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BEFORE THE ARIZONA CORPORATION

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COMMISSIONERS

**KRISTIN K. MAYES, Chairman**  
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Arizona Corporation Commission  
**DOCKETED**

SEP 30 2009

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IN THE MATTER OF THE APPLICATION OF )  
SOLARCITY FOR A DETERMINATION THAT ) DOCKET NO. E-20690A-09-0346  
WHEN IT PROVIDES SOLAR SERVICE TO )  
ARIZONA SCHOOLS, GOVERNMENTS, AND ) NOTICE OF FILING OF PREPARED  
NON-PROFIT ENTITIES IT IS NOT ACTING AS ) DIRECT TESTIMONY ON BEHALF  
A PUBLIC SERVICE CORPORATION ) OF SUNPOWER CORPORATION  
PURSUANT TO ART. 15, SECTION 2 OF THE )  
ARIZONA CONSTITUTION )

Enclosed for filing in the above-captioned and above-docketed proceeding on behalf of SunPower Corporation are the original and thirteen (13) copies of the prepared Direct Testimony of H. M. Irvin, III and Kevin Fox.

Copies of the aforesaid testimony are also being concurrently served electronically or by mail on all parties of record.

Dated this 30<sup>th</sup> day of September 2009.

Respectfully submitted,

*Lawrence V. Robertson, Jr.*

Lawrence V. Robertson, Jr.  
Attorney for SunPower Corporation

The original and thirteen (13) copies of the foregoing Notice will be filed this 30<sup>th</sup> day of September 2009 with:

Docket Control  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, Arizona 85007

A copy of the foregoing Notice will be

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**PREPARED DIRECT TESTIMONY  
OF  
SUNPOWER CORPORATION WITNESS  
H.M. IRVIN, III.  
IN  
DOCKET NO. E-20690A-09-0346**

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6 **Q.1 Please state your name, business address and position with SunPower Corporation (“SunPower”).**

7 A. 1 I am H. M. Irvin, III. My business address is 1414 Harbour Way South, Richmond,  
8 California. I serve as the Managing Director of Structured Finance for SunPower.

9  
10 **Q.2 Please describe SunPower’s business interests and activities in general.**

11 A.2 A comprehensive description of SunPower’s business interests and activities is set forth  
12 in Section II of SunPower’s August 4, 2009 Application for Leave to Intervene in this  
13 proceeding. Accordingly, and in the interest of brevity, I will not repeat that description  
14 in detail at this time, and instead will provide the following summary.

15 SunPower is a manufacturer of the world’s highest efficiency photovoltaic solar energy  
16 cells and modules.

17 We sell our cells and modules into domestic and international markets, for application in  
18 residential, commercial, governmental and utility settings.

19 Our company is capable of project development, including site acquisition, system  
20 financing, system design and engineering, equipment procurement, system construction,  
21 system commissioning and testing, long-term system maintenance and warranty  
22 fulfillment.

23 We sell our equipment (i) directly to end-users through a network of distributors and  
24 dealers, and (ii) to third-party owners who invest in large projects supported by power  
25 purchase agreements, under which these third-party owners (or investors) own the  
26 equipment for an extended period of time through an outright purchase, a partnership or a  
27 lease arrangement.

28 **Q.3 Please describe your areas of responsibility in connection with your position at SunPower.**

A.3 I procure investment capital for the solar electricity generating stations that SunPower  
builds in the United States and around the world.

In the United States, this specifically involves procuring investors who can fully utilize  
the tax benefits (IRS Section 48 “tax credits” and accelerated depreciation) that are

1 employed as public policy incentives for renewable energy installations. The solar  
2 energy investment market relies on these investors, who in turn rely on highly predictable  
3 project cash flows (in addition to the tax attributes mentioned above) to obtain their  
4 return on investment.

5 My job is negotiate binding agreements with our customers (site owners or hosts) who  
6 are interested in procuring the benefits of solar generating equipment for their business. I  
7 label this activity "origination."

8 When those negotiations are complete, I then negotiate binding agreements with the  
9 previously mentioned third-party investors who are willing to own the equipment for an  
10 extended period of time through an outright purchase, a partnership, or a lease  
11 arrangement. I label this activity "placement."

12 Typical hosts include SunPower customers such as WalMart, Toyota, Target, Lowes, the  
13 US Air Force, the San Jose Technology Museum, and more than 400 others.

14 Typical investors include Wells Fargo Bank, Morgan Stanley, General Electric, Integrys  
15 and potentially dozens of other commercial banks, investment banks, commercial finance  
16 companies, or utilities with tax equity and expertise.

17 **Q.4 Please describe the products and services that SunPower currently offers or intends  
18 to offer customers in Arizona.**

19 **A.4** In Arizona, we presently have a number of dealers who install our equipment at  
20 residential and small commercial sites.

21 We also intend to originate transactions with larger commercial and utility customers,  
22 using the third-party ownership structure previously described, so long as the regulatory  
23 and market environment in Arizona makes that feasible. I will discuss this point in more  
24 detail later in my testimony.

