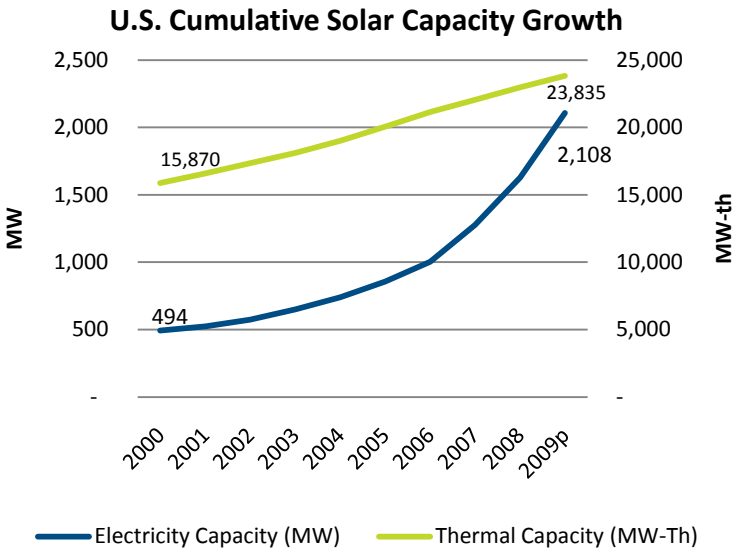
A doubling in size of the residential PV market and three new CSP plants helped lift the U.S. solar electric market 37 percent in annual installations over 2008 from 351 MW in 2008 to 481 MW in 2009. Solar water heating (SWH) installations managed 10 percent year-over-year growth, while the solar pool heating (SPH) market suffered along with the broader construction industry, dropping 10 percent.

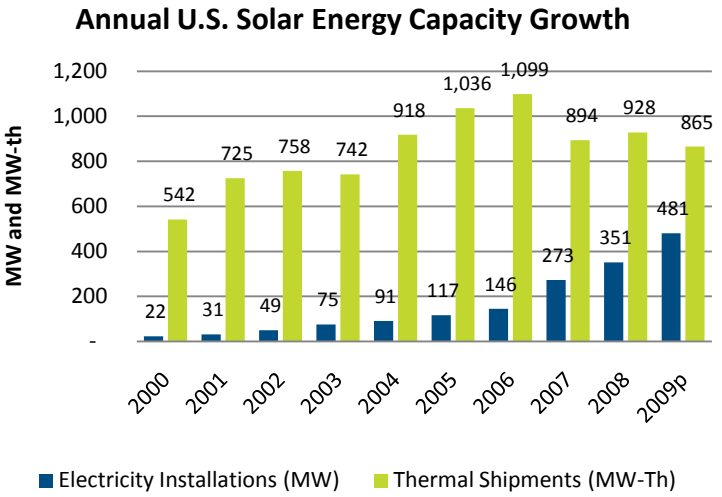
Another sign of continued optimism in solar energy: venture capitalists invested more in solar technologies than any other clean technology in 2009. In total, $1.4 billion in venture capital flowed to solar companies in 2009.[2] For an industry that had a total U.S. volume of roughly $4 billion, this signals huge optimism about near-term growth.

Solar provisions in the *American Recovery and Reinvestment Act of 2009* (ARRA) got off to a slow start but continue to ease the pressures of the credit crisis. As of early February 2010, more than 46 MW of solar capacity has been deployed with the help of the Section 1603 Treasury grants in lieu of the investment tax credit (ITC). Solar equipment manufacturers have been awarded $600 million in manufacturing tax credits under ARRA, representing investments in new and upgraded factories of more than $2 billion.

## Federal Solar Policy

The significant solar policy changes in 2008 set the bar high but 2009 brought its own share of federal solar policy victories. After obtaining a long-term extension of the 30-percent investment tax credit in October of 2008, the economy put the brakes on the tax equity market.




**Iowa State and Team Alberta building their Solar Decathlon homes. (Credit: Stefano Paltera/U.S. Department of Energy Solar Decathlon)**

[1] See "What's a Watt?" box in page 12 for a description of units used in this report.

[2] Greentech Media http://www.greentechmedia.com/articles/read/green-vc-total-second-best-year-ever/

Fortunately, 2009 began with the passage of ARRA, in which Congress established the Treasury Grant Program that allows the commercial tax credit to be taken as a cash grant for a limited time and lifted the $2,000 cap on the residential investment tax credit for solar thermal installations, for the first time allowing a full 30-percent ITC on solar water heating and other solar thermal technologies for the homeowner.

ARRA also eliminated the penalties for subsidized energy financing, encouraging state and local programs that subsidize solar installations without penalizing the customer, and it permitted Master Limited Partnerships to utilize the ITC for the first time, opening additional financing opportunities to the industry.

Among other provisions were a new tax credit for renewable energy manufacturing facilities and billions of dollars in additional funding for solar research and deployment financing.

## Treasury Grant

The grant created by ARRA reduces the need for tax equity partners and significantly lowers the transaction costs for a solar project. As of early February 2010, 182 solar projects had received Treasury grants totaling $81 million—representing more than $271 million in solar energy investment. The 13 solar thermal and 169 solar electric projects receiving the grant are spread over 30 states and the electric systems total 46.5 MW. Unless Congress extends the program, it will end December 31, 2010.[3]

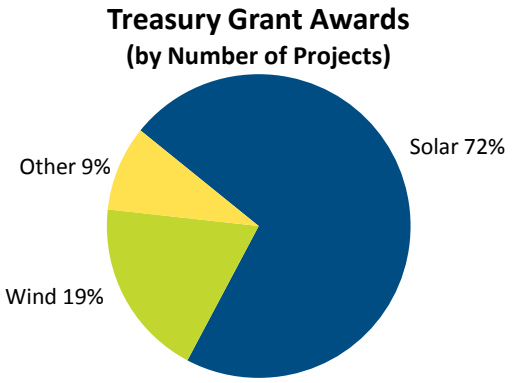
## Manufacturing Investment Tax Credit

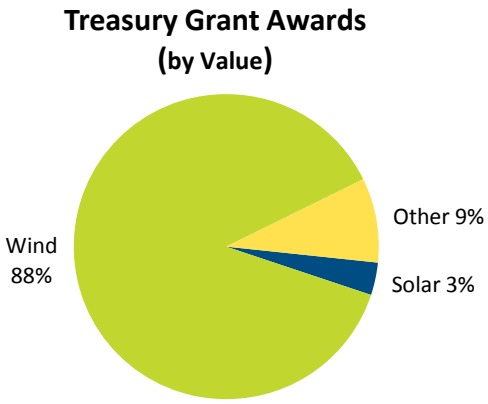
With the economy suffering record job losses, spurring domestic manufacturing was a primary concern for Congress and the Administration. The ARRA created a 30-percent manufacturing investment tax credit (MITC) for equipment that makes renewable energy components. The Department of Energy (DOE) announced the recipients of the $2.3 billion in credits in January 2010. Of the 183 winning projects, 60 were factories supplying the solar energy industry, accounting for nearly a third of the selected projects and 46 percent of the awarded funds. These tax credits will create thousands of new domestic solar manufacturing jobs.

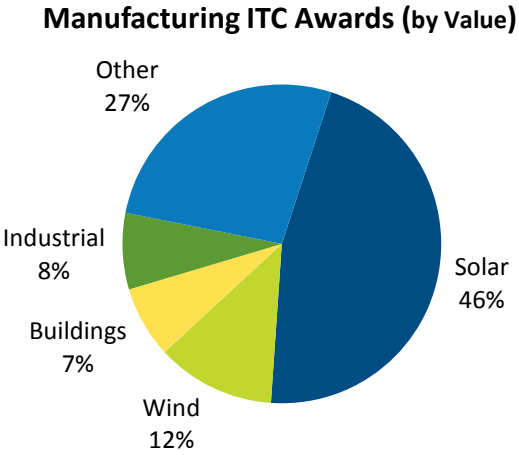
## Department of Energy Funding

Of the $16.8 billion in ARRA funds directed to DOE's Office of Energy Efficiency and Renewable Energy, $115 million went to the Solar Energy Technologies Program, $1.6 billion for Clean Renewable Energy Bonds (CREBs), $2.7 billion went to fund Energy Efficiency and Conservation Block Grants and $3.1 billion was provided for State Energy Program (SEP) grants.

The SEP grants in particular are helping support the deployment of solar




**Worker inspects CSP receiver tubes at SCHOTT Solar in Albuquerque, NM. (SCHOTT Solar)**

[3] See SEIA's "Guide to Federal Tax Incentives for Solar Energy" for more details.

energy equipment around the country. Virginia, Maryland, Delaware, Massachusetts, New York, Pennsylvania, Vermont and Wyoming are using their SEP allotments to fund existing rebate programs and create new programs where none existed before. Other states are using the funds for competitive grants, large installations, manufacturing incentives, research centers, low-interest financing and worker training.

## Solar Industry Driving Employment

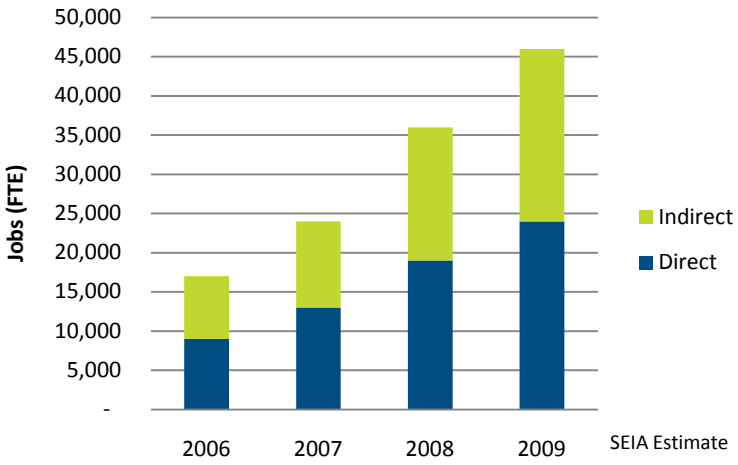
Answering ARRA's call, the solar energy industry is putting Americans back to work. While the recession has taken its toll on the solar industry, the many provisions of ARRA, the Emergency Economic Stabilization Act of 2008 (EESA) and the hard work of tens of thousands of solar workers have helped the industry maintain modest growth.

