Edison Electric
INSTITUTE

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Vice President, General Counsel & Corporate Secretary

June 7, 2016

Donald S. Clark, Secretary of the Commission
Federal Trade Commission
Office of the Secretary
600 Pennsylvania Avenue N.W., Suite CC-5610 (Annex B)
Washington D.C., 20580

Re: Solar Electricity Project No. P161200

Dear Secretary Clark,

In advance of the Federal Trade Commission's (FTC) June 21, 2016, "Something New Under the Sun: Competition and Consumer Protection Issues in Solar Power" Workshop, the Edison Electric Institute (EEI) hereby submits these comments addressing competition and consumer protection issues that may arise when electricity customers choose to install private solar photovoltaic panels to generate some of their own electricity. EEI is the national association of shareholder-owned electric power companies.

These issues are being actively addressed in state legislative, regulatory and enforcement proceedings across the country. We strongly encourage the Commission to take full account of these state activities in its deliberations.

EEI appreciates the opportunity to participate in the workshop and to submit these comments.

Sincerely

Edward H. Comer
Vice President, General Counsel & Corporate Secretary

cc: Phil Moeller, Senior Vice President, EEI

Comments of the Edison Electric Institute
Something New Under the Sun:
Competition and Consumer Protection Issues in Solar Power
A Federal Trade Commission Workshop

Solar Electricity Project No. P161200

June 7, 2016

In advance of the workshop on solar power that will be held by the Federal Trade Commission (FTC or Commission) at the end of June, the Edison Electric Institute (EEI) submits these comments addressing competition and consumer protection issues that may arise when electricity customers choose to install private (often rooftop) solar photovoltaic (PV) panels to generate some of their own electricity. EEI appreciates the opportunity to participate in the workshop and to submit these comments. The FTC has an important role to play in understanding the competitive dynamics of electricity markets and in protecting consumers that are being marketed to install distributed generation (DG) systems, like private solar PV.

EEI is the association that represents all U.S. investor-owned electric companies, international affiliates and industry associates worldwide. Our members provide electricity for more than 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ nearly 500,000 workers. Investing more than $100 billion, on average, in annual capital expenditures, the electric power industry is responsible for millions of additional jobs.

Safe, reliable, affordable, and clean electricity powers the economy and enhances the lives of all Americans. EEI's members include the local distribution companies (LDCs) that interconnect customers' private solar PV generators to the larger power grid and then continue to provide them a range of services. The interconnection, delivery, and support services that LDCs provide are essential for customers who install private solar systems. Our members also include companies that produce and sell electricity at wholesale and retail and that have a strong interest in fair competition with private solar generators and in achieving efficient electricity prices for their customers.

This workshop provides an opportunity for the FTC to shine a light on the competitive distortions sought by some members of the distributed solar industry. Taking advantage of the enthusiasm for more environmentally-friendly alternatives in many aspects of our lives, some members of the solar industry seek rules that would increase their companies' profits at the expense of equally environmentally-friendly, but more efficient, alternatives and would subsidize private solar consumers at the expense of those less well-off.

In all states, retail customers have the right to self-generate, or produce their own power.[1] Customers have long been able to buy back-up generators and/or to purchase private solar systems or other forms of private generation. For example, commercial and industrial customers (C&I) have installed combined heat and power (CHP) systems that have allowed them to produce their own electricity for years. As of 2015, over 82.7 gigawatts (GW) of CHP capacity exists at more than 4,400 C&I facilities across the country.[2] For most customers, however, electric companies produce and deliver power at far less cost and with far greater reliability to individual customers than private generation options.[3]

The debate over current net metering policies is not a debate over the right to self-generate. Customers have that right. Rather, the retail net metering policy debate is an economic debate about the price electric companies and their customers are required to pay for generation from

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[1] Not all states allow retail net metering or direct sales from private solar customers to others, but customers in these states may install solar panels to generate electricity for their own use.