25 **Q.5 I notice that in your previous responses to my questions, you have referred to  
26 commercial and residential customers as being among SunPower's market  
27 prospects in Arizona. Does the Company believe that it's activities in that regard  
28 conceivably could be impacted by a Commission decision in this Track 2  
proceeding?**

Yes. Although both (i) the July 2, 2009 SolarCity Corporation ("SolarCity") Application  
and (ii) the Commission's July 22, 2009 Procedural Order in this proceeding pose the  
central question to be resolved as whether SolarCity is a "public service corporation"  
under Arizona law when it enters into Solar Service Agreements with schools, non-  
profits and governmental entities, SunPower believes (i) that the scope of the ultimate  
underlying inquiry in reality is broader; and, (ii) that the question to be resolved should  
be stated differently, at least as to entities who conduct business like SunPower.

1 **Q.6 Please be more specific as to the Company's position in that regard.**

2  
3 A.6 There are several aspects as to the Company's position, which was developed following  
4 consultation with legal counsel. First, the Company does not believe that the identity or  
5 nature of the customer (or host) will determine how the ultimate underlying inquiry is to  
6 be resolved. Thus, it does not matter if the customer (or host) is a school, non-profit,  
7 governmental, commercial or residential entity. Second, the question of whether or not  
8 SolarCity, SunPower or any other entity offering solar products and/or services is a  
9 "public service corporation" under Arizona law is not the end of the inquiry. Third, and  
10 most importantly, in the event the solar services and products of a particular provider  
11 should be found to be a "public service corporation," then the inquiry must progress to an  
12 ultimate determination of whether the circumstances surrounding the business activities  
13 of that entity are of such a nature as to require or warrant regulation by the Commission.  
14 In that regard, SunPower believes that at the end of Track 2 in this proceeding, the  
15 Commission will conclude that (i) even if SunPower and other similarly situated solar  
16 products and/or service providers might technically fit the definition of a "public service  
17 corporation" under the Arizona Constitution, (ii) the circumstances surrounding their  
18 respective business activities are such that they neither require nor warrant regulation by  
19 the Commission.

20 My testimony in this proceeding, as well as that of SunPower witness Kevin Fox, is  
21 designed to address this last point, and to provide an evidentiary record which would  
22 support a Commission decision that regulation of SunPower and others similarly situated  
23 is unnecessary and inappropriate.

24 **Q.7 Does SunPower, its customers (or hosts) or the third-party investors with whom it  
25 does business in any manner "dedicate to the public" the equipment and services  
26 which are provided?**

27 A.7 No. The equipment and services in question are customer- (or host-) specific, and are  
28 designed to meet a particular need at a particular location. Each transaction has its own  
unique requirements, attributes and benefits for the contracting parties in question. There  
is not any dedication or commitment to the general public or a general public use.

**Q.8 Does SunPower desire to serve all of the customers served by those electric utilities  
in whose service areas SunPower seeks to do business?**

A.8 Not at all. As I have previously indicated, SunPower's solar products and services are  
customer- (or host-) specific, and typically they are designed to serve only a portion of  
the customer's (or host's) needs for electric service. In that regard, many electric utility  
customers have no need or desire for the types of products and services that SunPower  
offers, or their physical and/or economic circumstances are such that our products and  
services are not feasible in their particular circumstances.

1 **Q.9 Does SunPower believe that its current and contemplated business activities in**  
2 **Arizona are of such a nature as to represent actual or potential competition with**  
3 **local electrical utilities who are regulated by the Commission?**

4 A.9 No, quite the contrary. Given the Commission's adoption of the Renewable Energy  
5 Standard Tariff ("REST") regulations, and the REST compliance obligations resulting  
6 from such adoption, SunPower believes its activities are complimentary and  
7 supplemental to the efforts of electric utilities subject to the REST regulations to satisfy  
8 and exceed their respective REST obligations. The economic reality is that there are only  
9 so many dollars available to a given electric utility to facilitate the utilization of solar  
10 energy within its service area, whether the technology be distributed generation or central  
11 station generation in nature. We believe that the supplemental provision of solar products  
12 and services by providers such as SunPower will, in effect, enable the electric utilities in  
13 question to experience broader utilization of solar technology within their respective  
14 service areas, thereby "stretching" the solar dollar and advancing the role of solar energy  
15 within the state of Arizona's energy future and lifestyle.

16 **Q.10 Please describe the manner in which SunPower's business arrangement with its**  
17 **customer (or host) interfaces with or affects the customer's (or host's) relationship**  
18 **with the local electric utility in question.**

19 A.10 The equipment SunPower sells and the systems it intends to develop and build all operate  
20 in a "grid-connected" mode, and are synchronized with grid voltage. This applies to the  
21 smallest residential installation now being installed, and to the largest proposed projects  
22 for our commercial, governmental, and utility customers.

23 SunPower solar systems do not eliminate utility customers for or relationships with the  
24 local electric utility, and can be instrumental in enabling the electric utility industry to  
25 reach state and national goals of increased renewable power generation, carbon reduction  
26 and reduced reliance on fossil fuel sources.

27 **Q.11 Please describe the criteria and procedures SunPower utilizes in evaluating requests**  
28 **for service, and in deciding when to enter into a contractual relationship with a**  
29 **customer (or host).**

30 A.11 Previously in this testimony, I used the terms "origination" and "placement" when  
31 describing the areas of responsibility associated with my position at SunPower. A  
32 reference to those terms is also appropriate in responding to this question.

33 In the "origination" phase, hosts are evaluated on several fronts. These include site  
34 adequacy, shading, orientation to due south, available space, current electricity usage,  
35 roof condition or soil conditions, ease of installation, etc. Hosts are also evaluated for  
36 their credit rating and ability to pay for our services.

