

SEPA's First Annual Top Ten Utility Solar Integration Rankings



*Results of the 2007
U.S. Utility Solar Electricity Market Survey*





About the Solar Electric Power Association

From national events to one-on-one counseling, SEPA is the go-to resource for unbiased and actionable solar intelligence. SEPA is comprised of over 325 utility industry and solar industry members. Breaking down information overload into business reality, SEPA takes the time and risk out of implementing solar business plans and helps turn new technologies into new opportunities. www.solarelectricpower.org

Disclaimer

The rankings in this document are based on self-reported data and no third party verification was conducted.

Table of Contents

Introduction...	1
Overview of Results...	1
Solar Electricity System Configuration...	2
About the Rankings...	3
Top Ten Utility Solar Integration Rankings...	3
I. Solar Electric Capacity – Total...	3
Ranking 1A...	3
Ranking 1B & 1C...	4
Ranking 2A...	4
Ranking 2B & 2C...	5
ii. Solar Electric Capacity – Customer-Side of the Meter...	5
Ranking 3A...	5
Ranking 3B & 3C...	6
Ranking 4A...	6
Ranking 4B & 4C...	7
iii. Solar Electric Capacity – Utility-Side of the Meter...	7
Ranking 5...	7
Ranking 6...	8
Future Utility Solar Integration...	8
Utility Large Solar Electricity Purchase Announcements...	10

Addendum

2008 SEPA Reports...	11
SEPA Staff...	12
Board of Directors...	12
SEPA Members...	13

SEPA'S FIRST ANNUAL TOP TEN UTILITY SOLAR INTEGRATION RANKINGS

Results of the 2007 U.S. Utility Solar Electricity Market Survey

INTRODUCTION

In the last year, U.S. electric utilities' engagement with grid-connected solar electricity increased significantly, with major photovoltaic (PV) and concentrating solar thermal (CST) announcements by utilities, their customers, and third-party solar developers. Utilities have traditionally operated as a solar facilitator, integrating customer developed projects. However, recently there have been several announcements by utilities of new entrepreneurial ideas that provide fresh solutions to regulatory, customer and internal issues. Based on these announcements and internal discussions with other utilities, the Solar Electric Power Association (SEPA) anticipates that utilities will quickly become the largest and one of the most important customers for the solar industry. Whether solar electric systems are developed by utilities, their customers, or solar companies, the utilities' proactive engagement with emerging solar technologies is important to the solar industry as a whole.

SEPA's first annual utility solar market rankings compare U.S. electric utilities by the total amount of solar electricity installed in their service territories at the end of 2007. The rankings are based on information provided through a survey of utilities and independent research. The overall rankings are broken down into categories based on the amount of solar electricity interconnected to the utility in two different configurations: customer-side of the meter and utility-side of the meter (see page 2 for description of each). Generally speaking, data regarding the customer-side of the meter is limited to photovoltaic technologies, while the data on the utility-side of the meter includes both photovoltaics and concentrating solar thermal technologies.

OVERVIEW OF RESULTS

For **total** solar electric capacity by megawatt (MW), Southern California Edison (CA) takes top honors as the most solar integrated utility with the most overall solar capacity (MW) and solar capacity per customer (MW/customer). Southern California Edison's long-standing contracts with the SEGS concentrating solar thermal (CST) plants drive its large number of solar megawatts. However, with a number of large-scale CST announcements by several other utilities, Southern California Edison's top ranking may no longer hold once these new plants are constructed.

On the **customer** side of the meter, Pacific Gas & Electric (CA) took the honors for both the largest amount of overall solar capacity and the highest MW per customer, but the latter category is in striking distance for several public power utilities. On the **utility** side of the meter, Southern California Edison is the highest ranked utility both for overall MW as well as MW per customer, which drove its number one total ranking.

The list diversifies when you dive down further into the data and differentiate utility types. On the customer-side of the meter, Los Angeles Department of Water & Power (CA) is the most solar integrated public power utility¹ in overall capacity, while Kauai Island Utility Cooperative (HI) has the highest capacity per customer for public power utilities.

California—with its long-standing policies for solar development—represents the majority of the highest rankings, but utilities in Arizona, Colorado, Hawaii, Illinois, Nevada, New Jersey, New York, Texas, Washington and Wisconsin also make the top ten in many categories. Solar markets are expanding rapidly beyond California and when standardized by the number of customers, interesting results will continue to emerge in the coming years. Next year's survey and report will be based on 2008 data and will be published in early 2009. It will no doubt show a reordering of many of these rankings as the solar markets change.

¹ Public power utilities include municipal, cooperative, county, and utility districts.

SOLAR ELECTRICITY SYSTEM CONFIGURATION

There are three main categories to consider when assessing a solar electric system’s general configuration: siting, metering (interconnection), and ownership.

Siting - The solar system can be located on customer, utility or third-party property. The latter refers to a solar developer who buys or leases space (land or building) for the purpose of installing a solar project.

