TESTIMONY OF

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and
SENIOR COUNSEL, PERKINS COIE LLP

BEFORE THE

HOUSE SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

LEGISLATIVE HEARING ON

H.R. 596, H.R. 1363, and H.R. 2004

JULY 29, 2014

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Mr. Chairman, Ranking Member Holt, and Members of the Subcommittee,

Thank you for the opportunity to provide testimony on potential improvements to solar energy development on public lands. I am Arthur Haubenstock, and I serve as Chair of the Utility-Scale Solar Power Division of the Solar Energy Industries Association (SEIA). I am also a Senior Counsel with Perkins Coie, LLP, and my clients include companies developing solar projects on both federal and private lands. I am testifying on behalf of SEIA's 1,000 member companies and the nearly 143,000 American citizens employed by the solar industry. SEIA represents the entire solar industry, encompassing all major solar technologies (photovoltaics, concentrating solar power and solar water heating[1]) and all points in the value chain, including financiers, project developers, component manufacturers and solar installers. Before I begin my testimony, let me thank Chairman Lamborn and Ranking Member Holt for their leadership and support of solar energy. We are grateful that the Subcommittee recognizes the increasingly important contributions to our energy supply, as well as the role that our public lands play in achieving the promise of solar energy for the benefit of the nation.

I. Introduction

The Solar Energy Industries Association is celebrating its 40th year as the national trade association of the U.S. solar energy industry, having been established in 1974. Through advocacy and education, SEIA and its 1,000 member companies are building a strong solar industry to power America. As the voice of the industry, SEIA works to make solar a mainstream, significant energy source by expanding markets, removing market barriers, strengthening the industry and educating the public on the benefits of solar energy.

Our nation is graced with some of the world's best solar resources, in both the quality and quantity of the sunlight we receive as well as the proximity of our best solar areas to some of the country's largest cities and industries. While excellent opportunities for solar deployment exist throughout the country, much of the best solar resources are in the Southwest, and on public lands.

Our exceptionally rich solar resources have much to offer the nation, its economy and its environment. Solar can contribute substantially to a clean, sustainable domestic energy supply to power growth and prosperity for many decades to come. Its prospects for doing so depend greatly on whether we properly foster this still young, but rapidly maturing, industry. Stable,

[1] For more information on each of these solar technologies, please see SEIA, "Solar Technology," *available at* http://www.seia.org/policy/solar-technology.

long-term policies, including tax policies as well as improved permitting processes and access to the nation's best solar resources, are the keystones to realizing solar's promise for the nation.

H.R. 596, the *Public Lands Renewable Energy Development Act of 2013,* currently before the House, demonstrates the remarkable, bipartisan recognition of the tremendous value that solar offers the nation and the commitment to make its benefits available to all Americans. This bill reflects the need to craft policies today that will provide for a clean energy future for tomorrow, one in which our energy comes from renewable, domestic sources. While we have some concerns with the details of H.R. 596, SEIA looks forward to working with the sponsors to address our concerns. We are pleased to have this opportunity to address them and other factors needed to maintain the U.S. as a worldwide solar leader.

II. The U.S. Solar Industry: Recent Highlights & Future Prospects

In recent years, America's solar industry has come a long way in converting its solar resources to the electrical energy our economy needs to thrive. Solar energy is a young industry, but it is growing fast. In the first quarter of this year, solar comprised 74% of all of the new electric capacity in the U.S.[2] The vast majority of this new capacity, over 75%, came from utility-scale solar power plants, both photovoltaic (PV) and concentrating solar power (CSP), which collectively added approximately 1,260 MWac to the energy supply.[3] Solar capacity in the U.S. now exceeds 12,820 MWac,[4] the equivalent of approximately six nuclear power plants,[5] and enough to power 3 million homes.[6] The following graph illustrates solar's remarkable growth since 2000, including anticipated installations this year:

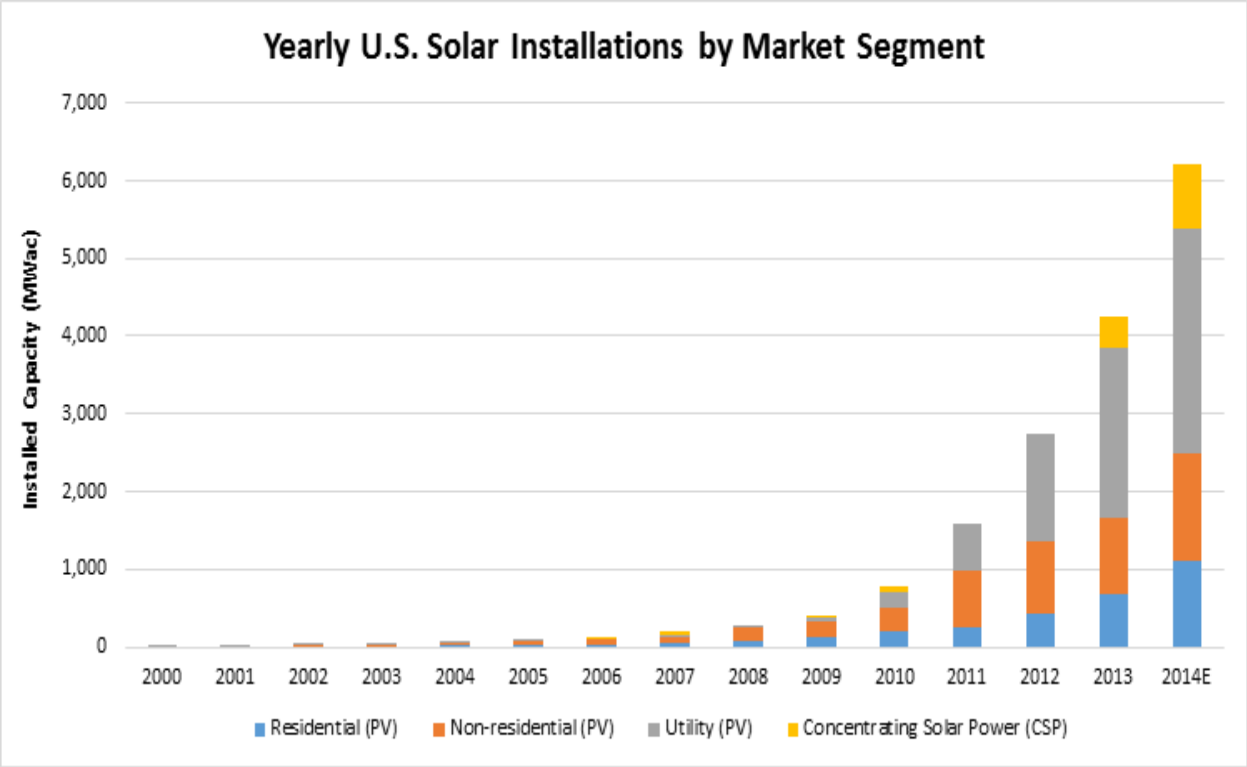
[2]SEIA, "Solar Energy Facts: Q1 2014" (June 16, 2014), a copy of which is included as Attachment 3.

