

**TAMPA ELECTRIC COMPANY  
UNDOCKETED: SOLAR  
ENERGY IN FLORIDA  
STAFF'S REQUEST FOR COMMENTS  
INTRODUCTION  
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**Introduction**

Solar power is an important part of Florida's energy future and can provide a number of benefits to Florida and its citizens by generating power without emissions to the environment and by improving fuel diversity in the state. Tampa Electric has a long history of pursuing development of solar power and supporting that development within the current regulatory framework. Tampa Electric has and continues to explore ways to increase our involvement in cost-effective solar power in a manner to benefit all stakeholders.

The Florida Public Service Commission ("Commission") has historically considered the implications of policies on the general body of ratepayers in their decision making, and with the development of policies and programs related to the expansion of solar power, this focus should remain. Specifically, the development of any policies or programs should strongly consider the economic implications on the many customers who will not have their own solar facilities.

The key to fairly maximizing solar power development in Florida is to find solutions where all customers share in the costs as well as the benefits of solar energy. The fairest, most cost-effective way to significantly increase the amount of solar power in Florida is by encouraging and promoting supply-side solar installations where everyone pays and everyone benefits.

The historical focus in Florida by both the investor-owned utilities and the Commission has been to keep electric rates as reasonable as possible while maintaining high reliability. In the past, it has been challenging for the state to fully embrace significant additions of solar energy given the historically higher cost of solar. However, as the cost of solar continues to decline, and customers and communities demand more electrical generation to be powered by the sun, the Commission can and should embrace the development of prudent and beneficial amounts of new solar generation. It is important however, to develop solar policy that encourages solar energy expansion in the most cost-effective and fairest ways possible, in ways that keep rates reasonable for all customers and so that the high reliability of electric service to all electric service customers is maintained.

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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)?

In providing comments on the above items, please address each of the following factors, as appropriate:

- a) Can the policies or programs be implemented under current Florida statutes?
  - b) Can the policies or programs be implemented under current FPSC rules? If not, what changes or additions to the rules would be needed?
  - c) What are the impacts of the policies or programs on system reliability?
  - d) What are the impacts of the policies or programs on system fuel diversity?
  - e) Identify the cost-effectiveness of the policies or programs compared to traditional forms of generation.
  - f) Identify specific costs associated with the policies or programs and who will bear these costs.
  - g) Identify how the policies or programs will be fair, just, and reasonable across the general body of ratepayers.
- A.** As noted above, the key to instituting an appropriate solar energy policy is to find ways to promote solar development cost-effectively and fairly so all customers share the costs and benefits equally. The area of demand side solar is particularly challenging in that the existing framework with net metering confers nearly all the benefits of the solar development to the people who install solar behind their meter, but the costs of the utility services provided to that customer are then subsidized by utility service customers who do not, or more importantly in some cases, cannot install solar.

With demand side solar, in addition to the cost shift from solar customers to non-solar customers, the distributed model of solar creates other challenges to maintaining a safe, reliable electric grid for all. Modest amounts of distributed solar development on a distribution circuit can be managed without adding significant costs. However, as larger amounts of solar are installed on a distribution circuit, adverse impacts can occur. The distribution system has been

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designed to allow power to flow in one direction. Having to manage the intermittent and varying nature of power flow in multiple directions that arises with substantial distributed solar development can present significant system challenges. As one example, voltage regulation issues which arise from such concentrated development can result in the need for additional monitoring and demand response and control equipment that is not currently installed on the system.

**Recommendation #1: Modify Net Metering**

The existing net metering policy results in solar customers not paying their share of grid costs and those costs are picked up by other rate payers, resulting in higher rates for all customers.

Everyone that is connected to the electric grid benefits from that interconnection. These benefits include the availability of adequate generation and the energy delivery facilities such as substations and power lines that are necessary to provide that energy in a reliable manner when it is needed – including when the sun does not shine. This is true even for utility-connected solar customers who install enough solar panels to annually produce kWh output that equals their annual kWh consumption. As an example, through the current net metering policy, a customer can install more generation than is needed to meet their peak demand, generate solar energy when the sun is shining and export excess energy production to the grid, import energy from the grid each and every night, and end up with net zero billed energy usage for the month. A customer like this on Tampa Electric's system would only pay a \$15 monthly customer charge even though the customer has called on and used the company's generation, transmission and distribution resources each and every night. The customer charge covers the cost of metering and billing and a small portion of the distribution investment but does not cover the other costs the customer imposes by importing from and exporting to the utility grid.

