From Project Cost To Customer Pricing

Community Solar Value Project Webinar • June 2017

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Community Solar Value Project

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• Led by Extensible Energy and cosponsored by US DOE SunShot, with top-notch consulting support

• Demonstration and documentation of four ways to make utility-led community solar better:
  - strategic design
  - target marketing
  - procurement and pricing
  - solar-plus

• Utility participants, industry players, community partners

Community Solar Value Project

www.communitysolarvalueproject.com

Thanks to Hosts, Speakers and Participants from our June Meeting: “Procurements, Programs, and Pricing”

Meet Ups

InterSolar, San Francisco • July 11-13

Solar Power International, Las Vegas • Sept. 11-13

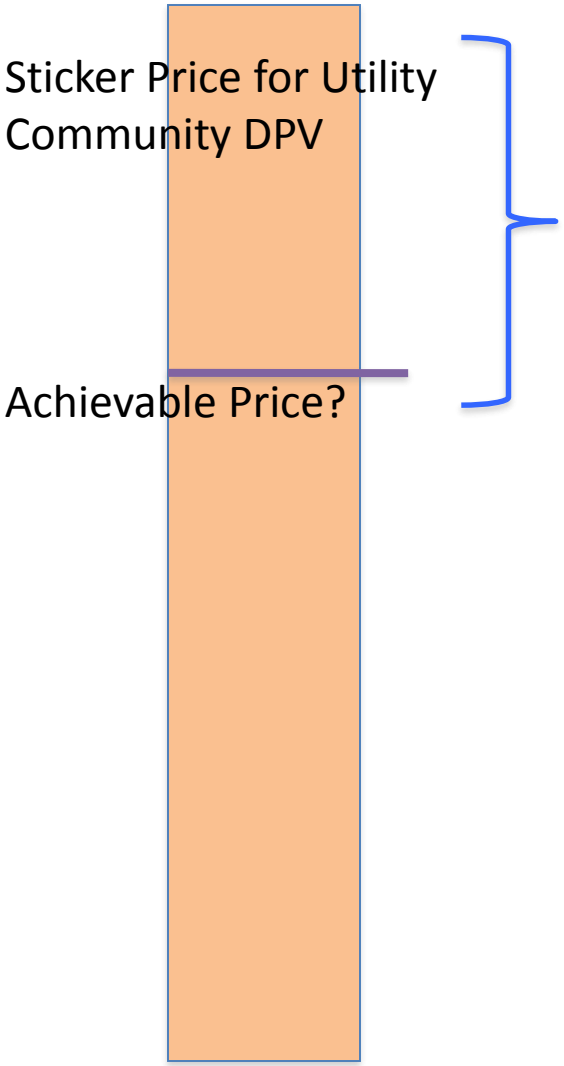
National Solar Conference, Denver • Oct. 9-12

APPA Customer Communications Conf., Sacramento • Nov. 5-8

Website Update • August

Jump-Start Offers • August

What's Packed In the Process



The "compelling narrative" may include:

- Ways to lower PPA/resource cost
- Ways to manage risks
- Transitional customer/revenue retention
- Partner-strategies for non-utility value streams
- Ways to lower net wires costs
- Credit for added DR or storage value
- Proactive Compliance Benefits
- Other!

1. **Create a realistic hypothetical**
2. **Estimate the baseline and cost gap**
3. **Perform a streamlined analysis**
4. **Reflect net value in pricing to fill the gap**
5. **Complete a compelling narrative**

A Streamlined Utility Analytic Process

"A Gap Analysis for Valuing and Pricing Community Solar Program Offerings"

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A CSVP Team Member

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Key Presentation Points

1) Community-scale PV in distributed applications can compete on ***price*** and ***value*** with utility-scale and customer-sited PV systems
2) A ***streamlined analysis approach*** can provide accurate information to guide the design of community solar (CS) projects and programs. This simple and flexible approach avoids falling prey to “analysis paralysis”.
3) The CSVP valuation approach can help utilities develop **cost-based pricing** for their CS program
4) A ***“fleet approach”*** to community solar can provide ***additional benefits*** and ***initial cost reductions*** through the combination of geographically dispersed distributed PV projects
5) The ***“gap analysis” of localized value*** identifies ***high-value DPV benefits*** that can be monetized by the utility and the these cost savings can be reflected in an ***“Adjusted PPA Price”*** and program pricing.

