

Ask the Utility: Working with Your Local Investor-Owned Utility



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SunShot
U.S. Department of Energy

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About the SunShot Solar Outreach Partnership



The SunShot Solar Outreach Partnership (SolarOPs) is a U.S. Department of Energy (DOE) program designed to increase the use and integration of solar energy in communities across the US.

Speakers

Today's Speakers

Tom Nicholas, Regional Director, Central
US
SEPA

Richard Wright, Managing Executive,
Renewables
Ameren

Andrew Yip, Manager - Solar and
Customer Generation
Pacific Gas and Electric Company



About SEPA

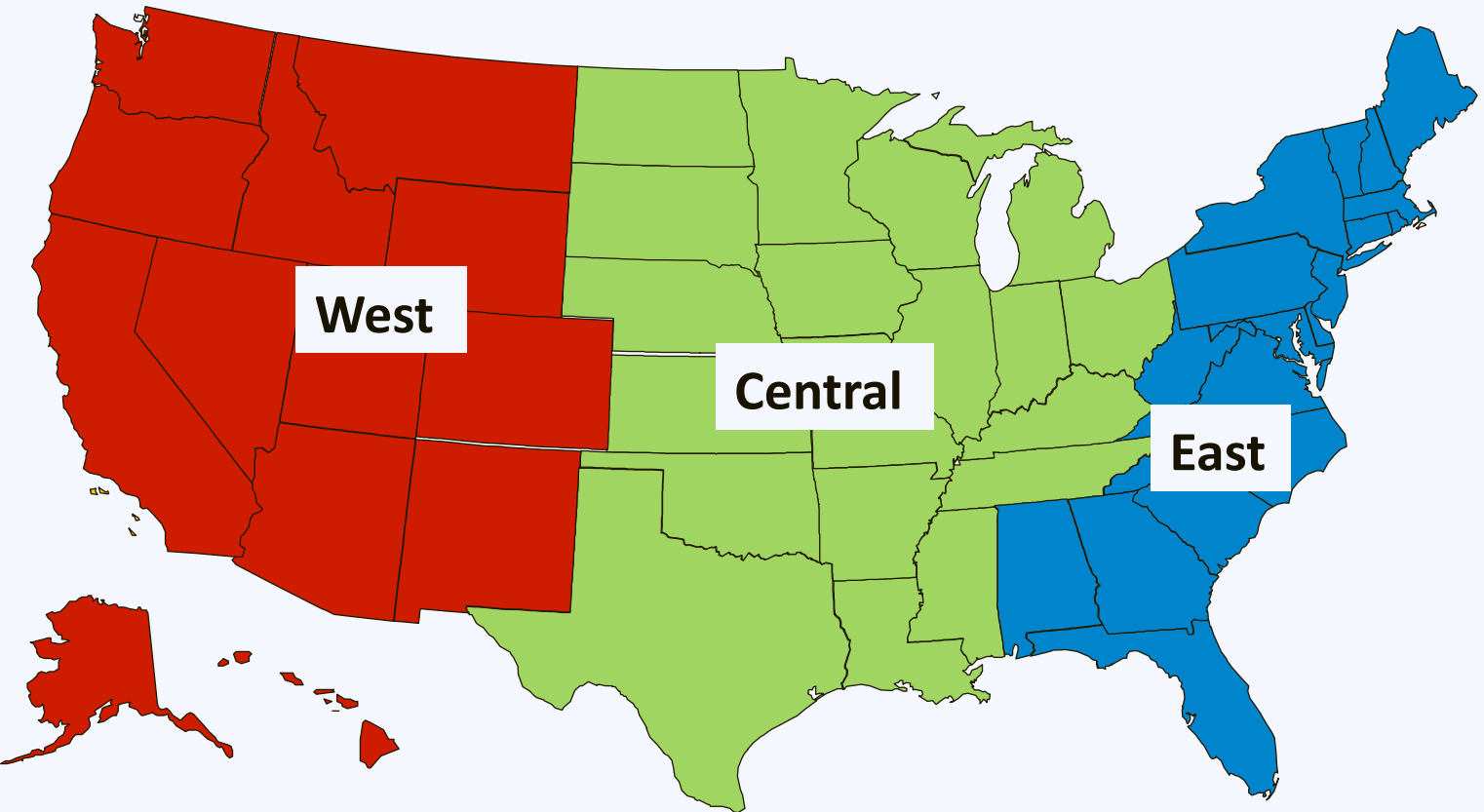
- Formed in 1992 as the Utility Photovoltaic Group
- Educational non-profit organization
- Provides unbiased solar information, services and events with a utility focus