[3] Id.; note that an average 85% conversion factor from DC to AC ratings was applied to reported PV statistics (using 2013 estimates from the National Renewable Energy Laboratory (NREL); see Ong et al, "Land-Use Requirements for Solar Power Plants in the United States" at p. 5 (June 2013)(hereinafter "NREL Land Use Requirements"), *available at* http://www.nrel.gov/docs/fy13osti/56290.pdf).

[4]Id. (see fn.3 re: conversion factor for PV).

[5] The Duane Arnold Energy Center, for example, has a capacity of 1,912 MW; see U.S. Nuclear Regulatory Commission, "Duane Arnold Energy Center," *available at* http://www.nrc.gov/info-finder/reactor/duan.html .

[6] SEIA, "Solar Energy Facts: Q1 2014."



This phenomenal growth is the result of private investment, technological innovation, a maturing industry and smart federal and state policies. The federal government has received a strong return on its investment of public dollars, with benefits to our economy that far exceed their costs.

Solar is an energy source available in every U.S. Congressional district. Although Germany's solar resource is the equivalent of Alaska's, which has comparatively less solar potential than most other States, Germany continues to lead the world in solar installations—with a cumulative 35.7 GWp installed through 2013.[7] In June 2014, for the first time, solar production met over half of Germany's peak demand.[8] The United States, with its far better solar resources, could easily become the world leader.

Although solar is growing quickly, the nation has just begun to tap into its solar resources. Solar's potential to serve the nation is far greater than its remarkable success to date. Solar

[7] German Solar Industry Association, "Statistic Data on the German Solar Power (Photovoltaic) Industry" (April 2014), *available at* http://www.solarwirtschaft.de/fileadmin/media/pdf/2013_2_BSW-Solar_fact_sheet_solar_power.pdf

[8] Germany Trade and Invest, "German Solar Breaks Three Records Within Two Weeks" (June 18, 2014), *available at* http://www.gtai.de/GTAI/Navigation/EN/Meta/press,did=1034630.html

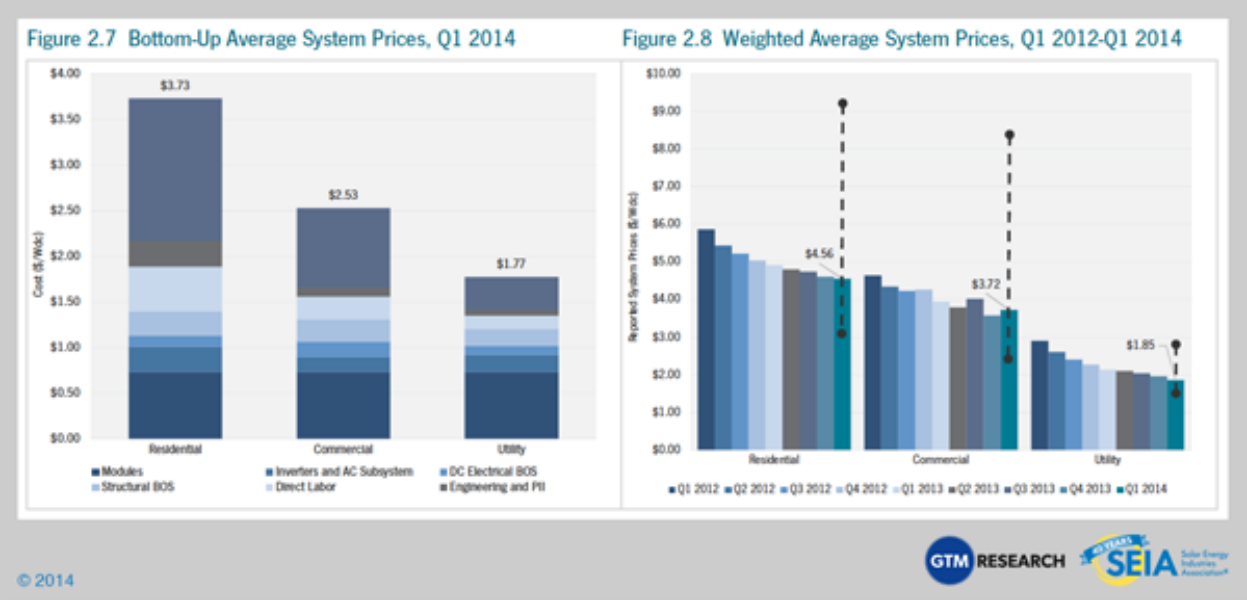
power transforms the endless, free energy we receive from the sun into electric power to drive commerce, industry and our way of life, at decreasing costs; without air, water or any other emissions; and with minimal environmental impact overall. Solar power plants can provide the nation with enough domestic, fully secure energy to meet the entire country's peak needs, using only a fraction of the solar resources available to us. The recently-released annual forecast published by the U.S. Energy Information Administration (U.S. EIA) projects that through 2040, nearly 40 GW of solar capacity will be installed in this country – approximately three times the currently installed solar capacity, and nearly half of the renewable energy expected to be deployed over the same timeframe.[9] The Bureau of Land Management (BLM) reports that designated Solar Energy Zones on federal lands alone could provide nearly 24 GW of this domestic, clean power;[10] federal lands potentially available for new zones or individual projects could provide much more. Our nation can – and should – depend on its exceptional solar resources to power its exceptional future.

As solar provides increasing amounts of energy to the country, its costs are decreasing dramatically. As shown in the charts below, PV system prices are generally decreasing in every market segment, year-over-year.[11] Solar deployment is paying great dividends to the American economy and continues to act as catalyst to drive down future costs.

[9] U.S. EIA, "EIA Projects Modest Needs for New Electric Generation Capacity" (July 16, 2014), *available at* http://www.eia.gov/todayinenergy/detail.cfm?id=17131 (summarizing U.S. EIA's projection, in its "Annual Energy Outlook 2014," that 39 GWac of the total 83 GWac of renewables in 2040 would come from solar).

[10] BLM, "Obama Administration Approves Roadmap for Utility-Scale Solar Energy Development on Public Lands" (Oct. 12, 2012), *available at* http://www.blm.gov/wo/st/en/info/newsroom/2012/october/NR_10_12_2012.html

[11] SEIA, Solar Energy Facts: Q1 2014.