Approach to the Streamlined "Gap Analysis

- One metric often used in evaluating resource acquisition decisions is the "Levelized Cost of Energy" (LCOE)
- LCOE is defined as the NPV of project costs divided by the NPV of kWh evaluated over the project life
- Traditionally, since most electricity resources were procured from central station projects on the transmission grid, only the NPV of project costs were compared
- With the increasing emphasis on distributed projects in the marketplace, it is important to evaluate the "*net LCOE*" which incorporates the *incremental* benefits of distributed generation on a levelized basis or the "*LBOE*"
- This *net LCOE* analysis approach ensures a more valid comparison of DPV resources

Methodology for Valuing and Pricing the DPV Resource

- CSVP defines the LBOE categories as falling into four areas:
  - Generation
  - Transmission
  - Distribution
  - Societal
- The equations for calculating the net LCOE are:
  - $LCOE_{DPV\ NET} = LCOE_{DPV\ GROSS} - LBOE_{DPV}$
    - ↖PPA Price
    - ↖DPV Benefits
  - Where,

$$LBOE_{DPV} = LBOE_{GENERATION} + LBOE_{TRANSMISSION} + LBOE_{DISTRIBUTION} + LBOE_{SOCIETAL}$$

- Once the $LCOE_{DPV\ NET}$ is calculated, the utility's non-bypassable wires charge is added to provide indicative values for CS program pricing.
- We refer to this as the "adjusted PPA" approach

DPV Benefit Values Used in the CSVP Analyses

DPV Benefit	Central California	Desert Southwest	Rocky Mountain
Avoided Transmission Costs	✔	✔	✔
Strategic DPV Design	✔	✔	✔
Customer Retention Value	✔		
Avoided Transmission Losses		✔	✔
Avoided Distribution Losses		✔	
Grid Resilience and Reliability		✔	
Coincident Demand Reduction			✔
Distribution Upgrade Deferral			✔

- The Gap Analysis focuses on high value DPV benefits that are both appropriate to the scenarios and sufficient to meet target costs

Generic "Gap Analysis" Calculation

Baseline Cost

PV PPA Price ($LCOE_{GROSS}$)	$0.075

DPV Value Category (LBOE)	Value ($/kWh)
DPV Benefit Category #1	$0.010
DPV Benefit Category #2	$0.005
DPV Benefit Category #3	$0.005
TOTAL OF DPV BENEFITS ($LBOE_{GROSS}$)	**$0.020**

Aggregated DPV Benefits

PPA Price Adjustment Calculation	Value ($/kWh)
Baseline PPA Price ($LCOE_{GROSS}$)	$0.075
Aggregated DPV Benefits ($LBOE_{GROSS}$)	$0.020
Adjusted PPA Price ($LCOE_{NET}$)	**$0.055**

Cost Minus Benefits

Program Price Offering Calculation	Value ($/kWh)
Adjusted PPA Price	$0.055
Non-Bypassable Wires Charge	$0.045
Community Solar Program Price	**$0.10**

Indicative Pricing Estimate

The Rocky Mountain West Scenario: DPV & Pricing Analyses

5 MW DPV Analysis Results

DPV Value Category	Value ($/kWh)
LCOE of DPV (PPA Price)	**$0.065**
Avoided Transmission Costs	$0.016
Strategic DPV Design	$0.000
Avoided Transmission Losses	$0.0003
Coincident Demand Reduction	$0.011
Distribution Upgrade Deferral	$0.009
Adjusted PPA Price	**$0.029**

CS Program Price Analysis Results

Price Category	Value (kWh)
Baseline “Break-Even” Price for All Program Costs	$0.065
Non-Bypassable Wires Charge	$0.046
Community Solar Program Price Offering	**$0.111**

SUMMARY

- The CSVP streamlined analysis for CS Valuation and Program Pricing offers a flexible approach that is easily adapted to different:
  - CS program designs
  - PV system types
  - Utility situations
  - Solar Plus companion technologies (i.e., storage and demand response)
  - Alternative pricing structures
- One of the keys to this approach is to conduct preliminary program planning to identify key characteristics desired for the program, areas of high value DPV benefits, and to answer important questions for the project
- A “gap analysis” approach that is simplified in its presentation, yet rigorous in its analytics, can be an effective tool in garnering management support for a Community Solar Program, and distributed PV in general.

