

## Q&A – Vote Solar Webinar

### Rooftop Solar Financing: Wins, Trends & What Comes Next

August 20, 2014

*Questions for Brad Klein on Iowa Supreme Court Case on PPAs*

**1. Brad, can you comment on the recent Washington Utilities and Transportation Commission Interpretive Statement concerning commission jurisdiction and regulation of third party owners of net metering which is different than Iowa court decision**

I did not work on the Washington case, but from my quick read of the order it appears that the Commission was highly influenced by consumer protection concerns related to third-party leasing companies. It is not clear from the opinion, however, why *utility* jurisdiction is necessary to enforce state business protection laws in the same way they are enforced for other kinds of businesses. In my opinion, the commission glossed over the first level of inquiry, which is whether or not a public utility exists. The commission mentioned the Iowa Supreme Court opinion, but did not spend much effort discussing or distinguishing it.

**2. Brad, is the ability to request a declaratory order available to all states seeking resolution of third party PPAs for solar PV?**

This is a question of state administrative law. In most states, this step should be available.

**3. Brad, would you address the written dissent filed by the Iowa Supreme Court and if there is any validity to its arguments?**

The dissent focuses on the level of deference that a state agency's opinion is entitled to under Iowa administrative law. The majority held that the courts need not defer to the Iowa Utility Board's interpretation of the term "public utility" as used in the Iowa Public Utility Act. The dissent would have given the Board more deference. This question may come out differently in other states.

**4. For Brad Klein: Given the Iowa Supreme Court decision attention to the fact that Eagle Point Solar was not providing 100% of the city's electricity needs so that the city continues to receive power from the electric utility, THEN how does the % of the customer's needs from solar impact the court's decision, e.g. would the court's decision be different if Eagle Point was meeting 95%+ of the customer's needs rather than 25-50%?**

No. The relevant point was that Dubuque was not *dependent* on Eagle Point solar for its electricity needs. If Dubuque was entirely off the grid and did not have another source of electricity, then perhaps the case would have come out differently.

**5. Is there any indication from the Iowa Supreme Court that if a PPA was big enough in terms of kwh, the decision might come out differently? Obviously, the scale of residential rooftop PPAs is different than PPAs that operate on a large scale. Do you think all PPA arrangements in Iowa are now "safe?"**

The outcome should not change for larger PPAs for the reasons discussed above.

**6. Has Brad written any articles on the court ruling and if so, can he provide a link?**

No. But the case did receive a lot of media coverage. We could share a list of links.

**7. For Brad: What are ways and means of developing and financing the case you want to bring and win in another state like Indiana?**

Find a good project with compelling facts (municipality, house of worship, nonprofit, etc), build a strong local coalition, and find attorneys with experience on utility issues.

**8. Brad, Can you talk a bit about the importance of the distinction between a lease and a PPA? Our state UTC in Washington is concerned about consumer protection with leases.**

The Iowa case dealt with a PPA. The utility argued that the "per-kWh" nature of the sale in a PPA triggered public utility status. Eagle Point and Dubuque actually modified their contract to a lease after Alliant challenged their PPA and Alliant did not challenge it. So, interestingly, PPAs and leases may have different legal implications under other state public utility statutes.

*Questions for Travis Lowder on Rooftop Solar Financing Trends*

**1. Residential Lease structures often have escalators built in. Have you seen anyone talking about loan products where the payment increases over time (lower in early years, higher later when presumably energy that would have been purchased will cost more anyway?)**

I have not seen any solar loan products that build in an escalator, nor do I think that doing so would be viable. Think of loans in other asset classes like auto loans or student loans: escalators are very atypical (though adjustable interest rates could be viewed as something of a second cousin). With fixed rate loans, the inflation risk, long-term interest rate risk, etc. reside with the financier (i.e. the lender), which will usually hedge such its position with a derivative or some other instrument. With leases and commodity purchases (e.g. PPAs), financiers typically hedge such risks through things like fixed escalators, or periodic price increases.