Some sectors were flat and others declined slightly, but overall employment in the solar industry increased by 10,000 people from 2008 to 2009. In addition, the growth in economic activity from the industry and its employees supported an additional 7,000 induced jobs for a total economic impact of 17,000 new jobs in 2009. In total, the solar industry and its supply chain now support roughly 46,000 jobs in the U.S. With growth expected to continue, that number is likely to surpass 60,000 by the end of 2010.[4]

### Manufacturing on the Rise

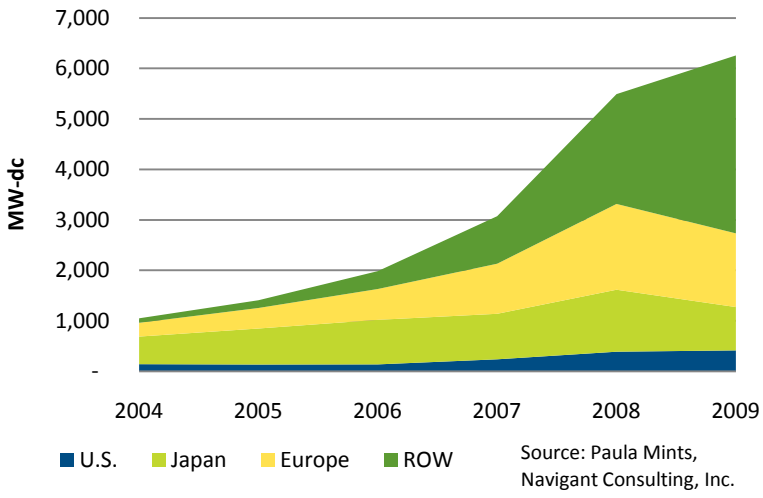
Though the U.S. has lost the lead in PV manufacturing that it held in the 1980's, both domestic capacity and production continue to grow steadily, keeping pace with domestic demand. The U.S. already has enough manufacturing capacity to meet all domestic demand for solar equipment and, with the MITC driving capacity expansion, will likely maintain self-sufficiency and robust two-way trade going forward. Many of the leading solar companies in the world are headquartered in the U.S., many have major existing manufacturing operations and many more have plans to set up new facilities in the states to meet growing demand. These companies supply all types of solar energy equipment for PV, CSP, SWH and SPH.

**Estimated U.S. Solar Industry Employment**




Worker installs solar shingles. (Dow Solar Solutions)

**Global PV Module Supply**




Source: Paula Mints, Navigant Consulting, Inc.

[4] In addition to employing 46,000 directly and indirectly, the economic activity in the U.S. solar industry supports the employment of an additional 33,000 people (induced jobs) for a total economic impact of up to 79,000 jobs.

## State Solar Policy

State policies continue to be some of the primary drivers for solar energy markets in the U.S. State net metering and interconnection rules define the market access for on-site distributed generation solar electric systems and even small incentive programs can draw attention to the solar industry.

In 2009, new incentives emerged in Pennsylvania, Virginia, Vermont and elsewhere, while some states used ARRA funds to bolster existing programs. The year also brought expansion of PACE financing and continued evolution of state renewable energy standard (RES) policies.

### PACE Financing on the Rise

Property-assessed clean energy (PACE) financing began spreading across the country in 2009. Since the City of Berkeley became the first to adopt this financing mechanism, 16 states have enacted PACE-enabling legislation: California, Colorado, Illinois, Louisiana, Maryland, Nevada, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Texas, Vermont, Virginia and Wisconsin. These provisions will allow homeowners and business-owners to finance solar energy systems through municipal or other government-backed bonds via an assessment on their property taxes. This ensures the availability of credit, reduces the upfront cost and facilitates transfer of the system to new property owners in the event of a sale.

### Top 10 States for New Grid-Tied Solar Electric Installations in 2009*

| | Capacity Installed in 2009 | |
|---|---|---|
| 1 | Calif. | 220 |
| 2 | N.J. | 57 |
| 3 | Fla. | 36 |
| 4 | Ariz. | 23 |
| 5 | Colo. | 23 |
| 6 | Hawaii | 14 |
| 7 | N.Y. | 12 |
| 8 | Mass. | 10 |
| 9 | Conn. | 9 |
| 10 | N.C. | 8 |
| | Others | 29 |
| **Total** | | **441 MW** |

| | Cumulative Capacity in 2009 | |
|---|---|---|
| 1 | Calif. | 1,102 |
| 2 | N.J. | 128 |
| 3 | Nev. | 100 |
| 4 | Colo. | 59 |
| 5 | Ariz. | 50 |
| 6 | Fla. | 39 |
| 7 | N.Y. | 34 |
| 8 | Hawaii | 27 |
| 9 | Conn. | 20 |
| 10 | Mass. | 18 |
| | Others | 78 |
| **Total** | | **1,653 MW** |

*** Includes all grid-tied PV and CSP.**

### State RES Updates

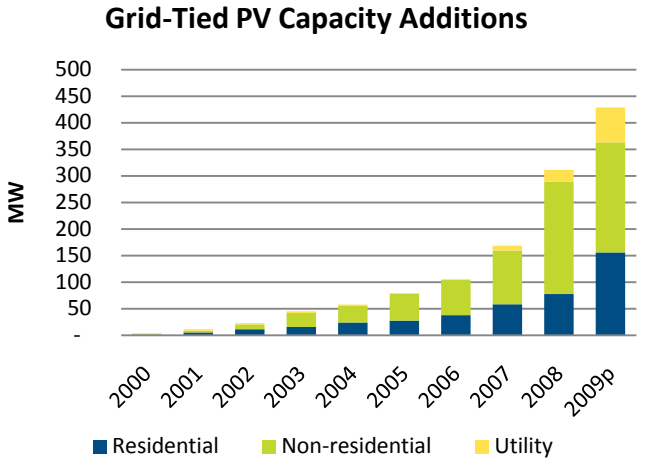
Eleven states modified their RES solar requirements in 2009. Of the 30 states and District of Columbia that have an RES, 18 now have a solar or distributed generation (DG) carve-out and 5 provide extra credits for solar or DG. Nevada increased its carve-out from 5 to 6 percent. Missouri upped its overall standard to 15 percent with a 2-percent solar carve-out (0.3 percent of retail sales). Illinois added a 6-percent carve-out (1.5 percent of retail sales). Washington, D.C. doubled its overall goal to 20 percent and increased its solar carve-out to 0.4 percent of retail sales.

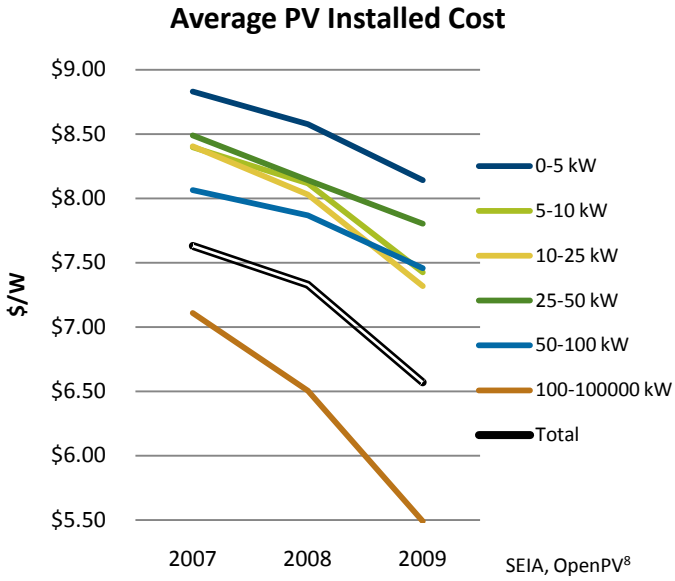
At least four states now include solar water heating as a qualifying RES energy source. While there has been little activity from this in the past few years, Arizona's law is starting to drive a more meaningful SWH industry, in part, by purchasing associated renewable energy credits (RECs) upfront, reducing the initial investment costs of SWH systems in that state.

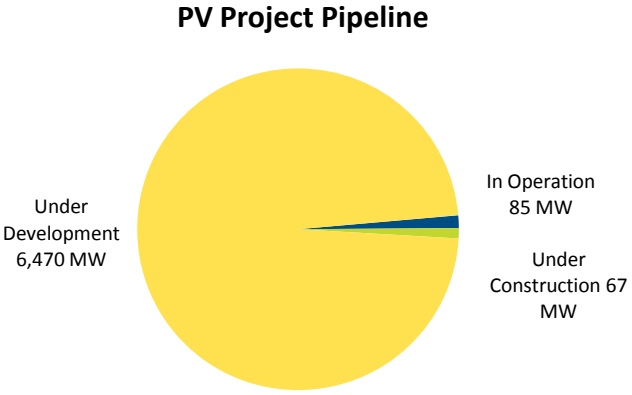
### Additional Information

For up-to-date information on state solar policies, see the Database of State Incentives for Renewables & Efficiency Solar Portal.

A 555-kW PV system on landfill in Canton, North Carolina. (Joanna Malcolm, FLS Energy; Suniva)




# Photovoltaics

The PV industry managed to maintain growth in 2009 despite difficulties in the housing and construction sectors and cumulative grid-tied capacity sailed past the 1 gigawatt (1,000 MW) mark by installing 429 MW. An estimated 40 MW of off-grid capacity was also added. However, year-over-year growth in annual grid-tied capacity additions of 38 percent fell short of the 84 percent growth in 2008. Notable growth came in the utility sector[5] which nearly tripled from 22 MW in 2008 to 66 MW in 2009. Residential installations were buoyed by the removal of the $2,000 cap on the ITC, lifting volume 101 percent from 78 MW in 2008 to 156 MW in 2009.