The screenshot shows the SEPA website's Resources page. At the top, there is a dark blue header with the SEPA logo (a globe with '20 YEARS' and 'SEPA solar electric power association') and navigation links: 'BECOME A MEMBER', 'DONATE NOW', and 'LOG IN'. Below the header is a secondary navigation bar with links for 'HOME', 'ABOUT', 'MEMBER CENTER', 'RESOURCES' (highlighted), 'NEWS & MEDIA', 'EVENTS', and a search box. A third navigation bar contains links for 'Knowledge Center', 'Publications', 'Resource Library', 'Solar Projects', 'Business Models', and 'Solar Case Studies'. Below this, there are more specific links: 'Utility Solar Rankings', 'Solar FAQs', 'Solar Solutions Tool', and 'Online Tools'. The main content area has a yellow header with the word 'Resources' and a '+ SHOW EXPLANATION' button. The main content is titled 'Solar Energy Information' and features a section for the 'Utility Solar Knowledge Center'. This section describes the center as a resource portal for filtering documents, multimedia, news, and events. It includes a list of links: 'Resource Library', 'SEPA News Briefs', 'SEPA Events', and 'Solar Tools (see below)'. To the right of the text is a photograph of a solar tower (CSP) system with a central receiver tower and surrounding heliostats.

SEPA Regional Director Territories

-  Kim Kiener
-  Tom Nicholas
-  Sandra Burton



Resources

DOE SunShot Resource Center

- http://www4.eere.energy.gov/solar/sunshot/resource_center/

Database of State Incentives for Renewables and Efficiency (DSIRE)

- www.dsireusa.org

SEPA

- www.solarelectricpower.org

North American Board of Certified Energy Practitioners (NABCEP)

- www.nabcep.org

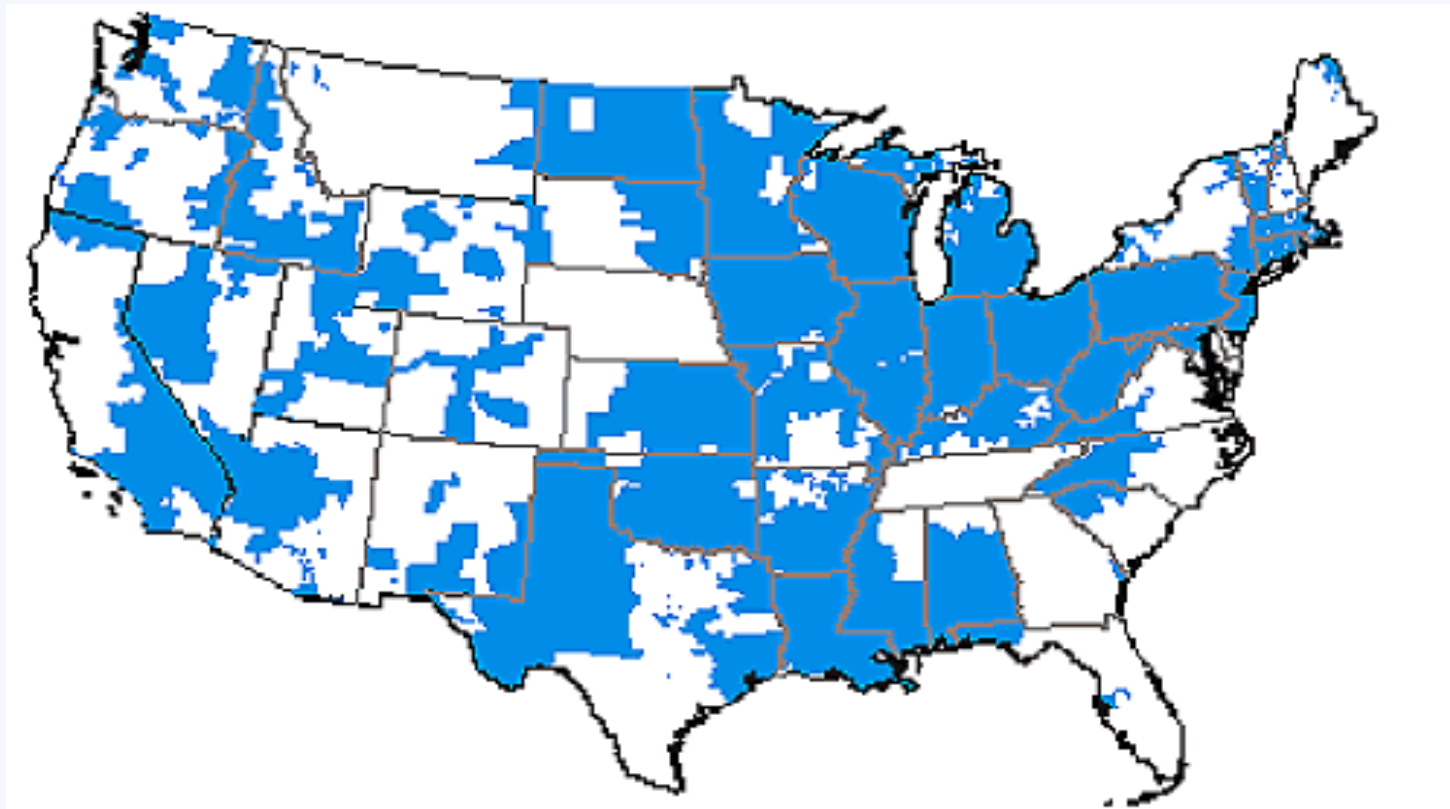
Don't forget to check your local utility's website for info!