The solar industry relies on an increasing labor force and a host of other domestic industries throughout the country, all of which are sharing in solar's success. With increased solar deployment, both the number of direct and indirect jobs, and companies in solar's supply chain, have grown as well. For example, the supply chain for utility-scale solar power plants (see Attachment 2) stretches across 44 states, from coast to coast.

Solar offers the nation an inexhaustible supply of energy that it can rely on to power the future, while protecting the nation's environment and conservation values. We are grateful for the Subcommittee's support for this emerging, and increasingly important, national asset.

III. Solar and Land Use: Accomplishments & Opportunities

Solar power plants are more efficient than coal in using the nation's land, over the plants' lifetimes, when the generation facility and all of the land needed for fuel are considered.[12] In a June 2013 report, the National Renewable Energy Laboratory (NREL) found that current utility-scale solar technology averages 8.9 acres per MW,[13] meaning that the entire U.S. peak demand[14] could be met with less than 0.3% of the nation's land area. America can count on a

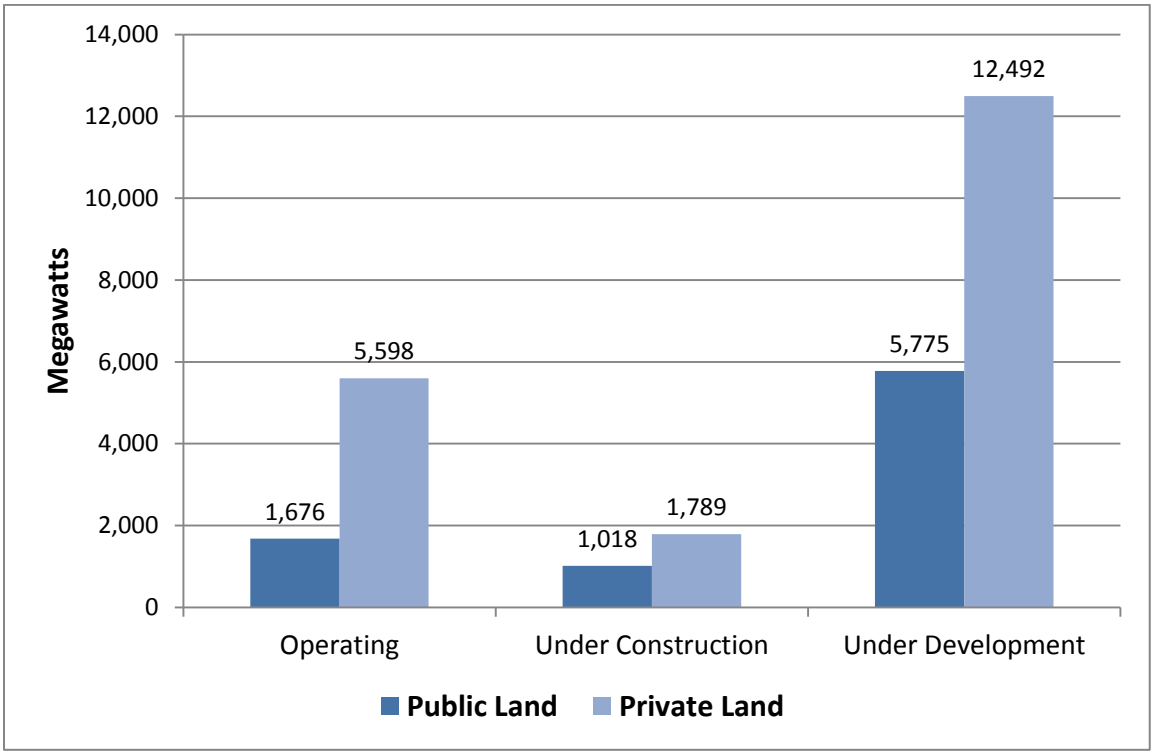
[12] Fthenakis & Kim, "Land Use and Electricity Generation: A Life-Cycle Analysis," Renewable and Sustainable Energy Reviews 13, 1465–1474, at p. 1473 (2009).

[13] NREL Land Use Requirements at p.17.

[14] Approximately 768 GW; *see* U.S. EIA, "Electric Power Annual 2012" (Dec. 2013), Table 8.6.A., "Noncoincident Peak Load by North American Electric Reliability Corporation Assessment Area, 2002 - 2012, Actual," *available at* http://www.eia.gov/electricity/annual/pdf/epa.pdf.

small fraction of its valued land to supply the energy it needs well into the future, by using the nation's best solar areas, much of which is located on federal lands, and by supporting solar's continuing innovation, which is certain to increase its efficiency and reduce its land requirements.

Depending on the size of the project, the electricity purchaser, and the goals of the developer, public lands may be attractive for solar power plant siting. The relative complexity of permitting on federal lands, and the overall expense of siting on federal lands relative to private lands, have often led solar developers elsewhere. The vast majority of utility-scale solar projects in the U.S. are built on private lands. Currently, only 23 percent of operating utility-scale solar capacity is located on public lands. Another 1,018 MW of solar power plants are under construction on public lands, comprising 36 percent of all utility-scale megawatts under construction.



In October 2012, the Department of the Interior issued the Record of Decision for the Solar Programmatic Environmental Impact Statement, launching the BLM's Solar Energy Program. The Record of Decision designated 17 areas on BLM-managed lands as priorities for solar development, totaling approximately 285,000 acres. BLM also designated approximately 19 million additional acres that could be made available for solar development through "variance" applications, or through identification of new Solar Energy Zones (two of which have since been established), although far more – nearly 80 million acres of public land – was excluded from

solar development.[15] The Solar Energy Program is intended to provide "incentives for development within" the Solar Energy Zones, including "access to existing or planned transmission."[16]

At present, the promised incentives remain a work in progress. Perhaps the most important step that the Department of the Interior could take, working with other federal and state agencies, is to adopt the most successful aspect of the "fast track" renewable energy program applied to renewable energy projects in 2010. That process demonstrated federal and state agencies could promptly and efficiently assess permit applications when working with clear and agreed-upon deadlines, adopting milestone schedules subject to both strategic and tactical oversight as well as corrective action when schedules appeared to slip, and being held accountable to the highest levels of each agency. In the absence of clear deadlines and a high level of commitment, the permitting process cannot attain that high level of effectiveness.

Another effort underway, for which BLM is to be commended, is its regional mitigation program. Piecemeal mitigation undertaken individually by each developer is inefficient, expensive, and less likely to be useful to the species intended to benefit from mitigation than comprehensive solutions. Initial regional mitigation attempts have appeared to be more expensive than other options available to renewable energy developers, and may threaten to provide a disincentive, rather than an incentive, to develop in Solar Energy Zones. Aggregating mitigation requirements should provide economies of scale that decrease costs, and care must be taken to ensure that regional mitigation efforts serve both species and development needs, perhaps by considering use of private land trusts and other innovative means of achieving regional mitigation's multiple goals.

