



# Solar Power Purchase Agreements

***a.k.a. 3rd Party Solar Financing***

# SPP Agreement

- A Solar Power Purchase Agreement (SPPA) is a service contract to **purchase the energy produced** by a solar system for a pre-determined length of time.
- Instead of buying the solar equipment, the customer buys the PV power. No up front or capital investment is involved.
- Typical contracts run from 10 to 20 years, with an option to buy the system at “fair market value” at the end of the term.
- Customer prices vary depending on their current energy rates, and their preference for shorter or longer term savings.



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# Terms of Art

- **Distributed Generation = Behind the meter**
- **The company that sell the solar power and owns the PV system:**
  - **Solar Power Provider**
  - **Solar Energy Services Provider**
  - **Solar Services Provider**
  - **Energy Service Company**



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The



**“Certainly an attractive tool  
to use, *when it fits.*”**

Wally McOuat, HMM Energy Resources



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# SPPs are Solar ESCOs

Total Market Estimate ESCOs 1990-2008 by LBNL Report

- Energy Service Companies (ESCOs) provide energy service contracts to buy *saved energy*.
- \$2 billion in 2000, \$5 billion est. in 2008
- ESCO's harvest *negawatts*. SPP harvest *megawatts*.

QuickTime™ and a decompressor are needed to see this picture.



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# Lg. Commercial Projects

	<b>2003-2006 SGIP*</b>	<b>2007 CSI</b>
<b>MW</b>	<b>195MW</b>	<b>143MW**</b>
<b>Sales (\$m)</b>	<b>\$1,600</b>	<b>\$536***</b>
<b># Projects</b>	<b>1,041</b>	<b>632**</b>
<b>Avg. Cost per watt</b>	<b>\$8.58</b>	<b>\$8.31 3rd Party, \$246m., \$9.22*** regular, \$243m</b>
<b>Of 252 projects in PG&amp;E with cost data, 75 are 3rd party 30%***</b>		

\*Statewide SGIP data published May 2007.

\*\*CSI Staff Progress Report, p.18, includes sm. commercial

\*\*\*PGE, CSI, Lg. Comm., installed & active only



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# Solar - room to grow....!