What Makes IOUs Different

Investor-owned Utilities (IOUs)

- For-profit, shareholder-owned utility
- Typically located in metropolitan areas, largest customer base (of the three major utility types)
 - On average, IOUs service 429,400 customers each
 - IOUs serve nearly 70% of all U.S. electricity customers
- Approximately 200 IOUs in the U.S. compared to more than 2009 Publicly Owned and 912 Cooperatively Owned
- Highly regulated by both state and federal commissions
 - States regulate rates and environmental issues
 - Federal government regulates transmission between states (in the wholesale market)

Service Areas of Investor-Owned Utilities, 1998



Source: U.S. Energy Information Administration

Ameren Corp

- Ameren Missouri
- Ameren Illinois
- AmerenEnergy Resources
- Ameren Services – Shared services
- 2.4 million electric customers
- 1.0 million gas customers
- 64,000 square miles of territory in Illinois and Missouri
- 16,900 MWs of generation



GENERAL MISSOURI NET METERING REQUIREMENTS

- Renewable generator can be sized up to an offset of all or part of the customer's electrical energy requirements (no greater than)
- Maximum renewable generator size is 100 kW nameplate
- Ameren Missouri's bi-directional meter must be installed
- Safe operation of the renewable generator is the main goal for standards set in the tariff as well as reliable service for all customers

RIDER SR – SOLAR REBATE TARIFF

- Rebate amount \$2/watt up to \$50,000 total
- Rebate check will only be disbursed to Ameren Missouri account holder for the specific project
- Permanently installed new solar systems or expanded solar systems operational after 12/31/09
- Ameren Missouri Net Metering agreement **required**
- Electric retail account must be active and in good payment standing

RIDER SP – SREC PURCHASE

- **Lump Sum Offer** – DC nameplate capacity if less than 10 kW
 - Offer to purchase 100% of SRECs produced during the first 10 years after executed agreement/operational system
 - Number of SRECs will be determined using PVWatts
 - \$50/SREC
 - Single up-front payment for contract term

RIDER SP – SREC PURCHASE

- **Annual Payment Offer** – DC nameplate capacity is 10 kW-100 kW
 - Offer to purchase 100% of SRECs produced during the first 5 years after executed agreement/operational system
 - Number of SRECs will be determined by utility installed meter which will show renewable production
 - Meter is in addition to bi-directional meter
 - Customer is responsible for cost of meter/installation
 - \$50/SREC
 - Annual payment based on actual SRECs produced for contract term