Access to transmission linking solar energy development areas to major electricity demand centers continues to be a gating item for solar development, whether in or outside of Solar Energy Zones. Transmission access to major demand centers is one major factor that differentiates the De Tilla Gulch and Los Mogotes East Solar Energy Zones in Colorado, where BLM's first attempt to hold competitive auctions for solar development failed,[17] from the Dry Lake Solar Energy Zone in Nevada, where BLM's second competitive auction attempt appears to

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[15]U.S. Department of the Interior, "Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States ," *available at* http://www.doi.gov/news/loader.cfm?csModule=security/getfile&pageid=321960

[16]BLM, "Fact Sheet: Renewable Energy: Solar" (updated May 2014), *available at* http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy/solar_and_wind.Par.99571.File.dat/fact_Solar.pdf.

[17] Montgomery, "BLM Reloading After Colorado Solar Land Auction No-Shows," Renewable Energy World (Oct. 29, 2013), *available at* http://www.renewableenergyworld.com/rea/news/article/2013/10/blm-reloading-after-colorado-solar-land-auction-no-shows.

have been successful. Other issues undoubtedly factored into these starkly different results, such as the demand for additional renewable energy in nearby markets, but there can be no doubt that successful solar development requires prompt, reliable permitting of adequate infrastructure, and cannot be successfully developed without it.

SEIA remains engaged with the BLM on the development of the Solar Energy Program and hopeful that the promised incentives for development in Solar Energy Zones – as well as the flexibility to develop in the many prime solar resource areas outside of those zones – will become permanent features of the program.

IV. Making the Most of the Nation's Exceptional Solar Assets: Policy Priorities

As with any industry, and particularly an emerging one, long-term policy certainty is critical to solar achieving its potential. Increased investment, innovation, and deployment are needed for the solar industry to continue to reduce costs and attain its potential as one of the largest contributors to our nation's energy supply. A steady tax policy, providing comparable treatment with other renewable technologies and avoiding "cliff" dates that stop investment cold long before programs actually expire is essential. For this reason, SEIA strongly advocates adoption of a "commence construction" eligibility standard for the solar Investment Tax Credit (ITC).

The ITC has been a major contributor to the rapid growth of the solar industry. In spite of the national economic downturn, solar installations have grown by 3000 percent since the ITC took effect in 2006, a compound annual growth rate of 77 percent. As financers require substantial schedule margins to avoid risk of losing tax benefits, however, the statutory deadline for the ITC is already casting a shadow on solar growth.

To qualify for either the Section 45 Production Tax Credit (PTC) or the Section 48 ITC, all renewable energy facilities had been required to be "placed in service"[18] before a statutory deadline. The *American Tax Relief Act of 2012* (ATRA) changed the eligibility standard for certain renewable energy technologies[19] under Section 45 of the tax code, allowing projects using those technologies to qualify for the PTC, so long as the projects "commence construction" prior to the expiration of the tax credit. Notably, this legislation did not encompass solar energy, fuel cells, combined heat and power, or microturbine property. The "commence construction" modification passed in ATRA should be applied to all Section 45 and

[18] I.e., the facility was required to be complete and capable of generating power substantially equal to its nameplate capacity.

[19] These technologies include wind; open- and closed-loop biomass; geothermal; small irrigation power; municipal solid waste; hydropower; marine and hydrokinetic energy.

48 clean energy incentives, regardless of technology.

Ensuring a consistent "commence construction" trigger for clean energy tax incentives is especially urgent for utility-scale solar projects. Analysis of the dozen largest solar projects expected to be online by 2016 reveals the median time from the early steps of development to commencement of construction is just over three years, and the median time from development to commercial operation is nearly six years. A "commence construction" standard would ease timing pressures on developers by two years or more, pressures that are building now as the ITC deadline looms at the end of 2016. This tax policy improvement would certainly drive the installation of an additional solar capacity that might otherwise not occur.

The *Public Lands Renewable Energy Development Act of 2013*

Stable, appropriate policies encouraging solar deployment on federal lands, such as aspects of the *Public Lands Renewable Energy Development Act of 2013* and, if properly implemented, the BLM's Solar Energy Program, are also needed to ensure the nation is making the most of its solar prospects. The commitments and compromises embodied in the Solar Programmatic Environmental Impact Statement process, including enhancing project development prospects in Solar Energy Zones as well as access to other appropriate development areas (referred to as "variance" lands), must be carried through if the nation is to receive the full benefit of its outstanding public solar resources. Permitting improvements for both solar projects and the transmission needed to bring its power to American homes and businesses must be institutionalized if we are to realize solar's potential on public lands.

First, we support the following elements of H.R. 596:

- **Revenue sharing with states and local government**. While solar development provides many net benefits to the communities hosting solar plants, and provides a substantial net environmental benefit overall, no development is without any impact. We agree that a portion of the revenues from solar development on federal lands should be directed to the states and local communities hosting solar power plants, which will help ensure that all fully share in the benefits solar development brings to the nation. We applaud efforts to fund increasing conservation and recreation needs on federal lands, but caution against burdening renewable energy with the costs of doing so, particularly in isolation. To the extent that monies from the solar industry are paid into a conservation fund, care must be taken to account for those contributions when determining the mitigation requirements for solar power plants.

- **Improved Permitting Processes.** With appropriate funding and prioritization, the "fast track" projects demonstrated that permitting processes can be timely and effective. High-level interagency coordination across federal and state governments, milestone schedules with clear deadlines, corrective action when necessary, high-level accountability and transparency are all necessary elements to permitting success. Focusing funding to institutionalize improved permitting processes is not only appropriate; it is a good investment for improved returns for the public.

We remain concerned about the certain elements of the *Public Lands Renewable Energy Development Act of 2013*, including the following aspects, and look forward to working with the sponsors to tailor these provisions to better ensure solar benefits to the nation:

- **Competitive Bidding is Counterproductive for an Emerging Industry.** Competitive bidding works best with fully mature industries, where multiple well-established companies can drive costs down by making existing practices more efficient, allowing some of the benefits of those efficiencies to be shared with the landowners- in this case, the federal government. Competitive bidding is not well-suited to an early-stage industry like utility-scale solar, as it encourages incumbent technologies and speculators and discourages the innovation that could ultimately reduce costs for energy customers, increase solar production from federal lands while decreasing land requirements, and provide far greater benefit to the public than could be realized by competitive bidding revenues. Competitive bidding would most likely increase the costs of developing utility-scale solar projects on public lands, and thereby decrease opportunities for innovation that will help make the most of the public lands that are used for renewable energy. Combined with high rental rates, bonds, and other costs, some developers that might have pursued projects on public lands will pursue projects on private lands or not at all.