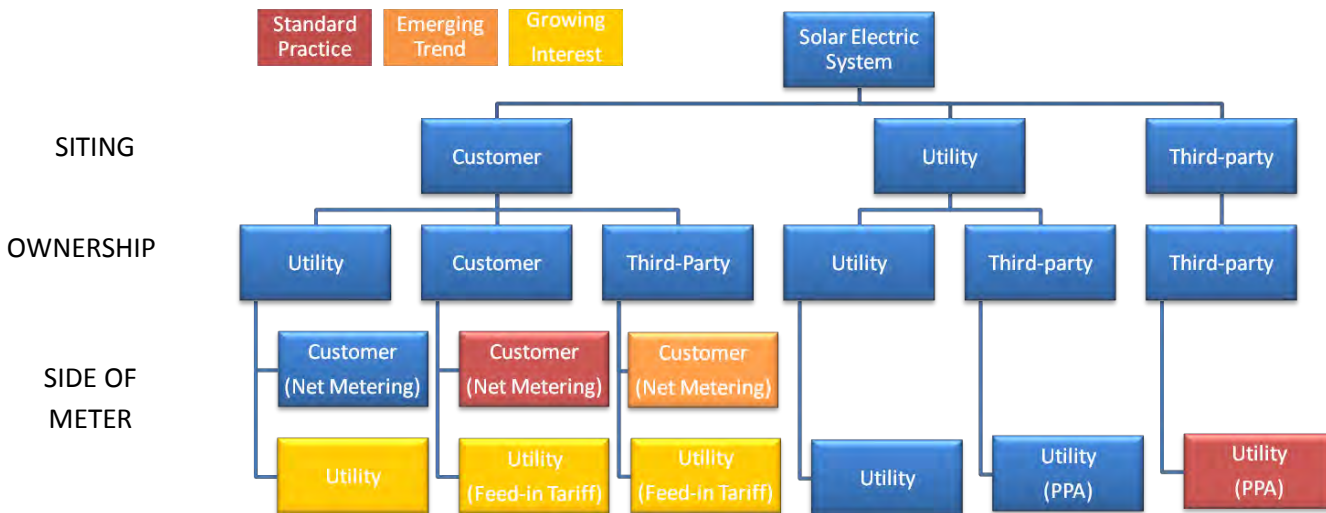
Metering - The point of interconnection for a solar system is roughly categorized as being on either the *customer side* or *utility side* of the meter. A solar electric system interconnected on the customer side of the meter offsets the onsite consumption of traditionally sourced grid electricity with solar electricity. This directly reduces a utility customer’s bill at retail rates, and is commonly known as net metering. A system interconnected on the utility side of the meter feeds solar electricity directly into the utility distribution or transmission system rather than offsetting on-site consumption on the property. The solar system can be located on a building or the ground in this configuration, but the system wiring bypasses the internal electricity circuits and connects directly to the electric grid.

Ownership - The solar system can be owned by the customer, utility or third-party developer.

The U.S. grid-connected solar industry has initially been developed based on a net metering configuration with customer siting, customer-side metering, and customer ownership. But new business models for solar services are emerging which are configured with customer siting, customer-side metering, and third-party ownership, especially in commercial markets. In Germany, the most common configuration is customer siting, utility-side metering with feed-in tariffs, and customer or third-party ownership. Several utilities in the U.S. have announced plans for solar projects which include customer siting, utility-side metering, and utility ownership.

Figure 2 diagrams the various system configurations and their relative maturity as business options in the rapidly evolving solar electricity industry.

Figure 2. Solar Electric System Configurations².



² *Standard Practice* – default configuration across geographic locations and customer/utility types; *Emerging Trend* – common configuration in some geographic locations and customer/utility types; *Growing Interest* – some combination of one or two examples, several separate announcements, or significant policy dialogue.

ABOUT THE RANKINGS

Data Sources

The various top ten rankings reflect a range of utilities nationwide and include data on cumulative solar electricity installations through December 31, 2007, unless noted otherwise. The rankings below were derived from SEPA survey data collected from over fifty utilities specifically for this project in the spring of 2008, and independent research of California Energy Commission and Energy Information Administration data sources.³

The rankings and graphical representations show relative differences among utilities, but to facilitate utility participation, data specific to any particular utility was withheld to address data privacy concerns. The utilities listed are the purchasers of the solar electricity generated, most often through contractual arrangements with their customer-generators, or in some cases, by third-party solar companies or the utilities themselves. There are a relatively limited number of utility-owned solar electric installations today, but several announcements made in 2008 indicate this will soon change.

Note: Due to privacy concerns, the bar charts below show precise relative differences among each ranked utility, but no incremental scale is indicated on the axis. In addition, the bar charts do not relate to each other as far as scale and cannot be compared, as each was created using a different axis measurement. This visual representation method was selected since top ten lists alone would not have provided a sense of variance between each of the ranked utilities.

THE TOP TEN UTILITY SOLAR INTEGRATION RANKINGS

The rankings are divided into three sections:

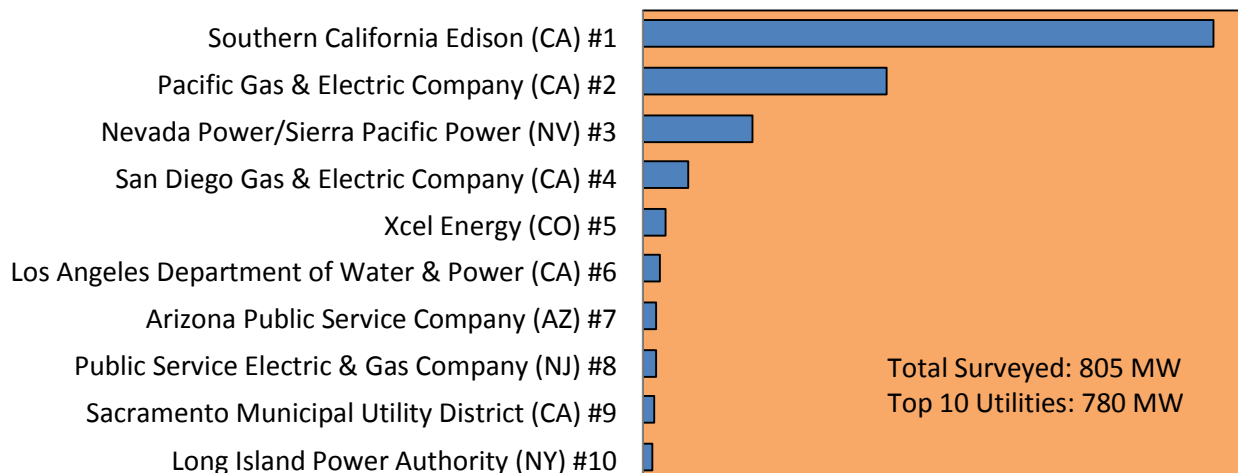
- I. Total Solar Electric Capacity
- II. Solar Electric Capacity on the Customer Side of the Meter
- III. Solar Electric Capacity on the Utility Side of the Meter

I. SOLAR ELECTRIC CAPACITY – TOTAL

Rankings 1 and 2 represent the combined sum of grid-connected solar electric system capacity from both the customer and utility sides of the meter, ranging from small residential PV systems to large concentrating solar thermal (CST) power plants.

Southern California Edison’s (CA) long-standing contracts with the SEGS CST in California drive their overall top ranking. Pacific Gas and Electric’s (CA) second place ranking is largely due to the significant number of photovoltaic systems interconnected at customer locations, while Nevada Power/Sierra Pacific Power’s (NV) third place finish is the result of the newly installed Nevada Solar One CST plant. The top public power utility was Los Angeles Department of Water and Power (CA), followed by the Sacramento Municipal Utility District (CA) and Long Island Power Authority (NY).