Two utility-scale solar power projects became the largest and second largest installations in the U.S. The 25-$MW_{ac}$ DeSoto Next Generation Solar Energy Center and the 21-$MW_{ac}$ FSE Blythe bumped the 14-$MW_{ac}$ Nellis Air Force Base installation into third place.

## Price Declines

2009 marked a second year of major price declines for PV modules.[6] Prices have fallen to $1.85-$2.25 per watt from $3.50-$4.00 per watt in mid-2008, a drop of over 40 percent.[7] With module prices accounting for up to half of the installed cost of a PV system, these prices are beginning to put downward pressure on system prices. Average installed cost fell roughly 10 percent from 2008 to 2009.[8] This is despite the large shift to the more labor-intensive (and expensive) residential installations. With new innovations in the installation process, increasing economies of scale and innovative equipment increasing energy yields, the cost reductions are expected to continue. PV is becoming an increasingly attractive and secure investment.

## What to Expect in 2010

PV is getting ready to go big. Residential and commercial rooftop installations are expected to remain strong and the utility-scale PV is expected to grow significantly, with more than 6,000 MW in announced projects in the pipeline. With the Treasury Grant Program set to expire at the end of the year, many in the solar industry wish to meet the start-construction deadline of December 31, 2010. Most industry analysts expect another year of growth in the PV industry.

[5] "Utility sector" refers to all capacity that feeds electricity directly into the distribution grid or the transmission grid, rather than primarily serving on-site use. It includes utility-scale solar power plants, utility-owned distributed systems, and non-utility owned distributed systems located on customer property that connect to the grid on the utility side of the meter.

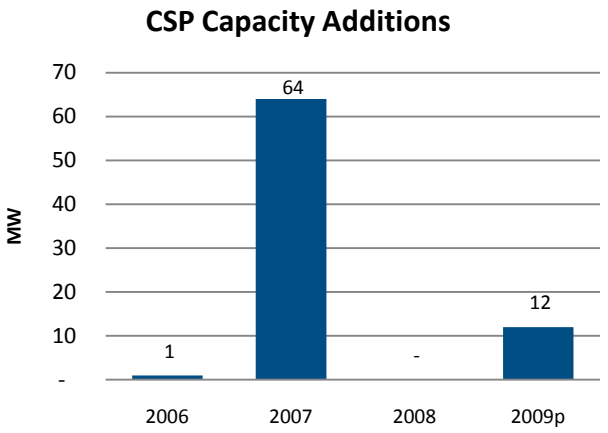
[6] "Modules" or "panels" are collections of PV cells. Modules are connected to form an array that makes up a PV system.

[7] Paula Mints, Navigant Consulting, Inc.

[8] Capacity-weighted average based on data from SEIA and OpenPV.nrel.gov downloaded 3/30/2010. For a more detailed analysis of PV system prices, see "Tracking the Sun II: The Installed Cost of Photovoltiacs" in the U.S. from 1998-2008 from Lawrence Berkeley National Laboratory.

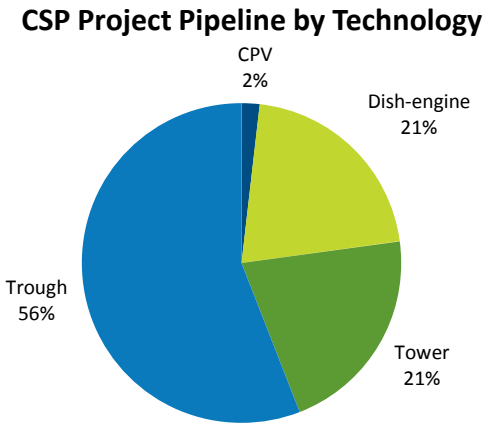
## Concentrating Solar Power

New U.S. concentrating solar power (CSP) facilities have been added in three of the last four years following 15 years of inactivity. Three new CSP facilities came online in 2009, the 5-$MW_{ac}$ Sierra SunTower from eSolar, the 2-$MW_{ac}$ Holaniku trough from Sopogy, and the 5-$MW_{ac}$ Kimberlina linear Fresnel system from AREVA Solar (formerly Ausra). The Sierra SunTower is the first power tower operating in the U.S. in a decade and Holaniku is the first CSP facility to come online in Hawaii.




### Siting Developments

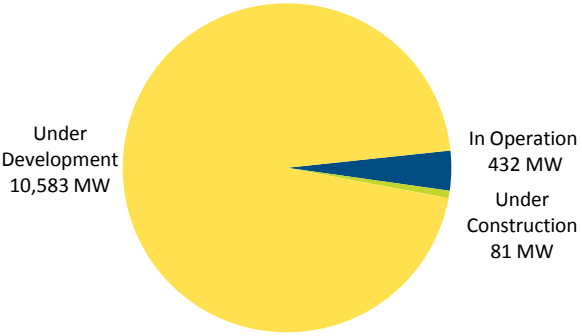
In 2009, Secretary of the Interior Ken Salazar announced two initiatives to speed the development of solar energy on public lands. First, four Renewable Energy Coordination Offices were established across the west (in California, Nevada, Wyoming and Arizona), along with renewable energy teams in five other offices. Second, the Bureau of Land Management (BLM) identified 14 solar energy projects that were in position to qualify for ARRA-related funding, if permitted, during 2010. BLM and the U.S. Fish & Wildlife Service have focused their resources on getting these "fast-track" projects through the permitting process so they can commence construction by December 31, 2010.




### Pipeline

The U.S. now has 432 MW of operational CSP plants in commercial production (as of March 2010), making it the world leader in installed CSP, and more plants are on the way. Several projects are expected to come online before the end of the year, and many additional projects will begin construction before the end of December and meet the deadline to qualify for the 30-percent Treasury grant.

At least three additional CSP facilities are likely to come online in 2010: a 2-$MW_{ac}$ Stirling dish installation in Phoenix, Ariz., a 4-$MW_{th}$ trough plant displacing coal-fired generation in Grand Junction, Colo., and the 75-MW Martin Next Generation Solar Energy Center hybrid trough in Martin County, Fla.. With the completion of these three projects by the end of the year, the U.S. will maintain its healthy lead over Spain in CSP capacity, with more than 500 MW installed.





Trough (Acciona North America)


Dish (Tessera Solar)

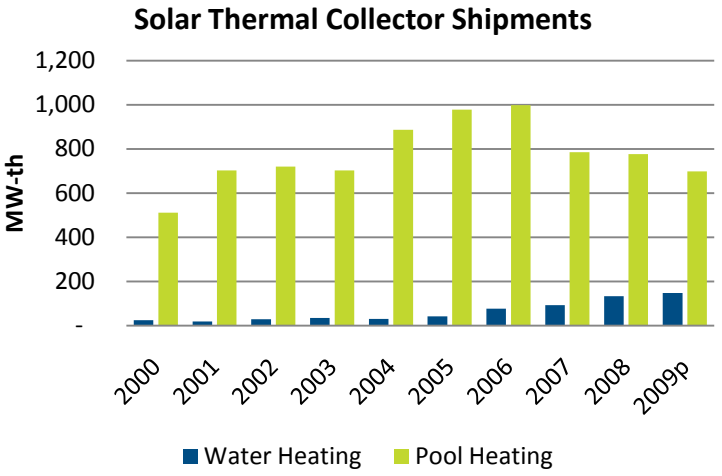

Tower (eSolar)

## Solar Thermal

Solar heating and cooling technologies saw a mixed year in 2009. Solar water heater (SWH) shipments managed modest growth for the fifth consecutive year with the help of the expanded federal investment tax credit. Solar pool heating (SPH) experienced a third year of decline, mirroring struggles in the housing market. SEIA estimates SWH collector shipments grew 10 percent to 147 $MW_{th}$ and SPH shipments sunk 10 percent to 699 $MW_{th}$ for the year.[9]

SEIA expects continued growth in SWH in 2010. This year, California will launch the most ambitious state SWH incentive program with the goal of installing 200,000 SWH systems. In addition, increased use of SWH to generate renewable energy certificates (RECs) to meet state renewable energy standards could drive additional deployment in some states as we began to see in Arizona last year. This optimism is mirrored by the many new products seeking certification from the Solar Rating and Certification Corporation, the testing body charged with certifying equipment for eligibility to take the federal ITC.

While the real estate market continues to impact the solar pool heating sector, SEIA is working to help commercial pools take advantage of solar energy. Nearly 300,000 non-residential pools at hotels, schools, gyms and physical therapy centers in the U.S. need year-round heating. Heating these pools results in as much as 1 million metric tons of carbon-dioxide pollution each year. Current law prohibits these facilities from taking advantage of the federal ITC.



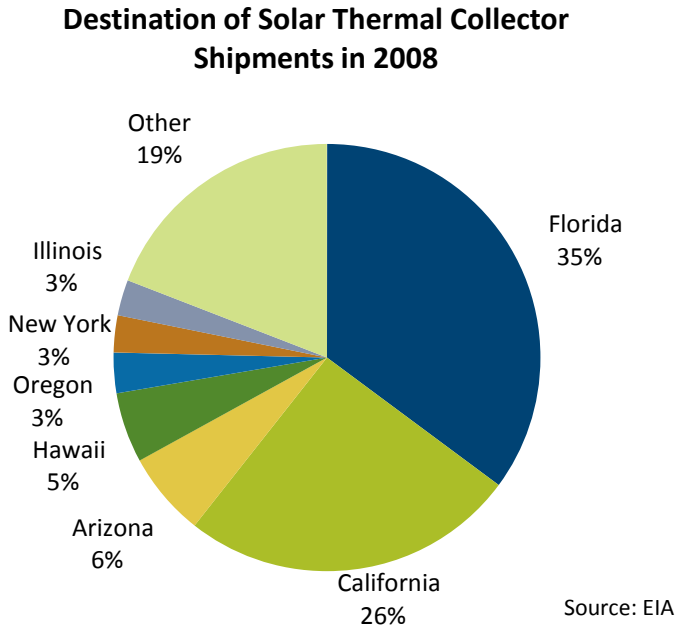

Solar water heating system on home. (Caleffi Solar)

### ENERGY STAR

Solar water heating equipment got a boost this year by becoming eligible to sport the ENERGY STAR label. As of publication of this report, there are already 279 ENERGY STAR-certified solar water heaters. Many solar water heaters will now benefit from the brand recognition and trust that many consumers associate with the program.