The utility grid, including the generation, transmission and distribution facilities, provides needed energy and capacity when the sun does not shine and the entire utility system is used to deliver that energy and capacity as well as to accept any excess energy produced by the rooftop solar. In effect, the utility system acts not only as a balancing system and standby resource for that customer, but as a virtual free battery or bank into which energy is deposited and withdrawn for future use. The net metering customer is not paying their fair share of system costs and is being overpaid for the energy they provide to the grid because all of their excess generation (solar generation above that

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customer's house usage) is valued at the company's retail rates. The company's non-solar customers are effectively paying solar rooftop customers the retail rate for any excess generation, which is currently approximately twice the rate of solar power that the utility could buy for customers through a wholesale solar power purchase agreement.

A modification to the Net Metering policy within Florida could be approved by the Commission within the current Florida statutes.

Specifically, Tampa Electric believes the net metering rules should be changed as outlined below:

- The utility should be authorized to install metering to measure the electricity generated by the customer's solar generator
- Excess customer generation delivered to the utility should be purchased by the utility at an avoided cost or wholesale market-based rate set by the Commission, not at retail or effectively at retail by netting against future energy purchases by the solar generation customer
- Rates for customers should be redesigned so that all customers, including solar customers, pay their fair share of the fixed facilities necessary to provide them reliable service (e.g., distribution facilities, transmission facilities and peaking generation). Solar net metering customers are currently not paying their fair share of these costs.
- Customers who self-generate should be separately accounted for in utility rate case cost of service studies as separate rate classes to reflect their usage of utility services.

**Recommendation #2: Encourage the development of utility-owned shared solar programs**

One way to promote more demand side solar would be to establish a utility sponsored shared solar program (sometimes referred to as community solar). Under a shared solar program, individual customers would have the opportunity to purchase power from a centrally located solar facility. Customers could choose to opt-in to a percentage share of a facility and, depending on the design of the program, potentially lock into a fixed, zero-fuel-cost source of power for a set period of time. Under such a model the customer is not only receiving renewable energy from the utility without the large up-front cost of installing solar themselves, but is also effectively hedging the future cost of fuel. These programs could be designed with no subsidies from non-participants and would allow customers to participate in solar generation through their utility, rather than installing and maintaining solar facilities on their own property.

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This model of demand side solar is superior to the current model of customer-sited solar with net metering subsidies in that it is open to all customers who wish to participate and can be designed so as to not result in a cost shift from participating customers to non-participating customers. Another advantage of this model is that it allows the utility to engineer a reliable solar system, including locating it to take best advantage of its impact on the transmission and distribution system and provide the distributed solar benefits to customers with the cost and system impact advantages of a larger scale solar facility. A utility sponsored shared solar program could be approved by the Commission within the current Florida statutes.

**Additional Information**

In regards to the Commission's question regarding demand side solar, Tampa Electric provides the following thoughts on certain programs and policies that would likely increase demand side solar installations, albeit at the expense of non-participating customers. Ultimately, all expenses to provide electric service should be borne and paid for by the customers of the utility. Any policy or program that provides benefits to a certain class of customer that is not cost-of-service based results in the unrecovered costs of that policy or program being subsidized by the non-benefiting and non-participating customers. Current examples of this cost-shift include: the rebate program for solar customers under the Tampa Electric Conservation Program which was determined not to be cost effective, and subsequently canceled, and subsidies that exist under the current net metering policy. The policies discussed below would likely encourage development of demand side solar installations but would unfairly shift costs to non-benefiting and non-participating customers. Therefore, Tampa Electric believes that these programs and similar policies that subsidize demand side solar at the expense of other rate payers should not be used to promote solar within Florida.

**Additional rebates and other direct financial incentives**

The legislature could provide direct incentives or rebates in addition to the 30 percent federal tax credit that is already in place or could direct the Commission to establish rebate programs to encourage the development of demand side solar. This could be done with a change to current Florida statutes or under current law with such rebates recovered through conservation clause programs. Such a directive would rely on generous subsidies from non-benefiting and non-participating customers to fund the incentives and would be contrary to the

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Commission's determination that solar rebates are neither cost-effective nor in the interest of the general body of ratepayers.

**Feed-in tariff**

Feed-in tariffs could be implemented under current Florida statutes but would require changes to the current net metering rule as well as rulemaking to cover the clause recovery mechanism. A feed-in tariff is a mechanism where owners of solar installations are compensated by the utility purchasing all the energy they produce at an artificially high price set to reflect either a profitable return to the owner or a perceived value to the utility or society for the solar energy produced. Feed-in tariffs are a direct subsidy from non-solar customers to solar customers as the price paid, which is normally substantially above avoided cost of the utility, is then recovered from non-participating customers through a clause included in their monthly bills. They create distinct winners and losers and the price paid is often unrelated to economic benefits to the utility system.