Ranking 1A: Top Ten Utilities Ranked By Total Solar Electric Capacity (MW) – All Utilities



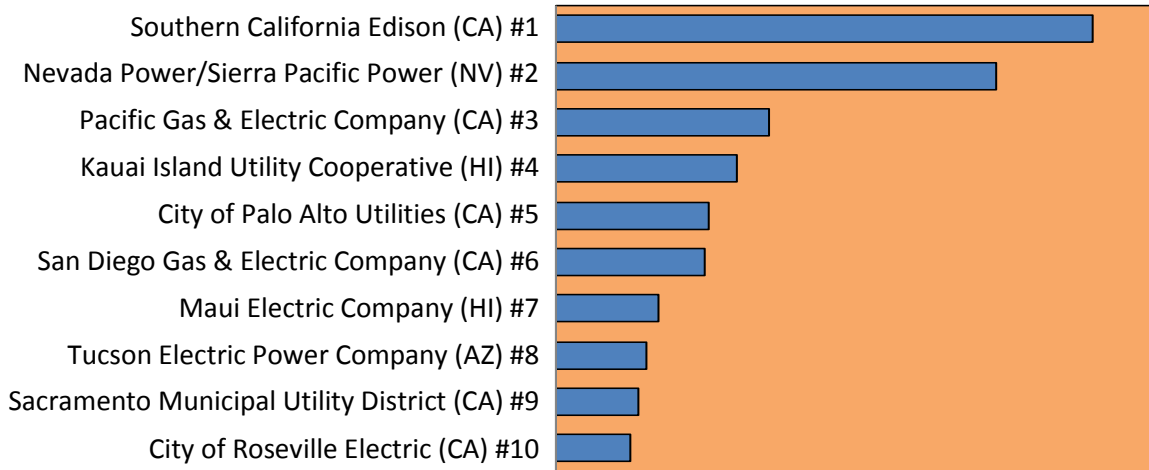
³ A small number of target utilities did not participate in the SEPA survey and data was not readily available through public sources. As a result, these utilities may not show up in the current SEPA rankings.

Ranking 1B & 1C: Top Ten Utilities Ranked by Total Solar Electric Capacity (MW) – By Utility Type

	1B: Investor Owned Utilities	1C: Public Power Utilities
1	Southern California Edison (CA)	Los Angeles Dept of Water & Power (CA)
2	Pacific Gas & Electric Company (CA)	Sacramento Municipal Utility District (CA)
3	Nevada Power/Sierra Pacific Power (NV)	Long Island Power Authority (NY)
4	San Diego Gas & Electric Co. (CA)	Salt River Project (AZ)
5	Xcel Energy (CO)	Austin Energy (TX)
6	Arizona Public Service Co. (AZ)	Kauai Island Utility Coop. (HI)
7	Public Service Electric & Gas Company (NJ)	City of Palo Alto Utilities (CA)
8	Tucson Electric Power Co. (AZ)	Riverside Public Utilities (CA)
9	Commonwealth Edison (IL)	Imperial Irrigation District (CA)
10	Central Hudson Gas & Electric (NY)	City of Roseville Electric (CA)

When the rankings are standardized by the number of utility customers, Southern California Edison again takes the top spot. However Nevada Power/Sierra Pacific Power and Pacific Gas & Electric swap for positions two and three. Kauai Island Utility Cooperative (HI) and the City of Palo Alto Utilities (CA), both public power utilities, enter the top five rankings.

Ranking 2A: Top Ten Utilities Ranked By Total Solar Electric Capacity Per Customer (MW/Customer) – All Utilities



Ranking 2B & 2C: Top Ten Utilities Ranked By Total Solar Electric Capacity Per Customer (MW/Customer) – By Utility Type

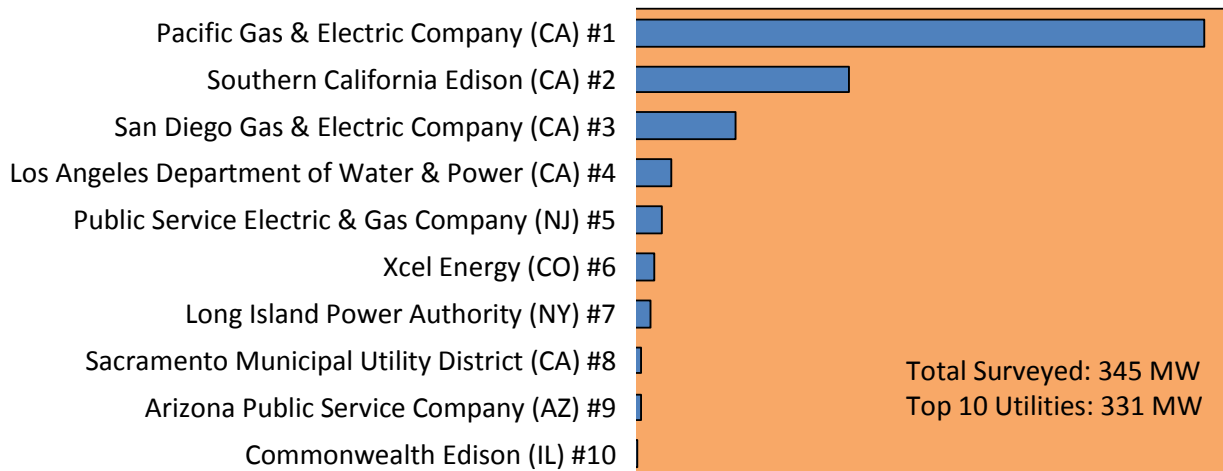
	2B: Investor Owned Utilities	2C: Public Power Utilities
1	Southern California Edison (CA)	Kauai Island Utility Coop. (HI)
2	Nevada Power/Sierra Pacific Power (NV)	City of Palo Alto Utilities (CA)
3	Pacific Gas & Electric Company (CA)	Sacramento Municipal Utility District (CA)
4	San Diego Gas & Electric Co. (CA)	City of Roseville Electric (CA)
5	Maui Electric Co. (HI)	Burbank Water & Power (CA)
6	Tucson Electric Power Company (AZ)	City of Ukiah (CA)
7	Arizona Public Service Co. (AZ)	Los Angeles Dept of Water & Power (CA)
8	Central Hudson Gas & Electric (NY)	Riverside Public Utilities (CA)
9	Xcel Energy (CO)	City of Healdsburg (CA)
10	Public Service Electric & Gas Company (NJ)	Long Island Power Authority (NY)

II. SOLAR ELECTRIC CAPACITY – CUSTOMER-SIDE OF THE METER

Rankings 3 and 4 represent the sum of grid-connected solar capacity in megawatts located on the customer side of the meter, all of which are photovoltaic installations. The customer side of the meter refers to solar electric systems that are configured to first offset onsite consumption at retail rates, with any remaining excess exported to the distribution grid. These types of systems typically represent traditional photovoltaic panels on homes, businesses or adjacent properties utilizing net metering.