### Solar Cooling

While solar cooling technologies have yet to take off in the U.S., the potential is enormous. More than 60 percent of energy consumed residential and commercial buildings is for thermal services. Of that, water heating accounts for about one quarter. The rest is used for space heating and cooling, a huge growth opportunity for solar energy over the next few years.




Source: EIA

[9] SEIA Estimates

## Solar Policy in 2010

The American Recovery and Reinvestment Act aimed to stimulate the economy through creation of green jobs and, with the help of several key policies, the solar industry has delivered. The Treasury Grant Program, the Loan Guarantee Program and the Manufacturing Investment Tax Credit in particular have driven a sizable increase in solar employment. However, funds and timeframes for these programs were limited.

The TGP, which provides a grant in lieu of the investment tax credit (ITC) for projects that begin construction before the end of 2010 and come online before the end of 2016, was intended to help the solar industry finance projects at a time of limited tax equity. However, the program did not launch until July of 2009, shortening the effective length of the program by nearly half a year. What's more, the tax equity markets do not yet show the signs of recovery necessary for a smooth return to tax credit incentives. To help ensure a liquid solar market, SEIA is supporting the effort to extend the "commence construction" deadline for this program through 2012.

ARRA provided $6 billion for the LGP, enabling capital investment of up to $90 billion. However, $2 billion of these funds were used by Congress to pay for an extension of the "Cash for Clunkers" new car rebate. SEIA is seeking restoration of these funds to support an additional $30 billion in renewable energy deployment.

The MITC created by ARRA provided for only $2.3 billion in credits. While solar energy equipment manufacturing received roughly a third of these credits, global demand for solar equipment will continue to rise and extending this credit will help ensure that U.S. manufacturing stays competitive with other countries offering generous incentives to attract new facilities. SEIA is pursuing the extension of this credit for solar manufacturing through 2016.

### SEIA Webinars

SEIA now offers webinars on new topics on a regular basis. Previous topics have included:

- Equity Analysts' Perspective on the Solar Market
- Treasury Grant Program
- Loan Guarantee Program
- Manufacturing Tax Credit
- Tax Equity in the Current Market
- Calculating your Tax Basis
- Utility Scale Interconnection
- Update on the Treasury Grant and MITC Programs
- Section 1603 Grants and State Taxability
- Project Finance Series

These webinars are free to SEIA members and aim to keep solar companies up-to-date on the issues that affect their businesses.

View upcoming webinars at www.seia.org/cs/webinars

**Workers install a solar cooling system on the Steinway & Sons piano factory in New York. (Steinway & Sons)**

### Solar Bill of Rights

In October 2009, SEIA launched its "Solar Bill of Rights" campaign. The Solar Bill of Rights is SEIA's grassroots advocacy effort to engage with all Americans, politicians, activists and celebrities to build support for eight rights designed to create a policy environment that allows solar to compete on a level playing field with fossil fuels. Nearly 2,000 people signed the Solar Bill of Rights during the first four months of the campaign.

Show your support at www.SolarBillofRights.org, Facebook, Twitter or LinkedIn.

## Solar at Copenhagen

SEIA, along with the European Photovoltaic Industry Association, lead the effort at United Nations Framework Convention on Climate Change (UNFCCC) to show all participants and observers that solar energy is ready to meet the climate challenge. SEIA brought together solar associations from around the globe to produce "Seizing the Solar Solution: Combating Climate Change Through Accelerated Deployment," a report that outlines solar energy's potential to reduce pollution that causes climate change in developed and developing nations alike.

Copenhagen marked the solar industry's first major presence in the 15-year history of these climate negotiations. As the world moves closer to a carbon-constrained economy, SEIA will continue make sure governments and business are prepared for the solar solution.

Find more information at www.solarcop15.org

# International Solar Round-Up 2009

### Germany

Germany continued its steady growth yet again, regaining its title as the largest PV market by installing 3,800 MW of new capacity in 2009. This represents a doubling of the 1,500 MW installed in 2008 and is attributable, in part, to the improved project economics resulting from the decline in module prices. This growth has caused the German government to pursue an additional mid-year cut in incentives in 2010 above and beyond what was already scheduled but the country is expected to remain the single largest market for PV in 2010. Germany continues to be one of the largest market for solar thermal installations.

### Spain

After rocketing past Germany to become the largest PV market in 2008, a drastic reduction in incentives pushed Spain down to 180 MW in new PV and CSP capacity for 2009, compared to 2,710 MW in 2008. Not all news was bad; Spain added more new CSP capacity than any other country in 2009, leading both the U.S. and China by a wide margin with 120 MW added. Spain ranks second after the U.S. in total CSP capacity with 181 MW installed.

### Italy

Installations in Italy more than doubled from 2008's 338 MW to roughly 700 MW in 2009, putting it in second place for new capacity for the year. The country's strong incentives and good solar resources should help the market stay strong in 2010.

### Japan

After two stagnant years, Japan recovered to have its best year ever, installing 484 MW, edging out the U.S. for the third place for annual capacity additions. This resurgence was driven in part by the falling equipment costs and in part by new incentives (roughly US$0.80 per watt) that went into effect in January 2009.

### Czech Republic

The Czech Republic emerged as one of the top markets for PV last year with annual installations jumping to 411 MW. Though the country ranked fifth in installations, it installed more new PV per capita (roughly 40 watts per person) than any country except Germany in 2009. The massive growth—from just over 50 MW in 2008—was due do the country's generous US$0.63 per kWh solar incentives. However, this rapid ramp-up in solar capacity has prompted a reduction in its feed-in tariff payments.

### China and India

Both China and India made headlines in 2009 when they independently announced plans to expand their solar power capacities to 20,000 MW each by 2020. If these plans move forward, Asia will become a major demand center for solar energy equipment after several years of expanding manufacturing capacity.

## Top Countries for New Solar Electric Installations in 2009

| | Capacity Installed in 2009 | Cumulative Capacity at End of 2009 |
|---|---|---|
| **Germany** | 3,800 MW | 9,677 MW |
| **Italy** | 700 MW | 1,158 MW |
| **Japan** | 484 MW | 2,628 MW |
| **United States** | 481 MW | 2,108 MW |
| **Czech Republic** | 411 MW | 465 MW |
| **Belgium** | 292 MW | 362 MW |
| **France** | 285 MW | 465 MW |
| **Spain** | 180 MW | 3,595 MW |
| **Total** | **~6,900 MW** | **~21,500 MW** |

## Solar's Growing Role in the US Energy Mix

Though solar energy continues to account for less than 1 percent of the U.S. energy supply, its contribution is expected to rise dramatically in the coming years as costs continue to decline making it more competitive in more states. This natural evolution will help drive demand in places that have yet to see the development of significant markets. Other states will see even more growth as RES carve-out provisions begin to require more and more capacity. Lawrence Berkeley National Laboratory estimates that compliance with existing solar and distributed generation carve-outs will require roughly 9,000 MW of solar capacity by 2025. In the short term, these carve-outs will help provide a base level of installations and grow the industry to a size that supports strong economies of scale.

In addition to satisfying carve-out requirements, solar is showing increasing competiveness against fossil fuels. When compared to the high cost of generation in places like Hawaii, where most electricity is generated with oil, or when compared to peaking generators, solar energy looks increasingly attractive.

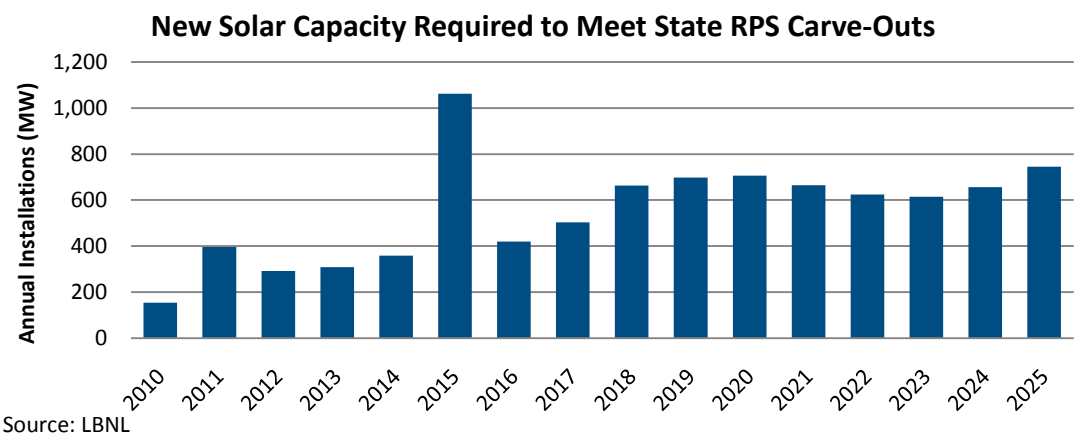
A 650-kW system on eBay headquarters in San Jose, California. (SolarCity)

The rising cost of fossil fuels due to dwindling supplies and increased international demand ensure that the trend toward solar competitiveness continues. Any major movement at a regional, national or international level to regulate greenhouse gas emissions or to put a price on emissions will only accelerate this trend. This means that those looking to hedge against volatile and increasing energy prices will do well to turn to solar energy.

### A Vision for the Future

Later this year, the U.S. Department of Energy is expected to release a report that explores the potential for solar energy to provide a significant share of the nation's electricity by 2030. The report will explore the costs and benefits of realizing this solar-powered future and paint a picture of how it would work.