1 In the "placement" phase, investors for the third-party ownership model are evaluated on  
2 the basis of their experience in the solar market, available tax capacity, and the quality of  
3 their investment team and external advisors.

4 Depending upon the results of the evaluation(s), negotiations directed towards a firm  
5 contractual relationship may or may not proceed. Not all prospective customers (or  
6 hosts) have suitable circumstances for SunPower's solar products and services.  
7 Moreover, even when negotiations commence, they do not necessarily result in a  
8 contractual relationship. In that regard, it is important to remember that SunPower  
9 competes with other providers of solar products and services, and that that competition  
10 can be quite vigorous. So, the ultimate decision as to whether or not to enter into a  
11 contractual relationship with a prospective customer (or host) or a third-party financing  
12 entity is by no means solely within the discretion of SunPower.

13 **Q.12 Does SunPower use third-party financing in connection with its business activities in  
14 other states?**

15 A.12 Yes.

16 **Q.13 If so, why and in what manner?**

17 A.13 We employ a third-party ownership model in several states, with our commercial,  
18 governmental and utility customers (or hosts).

19 In the case of governmental and other non-profit entities, a third-party ownership model  
20 allows those organizations to access the benefits of solar generating equipment at  
21 attractive rates because the third-party can utilize tax benefits that are unavailable to a  
22 non-profit customer (or host).

23 In the case of for-profit entities, the third-party ownership model allows those  
24 organizations with insufficient tax capacity (or a desire to apply that capacity to other  
25 investments or business activities) to access the benefits of solar generating equipment at  
26 attractive rates.

27 In non-profit and for-profit situations alike, the third-party financing model preserves the  
28 cash and investment capital of the customer (or host) so that it can be employed in the  
primary activities of the organization.

1 **Q.14 Does SunPower contemplate using third-party financing in connection with its  
2 business activities in Arizona?**

3 A.14 Yes, so long as the legal and regulatory environment make such an approach feasible.

4 At its most fundamental level of analysis, a third-party financing model for solar is akin  
5 to a home mortgage or an automobile lease – the end customer (or host) enjoys the use of

1 equipment and the various benefits of access to the solar equivalent of a home or car  
2 without being the owner or having to provide 100% of the purchase price of the asset up  
3 front. This represents a significant "plus" for many entities and individuals who would  
4 like to use solar energy technology.

5 In addition, allowing a regulatory environment permissive of third party financing  
6 structures will bring the benefits of renewable energy generation and services to the  
7 broadest group of Arizona citizens and businesses – and do so more quickly – than a  
8 reliance on direct purchase or self-financing arrangements.

9 This is in part because these facilities generate favorable tax attributes that investors  
10 value and can utilize, and in part because the balance sheets and purchasing capacity of  
11 Arizona citizens and businesses are limited in quantity and scope, as they are anywhere  
12 else in the world.

13 In doing so we further the public policy goals of the state and the nation in reducing  
14 emissions of green house gasses and reducing our reliance on foreign sources of energy  
15 or fossil fuel based generation.

16 **Q.15 Does SunPower believe that requiring such third-party financing arrangements**  
17 **and/or entities to be subject to regulation by the Commission would discourage, if**  
18 **not preclude, the use of third-party financing in Arizona?**

19 A.15 Yes.

20 **Q.16 Is your answer the same, regardless of whether the form of regulation in question (i)**  
21 **required obtaining a certificate of convenience and necessity from the Commission,**  
22 **or (ii) only required that the service provider or financing contracts and rate(s) be**  
23 **subject to review and approval by the Commission as "special contracts"?**

24 A.16 Yes.

25 **Q.17 Why?**

26 A.17 The mechanics of a project financing rely on a degree of certainty about the stream of  
27 future cash flows. Again, think of a fixed rate mortgage or a car lease – the payment  
28 stream to the owner/investor is fixed on the front-end of the transaction, and the decision  
as to whether to invest funds available for investing in that manner is based upon that  
foreknowledge and certainty.

A regulatory situation where such contracts for services (electricity, maintenance, output  
monitoring, warranty of system components) either (i) would be subject to the  
requirement of prior review and approval by the Commission or (ii) could subsequently  
be "reopened" by the Commission and subject to repricing and/or restructuring would

1 have a chilling effect on the willingness of financial investors to participate in the  
2 arrangement.

3 The perceived risk of having contractual terms altered – terms freely entered into  
4 between willing participants under no compulsion to trade – by a regulatory party years  
5 after contract initiation is commercially unacceptable. In that regard, it is imperative to  
6 remember that these “tax equity” investors have opportunities to participate in other  
7 investment markets, such as low-income housing, heritage buildings, economic enterprise  
8 zones, and other renewable energy projects like wind, biomass, and landfill gas. They  
9 also have the option of renewable energy projects in other states where the prospect or  
10 fact of such regulation does not exist.

11 The cost to induce a financier to take such risk would be reflected in their required rate of  
12 return on the investment -- exactly as commercial debt trades at a premium in relation to  
13 US Treasury bonds -- and would be so high as to make the transaction infeasible.