  Recent experience with competitive bidding could not be more varied, with one experiment in Colorado yielding no bidders and a second, in Nevada, yielding apparent success. If competitive bidding is to be pursued, the pilot project approach in the bill is essential to determine whether it can truly work on a sustainable basis, and if so, what factors lead to success or failure. It is essential that any pilot program is not overly prescriptive, allowing the BLM the flexibility to build on success and eliminate factors that deter from it, based on its own analysis as well as feedback from the solar industry. Most importantly, BLM should allow itself the flexibility to continue its current solar permitting regime while any competitive bidding program is evaluated. If the pilot project is considered unsuccessful, BLM

should retain the ability to reject the use of competitive bidding and to rely on technical and financial criteria to decide among competing applications.

- **Readjustment of Lease Terms Introduces Unfinanceable Risk.** The proposal to open lease terms for renegotiation 15 years into a 25-year lease is simply not financeable. Financers need certainty of sufficient revenues throughout the term of debt financing to ensure repayment. The potential that increased lease costs could eat into revenues by unknown amounts would create unconstrained risk. To ensure financeability of solar power plants and avoid unnecessary risk, which increases costs to electricity consumers, lease terms should remain consistent for the duration of the lease (typically 30 years for a solar right-of-way, which is commensurate with long-duration power purchase agreements).

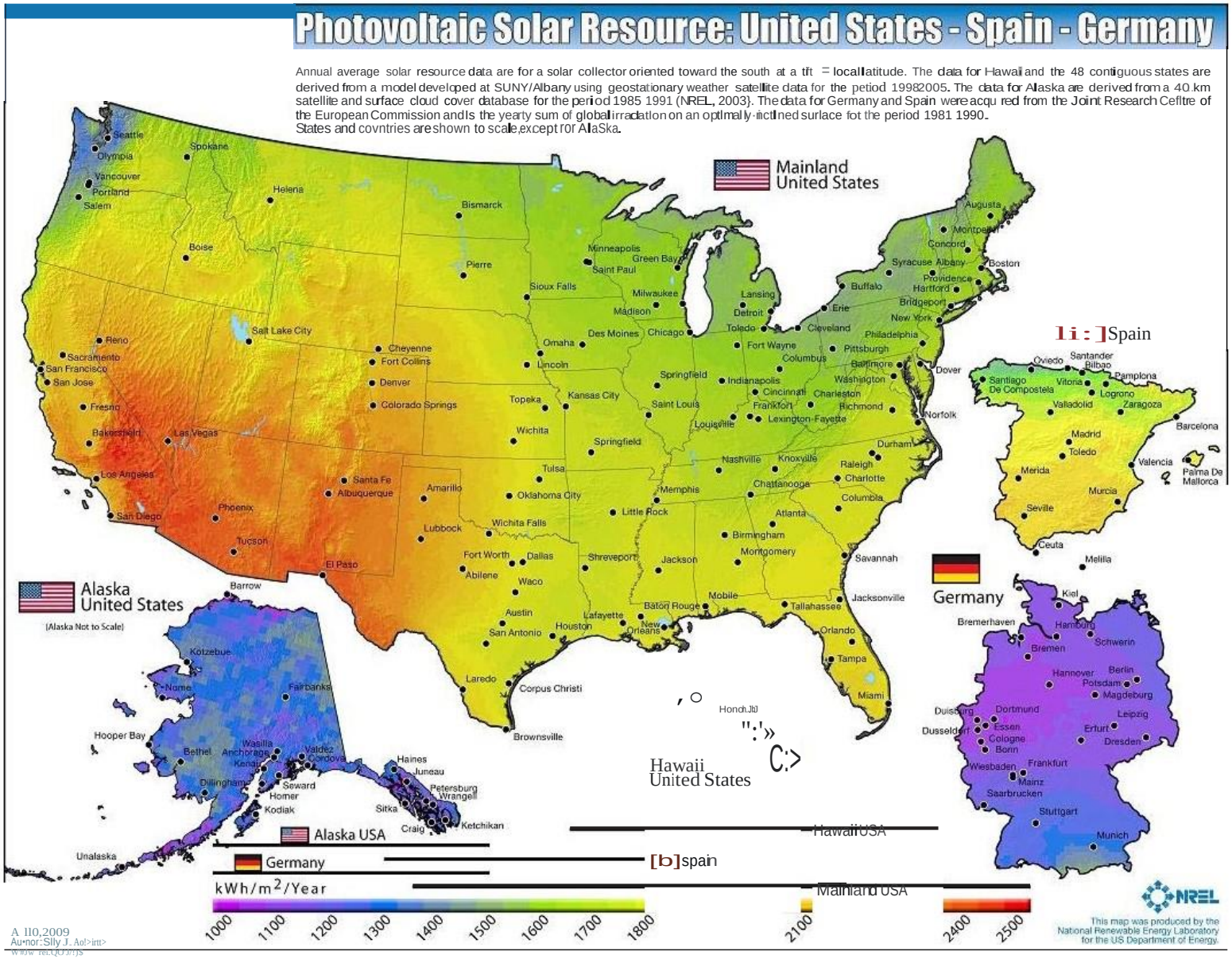
- **Royalties payments.** No royalty payments should be required, regardless of whether competitive bidding is adopted. Solar energy generation does not result in the depletion of the resource, which is the economic rationale for imposing a royalty. Increased solar production from federal lands should be incentivized, not penalized. Royalties charged on an output basis, particularly using a flat percentage, decreases the incremental value to solar developers of maximizing solar generation per acre. Existing rental values for federal lands have already contributed to make those lands less favorable than private lands, and switching to a royalty system could further reduce solar production from federal lands and ultimately provide less, not more, solar revenue for the federal government.

IV. Conclusion

Thank you once again for inviting SEIA to submit this testimony. SEIA is grateful for the tremendous support that solar has across the nation, which is reflected in the great interest and extensive efforts of this Subcommittee. We look forward to working with the Subcommittee to establish the long-term, stable policies needed to make the most of America's exceptional solar assets, delivering solar's benefits to the nation in the form of large quantities of cost-effective, clean and sustainable power, growing numbers of jobs throughout the country, and outstanding economic opportunity.