CUSTOMER'S NET METERING APPLICATION TWO-STEP PROCESS

STEP ONE

- Missouri Net Metering Application for renewable system design is submitted to Ameren (Sections A-D)
 - Section A. Customer-Generator's Information
 - Section B. Customer-Generator's System Information
 - Section C. Installation Information/Hardware and Installation Compliance (requires signature)
 - Section D. Additional Terms and Conditions (requires signature)
- Ameren Missouri's Engineer Review Board evaluates each Net Metering application and system design
- Ameren sends a Design Approval letter to the customer and installer approving the proposed design, requests additional information or denies proposed plans

CUSTOMER'S NET METERING APPLICATION TWO-STEP PROCESS

STEP TWO

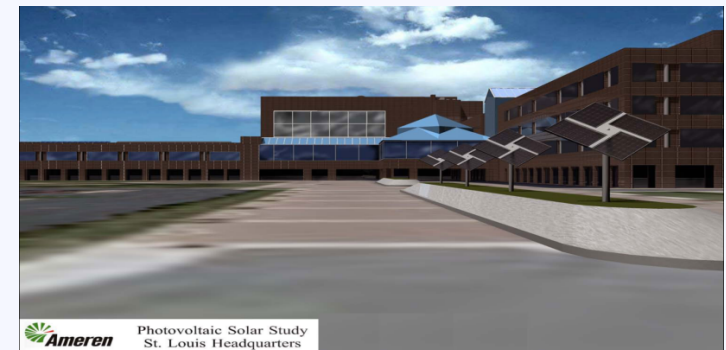
- Renewable system is installed and customer has a Missouri licensed engineer or electrician inspect system to ensure all requirements are met
 - Section E. Electrical Inspection (signature required)
 - Section F. Customer-Generator Acknowledgement (signature required)
- Ameren installs bi-directional meter \$360 one-phase or \$270 three-phase
- Ameren executes Section G. Application Approval

Solar Initiative-Ameren Headquarters

- Approximately 100 kW of various PV technologies
 - Mono-crystalline
 - Poly-crystalline
 - Thin film
 - Bifacial
- Website (www.amerensolar.com) display with real time generation output by system



A screenshot of the Ameren website's Solar Energy section. The page features a navigation bar with links for Customers, Investors, Career Seekers, Business Partners, Community Members, Educators/Students, and Media. The main content area is titled "Ameren's Solar Project" and includes a "Play Video" button, a "Solar Energy Production" widget showing 75 kW, and a "Enough Energy Produced for..." widget showing a house icon and "Homes". There are also links for "Monocrystalline", "Polycrystalline", and "Thin Film" technologies. The footer includes copyright information for 2011 Ameren Services and social media links.



Pacific Gas and Electric Company (PG&E)



Company Facts

- Fortune 200 company located in San Francisco, CA
- \$15B in operating revenues in 2011
- 20,000 employees