The Presenter and the Project

Joe Bourg is CEO and Founder of Millennium Energy, LLC and is a project analyst for CSVP. He focuses on solar project analysis, utility solar program design and evaluation, and solar project development support including business model assessment and policy and regulatory analysis.

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The Community Solar Value Project is focused on improving community-solar program value, through solar + storage + DR and other strategies, at electric utilities in Sacramento and beyond. Led by Extensible Energy, LLC, and drawing on expertise from four energy consulting firms.

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Small Print: Acknowledgements and Disclaimer

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The CSVP acknowledges the contributions of various utilities to this effort. Details and updates are available at the CSVP website, http://www.communitysolarvalueproject.com. The authors underscore that the case described is, as intended, a hypothetical, and does not represent specific utility programs or policies.

Three Mechanisms for Incorporating CS Value in Customer Bills

- Adjusted Energy Charge (or Adjusted PPA Cost)
- Adjusted Wires Charge (e.g., Reduce or Eliminate Transmission Component)
- Bill Credit (Similar to EE or DR Incentive Payment)

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Sample Bill

Billing Period: May 4, 2017 - June 3, 2017

	Rate	Usage (kwh)	
Customer Charge			$10.00
Generation Charge, RSP-1	$0.092	380	$34.96
Generation Charge, RSCSS-1	$0.102	225	$22.95
Delivery Charge	$0.041	605	$24.81
Taxes and Stuff			$6.95
Please Fork Over by June 17, 2017			$99.67

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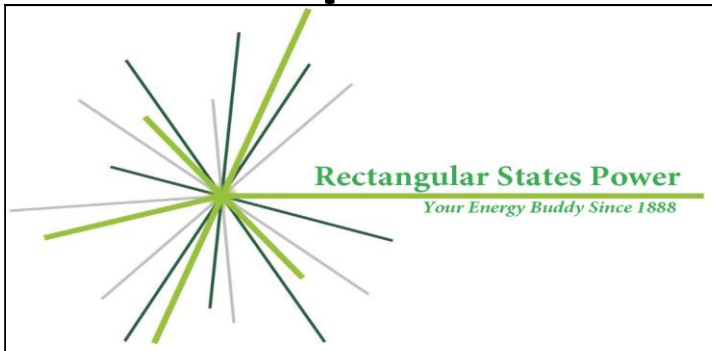
Sample Bill: Modified PPA



Billing Period: May 4, 2017 - June 3, 2017

	Rate	Usage (kwh)		
Customer Charge			$10.00	
Generation Charge, RSP-1	$0.092	380	$34.96	
Generation Charge, RSCSS-1	$0.082	225	$18.45	[=$.102 - $.02]
Delivery Charge	$0.041	605	$24.81	
Taxes and Stuff			$6.62	
Please Fork Over by June 17, 2017			$94.83	

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Sample Bill: Wires Charge Offset

Billing Period: May 4, 2017 - June 3, 2017

	Rate	Usage (kwh)		
Customer Charge			$10.00	
Generation Charge, RSP-1	$0.092	380	$34.96	
Generation Charge, RSCSS-1	$0.102	225	$22.95	
Delivery Charge, RSPD-1	$0.041	380	$15.58	
Delivery Charge, RSCSSD-1	$0.021	225	$4.73	[=$.041 - $.02]
Taxes and Stuff			$6.62	
Please Fork Over by June 17, 2017			$94.83	

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Sample Bill: Program Credit

Billing Period: May 4, 2017 - June 3, 2017

	Rate	Usage (kwh)	
Customer Charge			$10.00
Generation Charge, RSP-1	$ 0.092	380	$34.96
Generation Charge, RSCSS-1	$ 0.102	225	$22.95
Delivery Charge	$ 0.041	605	$24.81
CSS Program Credit	$ (0.020)	225	($4.50)
Taxes and Stuff			$6.62
Please Fork Over by June 17, 2017			$94.83

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Which is Best?

- Customer Preference, Regulation
- Politics, Current Practice, IT Considerations
- Adjust PPA – May have easier justification based on procurement language
- Wires Charge – May appear most “logical” to upper management
- Bill Credit – May fit most easily with existing billing system based on other programs

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