Also, in practice, an escalator on a fixed-interest loan would increasingly burden the system owner's monthly payment each year, without allowing for the accelerated pay down of principal. That is, the difference between the original monthly payment and any future payments that have been escalated would go to the solar financier—not the

homeowner who could use the extra money to make larger payments on his/her monthly principal and interest.

**2. Do you see utilities entering the residential solar financing or installer arena? If so, how and what kind of financing do you think they'll offer and what effect will that have?**

Yes. APS has proposed to their regulators that they be allowed to install solar in their service territory and pay the system hosts ~\$30/mo. to do so. Also of interest: Xcel energy is trying to develop a captive community solar programs in Colorado whereby they could get a hold of residential solar customers while still maintaining the economies of scale that come with a larger installation. These are the only examples that I know of at present, but I imagine that many other utilities in active solar markets are strategizing ways to get involved in this game soon. It is a rising tide that they will have deal with sooner or later.

**3. Travis slides 5 and 6 - costs for solar he quoted - are these installed cost, or just for the solar equipment?**

These are system prices (i.e. hardware and soft costs) as reported by utilities, PUCs, public program administrators, and other sources. There isn't a terrible amount of transparency into what calculations and costs go into these reported prices, so I cannot vouch for their precision. However they do, in aggregate, communicate that the trend in system prices has been in steady decline over the last several years.

The figures on this chart may actually be a bit high, at least for some territories. NREL will be coming out with a report in a month or so which models national system prices around high \$2's – low \$3's. The report discusses the modeling methodology and the inputs, so there is a good deal of transparency in how the authors arrived at this range. Also, SolarCity has recently confirmed that that their installation costs (with overhead) were around \$2.76.

**4. Would there be warranty reserve requirements that are different for loan based systems vs lease/ppa/tpo**

As opposed to the prevailing lease/PPA model, the best practices for the operations and maintenance (O&M) component of solar loan programs is still unsettled. At least one loan program in the market right now requires O&M, though it is not the same bumper-to-bumper wrap as in TPO systems. Other programs may have something resembling production guarantees or other requirements, but again, there is a lot of variability in terms of what kind of service people can expect when they own their systems. O&M includes warranty issues; in a TPO system, the financier will call upon their vendors to replace parts that have malfunctioned before their warranty has expired. In a loan situation, it may be up to the system owner to take such action.

**5. Are there equity reasons for favoring PPAs over solar loans? Is one mechanism easier for low income customers to access?**

Loans allow customers to own their systems and to do so at a potentially lower lifetime cost. Monthly payments to service a solar loan may be higher than a lease or PPA

(though this will be highly dependent on the terms of either), though if the loan tenor is shorter than the standard 20 years of a lease/PPA contract, the benefit of free electricity on the backend may boost the overall value of the system in the long run. Thus, I would say that a loan is best suited to customers that can wait to see a return on their investment over a longer term. Low-income customers may be better suited with a lease/PPA that could capture savings/favorable economics right off the bat. This is, however, a very general assessment.

## **6. why are system installation costs increasing in Massachusetts?**

Great question...I do not know if I have an answer

## **7. Travis: Quickly walk us through the numbers of an average household solar rooftop deal: size of kw, costs of installation and price of electricity sold, length of PPA, etc. Aware that numbers are different everywhere so just make it an average or typical deal.**

While it is indeed problematic to give such general estimates, I will do my best:

- \* Average system size is around 5kW
- \* Installed cost is around high \$2's to low \$3's
- \* PPAs and leases are pretty standardly offered at 20 years
- \* Loan maturities can range anywhere from 10-20 years (with notable exceptions being shorter and at least one program looking to go out to 30 years)
- \* Loan interest rates can range from 2.99% - 9% depending on the product, the maturity, the customer credit score, and other factors. Probably best for both the maturity and the interest rate to assume the middle of the range (e.g. 15 year maturity with a 6% interest rate) with no weighting for lack of data.
- \* Average price/kWh of electricity in a PPA is around \$0.15 (this is the weighted average price quoted in the presale reports for the SolarCity securitizations—systems in these deals are entirely in CA, CO, and AZ).