14 **Q.18 Please describe how SunPower’s provider agreements enable the customer (or host  
15 site) to protect itself as to both its economic and service interests, so that there is no  
16 need for the Commission to perform a regulatory oversight role.**

17 **A.18** As previously noted, the customer (or host) is not compelled to enter into a transaction  
18 with SunPower or a third-party financier, and it also is accorded the customary  
19 contractual protections in the event SunPower or the investor fails to perform to industry  
20 or contractual standards.

21 The customer (or host) contracts typically include termination rights (for a fee), the  
22 ability to set off payments in the event of dispute, arbitration or other dispute resolution  
23 procedures, representations and warranties of the Parties, and default provisions with  
24 opportunity for “cure” periods.

25 This type of arrangement is widely utilized in other states and jurisdictions; and, there is a  
26 body of industry experts, trade associations, and professional service providers (legal,  
27 accounting, tax) who can advise and assist customers (or hosts) in their determinations  
28 and negotiations with providers such as SunPower.

29 **Q.19 Based upon the testimony provided by or on behalf of SunPower in this proceeding,  
30 does SunPower believe that the Commission can and should issue a decision either  
31 (i) concluding that SunPower is not a “public service corporation” under Arizona  
32 law; or, alternatively, (ii) concluding that, if SunPower meets the definition of a  
33 “public service corporation” under Arizona law, then it’s circumstances and  
34 operating practices are not such as to require regulation of either SunPower or its  
35 third-party financing entities by the Commission?**

36 **A.19** Yes, that is the opinion of the company, based upon consultation with counsel.

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**Q.20 Does that complete your prepared Direct Testimony?**

A.20 Yes, it does.

**PREPARED DIRECT TESTIMONY  
OF  
SUNPOWER CORPORATION WITNESS  
KEVIN T. FOX  
IN  
DOCKET NO. E-20690A-09-0346**

**Q1: Please state your name, profession, business address and education.**

A1: My name is Kevin T. Fox. I am a partner at the law firm Keyes & Fox, LLP. My business address is 5727 Keith Avenue, Oakland, California 94618. I hold a B.S. degree in Environmental Policy Analysis and Planning with an emphasis on Energy Policy from the University of California, Davis. I also hold a J.D. degree from the University of California, Berkeley. Further details about my background are included in the attached resume.

**Q2: On whose behalf are you testifying?**

A2: I am testifying as a representative of the Interstate Renewable Energy Council ("IREC") on behalf of the Sun Power Corporation. My firm, Keyes & Fox, LLP, represents IREC in state workshops, proceedings and rulemakings focused on interconnection, net metering and financing of distributed renewable energy technologies such as solar photovoltaics ("PV"). My firm has represented IREC in over 29 proceedings before over twenty state public utility commissions during the past two years.

**Q3: Have you appeared before this Commission on other occasions?**

A3: Yes. I represented IREC in the Commission's net metering rulemaking, Docket No. RE-00000A-07-0608, and I represent IREC in Docket No. E-20633A-08-0513, The Application of the Solar Alliance for a Declaratory Order That Providers of Certain Solar Service Agreements Would Not Be Public Service Corporations.

**Q4: Do you have professional experience drafting and negotiating solar service agreements?**

A4: Yes. Prior to the formation of my current law firm, Keyes & Fox, LLP, I worked in the Energy and Clean Technology Practice of Wilson Sonsini Goodrich & Rosati P.C.. Prior to that, I worked in the Renewable Energy practice group at Stoel Rives LLP. While at those firms, my practice was divided between energy regulatory work and project finance and development work. With regard to the latter, I had an opportunity to draft and negotiate a number of solar service agreements (SSAs) and power purchase agreements (PPAs), which I will refer to in this testimony as SSAs. I also had the opportunity to review a number of SSA agreements on behalf of investors interested in investing in companies that provide SSAs.

**Q5: Please describe your testimony.**

A5: There are a number of important issues that I address in my testimony. I begin by explaining IREC's interest in SSAs and its background in addressing regulatory issues related to SSA provision in other states. I also explain why I believe it is important for the

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1 Commission to resolve this issue in Arizona at this time. Next, I discuss why SSAs are an  
2 important financing tool for investing in solar generation and why I believe regulation of  
3 SSA providers would have a detrimental impact on solar development in Arizona. I  
4 conclude my testimony with a discussion of why I believe it is necessary for SSA services  
5 to be priced on a per-kilowatt-hour basis.

6 **Q6: You mentioned that you represent IREC in state proceedings focused on financing of  
7 renewable distributed technologies such as PV. In which states has IREC been active  
8 on the issue of regulation of SSA providers?**

9 A6: I have personally represented IREC in regulatory proceedings addressing this issue in  
10 Oregon, Arizona and Massachusetts. Other attorneys at my firm have worked on this issue  
11 on behalf of IREC in Nevada, Colorado and New Mexico.

12 **Q7: Why has IREC decided to focus on regulation of SSAs in these states?**

13 A7: IREC directs its efforts where they will have the greatest potential to expand market  
14 opportunities for PV and other renewable distributed generation. Typically, that means  
15 focusing resources on states that have put in place key policy support elements which foster  
16 growth for onsite renewable generation. Key policy support elements include net metering  
17 rules, interconnection procedures, and incentive programs that close the gap between solar  
18 generation costs and prevailing electric utility rates. Once these key policy support  
19 elements are in place, IREC believes it is important to ensure that customers have a full  
20 range of financing methods available to facilitate investment in solar generation.