[2] Department of Energy, *Combined Heat and Power Technical Potential in the United States* (Mar. 2016), at p.5, http://www.energy.gov/sites/prod/files/2016/04/f30/CHP%20Technical%20Potential%20Study%203-31-2016%20Final.pdf

[3] *See* Electric Power Research Institute (EPRI), *The Integrated Grid: Realizing the Full Value of Central and Distributed Energy* Resources (Feb. 2014), http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002002733&Mode=download.

customer-based, private solar systems and the price private solar customers pay for their use of the power grid.[4]

I. The Current State of the Electric Power Industry

Today, a profound transformation is underway across the United States as the way energy is produced and used is changing due to changes in technology, policy, and customer demands. The electric power industry is transitioning to cleaner generation sources and leading the way on renewables and next generation nuclear power. We also are building smarter energy infrastructure, and our investments are making the power grid more dynamic and more secure for all customers. We are providing customers with solutions to meet their energy needs and are partnering with leading innovative companies and start-ups to ensure that customers can take advantage of new technologies.

This transformation comes on the heels of another: significant competition in the power sector. As a result of a series of actions at the state and federal level, there is more competition in the power sector than ever before. Today, two-thirds of the U.S. population is served by wholesale regional electricity markets run by regional transmission organization (RTOs) or independent system operators (ISOs)(collectively, RTOs). RTOs deliver reliable electricity through competitive market mechanisms. *See* FERC Energy Market Primer at 58.[5] Many states and the District of Columbia have adopted retail electricity competition, which allows customers to choose their electricity supplier. In 2014, competitive suppliers served nearly 60 percent of the customer demand for power in the areas where they operate. *See* COMPETE Report at 2.[6] From

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[4] There is a subsidiary issue of whether customers have the right to purchase electricity from third-party companies that build systems on the customer premises and sell or deliver power. This issue is related to state policies regarding retail competition, not the right to self-generate.

[5] Federal Energy Regulatory Commission (FERC), Division of Energy Market Oversight, *Energy Primer: A Handbook of Energy Market Basics* (Nov. 2015) (FERC Energy Market Primer), http://www.ferc.gov/market-oversight/guide/energy-primer.pdf.

[6] Philip R. O'Conner and Erin M. O'Connell-Diaz, COMPETE, *Evolution of the Revolution: The Sustained Success of Retail Electricity Competition* (July 2015) (COMPETE Report),

2003 to 2013, the amount of power competitive suppliers sold directly to end-use customers grew dramatically even in an era of overall flat growth in electricity consumption: 181 percent for C&I customers and 673 percent for residential customers, which accounts for 20 of every 100 kilowatt hours sold in the contiguous United States. *See id.*

Even in states that do not offer customer choice, power prices are based on the cost of the services necessary to provide electricity on demand and are reviewed by the Federal Energy Regulatory Commission (FERC) and state public utility commissions (PUCs) to ensure that they are just, reasonable, and not discriminatory. State regulators also compare the cost of power generated by electric companies to competitive alternatives to determine avoided costs under the Public Utility Regulatory Policies Act (PURPA).

A. Electric Companies are Building Smarter Infrastructure Using New Technologies

The power grid efficiently delivers reliable and safe energy so that customers get the electricity they need. The owners and operators of the power grid work to maintain and improve grid security, reliability, and resiliency. Our security strategies are constantly evolving and are closely coordinated with federal, state, and local governments.

The continued deployment of digital smart meters—nearly 65 million have been installed in nearly half of all U.S. households to date—is one key building block of a more secure and more dynamic power grid. In addition to smart meters, increased deployment of power grid-level sensors is providing increased visibility at the sub-feeder level, allowing for more granular operational capabilities. Investments like these that hasten the integration of new technologies, such as universal, large-scale wind and solar, private wind and solar, energy storage, micro grids, and other devices in customers' homes and businesses, are another. Electric companies are partnering with developers and startups to deploy a range of new technologies to better serve their customers.

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http://competecoalition.com/files/COMPETE%20White%20Paper_Evolution%20of%20Revolution_Final.pdf.

B. Electric Companies Are Creating Energy Solutions Customers Want

New technologies increasingly enable energy personalization, and many customers want more flexibility and want to be more engaged in managing their energy use. Electric companies are changing the way services are provided to customers to individualize them: for residential customers who want to install DG or manage their energy use using connected devices and web-based platforms; for large customers (like data centers and major corporations) that want to use renewable energy; and for cities that want electricity from more sustainable sources and to reduce their carbon footprint.

Today, electric companies are working with C&I customers that are seeking reliable renewable energy to meet their sustainability goals. Even sophisticated corporate buyers have found renewable development complicated, time-consuming, and potentially risky. For this reason, EEI member companies, the World Wildlife Fund (WWF) and World Resources International (WRI) created the Utility-Corporate Buyer Collaborative in 2015.[7] This Collaborative is aimed at helping electric companies provide their customers with cost-effective renewable electricity.

