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# PPA – A Cost-effective Approach to Solar Energy

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By  
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# PPA Basic Definitions

- PPA is a legal contract between an electricity generator (provider) and a power purchaser (host).
  - The seller under the PPA is typically an independent power producer, or "IPP."
  - PPA provider secures funding, maintains and monitors the energy production, and sells the electricity to the host at a contractual price for the term of the contract.
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## PPA – Terms and Conditions

- PPA generally last between 5 & 25 years
  - HOST has the option to:
    - purchase the generating equipment from the PPA provider before, or at the end of the term
    - renew the contract with different terms
    - or can request that the equipment be removed.
  - PPA defines the output of a solar electric system and the credit of its associated revenue streams
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# How PPAs make solar affordable

- drive costs down in every development phase
- utilize:
  - Federal ITC
  - leveraged supply relationships
  - Economies of scale
  - State tax credits
  - Renewable Energy Credits
  - Local rebate programs



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# PPA - Financing

- PPA provider raises non-recourse financing from a bank or other investors
  - Solar PPA depends heavily on the existence of the solar investment tax credit
    - Emergency Economic Stabilization Act of 2008 – 8 Year Extension
    - PPA relies on financing partners who can benefit from the federal tax credit
    - State tax credits and incentives drive priorities
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# PPA – “Stimulus”

- American Recovery and Reinvestment Act of 2009
  - the solar investment tax credit can be combined with tax exempt financing, significantly reducing the capital required to develop a solar project.



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# PPA provider managed services

- ❑ Program design
- ❑ Financing
- ❑ Design
- ❑ Construction
- ❑ REC certification & sales
- ❑ Rebate processing
- ❑ 24/7 monitoring & verification
- ❑ Operations & Maintenance





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## PPA Customer -

- customers do not have to pay upfront costs for equipment and installation
  - customers pay only for the electricity the system generates
  - Customers pay less than local tariffed rate for electricity
    - Negotiated
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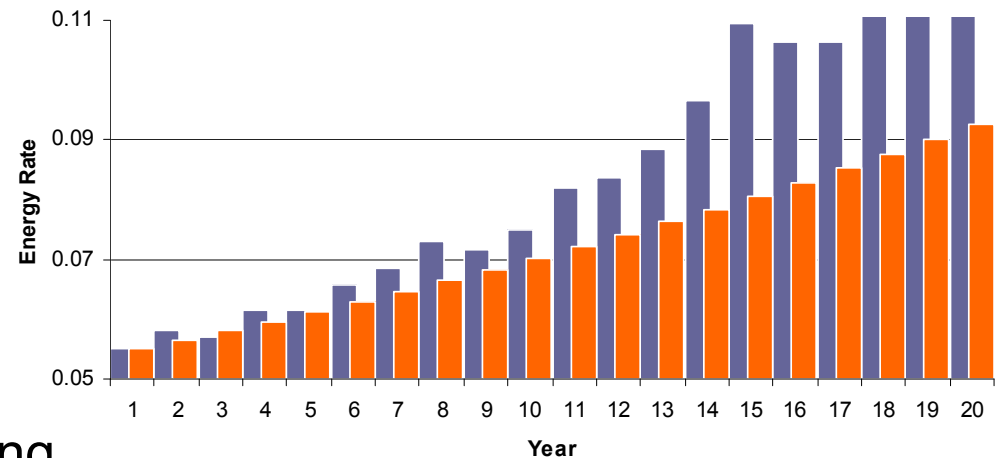
# PPA Value Proposition

- Simple
  - Customer just pays for energy
- Financially efficient
  - Incentives are fully maximized
- Predictable long-term pricing
  - PPA rate is equal or below utility's rate
- Aligns interests
  - Partners benefit from maximizing system long-term revenue stream
- Service based
  - PPA performs monitoring, operations, & maintenance