21 **Q8: How does IREC determine which states have put in place key policy support elements  
22 to support PV market growth?**

23 A8: Perhaps the clearest way to determine which markets have moved key policy support  
24 elements in place is by looking at which states have the largest amount of installed PV.  
25 Table 1 contains data collected and published by IREC. It ranks the top 10 states based on  
26 cumulative installed grid-connected PV capacity through 2008. With the exception of New  
27 Mexico, all of the states where IREC has focused its efforts in addressing the regulatory  
28 status of SSA providers, including Arizona, appear on this list.

Table 1

	MW(DC)	Market Share
1. California	528	67%
2. New Jersey	70	9%
3. Colorado	36	5%
4. Nevada	34	4%
5. Arizona	25	3%
6. New York	22	3%
7. Hawaii	14	2%
8. Connecticut	9	1%

9. Oregon	8	1%
10. Massachusetts	8	1%
All Other States	39	5%
Total	792	

Source: Sherwood, L., U.S. Solar Market Trends 2008, IREC, p. 7 (July 2009), available at: [http://www.irecusa.org/fileadmin/user\\_upload/NationalOutreachDocs/SolarTrendsReports/IREC\\_Solar\\_Market\\_Trends\\_Report\\_2008.pdf](http://www.irecusa.org/fileadmin/user_upload/NationalOutreachDocs/SolarTrendsReports/IREC_Solar_Market_Trends_Report_2008.pdf)

**Q9: Have public utility commissions in any of these states reached a decision on the regulatory status of SSA providers?**

A9: Yes. Public utility commissions in Colorado, Hawaii, Massachusetts, Oregon and Nevada have all determined that it would be inappropriate to regulate SSA providers as public utilities. Legislatures in Colorado and Nevada subsequently codified the public utility commission decisions reached in these states.

**Q10: Are you aware of any other states where SSA providers are not subject to regulation as a matter of practice or legislative action?**

A10: Yes. California and New Jersey have allowed SSA use without regulation for some time. In fact, the use of SSAs has facilitated the installation of over 125 MW of solar in California. Both states have explicit statutory exemptions that ensure onsite systems are not subject to public utility regulation. I am also aware of SSA use without regulation in Connecticut. I am not aware of the status of SSA use in New York. That state has struggled with putting the right policy support in place to support solar PV market growth, so there has not been occasion to bring the issue to resolution in that state. So, in sum, 8 of the top 10 states for installed PV capacity currently allow unregulated use of SSAs. The other two states are Arizona and New York. Obviously, this is an open issue in Arizona and it simply has not been looked into in New York, at least not that I am aware of.

**Q11: Are you aware of any of states regulating SSA providers as public utilities?**

A11: No.

**Q12: Do you believe this is an important issue for the Commission to resolve at this time for Arizona?**

A12: Yes, I do. The Commission has established a Renewable Energy Standard and Tariff ("REST") that requires in-state utilities to increase the percentage of energy supplied to customers from a variety of renewable resources, including distributed generation. To assist the utilities in meeting the distributed generation goals, the Commission has established an incentive program that many consider a model for other states. The Commission has also adopted strong net metering rules and provided guidance to utilities on interconnecting distributed generation resources. These policy decisions have created a solid foundation for solar PV market growth, however, they have not addressed one of the key obstacles to solar PV deployment – the large up-front investment that is required. SSAs are intended to address this obstacle and help bring solar further into the energy resource mainstream.

1 **Q13: Do you believe SSAs are an important option for helping customers finance solar PV**  
2 **investments?**

3 A13: Absolutely. Most importantly, SSAs provide customers a means of financing the high up-  
4 front cost of a PV system. For example, in its July 2, 2009 Application, Solar City  
5 estimates its SSAs will help the Scottsdale School District avoid an up-front payment of  
6 over \$10 million. That is money that is better spent on books, classrooms and teachers. In  
7 addition, SSAs provide an attractive bundle of services that are desirable to customers  
8 interested in investing in solar PV. In fact, SSAs have quickly become the preferred  
9 financing mechanism for non-residential PV installations. According to a recent study by  
10 Lawrence Berkeley National Laboratory, SSA agreements have grown from roughly 10%  
11 of the non-residential solar market in 2006 to an estimated 90% of the U.S. non-residential  
12 solar market in 2008.<sup>1</sup> Coupled with the fact that non-residential PV systems comprise an  
13 ever growing portion of aggregate installed capacity (nearly two-thirds of solar installations  
14 in 2007 alone), it is clear that SSA's have become an important, if not essential, part of  
15 facilitating non-residential customer investment in solar PV.

11 **Q14: What types of customers are included in the non-residential market segment?**

12 A14: The Bolinger Report identifies non-residential PV systems as systems being installed on  
13 the customer side of the meter at commercial, institutional, non-profit, or governmental  
14 properties.<sup>2</sup>

15 **Q15: Are SSAs also important in the residential context?**

16 A15: Yes. For example, I understand Sun Run, an intervener in this proceeding, offers residential  
17 SSAs in California and Massachusetts. Looking at California Solar Initiative data, it  
18 appears there has been significant demand for Sun Run's residential SSA product in  
19 California. Based upon information received from Sun Run, it is my understanding that Sun  
20 Run SSA systems represent approximately 12.5% of the California Solar Initiative market  
21 (which includes the regions of the three largest investor-owned utilities in California).