Electric companies also help customers save energy. In fact, their investments in energy efficiency (EE) saved enough electricity to power 14.7 million U.S. homes for one year and avoided the generation of 107 million metric tons of carbon dioxide in 2014.[8] Electric utility EE expenditures totaled nearly $7.3 billion in 2014. *See id.*

C. Electric Companies Are Quickly Expanding Clean Energy Supplies

In just 10 years, the mix of sources used to generate electricity has changed dramatically—today we are adding significant amounts of natural gas, wind, and solar as we steadily retire coal-based

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[7] EEI, WWF and WRI, *Creating Renewable Energy Opportunities, Utility-Corporate Buyer Collaborative Forum* (June 2016), http://buyersprinciples.org/wp-content/uploads/Utility-Corporate-Buyer-Collaborative-Forum-Strategic-Insights.pdf.

[8] Institute for Electric Innovation (IEI), *Electric-Utility Customer-Funded Energy Efficiency Savings, Expenditures, and Budgets (2014)*, IEI Issue Brief (Nov. 2015), p. 2, http://www.edisonfoundation.net/iei/Documents/IEI_2015USEnergyEfficiency_2014Exp_FINAL.pdf.

power plants. Coal's share of total net electricity generation dropped from 50 percent in 2005 to 34 percent in 2015.[9] One-third of all electricity generated in 2015 came from zero-emitting resources, including nuclear, wind, solar, hydropower, and other renewables. *See id.* As a result of these changes in the generation mix, as well as other environmental requirements and increased energy efficiency, the power sector has significantly decreased its greenhouse gas (GHG) emissions. At the end of 2015, the sector's GHG emissions were nearly 21 percent below 2005 levels.[10]

Electric companies[11] are responsible for virtually all of the wind, geothermal, and hydropower in the country and about 60 percent of all U.S. solar capacity.[12] Analysts expect another record year for solar power. Electric companies expect to install nearly three times as much solar in 2016 as they did in 2015, with the goal of bringing cost-effective solar to customers.

An important factor in the increased use of clean energy is the dramatic decline in the costs of using cleaner resources to generate electricity. New drilling technologies have expanded supply and reduced natural gas prices, so that power from gas generation often displaces power from coal. And prices for renewable power have also declined significantly over the past 10 years.[13]

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[9] *See* DOE, Energy Information Agency (EIA), *Annual Energy Outlook 2016, Early Release, Table: Electricity Supply, Disposition, Prices, and Emissions* (May 2016), http://www.eia.gov/forecasts/aeo/data/browser/#/?id=8-AEO2016&cases=ref2016~ref_no_cpp&sourcekey=0.

[10] *See* EIA, Monthly Energy Review (May 2016), http://www.eia.gov/totalenergy/data/monthly/pdf/mer.pdf.

[11] In this instance, "electric power companies" includes investor-owned utilities, public power, rural electric cooperatives, and independent power producers.

[12] EEI (2016). Data collected from EIA, SEIA, GTM, SMI.