U.S. Coal Industry  
\$265 billion/year



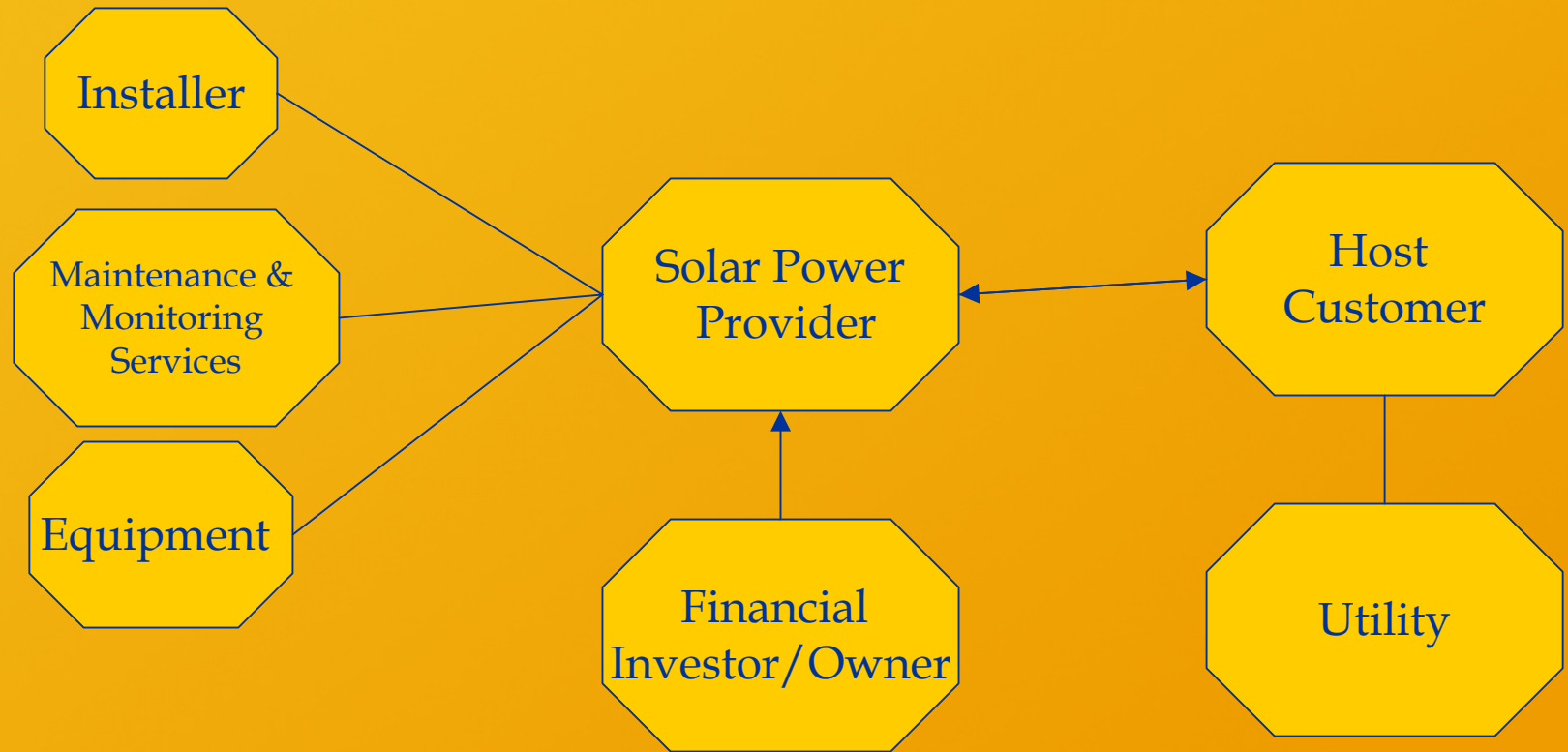
U.S. Solar Industry  
\$10+ billion in 2006