20 **Q16: What makes SSAs a preferred means of financing solar PV investments?**

21 A16: I believe there are two key reasons. First, SSA arrangements require an SSA provider to  
22 assume operational and financial risks that many solar customers do not want to take on  
23 directly. Second, from the customer perspective, SSAs provide a bundle of services that  
24 customers investing in solar PV find appealing.

24 **Q17: What sorts of operational and financial risks do SSAs require SSA providers to take**  
25 **on that solar customers do not want to take on directly?**

26 <sup>1</sup> See Bolinger, Mark, "Financing Non-Residential Photovoltaic Projects: Options and  
27 Implications." Lawrence Berkeley National Laboratory. January 2009. LBNL-1410E, at p. 18  
28 ("Bolinger Report").

<sup>2</sup> See Bolinger Report at p. 1.

1 A17: The Bolinger Report summarizes these benefits nicely: "due to financial innovation [in  
2 reference to SSAs], non-residential entities interested in PV no longer face prohibitively  
3 high up-front costs, no longer need to be able to absorb Tax Benefits in order to make the  
4 economics pencil out, no longer need to be able to operate and maintain the system, and no  
5 longer need to accept the risk that a system does not perform as expected." These benefits  
6 also exist for SSAs in the residential context.

7 **Q18: What bundle of services do SSAs provide that customers investing in solar PV find so  
8 appealing?**

9 A18: The Solar City Application, Testimony of Solar City witness Rive, and Testimony of Sun  
10 Power witness Irvin do a nice job of discussing the array of services priced into an SSA.  
11 Based on the demand for SSA financing in markets where SSAs are offered, I do not think  
12 the value of SSA services can be underestimated in understanding customer preferences.  
13 Commercial, institutional, non-profit, governmental and residential customers are generally  
14 not familiar with the various solar PV technologies available to them and do not necessarily  
15 have the desire or competency to own and manage a solar energy system despite the fact  
16 that they want to invest in solar PV to green their power supply. These skills sets are  
17 simply not part of many people's core competency, which lies in running businesses, non-  
18 profit enterprises and government agencies. To gain this competency would cost both time  
19 and money, both of which could be better spent steering their enterprises through a tough  
20 economy.

21 **Q19: Are there other financing mechanisms that would meet the same needs, for example a  
22 lease?**

23 A19: No. I agree with Solar City witness Lyndon Rive that SSAs are the only means that allow  
24 tax-exempt entities like schools, government and non-profits to have access to and fully  
25 utilize available tax incentives and benefits. Given that these benefits can add up to nearly  
26 half the cost of a PV system, it is not surprising that Solar City witness Peterson would  
27 testify that without using SSAs, the Scottsdale Unified School District would not be able to  
28 invest in solar PV. For other customers, leasing can remove the high up-front cost of  
investing in solar, and can be structured in a manner that allows for efficient use of tax  
benefits, but leasing typically leaves the customer with performance risk and the  
responsibility to operate and maintain a system. The solid movement of customers towards  
SSAs in markets where they are offered shows that these last barriers to investment that are  
solved by SSAs are not minor. It appears many customers would prefer to shift operational  
and financial risk to an SSA provider to the maximum extent possible, which is what SSAs  
are intended to do. SSAs provide assurance to customers that payment is based entirely on  
system performance, and importantly, payment is based on kilowatt-hour production, a  
metric that allows SSA pricing to be easily compared against existing utility prices.

29 **Q20: Do you agree with Solar City that the requested relief should be limited to schools,  
30 government and non-profit organizations?**

31 A20: No. For the reasons previously discussed, I believe SSAs offer substantial benefits to  
32 residential and for-profit entities as well.

1 **Q21: If the Commission decides to regulate SSA providers, do you have an opinion as to**  
2 **whether SSAs will be offered in Arizona?**

3 A21: Yes. I do not believe SSAs would be offered in Arizona. I believe regulation would stifle  
4 investor interest in making SSA financing available.

5 **Q22: Why do you believe investors would not make SSA financing available?**

6 A22: There is a fundamental difference in the risk profile of an SSA investment versus a  
7 traditional public utility investment. As indicated by Sun Power witness Irvin, a typical  
8 investor in an SSA financing is a large financial institution with significant taxable income  
9 that can be effectively offset by tax benefits associated with investment in solar PV assets.  
10 To ensure risk is sufficiently mitigated to make an SSA financing attractive to such an  
11 investor, a number of sophisticated, interlocking agreements must be put in place. One of  
12 the key documents within this suite of agreements is the SSA. The SSA establishes the  
13 revenue stream that is required to pay back an investment. In order for an investor to feel  
14 that risks associated with an SSA investment are sufficiently mitigated, there needs to be  
15 reasonable certainty regarding the income stream that will be generated by an SSA  
16 agreement. Regulation introduces a number of risks that undermine investor confidence as  
17 to whether projected revenue streams will materialize.

18 **Q23: Is there anything in particular that is likely to unnerve investors?**

19 A23: Two key concerns are with regard to initial contract approval by the Commission (for  
20 example the Commission's approval of the Solar City contracts in Phase 1 of this  
21 proceeding) and the Commission's ability to adjust rates of jurisdictional utilities. From the  
22 investor perspective, the former raises the risk that an expected revenue stream may never  
23 materialize and the latter raises the risk that revenue streams may be altered such that an  
24 investment becomes uneconomic.