**Rate design changes that encourage demand side solar**

Tiered energy rate designs in Florida, currently only in place for residential rate schedules, are designed to charge a higher per kWh rate for higher levels of monthly energy usage. This sends a price signal to customers to use less energy when their energy use extends into the higher tier and, under the current net metering policy, generally has the effect of paying solar generating utility customers a higher than average rate for marginal kWh's produced. Increasing the differential between tiers would have the effect of artificially raising the energy cost paid for solar energy produced, much like a feed-in tariff. It would also have the effect of artificially raising electricity rates, making self-generation through the existing net metering policy more economic for customers who consistently fell within the higher tier. Establishing tiered energy rates for commercial customers would also have a similar effect. This design would not reflect the true cost of producing the incremental energy and result in price incentives to customers considering investment in demand side solar to shift costs to non-participating customers.

Another rate design change that would tend to encourage solar investment by commercial customers would be to eliminate demand charges from large commercial rates. Demand charges are designed to collect the fixed costs associated with providing power to customers (certain generation, transmission and distribution costs) through billing. Eliminating them would raise the per kWh energy charge and result in a higher credit for large use net metering customers.

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This would be contrary to the principle of matching the prices customers pay with the system costs they create and would also result in unfair cost shifts to non-participating customers.

**Conclusion**

Programs and policies such as rebates and the current net metering policy provide inappropriate benefits to one group of customers and are funded by the general body of ratepayers. These programs should be seen for what they are: uneconomic subsidies that, if implemented at all, should be temporary. They should be used for financial encouragement to stimulate initial action rather than used as long term price supports. Given that the price of installing residential solar has dropped from over \$10,000 / kW to \$3,500 / kW, these subsidies are no longer warranted or justified.

These types of policies result in higher electric rates for all customers and the escalating rates for non-solar generating customers provide inappropriate price signals to develop even more subsidized demand side solar facilities. Increasing rates will reduce economic development, inhibit business attraction and reduce job creation and the current framework is not an appropriate business model. A number of states including Arizona, Iowa, Louisiana, Nevada, New Mexico, Utah, West Virginia, Wisconsin and the U.S. Virgin Islands have begun to address net metering and other issues in an effort to correct the cross subsidies that currently exist. The Commission should give serious thought to phasing out or modifying programs that so strongly favor solar generation customers over the general body of rate payers.

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

In providing comments on the above items, please address each of the following factors, as appropriate:

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  - b) Can the policies or programs be implemented under current FPSC rules? If not, what changes or additions to the rules would be needed?
  - c) What are the impacts of the policies or programs on system reliability?
  - d) What are the impacts of the policies or programs on system fuel diversity?
  - e) Identify the cost-effectiveness of the policies or programs compared to traditional forms of generation.
  - f) Identify specific costs associated with the policies or programs and who will bear these costs.
  - g) Identify how the policies or programs will be fair, just, and reasonable across the general body of ratepayers.
- A. Supply-side solar should play an increasing role in the energy produced in Florida and across the nation. Supply side solar generation enjoys many benefits over demand side solar generation including a lower installed cost per MW and an ability to locate the facility in ways that minimize system impact and in some cases provide tangible benefits to the energy delivery system. Additionally, supply side solar facilities produce energy more efficiently than many demand side facilities. This is accomplished through optimal panel placement, reduced shading and more effective monitoring, operations, and maintenance.

Other benefits of supply side solar include the potential impact the increased solar energy production would have in meeting future environmental requirements. If enacted as proposed, the Clean Power Plan requires very significant changes to the make-up and operation of generation systems across the nation. While it is anticipated that legal challenges may delay the final implementation of the Clean Power Plan, the company sees the installation of



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supply-side solar on its system as a first step in the direction of a solution to anticipated greenhouse gas requirements in the future.

Perhaps most importantly, a benefit of supply-side solar is that it will increase this environmentally friendly source of energy in a manner that is fair to all ratepayers rather than benefitting only the few that can afford to invest in their own solar generation. Solar installations where everyone pays, and everyone reaps the benefits are the key to increasing solar penetration in the state in a fair and equitable manner.

Tampa Electric Company is currently active in the development of a supply side solar facility in order to gain experience on the construction and operation of a substantial supply side asset. In the fall of 2014, Tampa Electric announced the planned installation of a 2 MW solar facility in partnership with Tampa International Airport. The facility is currently being engineered and it is anticipated to be in-service by late fall of 2015. The facility will be located on airport property but the solar generation produced will be a resource of Tampa Electric and used for the benefit of all Tampa Electric customers.