For solar capacity on the customer side of the meter, Pacific Gas and Electric leads the rankings by a significant margin, followed by three other California utilities: Southern California Edison, San Diego Gas & Electric, and Los Angeles Department of Water and Power. Public Service Electric & Gas Company (NJ) rounds out the top five.

Ranking 3A: Top Ten Utilities Ranked By Solar Electric Capacity on the Customer Side of the Meter (MW) – All Utilities

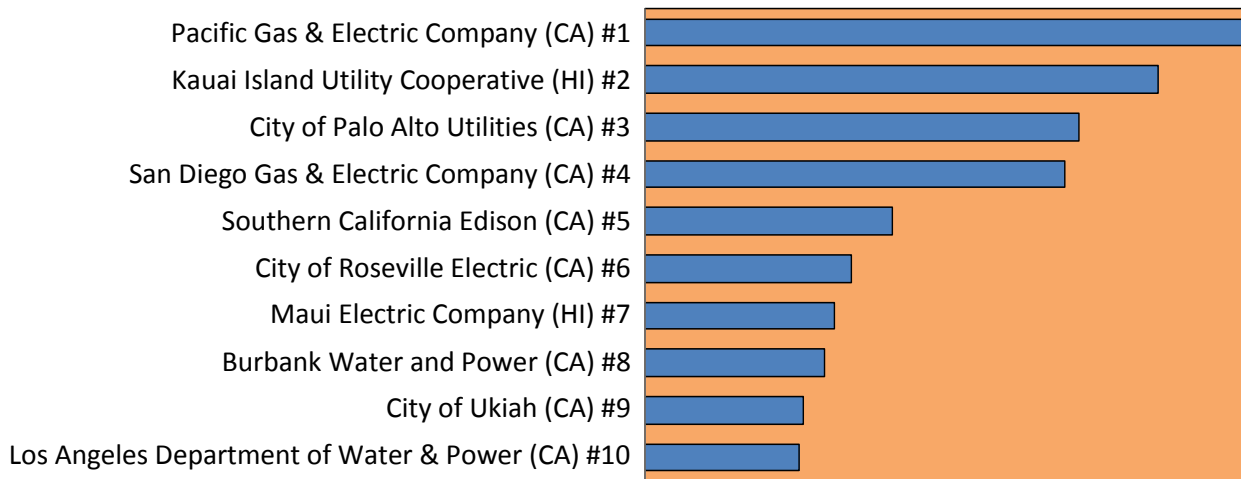


Ranking 3B & 3C: Top Ten Utilities Ranked By Solar Electric Capacity on the Customer Side of the Meter (MW) – By Utility Type

	3B: Investor Owned Utilities	3C: Public Power Utilities
1	Pacific Gas & Electric Company (CA)	Los Angeles Dept of Water & Power (CA)
2	Southern California Edison (CA)	Long Island Power Authority (NY)
3	San Diego Gas & Electric Company (CA)	Sacramento Municipal Utility District (CA)
4	Public Service Electric & Gas Company (NJ)	Austin Energy (TX)
5	Xcel Energy (CO)	Salt River Project (AZ)
6	Arizona Public Service Co. (AZ)	Kauai Island Utility Coop. (HI)
7	Commonwealth Edison (IL)	City of Palo Alto Utilities (CA)
8	Central Hudson Gas & Electric (NY)	Riverside Public Utilities (CA)
9	Nevada Power/Sierra Pacific Power (NV)	Imperial Irrigation District (CA)
10	Tucson Electric Power Company (AZ)	City of Roseville Electric (CA)

Once the rankings are standardized by the number of utility customers, a diversity of new utilities enter the top 10 on the customer side of the meter, although all are located in California and Hawaii. Pacific Gas & Electric takes the top spot, while Kauai Island Utility Coop and the City of Palo Alto Utilities rank two and three; San Diego Gas & Electric and Southern California Edison round out the top five.

Ranking 4A: Top Ten Utilities Ranked By Solar Electric Capacity Per Customer on the Customer Side of the Meter (MW/Customer) – All Utilities



Ranking 4B & 4C: Top Ten Utilities Ranked By Solar Electric Capacity Per Customer on the Customer Side of the Meter (MW/Customer) – By Utility Type

