From:	Dave Click
To:	Lee Eng Tan
Subject:	Response: Solar Energy in Florida Request for Comments
Date:	Tuesday, June 23, 2015 4:50:19 PM

Dear Lee Eng Tan,

We are a solar photovoltaic (PV) power project developer based in Sanford. Because we are a PV project developer, we operate mainly in states that are not Florida.

Florida, like most states, has an electric regulatory structure that offers investor-owned utilities the guarantee of reliable, annual profits based on electricity sales and returns on capital investments, in return for serving the public. Generally speaking, utilities therefore seek to sell more electricity and make large capital investments. Clearly, the sale of more electricity year after year runs counter to the desire of society when that electricity is not generated cleanly. It's generally accepted that less pollution and cleaner air are better than the alternatives— no one likes driving behind the car with the exhaust problem and power plants are generally sited in remote locations far from the loads they serve to minimize complaints from area residents. The utility business model needs to change such that utilities can remain in business while providing perhaps less electricity more efficiently. The ability of high-, medium-, and even low-income customers to construct their own power plants and cost-effectively interconnect them into the grid has been a dream until only recently, but has become reality with a rapid drop in PV system prices, with prices dropping almost 90% in 10 years. The introduction of solar projects onto our shared electric grid is clearly a disruptive force for utility companies, who for decades have owned and operated all generation, transmission, and distribution of electricity. It's time to acknowledge reality: while Florida's electric grid is currently served nearly exclusively by dozens of power plants owned by governmental and quasi-governmental institutions, over the coming decades there will be hundreds of thousands of new power plants interconnected in Florida as the electric grid becomes decentralized. Most of these power plants will be PV, and they will be owned by residential ratepayers, commercial ratepayers, industrial ratepayers, and other entities who are not the serving electric utility. A shift that must occur is for utilities to recognize distributed generation systems as assets to the utility, even when they are not owned by the utility.

Florida consumers have the right to install solar power at their homes or business. Florida businesses should have the right to construct large PV systems for direct interconnection into the utility distribution or transmission system unless it is technically infeasible. In both cases, the PSC and other state policymakers can create a market structure that does not merely reward incumbent generators but encourages innovation and competition from new entrants into what should be something resembling a free market.

1. What policies or programs would be most effective at promoting demand-side solar energy systems (i.e., programs effective on the customer side of the meter)?

Enabling Third-Party Ownership; Mitigating the Tangible Personal Property (TPP) Tax
Allowing third-party ownership and electricity sales for PV systems would be one of the most effective policies that the PSC could effect under current law. Reducing or eliminating the tangible

personal property tax on PV systems would be one of the most effective policies that would need to be enacted by the legislature. The incredible degree to which these two programs affect the ability of the industry to cost-effectively install solar in Florida is perhaps best shown with a comparison—let's look at an example of three hypothetical 6-kilowatt residential installations on a street using **identical equipment**, installed by licensed, qualified installers.

House #1: the homeowner purchases this system outright for $15,000 cash to go on their home. This system is exempt from TPP taxes. This system requires the homeowner to accept all technical risk of the installation. If a workmanship issue renders the system non-operational, the homeowner may be responsible for bearing the cost of any and all repairs if the contractor is unable to honor any warranty that may be in effect.

House #2: the homeowner purchases this system from a solar company offering a power purchase agreement (PPA). This system is not exempt from TPP tax. In this case, perhaps the homeowner pays a utility an average of $0.10/kWh for electricity and signs a long term PPA for solar power delivered at $0.15/kWh (including perhaps a $0.05/kWh TPP tax). The homeowner can clearly see the price of PV with respect to the status quo and easily determine any cost increases or savings in installing PV. Under this scenario, the PPA company assumes all technical risk as they only get paid if the system works—they are selling electricity to the customer and charging only by the kWh. Of course, this system is not interconnected by the utility because the PSC has deemed this "retail sales of electricity," and so the homeowner instead is forced into either a direct purchase or a lease agreement. Neither of these can include production guarantees, or tie payment to kWh in any way, to avoid this PSC determination in the eyes of many utilities.