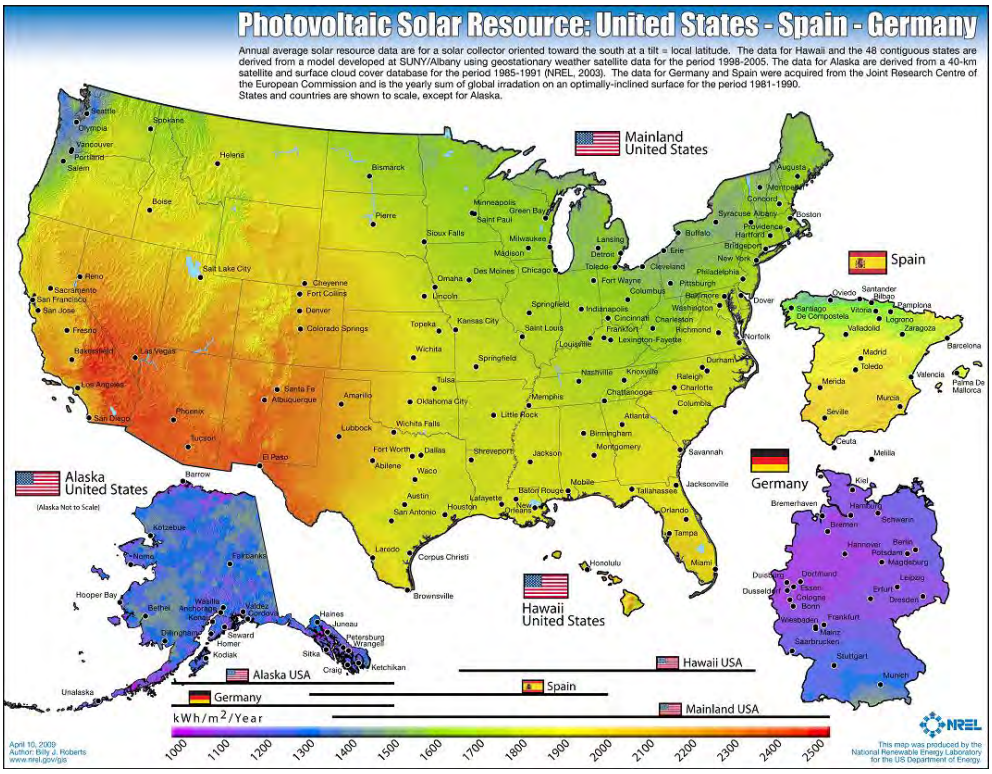
This vision would require hundreds of thousands of new solar megawatts, many times more than the current global solar capacity. However, this industry has shown extraordinary ability to grow quickly to meet any demand.




Source: LBNL

## About SEIA

Established in 1974, the Solar Energy Industries Association is the national trade association of solar energy industry. As the voice of the industry, SEIA works with its 1,000 members to make solar a mainstream and significant energy source by expanding markets, removing market barriers, strengthening the industry and educating the public on the benefits of solar energy.

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- The Solar Alliance
- The Vote Solar Initiative
- Galen Barbose, Lawrence Berkeley National Lab


## Contact Us

For more information or questions about this report, email research@seia.org.

For press inquiries, contact SEIA's communications team, Monique Hanis and Jared Blanton.

For a PDF of this report with clickable hyperlinks and additional charts, please visit SEIA's web site at www.seia.org.

**Note on data:** Unless otherwise noted, PV data in this report is from Larry Sherwood and SEIA. Thermal shipments for 2008 and earlier are from the Energy information Administration and the International Energy Agency. Thermal shipments for 2009 are SEIA estimates. CSP data are from SEIA. Data is best available and may differ from earlier reports.

## What's a Watt?

**Watt (W):** A watt is a unit of *power* (like horsepower used to measure engines) that measures the rate of flow of energy. Solar equipment is often measured in peak watts or maximum power output rating. 1 W = 1 joule/second. (A joule is a unit of energy equal to 0.24 calories.)
**Kilowatt (kW):** 1 kW = 1,000 W or 1.34 horsepower.
**Megawatt (MW):** 1 MW = 1,000 kW = 1,000,000 W. Depending on location and configuration, 1 MW of solar power capacity can provide 1,300 to 2,500 MWh (1.3 to 2.5 million kWh) of electricity per year, enough to supply 120 to 220 average American homes.
**Gigawatt (GW):** 1 GW = 1,000 MW = 1 million kW = 1 billion W
**Kilowatt-hour (kWh):** A kilowatt-hour is a unit of *energy* necessary to provide 1 kW of *power* for 1 hour. 1 kWh can light a 100-W light bulb for 10 hours. The average American household uses 936 kWh of electricity per month. (EIA, http://www.eia.doe.gov/cneaf/electricity/esr/table5.html )
**Watt-thermal ($W_{th}$):** Solar thermal systems (water heating, pool heating, etc.) do not provide *power* but instead provide thermal *energy* or heat. However, to roughly compare solar thermal capacity to solar electric capacity, thermal capacity is reported in watts-thermal by treating one square meter of collector area as equivalent to 700 watts of solar electric capacity.

**ATTACHMENT 2**

# Utility-Scale Solar Projects in the United States
# Operational, Under Construction, and Under Development
## Updated May 28, 2010

**Utility-Scale Projects in Operation (Page 2)**

| | | |
|---|---|---|
| | *Concentrating Solar Power Total (MW)* | 433 |
| | *Photovoltaics Total (MW)* | 120 |
| **Total Projects in Operation (MW)** | | **553** |

**Utility-Scale Projects Under Construction (Page 3)**

| | | |
|---|---|---|
| | *Concentrating Solar Power Total (MW)* | 77 |
| | *Photovoltaics Total (MW)* | 62 |
| **Total Under Construction (MW)** | | **139** |

**Utility-Scale Projects Under Development (Pages 4 - 6)**

| | | |
|---|---|---|
| | *Concentrating Solar Power Total (MW)* | 9,991 |
| | *Photovoltaics Total (MW)* | 12,053 |
| **Total Under Development (MW)** | | **22,044** |

**Utility-Scale Projects in Operation, Under Construction, and Under Development**

| | | |
|---|---|---|
| | *Concentrating Solar Power Total (MW)* | 10,501 |
| | *Photovoltaics Total (MW)* | 12,235 |
| **Total Projects in Operation, Under Construction, and Under Development (MW)** | | **22,736** |

### Major Steps to Bring a Utility-Scale Solar Project On-Line


* This list is for informational purposes only, reflecting projects and completed milestones in the public domain. It is not a comprehensive list of all utility-scale solar projects under development, nor is it a guarantee that every identified project will be built. Like any other industry, market conditions may impact project economics and timelines. SEIA actively promotes public policy that minimizes regulatory uncertainty and encourages the accelerated deployment of utility-scale solar power.

Please note that some figures may not add up exactly due to independent rounding.
Press inquiries should be directed to Monique Hanis at mhanis@seia.org.
If you have comments on this list, please contact Joel Meister at jmeister@seia.org.
For information on distributed generation solar projects, including utility-owned DG programs, see the Open PV Project Database at http://openpv.nrel.gov

On June 29th, 2009, Secretary of the Interior Ken Salazar announced "Fast-Track" initiatives for solar projects on lands in the West. Currently, 14 solar projects have received the "Fast-Track" distinction and are undergoing environmental review. The "Fast-Track" initiative goal is to focus BLM efforts on promising projects in order to complete review prior to the December 2010 deadline required to qualify for some funding programs under the American Recovery and Reinvestment Act. For more information on the "Fast-Track" solar projects, please visit:
http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/fast-track_renewable.html