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# SPP Players -

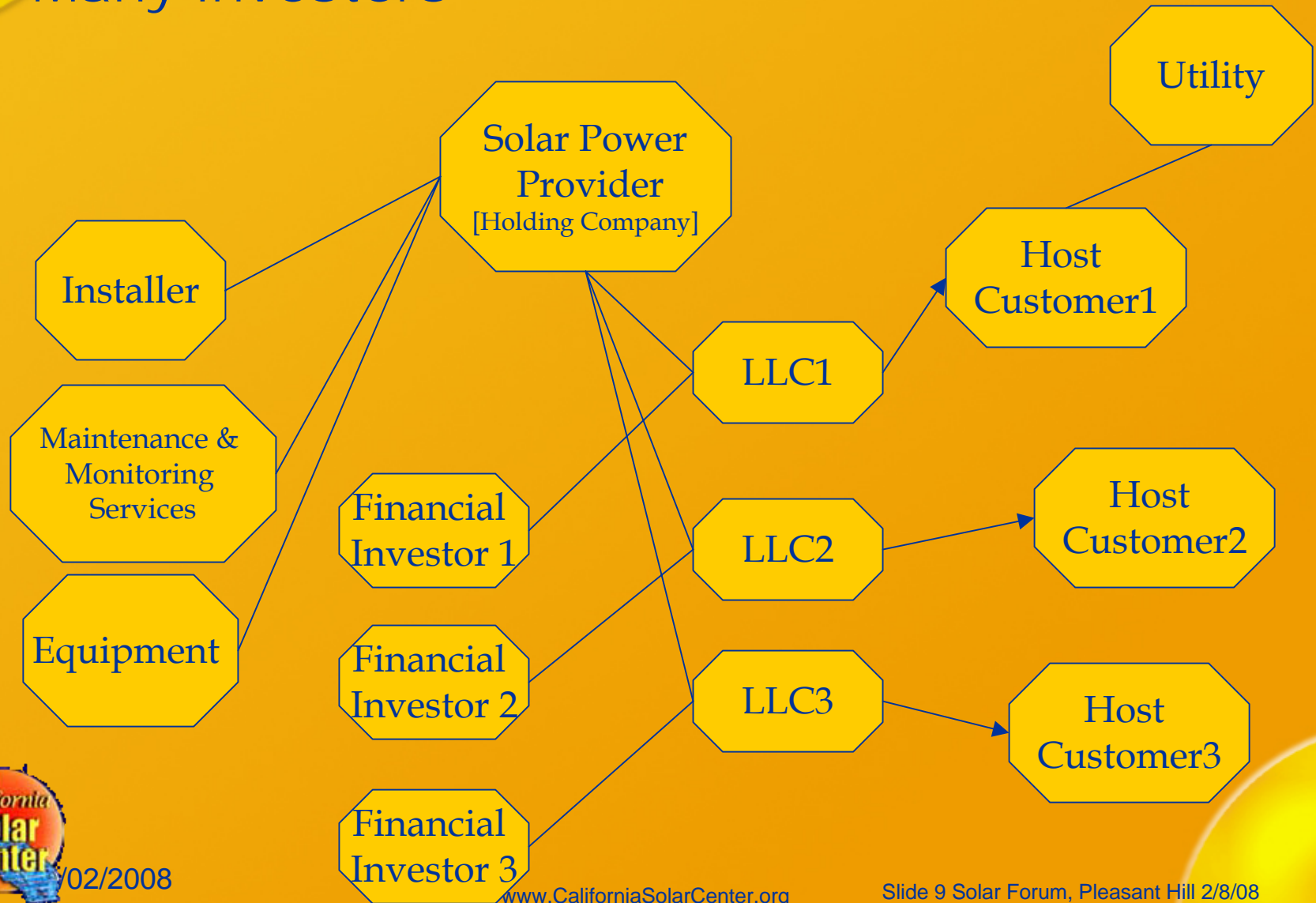
One Financial Owner



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# SPP Players -

Many investors



# 5 Steps to an SPP Project

- 1. Decide if solar energy performance contracting is right for your business.**
- 2. Select a Solar Power Provider (SPP).**
- 3. Contract with your SPP to identify/confirm Solar project(s).**
- 4. Negotiate a long-term contract with your SPP.**
- 5. Purchase solar energy and enjoy the benefits.**

Adapted from <http://www.colorado.gov/rebuildco/fivesteps.htm>



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# Step 1: Is an SPP for you?

1. No available path to simple ownership.
2. No access to commercial tax and depreciation incentives.
3. Large unshaded installation space, e.g. 25,000 sq. ft., on relatively new roof, or twice as much ground mount space.
4. Use significant, 20,000kWh+ per month on one or more facilities.
5. Need to address CO2 policies with small budget.



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## Step 2: Select an SPP

1. Understand the technology
2. Analyze your energy loads and costs
3. Review likely installation locations - including lifecycle and timing of roof replacement
4. Use examples to develop your RFP and draft contracts - don't reinvent the wheel



# Step 2 cont'd: Selecting your SPP

- Put out RFP that meets your requirements for:
  - Timing - understand permitting process and who meets added costs for delays
  - kWh savings needed - what's your bottom line (may use bidding process)
  - Contract duration and options to purchase
  - Equipment flexibility
  - Use of RECs
- Get references from previous customers - not just those provided by contractor



# Step 3: Contract with SPP

## **GOALS:**

- **Clarity**
- **Transparency**
- **Identify responsibilities**
- **Manage expectations**



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# Step 4: Negotiate SPP Contracts

- **Site License**

- Clarify Host and SPP responsibilities re: installation and maintenance of equipment
- Access for maintenance
- Responsibilities for system structure
- Installation timing and delay penalties
- Change of ownership issues (lease clauses, system removal parameters, etc.)
- Prevent damage, shading.