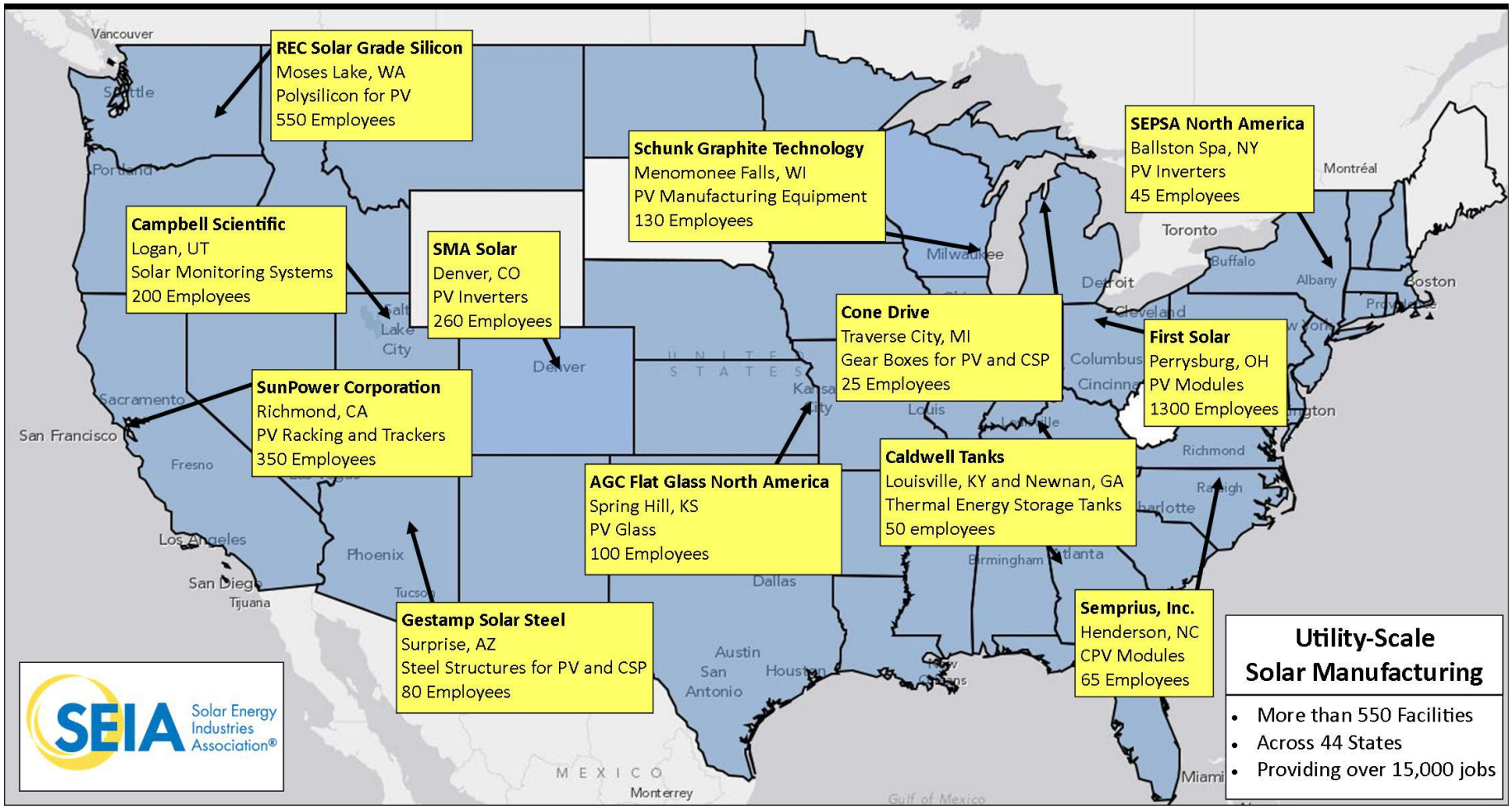
ATTACHMENT 1

MAP OF U.S. SOLAR RESOURCES COMPARED TO GERMANY AND SPAIN



ATTACHMENT 2

Utility-Scale Solar Manufacturing: A Coast-to-Coast Supply Chain



ATTACHMENT 3

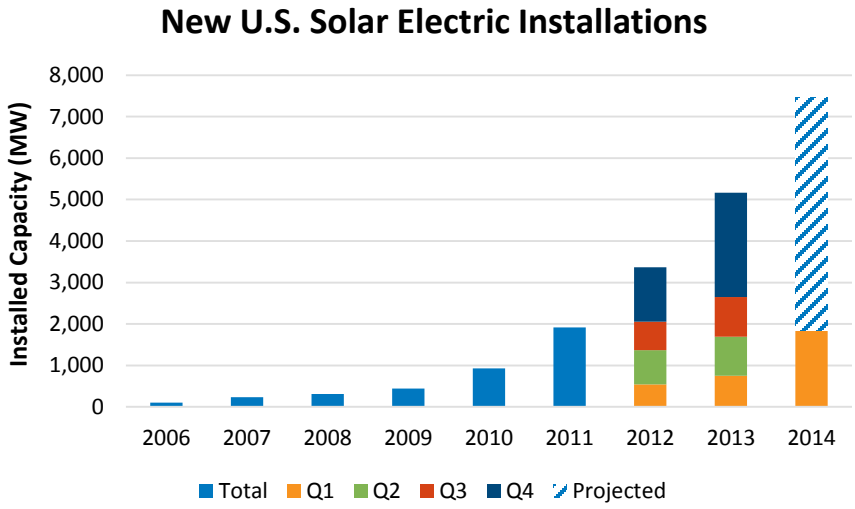
SOLAR ENERGY FACTS: Q1 2014

U.S. SOLAR MARKET INSTALLS 74% OF ALL NEW ELECTRIC CAPACITY IN Q1

The solar industry picked up in 2014 where it left off in 2013, installing 1,330 MW of photovoltaics (PV) in the first quarter to grow 79% over Q1 of last year. The concentrating solar power (CSP) market enjoyed its largest quarter on record, with installations totaling 517 MW. In total, the solar industry accounted for 74% of all new electric capacity added to the grid in Q1. The growth was led primarily by the utility sector, which installed nearly 873 MW of PV to more than double the amount of utility capacity installed in Q1 of 2013. (All data from SEIA/GTM Research "U.S. Solar Market Insight: Q1 2014" unless otherwise noted.)