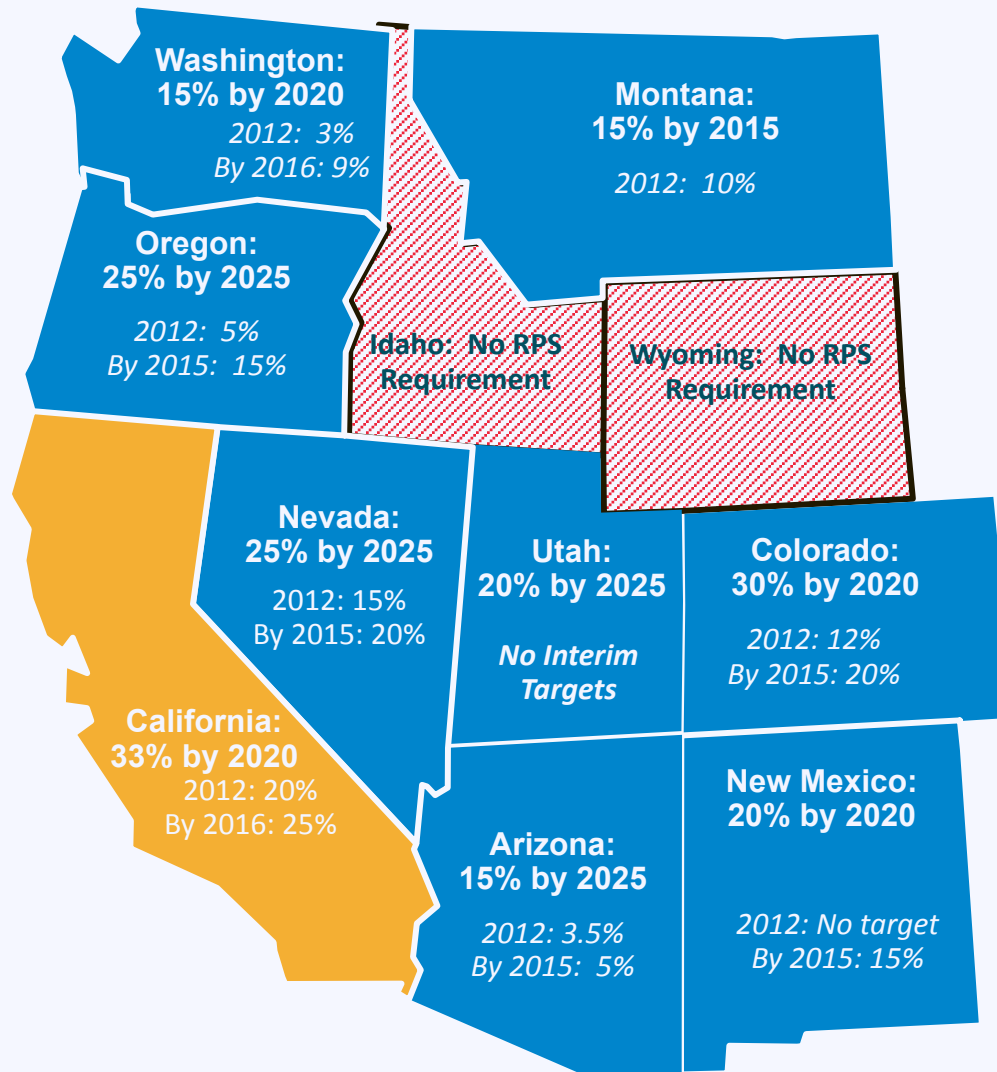
Energy Supply

- Services to 15M people:
 - 5.2M Electric accounts
 - 4.3M Natural Gas accounts
- Peak electricity demand: 20,000 MW
- Over 50% of PG&E's electric supply comes from non-greenhouse gas emitting facilities

Service Territory

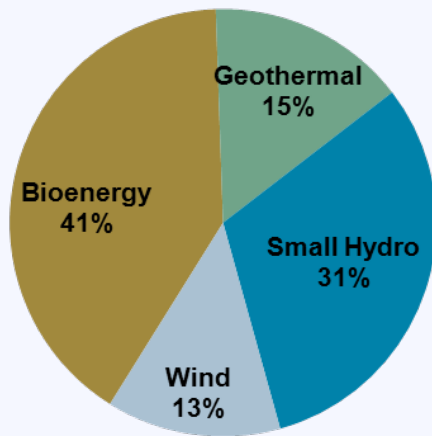
- 70,000 sq. miles with diverse topography
- 160,000 circuit miles of electric transmission and distribution lines
- 49,000 miles of natural gas transmission and distribution pipelines

