



A Benefits-Adjusted PPA Could Make All the Difference

CSVP Blog Post by Jill Cliburn
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Here's a quick take on our streamlined approach to community solar analytics, which is aimed at helping utilities to hit the target for competitive community solar pricing. You know the challenge. So many utilities nationwide have been critiqued for high premium pricing on community solar. Our approach is aimed squarely at solving that problem and bringing the price premium down to a range of two cents or less. That's the range market researchers describe (consistently!) as the boundary for customer acceptance.

You might enjoy our more detailed discussion on this topic, presented recently with economic analyst Joe Bourg and our rate-savvy contract officer, John Powers. The recording and slides are posted in the CSVP [webinar](#) archive. Here, I'll focus on one key finding. That is that true cost-based pricing for distributed solar is *not* simply a pass-through of the solar power purchase agreement (PPA) cost. Yes, the PPA is based on the levelized cost of energy (LCOE), but that LCOE is set from a solar-developer perspective. Put bluntly, it's *gross*. It is defined simply as the net present value (NPV) of project costs divided by the NPV of generation (kWh), evaluated over the life of the project. From the utility perspective, distributed energy resources provide strategic *benefits*, too. The utility's net LCOE must include both the levelized costs of solar and also its incremental levelized benefits.

The generic equations for this net LCOE are:

$$\text{LCOE}_{\text{DPV NET}} = \text{LCOE}_{\text{DPV GROSS}} - \text{LBOE}_{\text{DPV}}$$

where $\text{LCOE}_{\text{DPV GROSS}}$ is PPA Price and LBOE_{DPV} is DPV Benefits

$$\text{LBOE}_{\text{DPV}} = \text{LBOE}_{\text{GENERATION}} + \text{LBOE}_{\text{TRANSMISSION}} + \text{LBOE}_{\text{DISTRIBUTION}} + \text{LBOE}_{\text{SOCIAL}}$$

Not all utilities can tap every possible benefit in every possible category; only monetizable benefits from a specific project to a specific utility should be included. You can think of the resulting net LCOE as a benefits-adjusted PPA. It may be used to compare the utility's community solar resource options—e.g., a local project with grid benefits vs. a larger, remote solar project, or a half-dozen smaller, strategic projects vs. a standard larger-scale system. Further, the benefits-adjusted PPA can be applied readily as a pricing solution on the customer bill. The Generic Pricing Gap Analysis chart below summarizes how all this works. (Note that the values and costs are for illustrative purposes only.)

Now, an important parenthetical: Yes, it is possible for some utilities to offer community-scale solar today without charging a premium. We've heard of a few cases where solar is the a least-cost resource, so a simple pass-through of the gross LCOE already beats the average retail cost of energy. But that's no excuse to stop short, without considering benefits and getting to the net LCOE. In a case like that, other opportunities emerge, to target lower-income customers or to support value-added designs.

For many readers, this analytic approach looks familiar and hardly innovative--*except in how it is applied*. In contrast to a typical value-of-solar analysis, which attempts to identify and set all relevant benefits, this approach seeks a minimum list of benefits, associated with a specific program/acquisition. The goal is simply to reach a target net LCOE. Typically, the analyst would ask utility staff to provide ranges for each candidate value, and to apply caveats as needed. The analyst also may offer strategic improvements to the baseline project design, e.g., using a particular carport structure, single-axis

tracker, or fleet deployment. If accepted, strategic design improvements can increase the levelized benefits of energy (LBOE) for the community solar project and make strong progress toward competitive pricing.

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
	<u>DPV Benefit Category #3</u>	<u>\$0.005</u>
Aggregated DPV Benefits ↗	TOTAL OF DPV BENEFITS (LBOE_{GROSS})	\$0.020
	PPA Price Adjustment Calculation	Value (\$/kWh)
	Baseline PPA Price (LCOE _{GROSS})	\$0.075
	<u>Aggregated DPV Benefits (LBOE_{GROSS})</u>	<u>\$0.020</u>
Cost Minus Benefits ↗	Adjusted PPA Price (LCOE_{NET})	\$0.055
	Program Price Offering Calculation	Value (\$/kWh)
	Adjusted PPA Price	\$0.055
	<u>Non-Bypassable Wires Charge</u>	<u>\$0.045</u>
Indicative Pricing Estimate ↗	Community Solar Program Price	\$0.10

In the graphic above, placeholder values are used to show, step by step, how to incorporate a levelized benefits into a net LCOE calculation, and then apply it to a benefits-adjusted PPA price. Some utilities already use the "pass-through PPA" price to arrive at customer pricing for community solar. By using a benefits-adjusted PPA, the utility can reflect specific solar benefits in pricing, without proposing internally contentious alternatives, such as changing the non-bypassable wires charge.

The CSVP has applied this process to three utility cases so far: 1) A northern California municipal utility comparing a DPV-inclusive portfolio with a single centralized PV buy; 2) A Southwestern utility where DPV--and even carport solar--benefits add up; and 3) a low-cost wholesale utility in the Mountain West, hoping to offer local community solar, while minimizing the premium on pricing. The differences from case to case are instructive, but in each case, a short list of benefits, conservatively estimated, has proven adequate to meet the target price. I think that's compelling, and I hope you'll dive into the [webinar](#) materials for detail, or [contact](#) us with your questions.

In utility and peer reviews so far (the cases were completed this year), this process has scored high marks for its focus on building utility decision-makers' support; on speeding the path to more competitive program design and pricing, and on pushing the community solar market forward. It was noted that in a few markets, utilities can't monetize some fairly obvious benefits, due to problems in market structure. But even then, it is likely that utilities can find alternative benefits to meet a reasonable pricing target. In time, sweeping policy advances may dramatically change utility understanding of the solar value proposition, but all stakeholders can benefit from solutions that work for today.

This blog is based on a poster presentation that that was featured at Solar Power International 2017, in Las Vegas, NV, in September 2017. See www.communitysolarvalueproject.com for more on the GAP Analysis and Pricing approach.