House #3: the homeowner purchases this system from a solar leasing company, which owns this system and bills the homeowner at a fixed monthly rate. This system is not exempt from TPP tax, which would be passed through the lease back to the customer at a surcharge of perhaps 30%. This is a legal arrangement under Florida law unless the leasing company attempts to link the lease payments to the energy produced by the system. As with the PPA example, this can't be done, because all parties are required to pretend that the leased PV system on the roof was installed for some reason other than the fact that it generates electricity. So again, no production guarantee, and the customer is again not protected.

In these three examples, the only thing that is relevant to an interconnecting electric utility is the technical specifications of these three systems being interconnected. Clearly if a system did not meet the technical requirements for interconnection then the installation should not go forward, but what rationale is there for a state policy that eliminates the best and simplest customer protection for a system producing energy—a production guarantee? Why are solar installers not allowed to hold themselves accountable for the quality of installations by tying their payment to performance? Why should homeowners, who are generally concerned with the financial performance of an investment, have to assume the technical risk for equipment with which they are likely unfamiliar?

Power purchase agreements should become legal, though of course with some degree of regulation so that vendors have a set of rules by which to play. For example, these long-term contracts often

include escalators to account for the impacts of inflation over time; in some cases, high escalation rates have been sold to customers fearful of the possibility of runaway electric rates in the future. Setting limits on the PPA term length, and escalation percentages, would make this a truly valuable customer protection.

Regarding property taxes, the impact on residential customers can be a 50% surcharge above their annual electric savings, which clearly exceeds the 6% savings that PV system installations see through the sales tax exemption. Why, indeed, does the national solar industry not come to Florida for the opportunity to pay a 50% tax on all their installed equipment? Any sort of abatement would of course be welcomed by the industry (and ratepayers). Several solutions would be to offer a specific mitigation amount for PV systems—North Carolina offers an 80% abatement, for example—or classifying PV systems as “pollution control devices” per FS 193.621 (additional legislation would need to be passed to open this to non-industrial customers), which would be in line with perhaps a 90% abatement.

Improved Net Metering

In 2008 the Florida legislature passed HB 7135, which introduced statewide net metering for those Floridians fortunate enough to have their residence or business within the service territory of one of the impacted utilities. This brought national attention to Florida within the solar industry and it was a great step forward. Since then, very little has happened. Many small utilities don’t offer net metering, and for a time at least one municipal utility refused to allow any customers to interconnect even while its city government was planning its own PV installations. While not a perfect policy, net metering is a simple one for everyone to understand. The current implementation, with a limited intent of using on-site generation merely to offset a load, also has a number of idiosyncrasies.

While most residential customers have a single electric meter, farms or businesses or apartment complexes may have many meters across a property. If one of these businesses becomes a net metered customer, they must divide their planned PV system into pieces proportional to the existing electric load on that meter. This is the case even in instances where these meters share a single utility transformer. A large farm or industrial campus that has 30 meters therefore would need to split its PV investment into 30 individual systems after which the utility may need to replace those 30 meters to allow for bidirectional power flow. Through virtual net metering or meter aggregation, this customer would be allowed to install its PV system in one section on either an existing meter or even a new meter and offset the demand on other on-site meters. However, if the PV system were put onto a dedicated new meter under current Florida policy, the system owner would see a benefit of perhaps just $0.04/kWh rather than perhaps $0.10/kWh had an existing meter been used. More reasonable policies are in place in Massachusetts and especially in New York, where a production meter can offset the consumption at a meter many miles away even if fed from a different substation or transmission line. Perhaps for systems where power is "wheeled" from one meter to another, a tariff could be developed such that utilities would not be providing this service for free (for example, a $0.01/kWh utility fee, and larger projects would likely require the customer pay a reasonable cost for the utility impact study).

We need to move on from the characterization of net metering as nothing more than a "subsidy."

Net metered customers are providing a service to the grid and according to various studies, many may even be getting short-changed by only getting the retail rate for the energy they sell back.