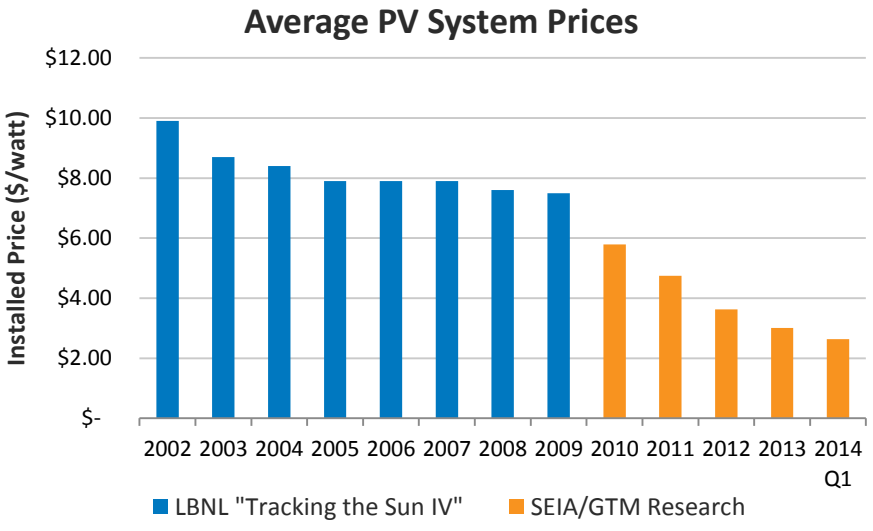
Installations Continue To Boom

- There are now 14,800 MW of cumulative solar electric capacity operating in the U.S., enough to power more than 3 million average American homes.
- There are now over 480,000 solar installations in the U.S. In 2014, a new solar installation is expected to come online every 2.5 minutes.
- The utility market led the charge again with 873 MW of PV and 517 MW of CSP installed in Q1 2014.



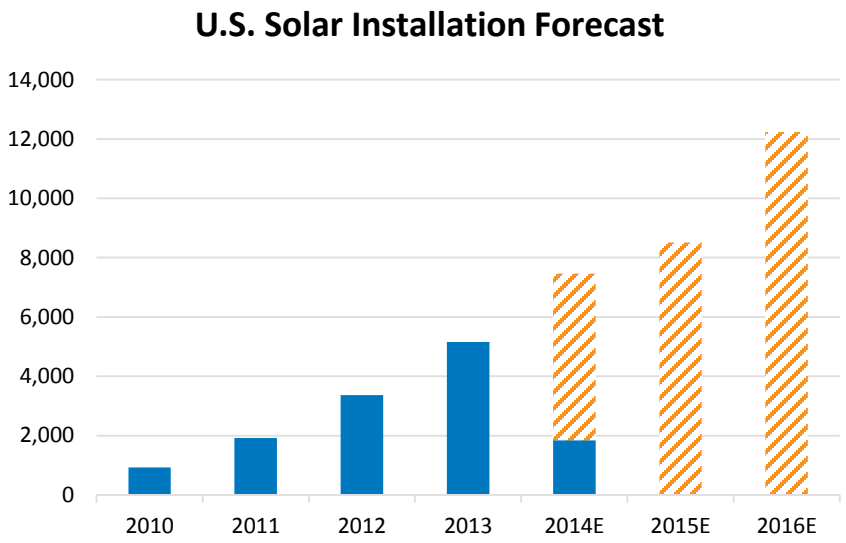
Solar More Affordable Than Ever

- Year-over-year, the national average PV installed system price declined by 22% to $2.64/W in Q1.
- Since the beginning of 2011, the average price of a PV panel has dropped by 59%.
- While these price declines are beneficial for solar end-consumers, the rapid fall in prices, due in part to a global oversupply situation, has put a significant strain on manufacturers.

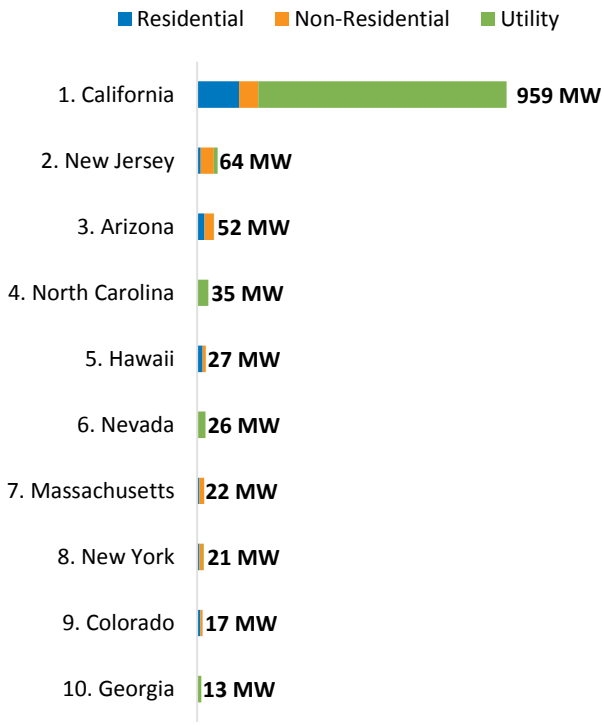


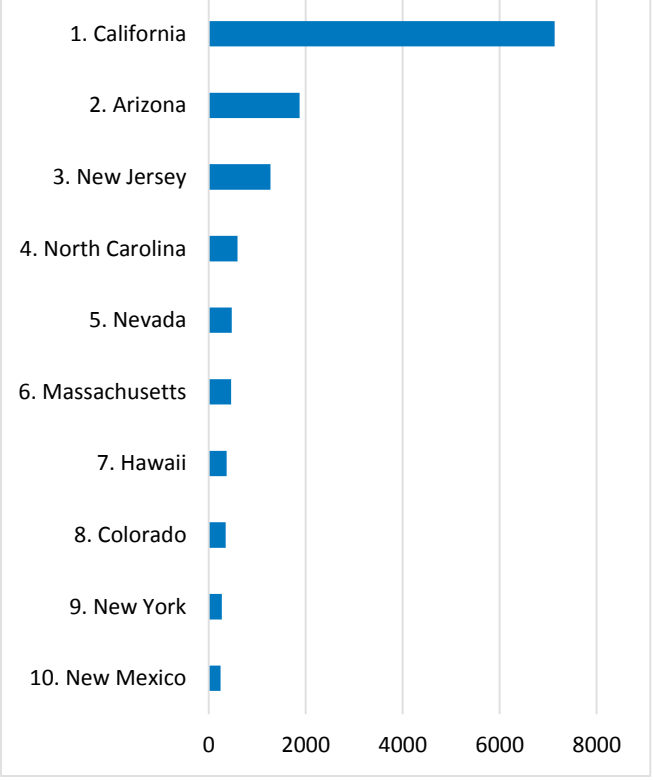
Record Growth to Continue

- Over 6,600 MW of PV is forecasted to come online in 2014, representing 39% growth over 2013's record installation levels.
- 2014 will be a record year for CSP as 857 MW is expected to be commissioned by years end.
- Together, the new solar electric capacity projected to be added in 2014 will generate enough clean energy to power over 1.5 million average American homes.