RPS Requirements Growing in the West

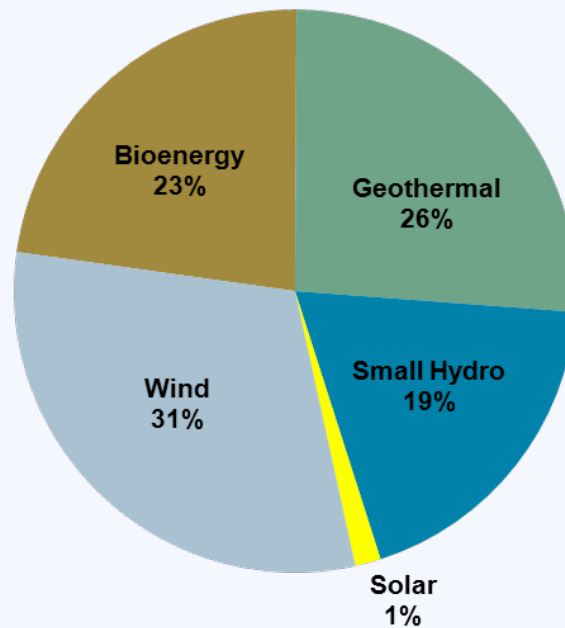


Renewable Portfolio: Past, Present and Risk-Adjusted Future

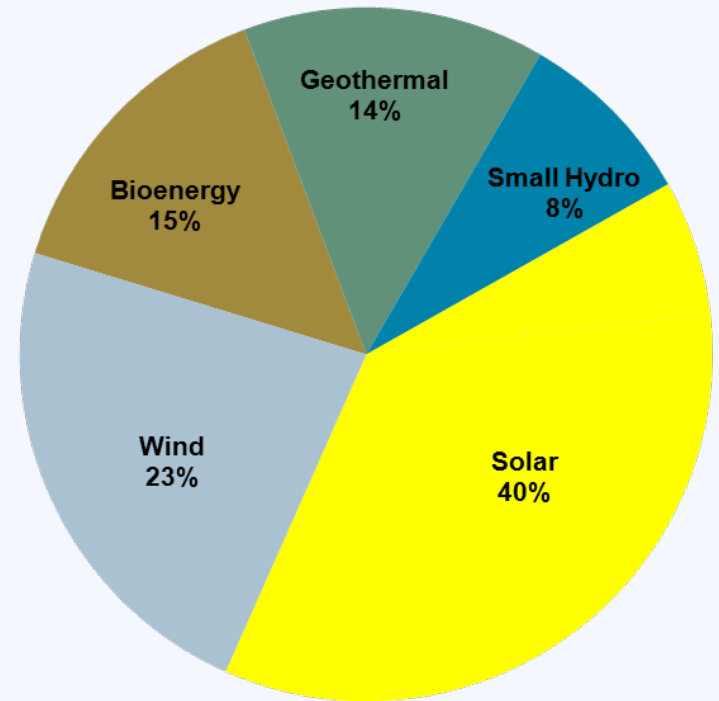
2002 Actual
11% of total bundled retail sales