Proper Valuation for PV with Storage, A Need For Stronger Technical Guidelines from Utilities
A common complaint from utilities has been that customer-sited PV systems aren't like typical utility generators—instead, they produce solely real power during the day that fluctuates. The reason that most PV systems are only providing real power to the utilities is that the utilities are requiring the PV systems to only provide real power. Every week there are more PV systems installed in Florida under interconnection requirements last updated over ten years ago. Smarter interconnection standards are needed. At minimum, inverters should be installed with a frequency tolerance of not the standard 59.3 to 60.5 Hz window, but 57 to 60.5 Hz to allow for PV systems to remain online when the grid needs more power. Inverters are also increasingly capable of ride-through capability, though utilities require system operators to disable this functionality through standard interconnection agreements. This ride-through capability is the ability to ride through a short-term fault that would normally trip inverters off. Utilities should be allowed to improve their communications capabilities to communicate with and yes, even have a reasonable amount of limited control over, distributed generation assets across their service territory. Allowing utilities to use these systems as assets is critical to widespread integration of PV systems—and the PSC can provide important guidance and rulemaking here to protect customers from utility overreach, utilities from obsolete technology, and both sides from excessive costs. Enabling this functionality is important to do early, rather than waiting until 2025 and then attempting to retrofit legacy systems.

Additionally, work must be done as quickly as possible to quantify the long-term value of PV and storage. With PV systems and energy storage both experiencing massive drops in cost, the proliferation of these systems across Florida must be well-integrated into the utility system. Rather than concerning themselves with the incredibly unlikely possibility of "grid defection," the PSC and policymakers should better quantify the value that these systems bring to the grid. Storage can help to mitigate the variability inherent in the existing electrical system, and it can help of course to mitigate any variability in power production from distributed PV systems as well. Policies should be pursued that properly value these assets—if in 2020 we have 50,000 battery systems across Florida that merely load-follow the power fluctuations at those individual meters, or that sit idle 99% of the time in the expectation of reducing demand charges, we will have dropped the ball. PV and storage systems are increasingly able to mimic the abilities of traditional interconnected generators, through the supply of vars or other ancillary services. A reasonable value must be placed on these services to invite interconnected customers to participate in the grid. These investors are already using their own capital to deploy assets onto the grid and utilities should be able to count upon them. The 50,000 battery systems across Florida would be able to mimic a traditional fuel-burning turbine in many ways, but without the pollution. We will all have a much better grid if all of these 50,000 customers remain connected to the grid and participate in improving its reliability.

2. What policies or programs would be most effective at promoting supply-side solar energy systems (i.e., utility or third-party owned)?

Enabling Third-Party Ownership; Mitigating the Tangible Personal Property (TPP) Tax

This topic is discussed more thoroughly as a demand-side policy but is incredibly important on large-scale systems as well. In some cases, the impact of the TPP can **double** the cost of the system! A 100% tax on PV systems is obviously extreme.

Community Solar Projects; Not Forgetting Lower-Income Ratepayers

Those of us in the solar industry realize that we can't possibly reach every customer, which makes the warnings of "utility death spirals" especially unusual— at most perhaps 20% of buildings will have substantial rooftop systems. However, utilities can reach everyone through enabling community solar projects. This is a great opportunity for utilities and industry to work together— in South Carolina, Duke Energy locates hosts for community solar projects, targeting schools, nonprofits, and churches. Duke then reaches out to the industry and contracts with solar firms to develop and build the projects for Duke—developers even handle getting the subscriptions. Minnesota community solar gardens guarantee the serving utility that it will always have an offtaker to purchase the energy generated. We could easily bring these policies to Florida.

A common argument against solar has been that it is too expensive for lower-income ratepayers. Community solar programs could be structured such that affordable or multi-family housing sees a greater benefit—apartment complexes could receive lease payments to host large rooftop arrays on the condition that apartments be made energy efficient. Far too much political attention is paid to keeping electric rates low when a major issue with lower-income housing is high electric bills through incredible energy inefficiency—multi-family development owners have no incentive to choose SEER 25 air conditioners or high R-value insulation. On-site community solar could even be used to lock in low long-term rates for multi-family occupants. Community solar can be used to incentivize more efficient living for these ratepayers, and creative solutions could be found by utilities and the solar industry.