25 **Q24: What do you mean when you say there is a fundamental difference in the risk profile**  
26 **of an SSA investment versus a public service corporation investment?**

27 A24: In a traditional public utility context, rates are set to allow regulated utilities an opportunity  
28 to earn a reasonable return on investment in property dedicated to public use. This means  
investors in public service corporations have a reasonable assurance that rates will be  
maintained at a level that allows an opportunity to earn a return on property dedicated to  
public use. This approach works well for monopoly utilities with designated service  
territories because they have a captive audience that generates a relatively predictable  
stream of revenue under approved rates.

**Q25: In what ways do SSA providers operate in a different investment climate?**

A25: SSA providers operate in a very different environment. Unlike public service corporations,  
competitive SSA providers do not have a captive audience of customers whose rates may  
be adjusted to ensure a SSA provider enjoys a reasonable return on investment. Instead,  
SSA providers negotiate a price for their services for each installation taking into account  
availability of incentives, financing rates, site-specific issues such as onsite shading, and

1 competitive pressures such as prevailing public utility rates and competition from other  
2 providers. Also unlike public service corporations, SSA providers dedicate property to  
3 private use not public use, meaning there is no shared infrastructure. Taking these factors  
4 into account, the opportunity for an SSA investor to earn a rate of return on equipment  
5 dedicated to private use is dependent on a provider's ability to realize the revenue stream  
6 generated by the rate that was specifically negotiated for a particular installation. In this  
7 environment, investor confidence is diminished by anything that calls into question the  
8 ability to realize that revenue stream.

9 **Q26: Given these practical considerations, what would likely be the result of a Commission  
10 determination that SSA providers are public service corporations?**

11 A26: A decision that SSA providers are public service corporations would create an enormous  
12 amount of uncertainty regarding: (1) the threshold for initial contract approval, (2) the  
13 requirements for obtaining a CC&N, (3) the basis for determining which rates will be  
14 determined just and reasonable, (4) the possibility that contract rates or terms may be  
15 unsettled during the term of an SSA, and (5) the sort of regulatory compliance costs and  
16 obligations that may be applied to an SSA provider. Quite frankly, I cannot imagine any  
17 investor being interested in making SSA financing available with any, let alone all, of these  
18 open questions.

19 **Q27: Do you have an opinion regarding the impact on solar PV development in Arizona if  
20 SSAs are not available?**

21 A27: It is difficult to quantify the precise impact because there are no available examples of a  
22 state commission deciding to regulate SSA use. However, I believe the absence of this  
23 preferred financing mechanism could have a significant impact on the pace of solar market  
24 growth in Arizona. According to the Bolinger Report, SSAs were used to finance an  
25 estimated 90% of U.S. non-residential solar market investments in 2008. If this option is  
26 not available, it seems likely that many customers who would otherwise invest in solar  
27 using an SSA might simply chose not to invest in solar PV because they will continue to  
28 face the barriers that SSAs address and resolve. For non-residential customers this would  
likely be a very high percentage given that many such entities would lose the ability to  
fully utilize available federal tax incentives.

**Q28: At the July 16, 2009 procedural conference in this docket, there was a discussion  
about the possibility of pursuing a "streamlined form of regulation." Do you believe  
this approach may offer a viable path forward?**

A28: No, I do not. I have a number of concerns with that sort of approach. First, I believe Solar  
City makes a compelling case that regulation is inappropriate when policy considerations  
underlying the *Serv-Yu* decision are applied to circumstances surrounding SSAs. Sun  
Power witness Irvin has also addressed several of these in his testimony. Second, any  
decision to regulate is likely to create a number of uncertainties that may take a  
considerable amount of time to clarify through a rulemaking. Third, what is considered  
"regulation light" by the current Commission may be considered too light by a subsequent  
Commission, meaning ongoing uncertainty is created regardless of the level of regulation  
that would be put in place today. Finally, any form of regulation would be likely to

1 introduce compliance costs that would serve to make solar options more expensive. I also  
2 do not think this sort of approach is necessary given that the Commission already exercises  
3 considerable control over SSA providers, and the manner in which they do business  
4 through its REST rules, net metering rules and interconnection standards.

5 **Q29: Do you have an opinion as to what would happen to the investment money that is  
6 poised to flow into Arizona if the Commission decides to regulate SSA providers as  
7 public service corporations?**

8 A29: I have previously identified the top 10 states for installed solar capacity. In my opinion,  
9 investment dollars and economic activity associated with SSA financing would likely flow  
10 to solar projects in the other 9 states as opposed to Arizona. This would amount to a  
11 significant loss of economic activity for Arizona. The California Public Utilities  
12 Commission has estimated that for every \$1 of ratepayer-funded incentives, an additional  
13 \$6 of private and federal funding is harnessed.<sup>3</sup> This has resulted in over \$5 billion in  
14 investment, much of which was facilitated by SSA arrangements.<sup>4</sup> In addition, new PV  
15 manufacturing facilities are likely to locate in States with the most PV market activity. The  
16 inability to use SSAs in AZ could in turn lead to the loss in new manufacturing and  
17 associated "green collar" jobs.