2011 Actual
19% of total bundled retail sales



2020 Projected
33% of total bundled retail sales

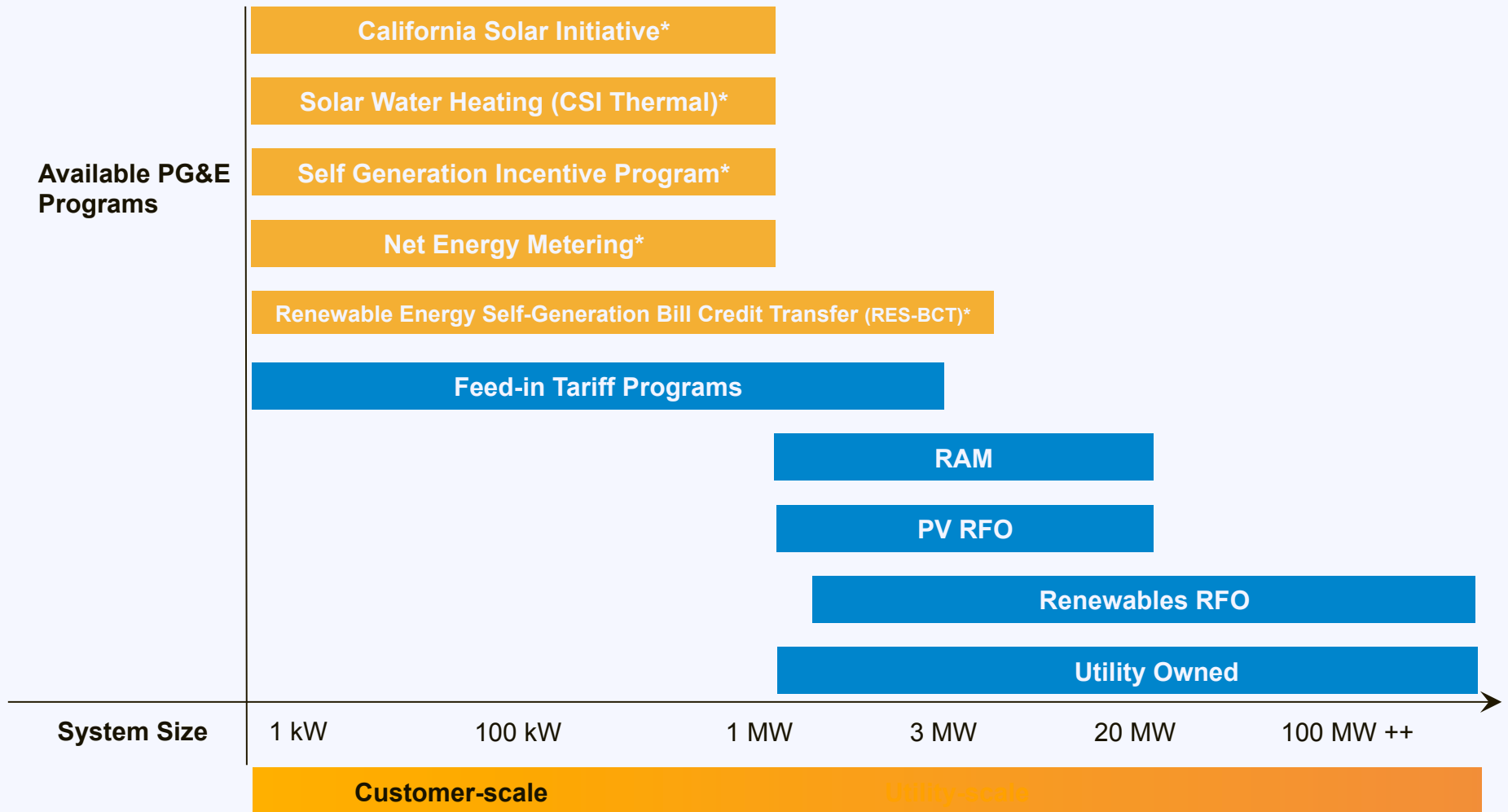


Total RPS-Eligible Procurement
7,504 GWh

Total RPS-Eligible Procurement
~14,000 GWh

Projected RPS-Eligible Procurement
~28,000 GWh

Renewable Energy Programs



Net Energy Metering (NEM)

California Solar Initiative (CSI)

- \$790M in PG&E solar incentives over the next decade
- Statewide goal: 3,000 MW by 2016
- **PG&E has installed over 450 MW at over 40,000 sites**

Net Energy Metering (NEM)

- **Over 65,000 customers have installed over 600 MW of PV using NEM**
 - Over 61,000 residential customers have installed over 275 MW
 - Approximately 4,000 non-residential customers have installed 350 MW

- **Distributed solar shifts costs to customers who do not participate in solar programs**
 - Transmission, distribution and public purpose program (e.g., low-income discounts and energy efficiency) costs should be fairly shared
- **California needs a sustainable customer-side solar program for the future**