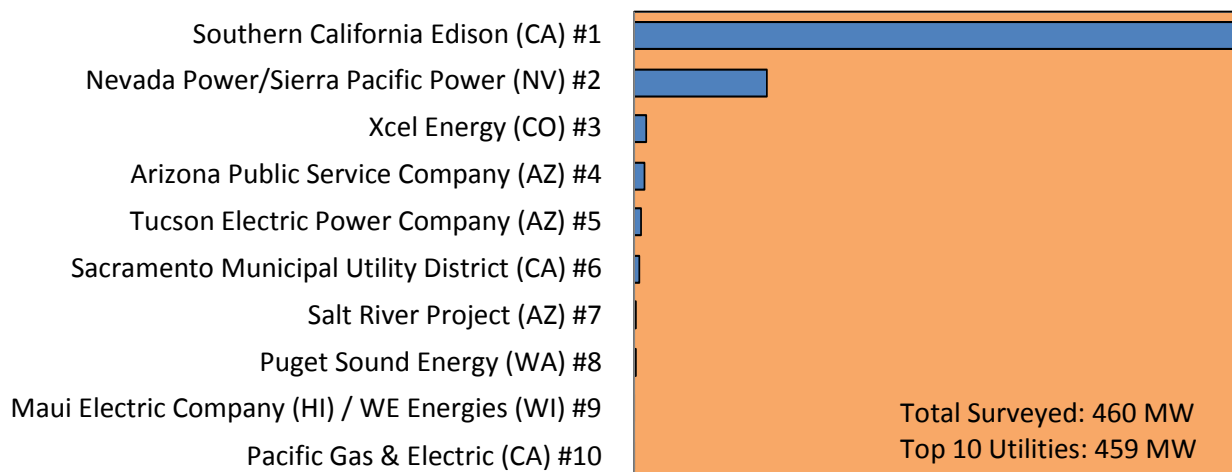
	4B: Investor Owned Utilities	4C: Public Power Utilities
1	Pacific Gas & Electric Company (CA)	Kauai Island Utility Coop. (HI)
2	San Diego Gas & Electric Company (CA)	City of Palo Alto Utilities (CA)
3	Southern California Edison (CA)	City of Roseville (CA)
4	Maui Electric Company (HI)	Burbank Water & Power (CA)
5	Central Hudson Gas & Electric (NY)	City of Ukiah (CA)
6	Public Service Electric & Gas Company (NJ)	Los Angeles Dept of Water & Power (CA)
7	Tucson Electric Power Company (AZ)	Riverside Public Utilities (CA)
8	Arizona Public Service Co. (AZ)	City of Healdsburg (CA)
9	Xcel Energy (CO)	Sacramento Municipal Utility District (CA)
10	Black Hills Energy (Aquila Energy) (CO)	Long Island Power Authority (NY)

III. SOLAR ELECTRIC CAPACITY – UTILITY-SIDE OF THE METER

Rankings 5 and 6 represent the sum of solar electric system capacity located on the utility side of the meter on either the distribution or transmission system, with the ranked utilities representing the end purchasers of the solar electricity. The solar capacity represented in this category is heavily weighted toward concentrating solar thermal plants, but several new large photovoltaic plants may be indicative of an emerging trend. A separate top ten ranking by utility type was not possible due to the limited number of systems currently in this configuration.

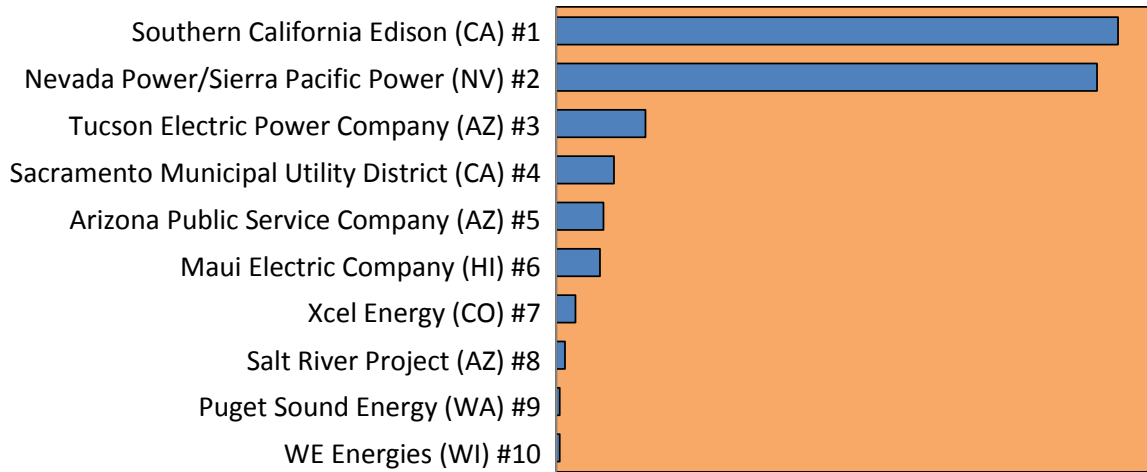
Southern California Edison’s SEGS CST plants on the utility side of the meter drives the rankings here, as they also do for the overall rankings. Nevada Power/Sierra Pacific Power is similarly led by the Nevada Solar One CST plant purchases, followed by Xcel Energy (CO), Arizona Public Service (AZ), and Tucson Electric Power (AZ). Sacramento Municipal Utility District (CA) is the highest ranked public power utility at number six.

Ranking 5: Top Ten Utilities Ranked By Solar Electric Capacity on the Utility Side of the Meter (MW) – All Utilities



When standardized by customer, the rankings change somewhat, with Sacramento Municipal Utility District (CA) rising into the top five, and Tucson Electric Power and Arizona Public Service trading spots.

Ranking 6: Top Ten Utilities Ranked By Solar Electric Capacity Per Customer on the Utility Side of the Meter (MW) – All Utilities



FUTURE UTILITY SOLAR INTEGRATION

It is especially difficult to predict the future in the rapidly changing solar industry. However, increasing utility engagement in solar electricity is an obvious theme. An unprecedented number of utilities have made major announcements of large solar purchases or new and expanded customer programs in 2007 and 2008.

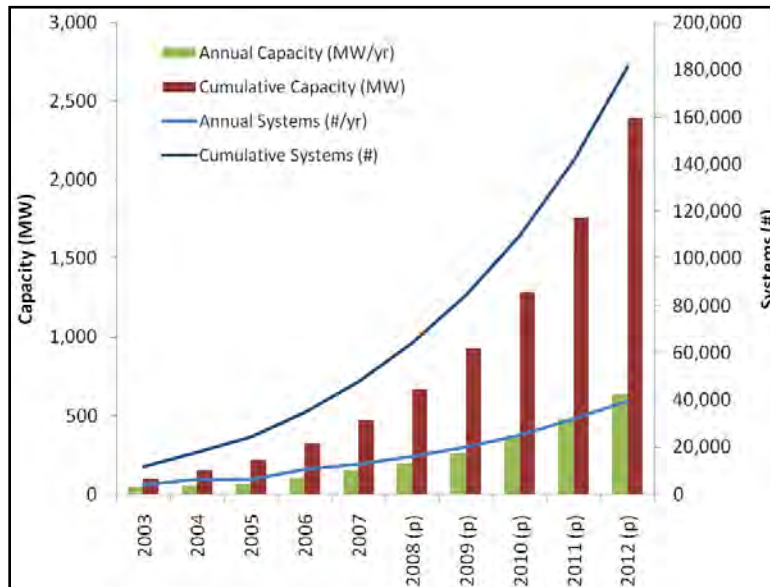
Customer Side of the Meter

On the customer side of the meter, photovoltaic systems will continue to be the dominant solar electric technology. Differences in utility integration of solar are driven by a variety of factors, including state policies, available incentives, retail electricity prices, solar resource, market prices, and the state of the economy. Ultimately, all customer-related solar markets are state and utility specific.