18 **Q30: Why are SSAs priced on a per-kWh basis?**

19 A30: Pricing services on a per-kWh basis has a number of benefits from the customer  
20 perspective. First, SSA providers reinforce the fact that they bear the performance risk for  
21 a system, meaning customer payment is based on the useful solar energy provided by a PV  
22 system. Additionally, presenting the total cost of the services provided on a kWh basis  
23 allows customers who are not experts in solar energy to compare the cost in a metric they  
24 understand - \$/kWh. The importance of per-kWh pricing can be seen in the Solar City  
25 contracts with the Scottsdale School District, which adjust contract pricing to reflect  
26 adjustments in incentive amounts. It helps customers understand the impact incentive levels  
27 have on solar prices when the two are both denominated in kWh. The importance can also  
28 be seen in the analysis of the Solar City contracts in Commission Order 71277. Staff, Solar  
City and the Scottsdale School District all used a comparison of \$/kWh prices in  
conducting a cost comparison of Solar City contract pricing to otherwise applicable utility  
tariff rates.

**Q31: Does this conclude your testimony?**

A31: Yes, it does.

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<sup>3</sup> See California Solar Initiative: Staff Progress Report, California Public Utilities Commission (Jan. 2009), at p. 4.

<sup>4</sup> See Id.

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## EDUCATION

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### UNIVERSITY OF CALIFORNIA, BERKELEY - BOALT HALL SCHOOL OF LAW

*Juris Doctor*, Certificate, Environmental Law (May 2005)

- Jurisprudence Award (Spring 2003)
- Ecology Law Quarterly, Associate Editor (Fall 2003)

### UNIVERSITY OF CALIFORNIA, DAVIS

*Bachelor of Science*, Environmental Policy Analysis & Planning, Energy Policy Emphasis (June 2002)

- Graduated with Highest Honors
- Morris K. Udall National Environmental Policy Scholar (2000-2001)

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## PROFESSIONAL EXPERIENCE

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### KEYES & FOX LLP

*Partner*, OAKLAND, CALIFORNIA (2008 – present)

Represent clients in state utility commission rulemakings related to renewable energy policy development and implementation, including work on net metering rules, interconnection standards, community solar programs, feed-in tariffs and incentive programs; draft and review retail power purchase and sale agreements for distributed energy projects; advise clients on compliance with local regulatory requirements.

### WILSON SONSINI GOODRICH & ROSATI PC

*Project Finance & Clean Technology Associate*, SAN FRANCISCO, CALIFORNIA (2007 – 2008)

Drafted and reviewed contracts for the purchase and sale of energy, renewable energy certificates and carbon financial instruments; drafted and reviewed project finance-related agreements; diligence of clean technology company business plans for regulatory compatibility and risk; advised clients regarding intellectual property terms in government grants; advised clients on compliance with state and federal energy regulatory requirements; provided regulatory advocacy before state public utility commissions.

### STOEL RIVES LLP

*Energy Associate*, SAN FRANCISCO, CALIFORNIA (2004 – 2007)

Drafted and reviewed contracts for the purchase and sale of electricity, natural gas and renewable energy certificates; advised clients regarding state and federal energy regulatory compliance, including qualifying facility certifications, market-based rate tariffs, exempt wholesale generator certifications, and Federal Power Act Section 203 merger authorizations; provided regulatory advocacy before state public utility commissions; advised clients on transmission matters, including generator interconnections.

### CALIFORNIA ATTORNEY GENERAL

*Energy Task Force*, OAKLAND, CALIFORNIA (2003 – 2004)

Conducted legal research and drafted memoranda in support of antitrust litigation arising from California's 2000-2001 electricity market failures; drafted discovery requests, briefs and motions; researched and drafted memoranda regarding federal and state commodities laws and unfair business practice laws.

### CALIFORNIA ENERGY COMMISSION

*Demand Analysis Division*, SACRAMENTO, CALIFORNIA (2001 –2002)

Researched history of United States retail electricity pricing; organized a database of California electric utility rate schedules; maintained a website of California energy efficiency programs.

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### ENERGY PUBLICATIONS AND PRESENTATIONS

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- *What Utility Involvement in the Distributed Solar Market Means for the Future of the Solar Industry*, with Adam Browning, Renewable Energy World, available <http://www.renewableenergyworld.com/rea/news/recolumnists/story?id=53735> (Oct. 2008)
- *Comparison of the Four Leading Small Generator Interconnection Procedures*, with Jason B. Keyes, Solar America Board for Codes and Standards, available [www.solarabcs.org/interconnection](http://www.solarabcs.org/interconnection) (Oct. 2008)
- *Options for Selling Solar Distributed Generation to an Interconnected Utility in California*, presented at the annual conference of the American Solar Energy Society (May 2008)
- *Investing in California's Alternative Fuels Plan*, Energy Law 360, Portfolio Media Inc. (Jan. 4, 2008)
- *Leasing, Siting and Permitting Geothermal Energy Projects*, Lava Law: Legal Issues in Geothermal Energy Development (Stoel Rives, 2004-05).
- *Western Market Investigations: Developments in the Courts*, Spring 2006 ABA Sec. Pub. Util. L. Rep.
- *Western Market Investigations: Developments in the Courts*, Fall 2006 ABA Sec. Pub. Util. L. Rep.

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### BAR MEMBERSHIPS

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OREGON, ADMITTED TO PRACTICE (2005)  
CALIFORNIA, ADMITTED TO PRACTICE (2008)