## Utility-Scale Projects in Operation

| Developer | Project Name | Electricity Purchaser | Location | Technology | Online Date | Capacity (MW) |
|---|---|---|---|---|---|---|
| ***Concentrating Solar Power (including Concentrating Photovoltaic)*** | | | | | | |
| Abengoa Solar | Cameo Coal-Fired Hybrid Demonstration Project | Xcel Energy | Grand Junction, Colo. | Trough[1] | 2010 | 1 |
| Acciona | Nevada Solar One | NV Energy | Boulder City, Nev. | Trough | 2007 | 64 |
| Ausra | Kimberlina | California's wholesale market | Bakersfield, Calif. | Linear Fresnel | 2009 | 5 |
| eSolar | Sierra SunTower | Southern California Edison | Antelope Valley, Calif. | Tower | 2009 | 5 |
| Luz | Solar Energy Generating Systems (SEGS) I | Southern California Edison | Daggett, Calif. | Trough | 1985 | 14 |
| Luz | Solar Energy Generating Systems (SEGS) II | Southern California Edison | Daggett, Calif. | Trough | 1986 | 30 |
| Luz | Solar Energy Generating Systems (SEGS) III | Southern California Edison | Kramer Junction, Calif. | Trough | 1987 | 30 |
| Luz | Solar Energy Generating Systems (SEGS) IV | Southern California Edison | Kramer Junction, Calif. | Trough | 1987 | 30 |
| Luz | Solar Energy Generating Systems (SEGS) V | Southern California Edison | Kramer Junction, Calif. | Trough | 1988 | 30 |
| Luz | Solar Energy Generating Systems (SEGS) VI | Southern California Edison | Kramer Junction, Calif. | Trough | 1989 | 30 |
| Luz | Solar Energy Generating Systems (SEGS) VII | Southern California Edison | Kramer Junction, Calif. | Trough | 1989 | 30 |
| Luz | Solar Energy Generating Systems (SEGS) VIII | Southern California Edison | Kramer Junction, Calif. | Trough | 1990 | 80 |
| Luz | Solar Energy Generating Systems (SEGS) IX | Southern California Edison | Kramer Junction, Calif. | Trough | 1991 | 80 |
| Solargenix | Saguaro Solar Power Plant | Arizona Public Service | Red Rock, Ariz. | Trough | 2005 | 1 |
| Sopogy | Holaniku at Keahole Point | HELCO | Kona, Hawaii | Trough | 2009 | 2 |
| Tessera Solar | Maricopa Solar Power Plant | Salt River Project | Phoenix, Ariz. | Dish-engine | 2010 | 2 |
| | | | ***Concentrating Solar Power Total (MW)*** | | | **433** |
| ***Photovoltaics (excluding Concentrating Photovoltaic)*** | | | | | | |
| ARCO Solar Inc., Siemens Solar | Rancho Seco Nuclear Station | Sacramento Municipal Utility District | Herald, Calif. | PV | 1984 | 3 |
| Arizona Public Service | Prescott Solar Power Plant | Arizona Public Service | Prescott, Ariz. | PV | 2006 | 4 |
| Cleantech America Inc. | CalRENEW-1 | Pacific Gas & Electric | Mendota, Calif. | Thin-film PV | 2010 | 5 |
| Conergy | Exelon-Conergy Solar Energy Center | Exelon Generation LLC | Philadelphia, Pa. | PV | 2008 | 3 |
| Conectiv Energy | Vineland Solar One | Vineland Municipal Electric Utility | Vineland, N.J. | PV | 2009 | 4 |
| enXco | Sacramento Soleil 2008 | Sacramento Municipal Utility District | Sacramento, Calif. | PV | 2008 | 1 |
| First Solar | FSE Blythe | Southern California Edison | Blythe, Calif. | Thin-film PV | 2009 | 21 |
| First Solar/Sempra Generation | El Dorado Energy Solar Project | Pacific Gas & Electric | Boulder City, Nev. | Thin-film PV | 2008 | 10 |
| Florida Power & Light Co. | DeSoto Next Generation Solar Energy Center | Florida Power & Light Co. | Arcadia, Fla. | PV | 2009 | 25 |
| Florida Power & Light Co. | Space Coast Next Generation Solar Energy Center | Florida Power & Light Co. | Kennedy Space Center, Fla. | PV | 2010 | 10 |
| Global Solar Energy | Springerville Generating Station Solar System | Tuscon Electric Power | Springerville, Ariz. | Thin-film PV | 2003 | 5 |
| MMA Renewable Ventures | Nellis Air Force Base | Nellis Air Force Base | Clark County, Nev. | PV | 2007 | 14 |
| SunEdison | Alamosa Photovoltaic Solar Plant | Xcel Energy | Alamosa, Colo. | PV | 2007 | 8 |
| SunEdison | | Duke Energy | Davidson County, N.C. | PV | 2010 | 4 |
| SunPower/ Duke Energy Generation Services | Shelby Solar Project | NCMPA1 | Shelby, N.C. | PV | 2010 | 1 |
| Three Phases and Green Rock Capital | Fort Carson Army Base | Fort Carson Army Base | Colorado Springs, Colo. | PV | 2008 | 2 |
| | | | | ***Photovoltaics Total (MW)*** | | **120** |
| **Total in Operation (MW)** | | | | | | **553** |

**Project Name: Nevada Solar One**
**Developer: Acciona**
**Electricity Purchaser: NV Energy**
**Location: Boulder City, Nev.**
**Technology: Trough**
**Capacity: 64 MW**
**Source: Acciona North America**

**Project Name: Sierra SunTower**
**Developer: eSolar**
**Electricity Purchaser: Southern California Edison**
**Location: Antelope Valley, Calif.**
**Technology: Tower**
**Capacity: 5 MW**
**Source: eSolar**

**Project Name: Nellis Air Force Base**
**Developer: MMA Renewable Ventures**
**Electricity Purchaser: Nellis Air Force Base**
**Location: Clark County, Nev.**
**Technology: PV**
**Capacity: 14 MW**
**Source: MMA Renewable Ventures**

**Project Name: DeSoto Next Generation Solar Energy Center**
**Developer: Florida Power & Light Co.**
**Electricity Purchaser: Florida Power & Light Co.**
**Location: Arcadia, Fla.**
**Technology: PV**
**Capacity: 25 MW**

## Utility-Scale Projects Under Construction

| Developer | Project Name | Electricity Purchaser | Location | Technology | Capacity (MW) |
|---|---|---|---|---|---|
| ***Concentrating Solar Power (including Concentrating Photovoltaic)*** | | | | | |
| Florida Power & Light Co. | Martin Next Generation Solar Energy Center | Florida Power & Light Co. | Martin County, Fla. | Trough[1] | 75 |
| GreenVolts Inc. | GV1 | Pacific Gas & Electric | Byron, Calif. | CPV | 2 |
| | | | | ***Concentrating Solar Power Total (MW)*** | **77** |
| ***Photovoltaics (excluding Concentrating Photovoltaic)*** | | | | | |
| Conergy | Ingram's Mill Farm | PJM wholesale market | Chester County, Pa. | PV | 1 |
| juwi solar Inc. | Blue Wing Solar Project | CPS Energy | San Antonio, Texas | PV | 14 |
| juwi solar Inc. | | Jacksonville Electric Authority | Jacksonville, Fla. | PV | 15 |
| juwi solar Inc. | Wyandot Solar Facility | American Electric Power Co. Inc. | Salem Township, Ohio | Thin-film PV | 10 |
| SunEdison | | Duke Energy | Davidson County, N.C. | PV | 12 |
| SunPower | West Pullman Industrial Redevelopment Area | Exelon Corp. | Chicago, Ill. | PV | 10 |
| | | | | ***Photovoltaics Total (MW)*** | **62** |
| **Total Under Construction (MW)** | | | | | **139** |

(1) Hybrid solar plants cofiring with other fuels (output reflects peak solar contribution)

## Projects Under Development: Concentrating Solar Power (including Concentrating Photovoltaic)

| Developer | Project Name | Electricity Purchaser | Location | Technology | Capacity (MW) |
|---|---|---|---|---|---|
| Abengoa Solar | Mojave Solar | Pacific Gas & Electric | San Bernardino County, Calif. | Trough | 250 |
| Abengoa Solar | Solana | Arizona Public Service | Gila Bend, Ariz. | Trough | 280 |
| Acciona Solar Power | Ft. Irwin Solar Power Project | U.S. Army/surrounding utilities | Ft. Irwin, Calif. | Trough | 980 |
| Albiasa | Kingman Project | | Kingman, Ariz. | Trough | 200 |
| Bell Independent Power Corp | UA Tech Park Thermal Storage Demonstration Project | Tucson Electric Power | Tucson, Ariz. | Trough | 5 |
| Boulevard Associates LLC | Sonoran Solar Energy Project | | Maricopa County, Ariz. | Trough | 375 |
| BrightSource Energy | Ivanpah Solar Electric Generating System (SEGS) I | Pacific Gas & Electric | Barstow, Calif. | Tower | 126 |
| BrightSource Energy | Ivanpah Solar Electric Generating System (SEGS) II | Southern California Edison | Barstow, Calif. | Tower | 133 |
| BrightSource Energy | Ivanpah Solar Electric Generating System (SEGS) III | Pacific Gas & Electric | Barstow, Calif. | Tower | 133 |
| BrightSource Energy | Coyote Springs 1 | Pacific Gas & Electric | Coyote Springs, Nev. | Tower | 200 |
| BrightSource Energy | Coyote Springs 2 | Pacific Gas & Electric | Coyote Springs, Nev. | Tower | 200 |
| BrightSource Energy | | Southern California Edison | Nev. | Tower | 1,200 |
| Chevron Technology Ventures | | | Questa, N.M. | Lens CPV | 1 |
| Emcore/SunPeak Power | | | Southwest U.S. | Lens CPV | 200 |
| eSolar | Gaskell Sun Tower (Phase I) | Southern California Edison | Kern County, Calif. | Tower | 105 |
| eSolar | Gaskell Sun Tower (Phase II) | Southern California Edison | Kern County, Calif. | Tower | 140 |
| eSolar | Santa Teresa New Mexico SunTower | El Paso Electric | Santa Teresa, N.M. | Tower | 92 |
| Harper Lake LLC | Harper Lake Solar Plant | | Calif. | Trough | 250 |
| Inland Energy Inc. | Palmdale Hybrid Gas-Solar plant | | Palmdale, Calif. | Trough | 50 |
| Inland Energy Inc. | Victorville Hybrid Gas-Solar plant | | Victorville, Calif. | Trough | 50 |
| NextEra Energy Resources | Beacon Solar Energy Project | | Kern County, Calif. | Trough | 250 |
| NextEra Energy Resources | Genesis Solar Energy Project | Pacific Gas & Electric | Riverside County, Calif. | Trough | 250 |
| Pacific Light & Power | Westside Solar Project | Kaua'i Island Utility Cooperative | Kauai, Hawaii | Trough | 10 |
| San Joaquin Solar LLC | San Joaquin Solar 1 | Pacific Gas & Electric | Coalinga, Calif. | Trough[1] | 53 |
| San Joaquin Solar LLC | San Joaquin Solar 2 | Pacific Gas & Electric | Coalinga, Calif. | Trough[1] | 53 |
| SkyFuel | SkyTrough Demonstration | Southern California Edison | Daggett, Calif. | Trough | 43 |
| Solar Millennium | Amargosa Farm Road Solar Energy Project 1 | NV Energy | Nye County, Nev. | Trough | 242 |
| Solar Millennium | Amargosa Farm Road Solar Energy Project 2 | NV Energy | Nye County, Nev. | Trough | 242 |
| Solar Millennium | Blythe Solar Power Project | Southern California Edison | Blythe, Calif. | Trough | 1,000 |
| Solar Millennium | Ridgecrest Solar Power Project | Southern California Edison | Ridgecrest, Calif. | Trough | 250 |
| Solar Millennium | Palen Solar Power Project | Southern California Edison | Desert Center, Calif. | Trough | 500 |
| SolarReserve | Crescent Dunes Solar Energy Project | NV Energy | Nye County, Nev. | Tower | 100 |
| SolarReserve | Quartzsite Solar Energy Project | | La Paz County, Ariz. | Tower | 100 |
| SolarReserve | Rice Solar Energy Project | Pacific Gas & Electric | Riverside County, Calif. | Tower | 150 |
| Tessera Solar | Buckeye Landfill Project | | Buckeye, Ariz. | Dish-engine | 150 |
| Tessera Solar | SES Solar One | Southern California Edison | Victorville, Calif. | Dish-engine | 850 |
| Tessera Solar | SES Solar Two | San Diego Gas & Electric | Imperial County, Calif. | Dish-engine | 750 |
| Tessera Solar | Western Ranch | CPS Energy | San Antonio, Texas | Dish-engine | 27 |
| | | | ***Concentrating Solar Power Total (MW)*** | | **9,991** |