# Step 4 cont'd.: Negotiate SPP Contracts

## ● Power Purchase Agreement

- Fixed rate with annual escalator for inflation, e.g. \$.165/kWh + 2.5% increase OR
- Indexed to utility rates, e.g. 1% below defined tariff Fixed escalator on kWh price or higher starting prices
- Billing cycles and processes (pre-pay bills then true-up vs. pay after use)
- Agree to buy the solar energy produced



# Step 4 cont'd: Negotiate SPP Contracts

- **Power Purchase Agreement cont'd:**
  - Option to purchase RECs
  - If net metering is involved (e.g. at some points the power will go back to the utility) ensure host receives full retail “bundled” credit from net metering.
  - Renegotiation points/timelines: option to purchase, kWh rates, changes in ownership.
  - Performance standards, goals, penalties



# Step 5: Purchase solar energy

- **Certifying energy produced vs. energy billed**
- **Monthly vs. Quarterly vs. Annual ‘true-up’ calculations**
- **Maintenance and repair - access, timing, responsibilities**
- **Making public claims about your solar power investment**



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# Projects

- **California State Buildings, 4.2MW installed, 24MW planned. Including State Universities, Hospitals, Prisons, Admin. Bldg.'s**



**San Diego Unified School  
District, 28 Schools, 4.1 MW**

QuickTime™ and a  
decompressor  
are needed to see this picture.



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# Case Study 1: San Diego Unified School District

- 28 schools with solar roofs, 4.17MW of power (2000-2006)
- 4 phases, 7 schools at a time
- Project included replacing old roofs on schools with solar roofing - no cost to the schools
- 20 year contract with option to purchase at fair market value.
- 2.5% fixed annual kWh escalator, starting at 16.5/kWh, which is the blended rate including TOU and peak demand charges.
- SPPSCo was 3 Phases, installer/maintenance is Solar Integrated Technologies.



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# Advice from San Diego

- **Include the actual install structure in deal (e.g. the roof) if possible**
- **Vandalism is a real concern for schools - their thin-film system is not sensitive to that, but crystalline could be.**
- **Be very clear about your actual costs for energy and what the utility will be crediting for net metering**



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# Case Study 2: CSU San Luis Obispo

- **Part of CSU system RE project for several campuses**
- **175kW system installed 2006 by SunEdison**
- **Not net metered - all energy used immediately**
- **Fixed \$.145 kwh with 1.85% annual escalator**



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# Advice from SLO

- **Understand how PV works and what to expect**
- **Understand your energy costs (especially if you are paying TOU and peak demand charges) so you can negotiate best kWh price and reasonable escalator.**
- **Billing for kWh is easiest if it matches rest of energy procurement bills (e.g. monthly, quarterly, annually)**
- **Go with an experienced contractor if you can**



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# References

- Sandia: <http://energy.sandia.gov/thirdpartyfinancing.htm>
- California Energy Commission:  
[http://www.energy.ca.gov/reports/efficiency\\_handbooks/index.html](http://www.energy.ca.gov/reports/efficiency_handbooks/index.html)
- DOE - EERE:  
<http://www1.eere.energy.gov/femp/financing/superespcs.html>
- SunEdison
- MMA Renewable Energy Ventures



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# Example list of SPPs

(Year of First Install\*# of completed installations\*MW installed as of 1/2008)

- SunEdison (2003/140+/47MW)
- 3 Phases
- EI Solutions (2005/8/3MW)
- MMA Renewable Ventures (2005/11/20MW, including 15 MW at Nellis AFB - <http://www.renewableenergyaccess.com/rea/news/story?id=50895>)
- Solar Integrated Technologies
- Solar Power Partners
- Honeywell
- Sterling Planet
- DEERs
- UPC (Houston, TX)
- Tioga Energy
- MP2 Capital
- Sterling Planet
- CleanTech America
- Chevron Energy Solutions
- Sun Run Generation



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# Thank You!

- **SEPA Solar Power Conference 2007, and panel speakers from “Power Purchase Agreements, The New Frontier.”**
- **Bob Martin, San Diego Unified School District**
- **Patrick McCoy, California Department of General Services**
- **Nathalie Osborn, Honeywell**
- **Mark Stout, Cleantech America**

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