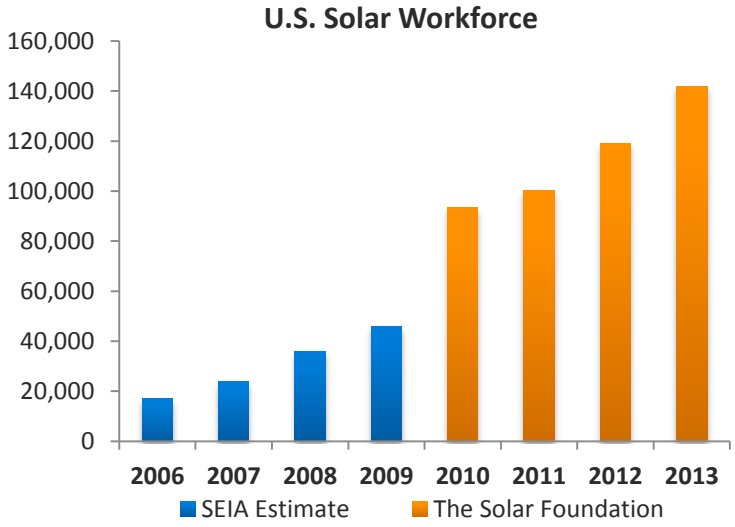
State Rankings

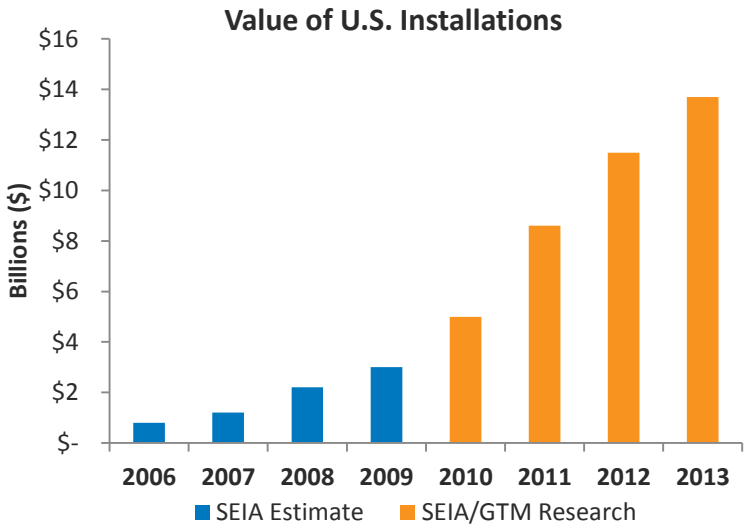


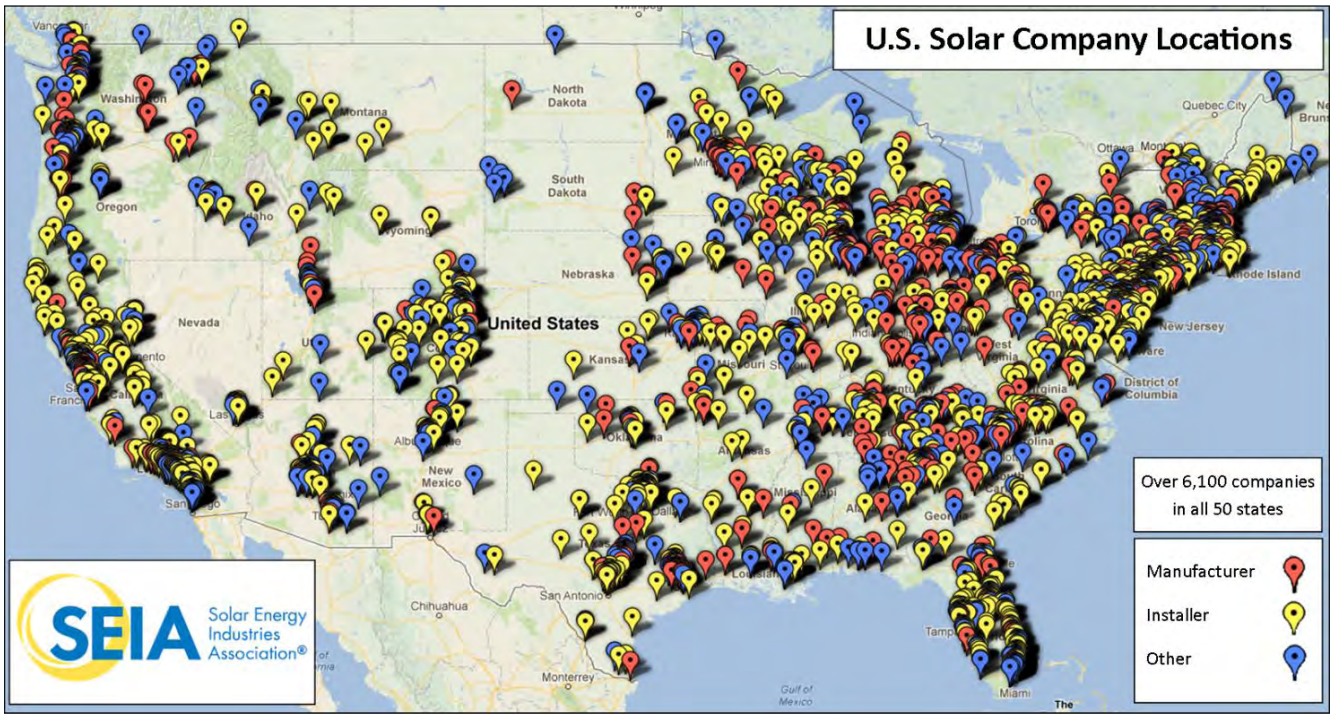


Solar Is an Economic Engine

As the solar industry grows, so does its benefit to the economy. There are now nearly143,000 solar workers in the U.S., a nearly 20% increase over employment totals in 2012.[1] These workers are employed at 6,100 businesses in every state. The increasing value of projects has injected life into the U.S. economy as well. In 2013, solar installations were valued at $13.7 billion, compared to $11.5 billion in 2012 and $8.6 billion in 2011.







[1]The Solar Foundation "National Solar Jobs Census 2013"

Established in 1974, the Solar Energy Industries Association® is the national trade association of the U.S. solar energy industry. Through advocacy and education, SEIA® and its 1,000 member companies are building a strong solar industry to power America. As the voice of the industry, SEIA works 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. www.seia.org