(1) Hybrid solar plants cofiring with other fuels (output reflects peak solar contribution)

## Projects Under Development: Photovoltaics (excluding Concentrating Photovoltaic)

| Developer | Project Name | Electricity Purchaser | Location | Technology | Capacity (MW) |
|---|---|---|---|---|---|
| Acciona Solar Power | Ft. Irwin Solar Power Project | U.S. Army/surrounding utilities | Ft. Irwin, Calif. | PV | 20 |
| Advanced Solar Products | Linden Solar Farm | PSE&G | Linden, N.J. | PV | 4 |
| American Capital Energy | Yardville Solar Farm | PSE&G | Hamilton, N.J. | PV | 5 |
| American Capital Energy | | NV Energy | Searchlight, Nev. | PV | 20 |
| American Capital Energy | | | Vineland, N.J. | PV | 5 |
| Atlantic Green Power | | | Salem County, N.J. | PV | 80 |
| BlueChip Energy | Rinehart Solar Farm | Progress Energy Florida | Lake Mary, Fla. | PV | 10 |
| BP Solar | BNL Area 1 | Long Island Power Authority | Brookhaven, N.Y. | PV | 19 |
| BP Solar | BNL Area 2 | Long Island Power Authority | Brookhaven, N.Y. | PV | 18 |
| BP Solar | | | Sierra County, N.M. | PV | 22 |
| C.F. Properties | | | Barstow, Calif. | PV | 19 |
| Chevron Energy Solutions | Lucerne Valley Solar Project | Southern California Edison | San Bernardino County, Calif. | Thin-film PV | 45 |
| Clear Skies Solar Inc. | | | Cantil, Calif. | PV | 6 |
| Community Energy | | Wholesale Power Market | Lancaster County, Pa. | PV | 6 |
| Conectiv Energy | Vineland Solar One Expansion | Vineland Municipal Electric Utility | Vineland, N.J. | PV | 12 |
| Corporación Gestamp/ GA-Solar | | | Guadalupe County, N.M. | PV | 300 |
| CPV Renewable Energy Company | CPV Piney Reach Solar Farm | | Charles County, Md. | PV | 10 |
| Element Power | Little Mountain solar project | | Weber County, Ore. | PV | 55 |
| Energy 5.0 | Florida Solar 1 | Tampa Electric | Polk County, Fla. | PV | 25 |
| enXco | Long Island | Long Island Power Authority | Long Island, N.Y. | PV | 13 |
| First Solar | Topaz Solar Farm | Pacific Gas & Electric | Carrisa Plains, Calif. | Thin-film PV | 550 |
| First Solar | Desert Sunlight | Pacific Gas & Electric | Desert Center, Calif. | Thin-film PV | 300 |
| First Solar | Desert Sunlight | Southern California Edison | Desert Center, Calif. | Thin-film PV | 250 |
| First Solar | Cimarron I Solar Project | Tri-State Generation and Transmission | Cimarron, N.M. | Thin-film PV | 30 |
| First Solar | | PNM | 5 sites in N.M. | Thin-film PV | 22 |
| First Solar/Sempra Generation | Copper Mountain Solar Project | Pacific Gas & Electric | Boulder City, Nev. | Thin-film PV | 48 |
| Florida Power & Light Co. | Babcock Ranch | Florida Power & Light Co. | Babcock Ranch, Fla. | PV | 75 |
| Fotowatio Renewable Ventures | | Tucson Electric Power | Tucson, Ariz. | PV | 25 |
| Fotowatio Renewable Ventures | | U.S. Air Force | Lancaster, Calif. | PV | 500 |
| Fotowatio Renewable Ventures | Austin Energy PV Project | Austin Energy | Austin, Texas | PV | 30 |
| Fotowatio Renewable Ventures | | NV Energy | Apex, Nev. | PV | 26 |
| Green Energy Capital Partners | Pennsylvania Solar Park | | Nesquehoning, Pa. | PV | 20 |
| GWS Technologies Inc. | Florence Solar Farm | | Florence, Ariz. | PV | 6 |
| Iberdrola Renewables Inc. | | Salt River Project | near Phoenix, Ariz. | PV | 20 |
| J. Fletcher Creamer & Son | Silver Lake Solar Farm | PSE&G | Edison, NJ | PV | 2 |
| Jemez Pueblo | | | Jemez Pueblo, N.M. | PV | 4 |
| Lincoln Renewables | | | Alamosa County, Colo. | PV | 37 |
| LS Power | Centinela Solar Energy | San Diego Gas & Electric | Imperial Valley, Calif. | PV | 130 |
| LS Power | Dover Sun Park | Delmarva Power | Dover, Del. | PV | 10 |
| Needle Mountain Power LLC | Sterling Project | | Lake Havasu City, Calif. | PV | 1,200 |
| New York Power Authority | SUNY Buffalo | New York Power Authority | Buffalo, N.Y. | PV | 7 |
| NRG Energy | | Pacific Gas & Electric | Lancaster, Calif. | PV | 66 |
| OPDE U.S. Corporation | | | West Sacramento, Calif. | PV | 20 |
| Western Massachusetts Electric Co. | William Stanley Business Park | Western Massachusetts Electric Co. | Pittsfield, Mass. | PV | 2 |

Continued on next page

## Projects Under Development: Photovoltaics (excluding Concentrating Photovoltaic)

| Developer | Project Name | Electricity Purchaser | Location | Technology | Capacity (MW) |
|---|---|---|---|---|---|
| Nextlight Renewable Power | Agua Caliente | Pacific Gas & Electric | Yuma County, Ariz. | PV | 290 |
| Nextlight Renewable Power | AV Solar Ranch One | Pacific Gas & Electric | Antelope Valley, Nev. | PV | 230 |
| Nextlight Renewable Power | Boulder City Solar | | Boulder City, Nev. | PV | 150 |
| Nextlight Renewable Power | Silver State North Solar Project | NV Energy | Primm, Nev. | PV | 140 |
| Nextlight Renewable Power | Silver State South Solar Project | NV Energy | Primm, Nev. | PV | 267 |
| NRG Energy Inc. | Wharton Generating Station | City of Houston | Houstion, Texas | PV | 10 |
| Pacific Blue Energy Corporation | | | Coconino County, Ariz. | PV | 20 |
| Pacific Solar Investments Inc. | Amargosa North Solar Project | NV Energy | Nye County, Nev. | PV | 150 |
| PowerWorks | Golden Hills | | Alameda County, Calif. | PV | 70 |
| PowerWorks | Kauai Solar Project | Kauai Island Coop | Kauai, Hawaii | PV | 10 |
| PPL Renewable Energy | Warren County Project | PPL Renewable Energy | Warren County, N.J. | PV | 5 |
| Recurrent Energy | | Southern California Edison | Kern County, Calif. | PV | 6 |
| Recurrent Energy | | Southern California Edison | Kern County, Calif. | PV | 22 |
| Recurrent Energy | | Southern California Edison | San Bernardino County, Calif. | PV | 22 |
| Recurrent Energy | San Francisco Sunset Reservoir Solar Project | San Francisco Public Utilities Commission | San Francisco, Calif. | PV | 5 |
| Sithe Global Power | Toquop Energy Project | | Mesquite, Nev. | PV | 100 |
| Solar Energy Initiatives Inc. | West Texas Solar Park | | West Texas | PV | 300 |
| Solar Energy Initiatives Inc. | California Solar Park | | Calif. | PV | 100 |
| Solargen Energy | | | San Benito County, Calif. | PV | 420 |
| Solar Project Solutions | | Pacific Gas & Electric | Tulare County, Calif. | PV | 20 |
| Solar Project Solutions | | Pacific Gas & Electric | Tulare County, Calif. | PV | 20 |
| Solar Project Solutions | | Pacific Gas & Electric | Tulare County, Calif. | PV | 20 |
| Solar Project Solutions | | Pacific Gas & Electric | Kings County, Calif. | PV | 20 |
| Solar Project Solutions | | Pacific Gas & Electric | Tulare County, Calif. | PV | 50 |
| Solar Power, Inc. | | | Rio Linda, Calif. | PV | 10 |
| Solon Corporation | PG&E Solon Project | Pacific Gas & Electric | Calif. | PV | 2 |
| SunEdison | | California State Universities | Calif. | Thin-film PV | 8 |
| SunEdison | Trenton Solar Farm | PSE&G | Trenton, N.J. | PV | 1 |
| SunEdison | | Xcel Energy | Lea & Eddy Counties, N.M. | PV | 50 |
| SunPower | Alamosa County Plant | Xcel Energy | Alamosa, Colo. | PV | 17 |
| SunPower | California Valley Solar Ranch | Pacific Gas & Electric | San Luis Obispo County, Calif. | PV | 250 |
| SunWorks Solar Systems | | | Central Fla. | PV | 2 |
| Teanaway Solar Reserve LLC | Teanaway Solar Reserve | | Cle Elum, Wash. | PV | 75 |
| Tucson Electric Power | Bright Tucson | Tucson Electric Power | Tucson, Ariz. | PV | 2 |
| Vidler Water Co. | Fish Springs Solar Ranch | | Washoe County, Nev. | PV | 100 |
| Westside Holdings | Westlands Solar Park | | San Joaquin Valley, Calif. | PV | 5,000 |
| Westwood Renewables | | Dairyland Power Cooperative | Olmsted County, Minn. | PV | 2 |
| Western Massachusetts Electric Co. | Silver Lake Boulevard project | Western Massachusetts Electric Co. | Pittsfield, Mass. | PV | 2 |
| | Springerville Generating Station Solar System (expansion) | Tuscon Electric Power | Springerville, Ariz. | Thin-film PV | 2 |
| | | Los Angeles Department of Water & Power | Owens Lake, Calif. | PV | 10 |
| | | | | ***Photovoltaics Total (MW)*** | **12,053** |