Investor-Owned Utilities' Ability to Rate-Base Solar

Historically the IOUs have rate-based a minimal amount of solar--in one allocation a few years ago, 110 MW were allowed that went to FPL. Due to the need for improved fuel diversity, and through what should be a natural desire for Florida to stop importing nearly all of its fuel from across state lines, utilities should be permitted to install many hundreds of megawatts of PV in the coming years so long as this does not limit projects developed and constructed by the private sector.

Investor-Owned Utilities' Inability to Pay for Research and Development

In the private sector, R&D expenditures for some industries can be well into the double-digit percentages of their annual revenue. Historically, the utility industry has rarely been allowed to use ratepayer money for substantial research. As Florida moves further towards a decentralized grid, there is a lot of R&D that can be accomplished with partnerships with Florida universities—this helps utilities prepare their workforce for the challenges of the coming decades while also helping to keep these Florida graduates in the state long after they graduate. The utility grid is under massive change at a time when a large percentage of the utility workforce is nearing retirement age. The grid needs to improve, and we will need top-notch personnel at Florida utilities to ensure the grid becomes even more reliable.

Feed-In Tariffs

Feed-in tariffs are sound policy when implemented correctly--which is to say, while private sector investors should be allowed to make a profit, ratepayers shouldn't be overpaying for projects to provide unusually quick returns for those investors. A FIT would create a market for utilities to invest in 15- or 20-year PPAs at known prices (with rates declining each year for new projects). This would provide cost certainty and long-term cost savings for Florida residents as increasing volumes of systems are installed at decreasing rates--for example, 50 MW at $0.07/kWh in 2016, 100 MW at $0.06/kWh in 2017, 2000 MW at $0.055/kWh in 2018. Utilities have existing programs that pay merely 4c/kWh for electricity. This rate should be allowed to increase to allow for the low-pollution electricity from PV, bringing down the unit cost paid by ratepayers on an annual basis and perhaps rewarding those projects that produce energy at expected levels. Production guarantees could even be provided by these projects to give utilities assurance as to system availability and reliability. Even a 10- or 15-year PPA term at a guaranteed base rate may be sufficient to guarantee financiers a minimum return, with the expectation that ensuing rates would still be reasonable (though likely lower).

Allowing Interconnection Under Certain Parameters For Projects >2 MWac

The existing interconnection procedures for PV systems are broken into three tiers which max out at 2 MWac. Better clarification should be given as to the regulations and value for what third parties can build and sell to the utilities at higher levels (where distribution or transmission lines can support additional projects). Also, the 0.85 dc-to-ac ratio is out of date, especially for these larger projects. The ac limit should be as the nameplate capacity of the inverter(s) as in most other states.

Interconnection Queue For Large Projects

For multi-megawatt projects in North Carolina, Duke now publishes an interconnection queue of projects waiting to be approved for interconnection. Historically, review times were long because the barrier-to-entry was too low--it was very easy to add a project to the queue even if it was unlikely to ever proceed to construction. Low-probability projects eventually saturated the queue and wasted a lot of time for the reviewing utility engineers. Recently, the policy was changed such that the developer or owner now submits a $20,000 fee to ensure that any review time by Duke engineers is covered; in return, Duke commits to a reasonable response time. This ensures that only the likely projects make it to the point where it is a burden on the utility, and even then, their costs are covered.

Thank you for issuing this Request For Comments. Every day, we import hundreds of millions of dollars worth of fuel to Florida so we can set it on fire. Solar power gives us the opportunity to reduce this economic dependence. National companies are looking to invest billions in the state if we can make a commitment. Picking solar isn't "picking a winner"--it's acknowledging one. The rapid declines in cost for solar energy will be what helps us keep utility rates, and utility bills, low in Florida in the coming years. Solar power can make us all into power plant owners and operators who can participate in the energy market. We would very much like to be developing projects close to home!

Thank you for your time, and please let us know how we can participate in this process moving

forward.

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