The announcement of this solar unit has been met with very positive customer and community leader support. Tampa Electric will use this facility to gain experience in the engineering, construction and operation of supply side solar. Tampa Electric anticipates the installation of additional substantial supply side solar facilities in the future as it works with the Commission to institute supportive policies and develops supply side solar systems that are paid for by and provide benefits to all Tampa Electric customers.

### **Cost Effectiveness**

The Commission has focused for many years on decision making that ensures the most cost-effective solutions to consumers, in general and specifically as related to energy production. These decisions have served the ratepayers of Florida well. As the cost of large scale supply side solar facilities continue to drop, the Commission is wise to explore ways to increase this resource as Florida residents have expressed a desire for more solar power. Even large scale supply side solar installation projects can be costly per MW of installation, and while costs continue to come down, traditional cost effectiveness tests are challenging for solar installations.

The installation of utility owned supply side solar can be done within the current rules of the Commission. In some situations, installations of solar energy may be

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competitive with more conventional energy production based on each company's individual avoided energy costs, solar construction costs and system integration costs. In other cases, installations may cost more than traditional forms of generation, but are significantly less expensive per unit of output than small distributed solar facilities or demand side solar facilities. In either case, the Commission has the authority to allow, authorize or mandate solar facilities within the broad power given to it by the legislature. The installations of these larger utility based systems is the optimum way to provide additional solar in the state, with the costs and benefits applying to all the utility's customers.

For solar facilities greater than 75 MW, the Power Plant Siting Act and determination of need rules apply. Section 403.519, Florida Statutes, requires the Commission to "take into account the need for electric system reliability and integrity, the need for adequate electricity at a reasonable cost, the need for fuel diversity and supply reliability, whether the proposed plant is the most cost-effective alternative available, and whether renewable energy sources and technologies, as well as conservation measures, are utilized to the extent reasonably available." While the statute does not specifically require it, the historical focus has wisely been on the cost-effectiveness aspect of this requirement. As a result of this focus, projects brought to the Commission for approval have contributed to Florida having adequate and reliable electric service at reasonable rates.

In order to encourage more supply side solar installations in the future, the Commission should look to all the requirements in the need determination statute and provide clear direction to utilities that all the benefits of solar generation will be given appropriate consideration.

### **Solar Power Purchase Agreements**

The inclusion of Solar Purchased Power Agreements ("Solar PPAs") is another way to encourage the expansion of solar energy within the state. If the Commission determines that it does not currently have the authority to approve solar PPAs exceeding the avoided cost threshold, then the Commission may need to change Rules 25-17.0832 and 25-17.0825 which requires that PPAs be evaluated for cost-effectiveness against the utility's avoided cost. These rules implement the same requirement specified in Florida Statutes, Section 366.051. Thus, the statute may need to be modified, or clarified in connection with other statutes encouraging development of renewable resources, *i.e.*, Sections 366.91 and 366.92, to allow for cost recovery of solar projects when costs exceed the avoided cost threshold.

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3. Are there any other policies or programs that could promote the development and deployment of solar energy systems in Florida?

A. An excerpt from the Florida Statutes is shown below:

*366.05 Powers*

*(8) If the commission determines that there is probable cause to believe that inadequacies exist with respect to the energy grids developed by the electric utility industry, including inadequacies in fuel diversity or fuel supply reliability, it shall have the power, after proceedings as provided by law, and after a finding that mutual benefits will accrue to the electric utilities involved, to require installation or repair of necessary facilities, including generating plants and transmission facilities, with the costs to be distributed in proportion to the benefits received, and to take all necessary steps to ensure compliance.*

The Commission could utilize this authority to proactively conduct proceedings leading to a finding that there is inadequate utility owned solar generation in the state and that the lack thereof adversely affects fuel diversity and investment in such generation would improve fuel supply diversity and reliability. Such a finding would then be used to determine how much solar generation each utility should invest in to overcome the finding. However, if no finding is issued, the Commission could still approve future solar projects under this same theory. This would not require either new statutory authority or new rulemaking and would result in the development of more supply side solar generating capacity within the state.

Tampa Electric believes that the Commission has broad authority to address the various subjects regarding solar power, including advancing (or requiring) the development of supply side solar, as well as addressing the issues associated with net metering. Tampa Electric applauds the Commission for reaching out to interested parties for ideas related to the promotion of solar energy within Florida and look forward to working with the Commission, the Staff and other interested parties in developing programs and policies that are beneficial to all of the ratepayers of Florida.