**ATTACHMENT 3**

GOTHAM research group

# MEMORANDUM

**TO:** Interested Parties

**FROM:** Gotham Research Group

**SUBJECT:** Summary of National Survey Findings

**DATE:** March 18, 2010

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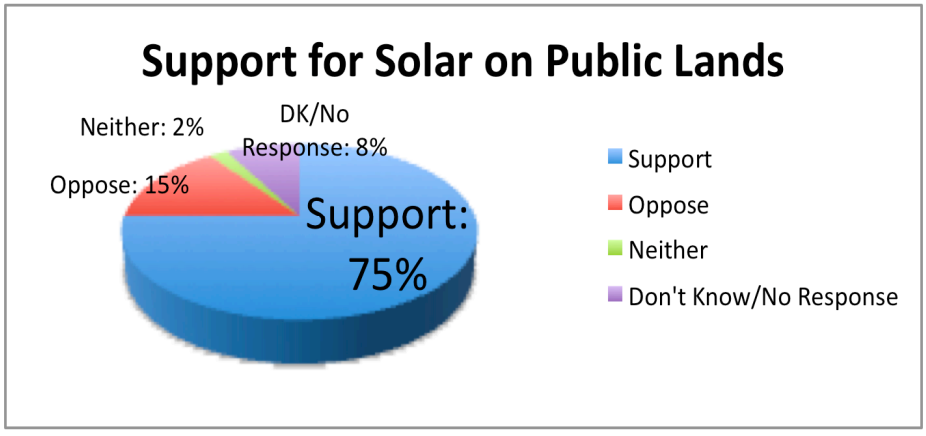
Below are an overview and key findings from a survey of 500 U.S. adults, age 18+, conducted February 24 through February 26, 2010.

## Overview

This poll examined public opinion about developing utility-scale solar power projects on public lands that has not already been set aside for national parks and nature preserves in the western United States. The results indicate strong public support for utility-scale solar power development on public lands and complements earlier polling that found that 92 percent of Americans think it is important to develop and use solar energy.[1]

- **Three out four (75 percent of) Americans support developing solar energy plants on public lands**.
- **Producing solar power is the top choice as the best use of this land** (38 percent).
- **Americans choose solar energy farms** (22 percent) and wind energy farms (22 percent) as the **top energy sources for the U.S. government to support**.
- **The most important energy challenge facing the country today is developing energy sources while protecting the environment**, according to respondents (26 percent).




[1] http://www.seia.org/cs/news_detail?pressrelease.id=638

## Key Findings

***Strong Support for Solar Energy***

- A recent national telephone survey of U.S. adults demonstrates that there is broad support for utility-scale solar initiatives, particularly developing solar energy plants on public lands in the western United States.

- 75 percent of Americans say they support developing solar energy plants on federal land not being set aside for national parks and nature preserves (39 percent "strongly support"; 36 percent "somewhat support"). Self-identified Democrats and Republicans report similar levels of support (74 percent and 73 percent respectively), while Independents are most supportive of solar energy plants (79 percent),

Summary Table
*See appendix for full question wording.*

| *Please tell me whether you support or oppose developing solar energy plants on this federal land?* | Total Sample | Democrats | Independents | Republicans |
|---|---|---|---|---|
| NET: Support | 75% | 74% | 79% | 73% |
| NET: Oppose | 15% | 17% | 10% | 16% |
| Strongly support | 39% | 44% | 37% | 33% |
| Somewhat support | 36% | 30% | 42% | 41% |
| Somewhat oppose | 6% | 6% | 5% | 6% |
| Strongly oppose | 9% | 11% | 5% | 10% |

- In addition, when asked to weigh several options for how to use this federal land, "producing solar power" is Americans' clear top choice. Democrats are most supportive of developing solar power on federal land, followed by Independents. Among Republicans, solar power is rated in second place after "drilling for oil."

Summary Table
*See appendix for full question wording.*

| *Which one of the following do you think is the best use of this federal land?* | Total Sample | Democrats | Independents | Republicans |
|---|---|---|---|---|
| Producing solar power | 38% | 45% | 38% | 27% |
| Drilling for oil | 18% | 9% | 18% | 31% |
| Drilling for natural gas | 18% | 18% | 18% | 21% |
| Grazing cattle | 9% | 13% | 7% | 5% |
| Mining for minerals and ores | 3% | 3% | 4% | 3% |
| Riding off-road vehicles | 1% | * | 1% | 1% |

***Energy Sources: Top Priority***

- When asked which energy source should be the top priority for the U.S. government to support, solar energy farms and wind energy farms are tied as the top response. Democrats and Independents are most supportive of solar energy farms, while Republicans clearly prefer either wind energy farms or nuclear plants.

Summary Table
*See appendix for full question wording.*

| *Which one do you think should be the top priority for the U.S. government to support?* | Total Sample | Democrats | Independents | Republicans |
|---|---|---|---|---|
| Solar energy farms | 22% | 27% | 26% | 13% |
| Wind energy farms | 22% | 21% | 22% | 22% |
| Natural gas plants | 16% | 22% | 11% | 14% |
| Nuclear plants | 16% | 11% | 22% | 21% |
| Oil wells | 11% | 8% | 3% | 19% |
| Coal plants | 4% | 4% | 5% | 4% |

***Most Important Energy Challenge***

- Americans report that the most important energy challenge facing the country today is "developing energy sources while protecting the environment" (26 percent), while "cutting the cost of utility bills" (19 percent) and "developing clean energy sources" (19 percent) represent a second tier of concern. Republicans are most likely to rate "developing energy sources while protecting the environment" as the most important challenge (33 percent), compared to 23 percent of Democrats and 21 percent of Independents.

Summary Table
*See appendix for full question wording.*

| *Which of the following is the most important energy challenge facing the country today?* | Total Sample | Democrats | Independents | Republicans |
|---|---|---|---|---|
| Developing energy sources while protecting the environment | 26% | 23% | 21% | 33% |
| Cutting the cost of utility bills | 19% | 17% | 21% | 21% |
| Developing clean energy sources | 19% | 23% | 17% | 18% |
| Being more energy efficient | 15% | 13% | 14% | 18% |
| Addressing climate change/global warming | 9% | 12% | 10% | 4% |

## Methodological Disclosure

The findings described in this release are based on a survey conducted on behalf of the Solar Energy Industries Association (SEIA), the national trade association of the solar energy industry. The survey was conducted from February 24 through February 26, 2010 among a representative sample of 500 U.S. adults, age 18+. The margin of error on the total sample of 500 is +/- 4.4 percent. The study was conducted by telephone and respondents were drawn from a random digit dial (RDD) sample, which gives every household an equal chance of being called. All respondents were screened to ensure that they are currently 18 years or older. The overall sample results were weighted demographically and geographically based on the Current Population Survey of the U.S. Bureau of the Census. All the numbers are presented as percentages and, due to rounding, may not add up to 100 percent.

## Appendix: Full Questionnaire & Total Sample Data

Below is the full questionnaire showing the order in which questions were read to respondents of the survey.

1. Which of the following is the most important energy challenge facing the country today? (READ AND ROTATE; ACCEPT ONE ANSWER) [IF "ALL", ASK:] If you absolutely had to choose, which one would you say should be the top priority?

| | Total Sample (n=500) |
|---|---|
| Developing energy sources while protecting the environment | 26% |
| Cutting the cost of utility bills | 19% |
| Developing clean energy sources | 19% |
| Being more energy efficient | 15% |
| Addressing climate change/global warming | 9% |
| All of the above | 7% |
| None of the above | 2% |
| Other | 1% |
| Don't know/Refused | 1% |

2. Now I'm going to read you a list of energy sources. Which one do you think should be the top priority for the U.S. government to support? (READ AND ROTATE; ACCEPT ONE ANSWER) [IF "ALL", ASK:] If you absolutely had to choose, which one would you say should be the top priority?

| | Total Sample (n=500) |
|---|---|
| Solar energy farms | 22% |
| Wind energy farms | 22% |
| Natural gas plants | 16% |
| Nuclear plants | 16% |
| Oil wells | 11% |
| Coal plants | 4% |
| All of the above | 3% |
| None of the above | 1% |
| Other | 1% |

| | |
|---|---|
| Don't know/Refused | 4% |

[READ TO ALL RESPONDENTS]

As you may know, the land owned by the federal government in the western United States is used for a variety of purposes. There's been discussion about what to do with some of the land – specifically the land that has NOT been set aside for national parks and nature preserves.

[ROTATE Q.3-4]

3. Please tell me whether you support or oppose developing solar energy plants on this federal land? [IF SUPPORT/OPPOSE, ASK:] Do you strongly support/oppose or somewhat support/oppose?

| | Total Sample (n=500) |
|---|---|
| Strongly support | 39% |
| Somewhat support | 36% |
| Somewhat oppose | 6% |
| Strongly oppose | 9% |
| NET: Support | 75% |
| NET: Oppose | 15% |
| Neither | 2% |
| Don't know/Refused | 8% |

4. Which one of the following do you think is the best use of this federal land? (READ AND ROTATE; ACCEPT ONE ANSWER) [IF "ALL", ASK:] If you absolutely had to choose, which one would you say is the best use of this land?

| | Total Sample (n=500) |
|---|---|
| Producing solar power | 38% |
| Drilling for natural gas | 18% |
| Drilling for oil | 18% |
| Grazing cattle | 9% |
| Mining for minerals and ores | 3% |
| Riding off-road vehicles | 1% |
| All of the above | 1% |
| None of the above | 3% |
| Other | 2% |
| Don't know/Refused | 7% |