



Solar Powering Iowa
Power Purchase Agreements
Midwest Renewable Energy Association
March 24, 2016

Farmer's Electric Coop – 800 KW
(Up until commissioning of CFU Community Solar
Array, this was the largest solar array in Iowa)



PPAs – What are they and why do we use them?

- A Power Purchase Agreement (“PPA”) is a contractual agreement between a power consumer and an energy asset owner (Wind, Solar, Bio, whatever).
- Brief History of PPAs in Iowa
 - Have been around for a very long time.
 - Initially they were mostly prevalent in big wind projects.
 - A taxable 3rd party owns the energy asset, monetizes the tax incentives and sells the energy to the off taker under a long term agreement.
 - Executing a PPA does not make the Producer a PUBLIC UTILITY (in Iowa).

- Considerations for PPAs in Iowa
 - PPAs have a “Capital Source” owning the energy asset and an “Off Taker”), usually a utility.
 - Solar PPA’s in Iowa are relatively new and have been extremely controversial.
 - Solar PPAs are generally done to permit nontaxable entities to be able to produce clean energy from renewables in an economically viable way.
 - Non-taxable entities can’t:
 - Monetize the 30% federal ITC, State tax credits, or the tax benefit of depreciation expense.
 - 3rd party ownership permits this to happen.

Solar PPAs – Who are the parties and what roles do they play?

- Energy Offtaker
- PPA Capital Source
- Offtaker's Utility
- EPC/Installer

Solar PPAs – How do they work? (Nontaxable Entities)

- A nontaxable entity decides they need to:
 - Effectively monetize tax incentives otherwise unavailable to them.
 - Reduce their carbon footprint.
 - Create a more sustainable environment for their constituents or students.
 - Hedge against utility inflation.
- Economic terms in a PPA for Offtaker and Capital Source
 - PPA rate (\$/kWh).
 - PPA term (10 – 25 years are fairly common).
 - Energy inflation rate (an annual pre-agreed inflation rate) designed to mimic utility inflation.
 - End of PPA buyout terms.
 - Lots of ways to skin this cat! It's all about returns,,,,,
 - Deal must have acceptable economics and underwriting criteria for capital source.
 - Appropriate deal structure on capital source side. This is usually transparent to offtaker.

Procurement of Tax Equity Investor

- Usually PPA structure has a general investor (who typically owns as little as 1%)
- Tax equity investor monetizes tax attributes and gets a percentage of annual net earnings (and can have up to 99% stake)
- After a period of time, generally 7-10 years, there is often a “Flip Transaction” where the general investor buys out the tax equity investor at a calculated price to give a target ROI.
- Procurement of tax equity investors can be very difficult here in Iowa and the Midwest:
 - Cheap energy rates mean cheap PPA rates
 - Very few incentives other than statutory ones.
 - No SRECs (yet) in Iowa
 - Small deal sizes can make soft costs prohibitive
 - Opinions: Legal, tax, engineering
 - Big banks (JPMC, USB, Wells, etc.) don't do small deals and thus require “Iowa Size” deals to be aggregated with fees to aggregators.
- Prior to ITC extension last December, 8+ GW of Utility Solar has largely filled the capital bucket for 2016.

Negotiation and Execution of PPA

- With Offtaker, nothing unusual. It is a contract.
- With Capital Source:
 - Requires tax and contract lawyers, accountants and engineers.
 - Subject to supply and demand for capital.
 - Fees galore (which come out of EPC margin).
 - Each capital source has their own preferred terms and contract documents.
 - Capital sources highly value experience, expertise and history.
- With Utility:
 - Fundamentally no different in terms of interconnection, net metering, and other factors in Iowa (now that we have a SC ruling).

Future of Solar PPAs

- Commercial (not discussed, they can self monetize tax incentives)
- Residential
 - While rare in Iowa and not addressed here, a huge percentage of residential solar in California, New Jersey, Hawaii and elsewhere PPAs and solar leases are the predominant formats.
 - Don't work well in Iowa because of cheap electric rates.
 - Solar City, NRG and Sun Run do these PPAs and while growth has been substantial in numerous markets, profits are hard to find.
- Nontaxable (municipal, academic, religious)
 - Municipal and academic projects with the right economics present huge growth opportunities for Installers, EPCs, and vendors.
 - Underwriting risks to investors are extremely low.
- Utility Scale
 - That's where the big \$\$'s are, but
 - Not my cup of tea because PPA rates are so low and terms are so onerous.
 - Sun Edison and their Yieldcos
 - Utilities are very hard to deal with as they view (eventually) DG as an existential threat.
 - Big banks like big deals but they never pay off at cheap PPA rates. Returns are hard to find on utility scale PPAs.

Conclusions

- PPAs on a small scale are very difficult to accomplish, mostly because soft costs eat the installer margin up.
- PPAs on a medium scale (municipalities and schools) are less difficult to accomplish but you often need to have an executed PPA before you can get a commitment from a capital source/tax equity investor.
- PPAs on a large scale
 - For utility scale are difficult because the EPC risk is high and margins are low.
 - For large General Service customers are generally not economically viable because solar developers can't represent the solar array will reduce peak demand.

(More) Conclusions

- While executing Solar PPAs can be very challenging, we can ALL be very bullish about solar.
 - Component prices continue to come down.
 - Energy rates continue to inflate.
 - Nat gas is now abundant and cheap but fracking is no free lunch either.
 - CPP is forcing this migration to renewables
 - Climate change is real and is working in favor of renewables.
 - Climate agreement in Paris where virtually all nations signed on to reduced GHG strategies were agreed to.
 - Nuclear, what can we say?
 - Clean coal,,,,, who is kidding who?
 - Significant Value of Solar beyond energy
 - Storage will be a paradigm shift.
- What can we do to promote these financial structures as a way of deploying more solar?
 - Explain and recruit PPAs to local and regional banks that have a community spirit and want good low risk returns.
 - Taxable entities may use PPAs for tax and estate planning purposes.
 - For religious nontaxables, parishioners generally need to be recruited as capital sources because of underwriting considerations.

Thank You!

Q & A?