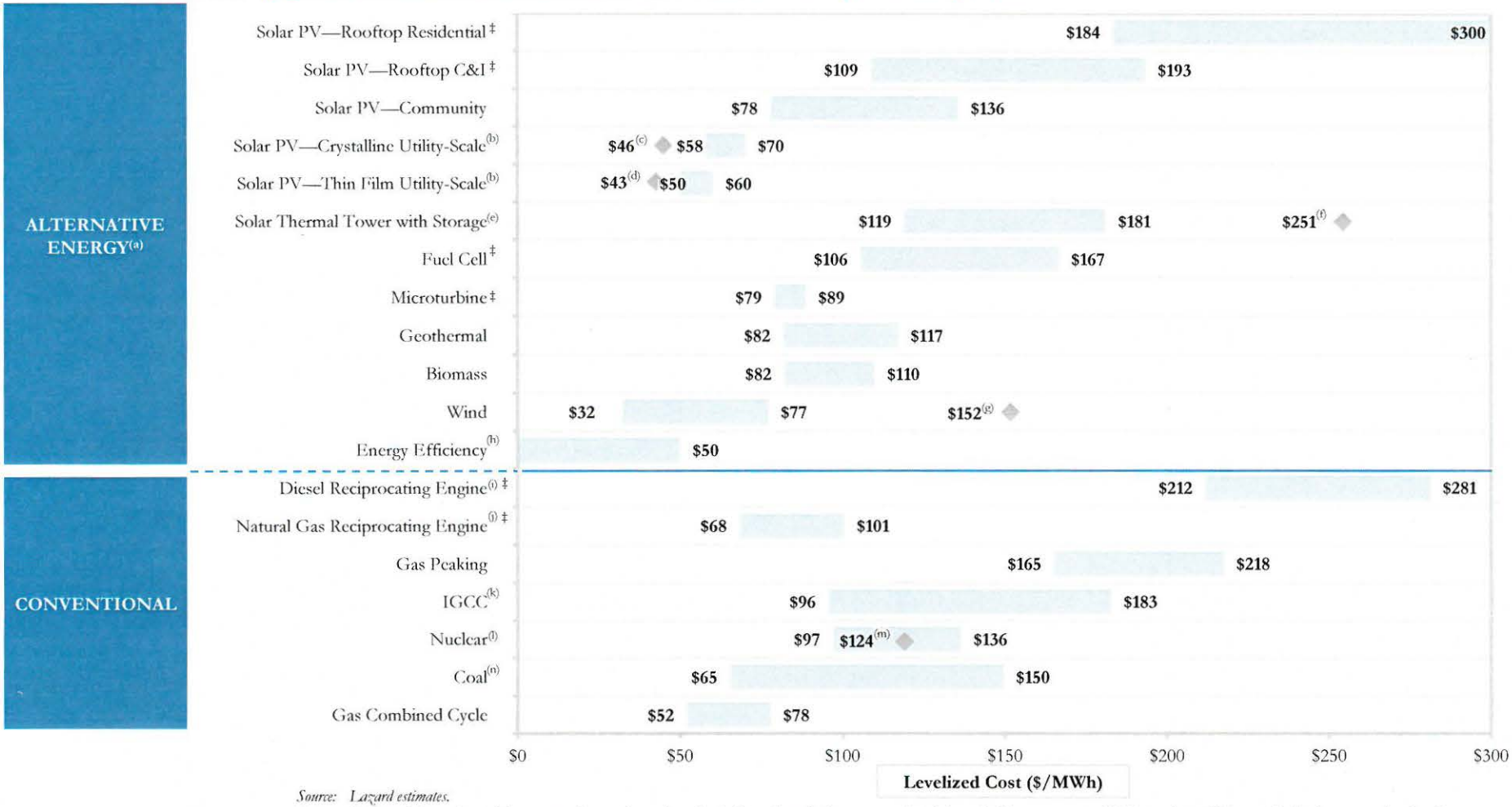
[13] *See* Renewable Energy Policy Network for the 21st Century, *10 Years of Renewable Energy Progress*, http://www.ren21.net/Portals/0/documents/activities/Topical%20Reports/REN21_10yr.pdf.

The least costly renewables are those used to generate electricity at a larger scale. In many places and at some times during the day, large-scale renewables can compete with traditional natural gas-based generation, which sets marginal prices in most electricity markets. However, despite the large cost decreases for solar panels, private residential PV solar remains one of the most expensive types of electricity. See Fig. 1. As the graphic below demonstrates, universal, or large-scale solar generation is significantly less expensive than private rooftop residential solar.[14]

[14] *See also* Bruce Tsuchida et al., Brattle, *Comparative Generation Costs of Utility-Scale and Residential-Scale PV in Xcel Energy Colorado's Service Territory* (July 2015), http://brattle.com/system/publications/pdfs/000/005/188/original/Comparative_Generation_Costs_of_Utility-Scale_and_Residential-Scale_PV_in_Xcel_Energy_Colorado%27s_Service_Area.pdf?1436797265.

Unsubsidized Levelized Cost of Energy Comparison

Certain Alternative Energy generation technologies are cost-competitive with conventional generation technologies under some scenarios; such observation does not take into account potential social and environmental externalities (e.g., social costs of distributed generation, environmental consequences of certain conventional generation technologies, etc.) or reliability-related considerations (e.g., transmission and back-up generation costs associated with certain Alternative Energy technologies)



Source: Lazard estimates.