**Predictable prices**

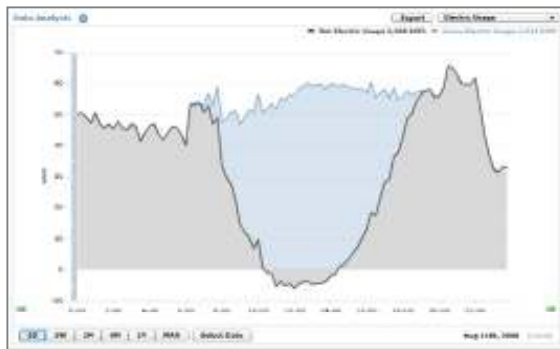
**vs.**

**Volatile energy prices**



# PPA – M&V

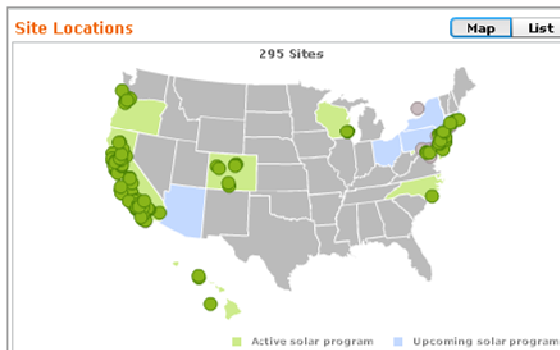
Real-time, auditable solar production monitoring in 15-minute intervals



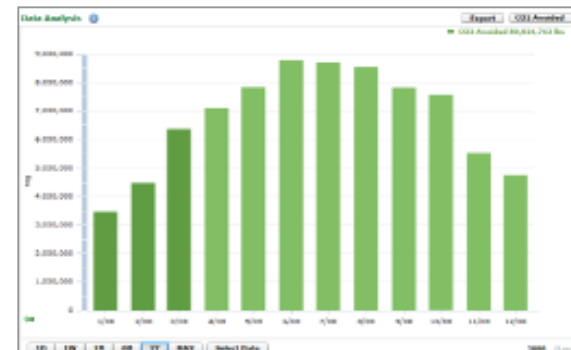
Transparency into cost savings from solar generation



Aggregated portfolio views, allowing users to track solar assets by geography



Performance metrics showing environmental impact



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# PPA Advantages

- Purchase energy
  - no capital expenditure
- maximizes incentives
  - sells tax credits, RECs to interested parties
  - provides (discounted) solar rate
- PPA holds responsibility
  - monitors system performance, operations, maintenance, etc.
- Evaluate savings on PPA rate vs. utility rate





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# Direct Ownership Disadvantages

- Purchase entire PV system
    - pay cash upfront, asset on balance sheet
  
  - Customer tries to monetize incentives
    - uses incentives to offset capital expenses over appropriate payback period
  
  - Customer holds responsibility
    - self-performs maintenance & operations --or hires a servicer
  
  - Evaluate ROI on PV System vs. ROI on core business investment
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# PPA Reality Check

- PPA wants to maximize ROI for investors
  - PPA decides installation priorities
    - Incentive driven; may not be your priorities
  - PPA has Carte Blanche to their system
  - Customer has no financial skin in game
    - Agrees to long-term production without change, or, penalties kick in
    - Agrees to reimburse for system downtime
  - PPA about Stewardship not Finance Benefits
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# Providence PPA

- **Multi-state Master Agreement with separate exhibits**
  - **20 year agreements; Agree to buy output < tariffs**
  - **Providence Newberg Medical Center, Newberg, Oregon**
    - **105 kWDC Rooftop Photovoltaic Installation, Phase 1**
    - **Connected to buss; PGE provides remainder of power**
  - **Additional 1378 KW Under Contract (5 facilities)**
  - **Slight Escalation in purchase schedule**
  - **Early Termination Clause/Schedule**
  - **Can purchase system after 6 years as per schedule**
  
  - **PH&S projects installed cost averages \$7 /watt or \$9,646,000 investment by SunEdison.**
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# SunEdison Customers

Top 9 Customers	Segment	Total size (MWdc)	Sites	States
 <b>KOHL'S</b> expect great things®	Commercial	21.0	67	CA, CT, NJ, WI, OR
 <b>Xcel Energy</b> ®	Utility	8.8	2	CO
 <b>Walgreens</b>	Commercial	5.0	63	CA, CT, NJ, OR
State of California	Public	5.2	20	CA
 <b>STAPLES</b> that was easy.™	Commercial	3.9	24	CA, CT, NJ
Various CO Municipalities (e.g., Rifle, Broomfield)	Public	3.3	6	CO
 <b>WAL*MART</b> ®	Commercial	2.7	5	CA, HI
 <b>Progress Energy</b> People. Performance. Excellence.	Utility	1.2	1	NC
 <b>GSA</b>  <b>NREL</b>	Public	1.9	2	CO

Federal government



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