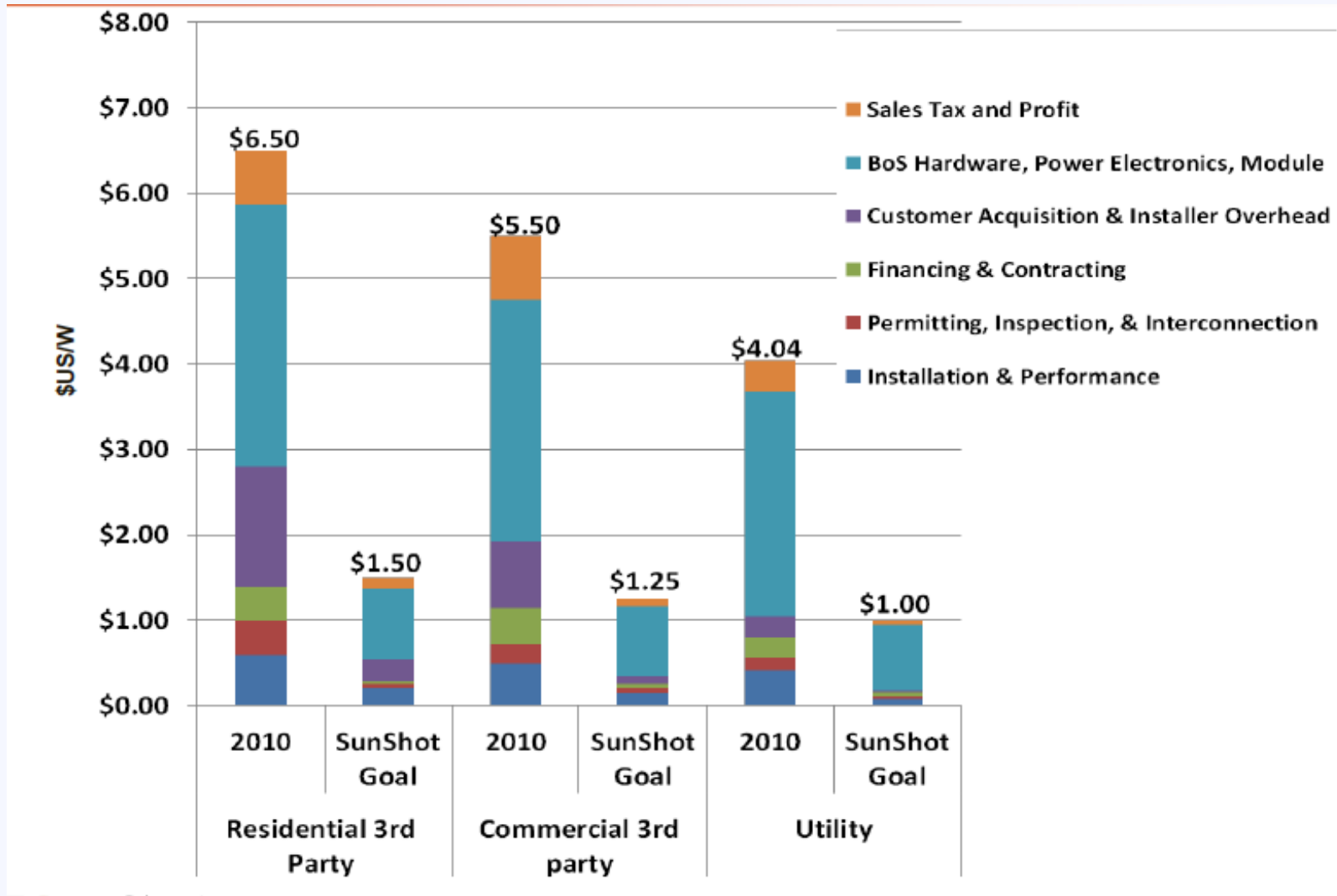
PG&E's Support and Collaboration in the Industry

Rooftop Solar Challenge

What is the Rooftop Solar Challenge?

- Challenge to install solar PV easier, faster, and cheaper
- Part of the DOE SunShot Initiative to make solar PV competitive without subsidies by the end of the decade
- Streamline Solar through non-hardware, or soft costs associated with permitting and interconnection
 - Currently makes up 40% of the total installed cost of PV systems
- Engages diverse teams of local and state governments along with utilities, installers, non-governmental organizations, and others

Solar Market Cost Drivers



Projects in PG&E Territory

Three Projects

- **Southwest Solar Transformation Initiative (SSTI)** (led by Optony and Strategic Energy Innovations) – covers Central CA, northern Utah, western Colorado, western Nevada
- **SolarTech Consortium** – covers Bay Area (mostly South, SF, and North)
- **Contra Costa Economic Partnership** – covers East Bay

PG&E's Participation

- Provide insight into PG&E's interconnection process
 - Compare and contrast to find best industry practices
- Support and guidance for overall successfulness of projects
 - Specifically the interconnection process

Key Takeaways

- PG&E continues to support customer's going solar
- Need to have continued increase in market penetration and lower prices
- PG&E is open to hear opportunities to be involved with projects that will further improve the market, lower costs, and address reliability issues
 - PG&E is also partnering with a few projects through the CSI RD&D grant as an advisor
 - PG&E may not have the capital to do match funding, but can support through other means such as in kind labor, as available

Government Agencies

- Do your homework and understand your facility needs
 - There are many vendors and financial options available in the market right now so it can be confusing
 - Compare bids
- PG&E will support in the incentive and interconnection process, as needed



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Questions?