Note: Here and throughout this presentation, unless otherwise indicated, analysis assumes 60% debt at 8% interest rate and 40% equity at 12% cost for both conventional and Alternative Energy generation technologies. Assumes diesel price of ~$2.50 per gallon, Northern Appalachian bituminous coal price of ~$2.00 per MMBtu and a natural gas price of ~$3.50 per MMBtu for all applicable technologies other than Natural Gas Reciprocating Engine, which assumes ~$5.50 per MMBtu. Analysis does not reflect potential impact of evolving regulations/rules promulgated pursuant to the EPA's Clean Power Plan. **See following page for footnotes.**

‡ Denotes distributed generation technology.

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The solar PV panels used for both private and universal solar are the same. The high costs of private solar are primarily due to high installation costs and low capacity factors. Universal solar is significantly less expensive because of economies of scale—a medium-sized solar power plant is 60 megawatts (MW), which is 10,000 times larger than the typical 6 kilowatt (kW) rooftop system.[15] Large-scale solar also is less expensive because of the much higher capacity factors (and, therefore, greater actual electricity output) achieved by ground-mounted projects with panels that are able to rotate and track the sun.

II. Net Metering: Pricing Private Solar at Retail Rates

The intent of the original net energy metering policies, which date as far back as the early 1980s, was to incent early adoption of small wind turbines and solar panels at a time when these technologies were expensive and electric companies only had analogue meters. These programs were small, almost always capped as to the number of customers or capacity allowed to participate. Given the metering technologies available at the time, they adopted a simple approach of spinning the meter forward during times when the customer relied upon the grid for power and backward when the system was exporting power onto the grid.[16] The programs were intended to help jump-start the amount of electricity generated using renewables, not to shift the significant costs of operating, maintaining, and enhancing the power grid from one group of customers to another as net metering at the retail price does today.

Customers who install private solar systems continue to rely on the power grid.[17] In fact, private solar customers use the grid more intensely than other customers: they both receive power from

[15] In some states, like New York, individual private solar customers are permitted to aggregate their generation for regulatory purposes.

[16] Analogue meters could only run forward and back; they could not record time of use. Today's smart meters are capable of measuring purchases and sales and time of use with little, if any, additional cost.

[17] Private solar, or other DG, customers who wish to truly disconnect from the power grid and not utilize grid services are not and should not be required to pay for the grid. However, most solar customers do not disconnect from the grid because of the extremely high cost of storage,

the grid when their systems cannot meet their needs (because the sun is not always shining), and they send power back to the grid when their systems produce more power than they need. Private solar systems require voltage support from the grid to power a household, even when they provide all the electricity a customer uses.[18] As a practical matter, private solar customers are taking power from the grid and sending it back every day. As we look to a future where DG resources, such as private solar, continue to grow and comprise a larger share of the energy resources on the nation's power grid, it is critical that the customers who own these resources help pay for the power grid upon which they rely.

A. There are Fundamental Problems with Retail Net Metering

In order to understand the problems with net metering at retail rates, it is important to first understand how residential electricity rates are designed. For a host of cost, technology, and policy reasons, residential retail rates historically have been designed to recover the majority of the costs of residential service on the basis of energy consumption, with most of the fixed costs and capacity related costs rolled into a volumetric charge. This residential retail rate, which generally remains constant regardless of the time when the electricity is used, includes the cost of the power generation, as well as a number of otherwise fixed costs associated with delivering the power from the generation source through the grid to the customer. These services, which are necessary to provide electricity upon demand to any customer who wants it, include constructing, maintaining, and operating the transmission and distribution systems, providing balancing, voltage, and frequency response services, and support activities (e.g., customer support and billing services).

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their desire for back-up power when the sun in not shining, reliability, and other factors. *See* EPRI, *supra*, n.1.

[18] As EPRI has noted, "the grid provides instantaneous power for appliances and devices such as compressors, air conditioners, transformers, and welders that require a strong flow of current ("in-rush" current) when starting up. This enables them to start reliably without severe voltage fluctuation. Without grid connectivity or other supporting technologies, a conventional central air conditioning compressor relying only on a PV system may not start at all unless the PV system is oversized to handle the in-rush current." EPRI, *supra*, n.1, at 18.