On a national level, using basic projection techniques, annual U.S. growth is expected to increase from 150 MW in 2007 to over 600 MW in 2012 (Figure 1). Prior to 2007, nearly all photovoltaic projects would have been installed under a net metering arrangement, i.e. the customer side of the meter. But with two large PV installations in 2007 and utility announcements of large amounts of customer-sited, utility side of the meter projects in 2008, growth will not be limited to traditional net metering arrangements. While customer sited systems will dominate the market for photovoltaics, the metering configuration may become blurred.

On the state level, several states have solar, distributed generation, or customer-siting requirements within their renewable portfolio standards or other state policies. Utilities in these states will see significant growth in their photovoltaic markets, largely but not exclusively, on the customer-side of the meter, including Arizona, California, Colorado, Delaware, Maryland, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Pennsylvania, and Washington, D.C. These state markets will emerge at different rates over the next five years, but they represent the best prediction for utilities actively engaging solar in a significant manner in the near-term. Other states, and their associated utilities, can certainly emerge as leaders with their own initiatives, and could leapfrog these coarse geographic predictions.

Figure 1. U.S. Photovoltaic Market and Projections (P)



Utility Side of the Meter

On the utility side of the meter, keeping track of myriad announcements of concentrating solar thermal plants is both confusing and indicative of the industry’s potential. There are many hurdles for these projects to overcome before they begin operations related to technology, capitalization, siting, transmission and permitting. In short, announcing a project is not the same as completing one, and the final numbers will play out over the coming years. However, SEPA has identified over 4,600 MW of CST being planned over the next eight years, and even a completion rate of 50% leaves a healthy dose of CST electricity for utility purchase. The industry could experience five to ten fold growth rates, but the range is wide and uncertainty is high.

The emergence of photovoltaics on the utility side of the meter is a new development, with several large announcements by utilities from across the country. However, the majority of the almost 600 MW identified will not be large solar farms. Duke Energy (NC), Long Island Power Authority (NY), San Diego Gas & Electric (CA), and Southern California Edison (CA) have all announced or moved forward on developing customer-sited projects on the utility side of the meter, either through direct utility or third-party ownership. This is quite different from the net metered or feed-in tariff projects in the U.S. and Europe in that the utilities are driving these market changes. For the investor owned utilities however, the regulatory process may hold the key to their projects’ development, as the solar industry and other stakeholders digest these announcements in public forums.

UTILITY LARGE SOLAR ELECTRICITY PURCHASE ANNOUNCEMENTS (> 5 MW)

Utility	CST MW	PV MW	Total MW	Notes
Arizona Public Service (AZ)	530	—	530	CST: 280 MW announced trough project and 250 MW open RFP, to be allocated among several utilities
Duke Energy Carolinas (NC)	—	48	48	PV: One 12+ MW open RFP (OH), one 20 MW announcement (NC), one 16 MW customer-sited announcement (NC)
Florida Power & Light (FL)	85	35	120	CST: 75 MW trough hybrid and 10 MW CLFR, PV: 25 MW and 10 MW
Long Island Power Authority (NY)	—	50	50	PV: 50 MW customer-sited open RFP
Pacific Gas & Electric (CA)	1,737	7	1,744	CST: 553 MW trough, 900 MW heliostat tower, 177 MW CLFR, and 107 MW trough-biofuel hybrid; PV: two aggregated 7 MW projects
Public Service of New Mexico (NM)	70	—	70	CST: 70-190 MW open RFP trough, to be allocated among several utilities
San Diego Gas & Electric (CA)	300	50	300	CST: 300 MW stirling engines with 600 MW expansion option; PV: 80 MW Solar Initiative, 2/3 utility owned
Southern California Edison (CA)	795	250	1,045	CST: 500 MW stirling engines with 350 MW expansion option; 245 MW heliostat tower and 50 MW trough-gas hybrid; PV: 250 MW customer-sited announcement
Xcel Energy (CO)	225	—	225	CST: 200 MW and 25 MW troughs
Unknown Utility Purchaser (CA)	890	200	1090	CST: 250 MW trough (Kern Cnty), 250 MW trough (San Bernadino Cnty), 50 MW trough (Victorville Cty), 50MW trough (Palmdale Cty), 290 MW CLFR (TBD); CPV: 200 MW (TBD)
Total	4,632	640	5,272	

ADDENDUM

2008 SEPA REPORTS

Spring 2008

- *Residential Photovoltaic Metering & Interconnection Study: Utility Perspectives and Practices*
- *Photovoltaic Capacity Methods Report*
- *Utility Solar Business Models Report*

Summer 2008

- *Solar Fact Finding Mission to Germany for Utility Decision Makers – Summary Report*
- *Top Ten Utility Solar Integration Rankings*
- *Customer Incentive Survey Report*
- *Decoupling Utility Profits from Sales - Issues for the Photovoltaic Industry (white paper)*

Fall 2008

- *Utility Solar Procurement Report*

SEPA reports, as released, are posted for public viewing at www.SolarElectricPower.org.

REPORT SUMMARIES

Residential Photovoltaic Metering & Interconnection Study: Utility Perspectives and Practices. Utilizing data from a survey of 63 U.S. utilities, this report establishes a baseline of utility practices related to residential grid-connected photovoltaic metering and interconnection practices.

Photovoltaic Capacity Methods Report. The PV Capacity report catalogues statistical methods for measuring the relationship between peak electricity demand and photovoltaic output, including three utility case studies, and documents the results from a 2007 workshop on the topic with utilities, industry and other stakeholders.

Utility Solar Business Models Report. Business opportunities are beginning to emerge for utilities to become involved in the solar value chain, providing value-added solutions to utilities and their customers.

Solar Fact Finding Mission to Germany for Utility Decision Makers – Summary Report. Twenty-five U.S. utility decision makers traveled with SEPA to Germany in June 2008 to examine how they can emulate the success of German utilities in integrating large quantities of solar electricity into a national utility grid.

Top Ten Utility Solar Integration Rankings. SEPA conducted a nationwide survey of utilities to find out how much solar electricity, e.g. PV and CST, is integrated into their service territories and ranked them overall and per customer to find out which are the most solar integrated, including on the customer and utility sides of the meter.

Customer Incentive Survey Report. SEPA worked with nine state and utility photovoltaic incentive programs to distribute a survey to program participants asking about their satisfaction and experiences with the installation, incentive, interconnection, and ongoing maintenance of their systems. The resulting report will analyze the data across geographies to draw distinctions and parallels across the country.

Decoupling Utility Profits from Sales - Issues for the Photovoltaic Industry. The reduced sale of retail electricity from photovoltaics creates an inherent problem for electric utilities in maintaining long-term operating revenue, especially as the solar industry expands. Decoupling is a regulatory policy that changes the way utilities recover revenues to adjust this disincentive. This decoupling white paper introduces the concept into the solar community, explains what decoupling is, defines the different types, and includes a case study showing how solar market development in the future might affect utility rates under decoupling.

Utility Solar Procurement Report. This project will identify innovative ideas and best practices for utilities to procure large amounts of solar electricity. Going beyond traditional methods, the report will explore innovative ideas for procuring solar, such as aggregation, auctions, and long-term manufacturing agreements, and include best-practices for a traditional RFP / PPA process.

SEPA STAFF

Julia Hamm – Executive Director

Administration

Mark Kimble – Director of Operations
Jessica Sliva – Administrative Associate

Communications, Education, Events, and Membership

Emily Brown – Director of Membership and Education
Michiel Glunt – Exhibits and Sponsorship Manager
Josephine Mooney – Communications and Marketing Manager

Information and Research

Yasmeen Hossain* – Research and Project Analyst
Mike Taylor* – Director of Research

Regional Directors

Jim Harding – Western Regional Director
Christy Herig – Eastern Regional Director
Tom Nicholas – Central Regional Director

* Report authors

CONTACT INFORMATION

Solar Electric Power Association
1341 Connecticut Ave NW, Suite 3.2
Washington, D.C. 20036
202-857-0898
info@solarelectricpower.org
www.SolarElectricPower.org

BOARD OF DIRECTORS

Chris Baggett – Arizona Electric Power Cooperative (AZ)
Mike Behnke – Behnke, Erdman, and Whitaker Engineering (CA)
Jon Bertolino* – Sacramento Municipal Utility District (CA)
Matt Cheney* – MMA Renewable Ventures (CA)
Mark Dougherty – Long Island Power Authority (NY)
Tom Dyer – Kyocera Solar (AZ)
Todd Foley – BP Solar (MD)
Ervan Hancock* (Treasurer) – Southern Company (GA)
Alex Kim – San Diego Gas & Electric (CA)
Pam Newell – Xcel Energy (CO)
Ernie Palomino – Salt River Project (AZ)
David Rubin* (Chairman) – Pacific Gas and Electric Company (CA)
Carl Siegrist* (Vice Chair) – We Energies (WI)
Ed Smeloff* – SunPower Corporation (CA)
David Spradlin – Springer Electric Cooperative (NM)
Jim White – Chelan County PUD (WA)

* Executive Committee

Solar Electric Power Association Membership List

The Solar Electric Power Association is comprised of three membership categories:

- Energy Service Providers
- Solar Electric Industry
- Solar Electric Stakeholders

ENERGY SERVICE PROVIDERS MEMBERS

AEP
AES
Alabama Power Company
Alameda Power & Telecom
Ameren Fuels and Services
American Public Power Association
Anaheim Public Utilities
Arizona Electric Power Cooperative
Arizona Public Service Company
Austin Energy
Azusa Light and Water
Barbados Light & Power Company
Biggs Municipal Utilities
Braintree Electric Light Department
Burbank Water and Power
Cannon Power Group
Central Valley Electric Cooperative, Inc.
Chelan County Public Utility District
City of Alameda
City of Banning
City of Ellensburg
City of Gridley
City of Healdsburg
City of Henderson
City of Lodi
City of Lompoc
City of Palo Alto Utilities
City of Pasadena
City of Riverside Public Utilities
City of Tallahassee Utility Services
City of Ukiah
City of Westerville Electric Division
Clallam County PUD
Cleantech America, Inc.
Colton Electric Utility
Columbia Water and Power
Commonwealth Edison
Cool Earth Solar
Cowlitz County PUD
CSG Services, Inc.
Duke Energy (Cinergy)
Edison Electric Institute
Edison Mission Energy
Elektrizitätswerk der Stadt Zurich
EPRI
EyeOn Energy Limited
Gainesville Regional Utilities
Georgia Power Company
Glendale Water & Power
Grant County PUD
Green Source Energy, LLC
Gulf Power Company
Idaho Falls Power
Imperial Irrigation District

Kit Carson Electric Cooperative, Inc.
Lakeland Electric
Lassen Municipal Utility District
Lea County Electric Cooperative
Long Island Power Authority
LA Dept. of Water and Power
Madison Gas & Electric Company
Maui Electric Company
Minnesota Power
MMA Renewable Ventures, LLC
National Grid USA
National Rural Electric Cooperative Assoc.
Network Tasman
Nevada Power/ Sierra Pacific Power
New Mexico Rural Electric Cooperative Assoc.
New York Power Authority
Northern California Power Agency
Northern Indiana Public Service Company
Northwest Public Power Association
Northwest Rural Public Power District
Oncor Electric Delivery
Orlando Utilities Commission
Otero County Electric Cooperative
Pacific Gas and Electric Company
PECO Energy Company
Plumas-Sierra Rural Electric Cooperative
Port of Oakland
Portland General Electric
Puget Sound Energy
Recurrent Energy, Inc.
Redding Electric Utilities
Roseville Electric
Sacramento Municipal Utility District
Salt River Project
San Diego Gas & Electric
San Francisco Public Utilities Commission
Santee Cooper
Seattle City Light
Sierra Pacific Power
Silicon Valley Power, City of Santa Clara
Snohomish County PUD
Solar Power Assets
Southern California Edison
Southern Company Services, Inc.
Spinnaker Energy, Inc.
Springer Electric Cooperative
SunEdison
Tennessee Valley Authority
Tioga Energy
Truckee Donner PUD
Tucson Electric Power Company
Turlock Irrigation District
Washington Public Utilities District Assoc.
We Energies
Western Area Power Administration

Wisconsin Public Service Corporation
Xcel Energy

SOLAR ELECTRIC INDUSTRY MEMBERS:

3 Tier Group
Acro Electric, Inc.
ACT Solar
AEE Solar
Akeena Solar, Inc.
All Vision Business Enterprise Corp.
Altair Nano
Amonix, Inc.
ARAM Solar
Argand Energy
Arizona Solar Concepts LLC
Atlas Solar Innovations
AVA Solar, Inc.
Avatar Solar
Avery's Electrical Service
BASS Electric
BEW Engineering
BP Solar
Brite Idea Energy
Burkle North America
Centro Solar America
Chevron Energy Solutions
CH2M Hill
Citel Surge Protection
Concorde Battery
Conergy
Cupertino Electric
D.C. Taylor Co.
Darfon America Corporation
Day4 Energy, Inc.
Delaware Renewable Energy
Delta Products Corporation
DH Solar
Direct Power & Water
Double G
DT Solar
DRI Energy
Dubuit of America
EKO Instruments
Empire
Energy Innovations, Inc
Enphase Energy Inc.
Envision Solar
enXco
Evergreen Solar, Inc.
Fat Spaniel Technologies, Inc
Finlo Renewable Energy
First Solar, LLC
General Electric Company
Global Solar Energy, Inc

SOLAR ELECTRIC INDUSTRY MEMBERS:
continued

Gloria Spire Solar
Greenlight Sunstream
Grenzebach Corporation
GridPoint
ICP Global Technologies
IE Inc.
Independence Power Inc.
Infinia Corporation
Inpower Systems
Jamar Power Systems
Jiangsu Lingly Solarfun
Kinetic Systems, Inc.
Krannich Solar, Inc.
Kyocera Solar
Ledcor CMI, Inc.
Morgan Solar, Inc.
Morningstar Corporation
Mustang Vacuum System LLC
N2 Electric, Inc.
NanoGram Corporation
NexPower Technology Corporation
Norcal PV, LLC
NPCP, LLC
Oerlikon Solar
Open Energy Corporation
Patriot Solar Group
Petra Solar Electric
Phasor Energy Company
PowerFilm Inc.
Pyron Solar
Recurrent Energy
REgrid Power
Renewable NRG Sun
Sapphire Automation
Satcon Power Systems
SCHOTT Solar
Sharp Electronics Corporation
Sharpe Solar Energy
SMA America
SmartSpark Energy Systems
Solar Depot
Solar Design Associates, Inc.
Solar Energy International
Solar Integrated Technologies
Solar Power Industries
Solar Power Works, Inc.
Solectria Renewables, LLC
Solon America Corporation
Southwest Windpower
SPG Solar
Spire Corporation
SRS
Su-Kam Power Systems
Sunforce Products, Inc.
SunLink Corporation
SunPower Corporation
Technos International
Texas Solar Power Company
The Citizens Electric Corporation
Trillion Science, Inc.
Trina Solar Energy Company

Trojan Battery Company
Turner Renewables
Two Seas Inc.
UNIRAC, Inc.
United Solar Ovonic, LLC
Varta Microbattery Inc.
WILO North America
Xantrex Technology Inc.
Xunlight
XYG Glass
Yuhan Heating & Air
Zhejiang Sunflower Light Energy Science
& Technology

SOLAR ELECTRIC STAKEHOLDERS:

360jmg, LLC
ABB, Inc.
Alabama Public Service Commission
American Power Conversion (APC)
AND, LLC
APWEN
Arizona Corporation Commission
Arizona Dept. of Commerce Energy Office
Arkansas State Energy Office
Baker & McKenzie LLP
Branson/AmTech Ultrasonics
California Center for Sustainable Energy
California Energy Commission
California Public Utilities Commission
Clean Power Research
Colorado Governor's OEMC
Colorado Public Utilities Commission
Comtel Ingenieria
Cox Enterprises
DC Public Service Commission
Delaware State Energy Office
ECE Electrical Engineering
Element Markets, LLC
Emerging Energy Research
ENCO Utility Services
enerG Magazine
Exide
Fitzgerald, Abbott & Beardsley
Georgia Environmental Facilities Authority
Glen Ivy Hot Springs
Hawaii State Energy Office
Hilb Rogal & Hobbs
Home Power Magazine
Husch & Eppenberger, LLC
Hydro Aluminum
Idaho Dept. of Water Resources
Illinois Dept. of Commerce & Eco. Dev.
Independence Power
Interstate Renewable Energy Council
Kansas Energy Office
Kentucky Office of Energy Policy
Kentucky Public Service Commission
Louisiana State Energy Office
Maryland Office of People's Counsel/
McDonough Holland and Allen PC
Michigan Dept. of LEG
Minnesota Public Utilities Commission

Minnesota State Energy Office
Missouri Dept. of Natural Resources
Energy Center
Morgan Lewis
NASEO
NABCEP
National Association of Electrical
Distributors (NAED)
National Renewable Energy Laboratory
National Association of State Energy Officials
National Resources Group
Navigant Consulting
Nevada Public Utilities Commission
Nevada State Energy Office
New Hampshire Office of Energy & Planning
New Jersey Board of Public Utilities
New Mexico Energy Conservation &
Management Division
NexGen Energy Partners, LLC
NPCP, LLC
North Carolina State University
North Dakota Department of Commerce
NYSERDA
Oak Ridge National Laboratory
Ohio Department of Development
Oklahoma Dept. of Commerce
Ongrid Solar
Oregon Department of Energy
Oregon Public Utilities Commission
Pennsylvania Dept. of OETD
Pennsylvania Public Utilities Commission
Prometheus Institute
REB Properties
Red Carpet Electric
Rhode Island Office of Energy Resources
RTS Corporation
Sandia National Laboratories
Seagle Electrical Services
SE Corporation
Solar Energy International
South Carolina Energy Office
South Dakota Office of the State Engineer
Southern Ute Indian Tribe Growth Fund
TX St. Energy Conservation Office
Thelen Reid & Priest LLP
VA Dept. of Mines, Minerals, and Energy
Washington State Dept. of CTED
Womble Carlyle Sandridge & Rice PLLC
Zackin Publications