A typical residential electricity customer consumes, on average, about 1,000 kWh per month and pays an average monthly bill of about $110.[19] About half of that bill (i.e., $60 per month) covers charges related to the non-energy services provided by the power grid. Because of the simple volumetric residential retail rate design, a private solar customer inherently does not pay for some of the fixed costs of these grid services they use. If, in addition, the customer is paid the retail rate for electricity sold back to the power grid, the customer, perversely, will be *paid* the amounts intended to pay for the fixed costs of grid services, even though the customer is consuming, not providing, grid services. This creates two problems in the context of retail net metering: (1) above-market payments to private solar customers and (2) cost shifting among customers.

B. Retail Net Metering Pays Private Solar Systems Higher than Competitive Prices for Power

Electric distribution companies are required to procure and/or provide electricity to all customers who request service in their territories, regardless of how much or how little electricity these customers need. In a large majority of the country, electricity generators operate in competitive wholesale markets where the price of power is determined through competitive power markets. This wholesale market cost of generation is then passed directly on to customers. In non-competitive or vertically integrated states, generation prices are regulated by state PUCs, where they are a function of the cost of service for that generation unit plus a reasonable rate of return. Such PUCs, however, are fully aware of the costs of alternative sources of electricity through their determination of avoided costs. In both instances, the power generation charge, or wholesale power rate, is just one component, which, as previously noted, typically is less than half of the final retail rate.

Retail net metering policies, however, require electric companies to pay an above-market price, the all-in retail rate, for private solar generation that is not used by the customer—and this cost is eventually paid by all customers who have not opted for private solar. The cost difference is

[19] IEI, *Issue Brief, Value of the Grid to DG Customers*, pp. 3-4 (Oct. 2013).

significant.[20] Instead of the competitive or cost-based price that electric utilities pay for all other solar power, which is usually around 5 cents per kWh, private solar customers are paid anywhere from 12 to 20 cents per kWh. There is no difference between the actual solar power provided, just the location of the PV panels with respect to the customer meter.[21] Because the electric company is required to buy this power when it is generated and there is no cost-effective means currently available to store power, it will have to forgo purchasing less expensive market-priced power in order to maintain reliability. This harms other suppliers, including other solar suppliers that can and do provide electricity at lower cost.

Retail net metering requires non-rooftop solar customers to pay significantly above-market prices for solar power that could otherwise be purchased or generated by their electric company for roughly one-third to one-half of the price. This is not only inefficient but anti-consumer, as it provides one particular source of generation—high-cost private rooftop solar—with a distinct competitive pricing advantage.[22] A net metering policy that paid private solar customers either the competitive wholesale price for power or the electric company's avoided cost of producing that power would be much more equitable for non-solar customers and be more consistent with competitive market principles.

Electricity prices also can be quite volatile over the course of a day, as well as vary seasonally. Rather than reflecting those price changes, retail net metering simply treats all energy the same, regardless of the time of day when it was produced. In most states, the time at which solar

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[20] The cost of PV has fallen more than 80 percent in the last five years—with further projected decreases—but the retail price paid to private solar customers has not been adjusted to reflect these decreases. *See* Lazard, *Levelized Cost of Energy Analysis - Version 9.0* (Sept. 2015), https://www.lazard.com/media/2390/lazards-levelized-cost-of-energy-analysis-90.pdf

[21] Technically, solar power is less valuable if it is variable and not able to be dispatched by a system controller.

[22] Thus, it is not surprising that consumer organizations like the American Association of Retired Persons (AARP) oppose retail net metering. *See* AARP, *The Policy Book: AARP Policies 2015-2016*, ch.10, Distributed Generation and Net Metering, http://policybook.aarp.org/the-policy-book/chapter-10/subsub066-1.2034759.

production peaks is not the same time as when the system demands, and price, for power are the greatest. Typically, private solar systems will produce excess solar energy that is exported back to the power grid in the middle of the day when the price of that energy is lower and will use grid-supplied power in the evening when the price is higher, without having to pay the pricing differential on the electricity produced and consumed. This not only distorts market prices, but it also drives inefficiencies by incentivizing customers to site rooftop solar to maximize production, as opposed to maximizing the market value of the electricity. In order to address this concern, electric companies have proposed time-of-use rates, whereby the energy component of the bill tracks more closely with the competitive price of power at a specific time of day.

C. Retail Net Metering Forces Non-Solar Customers To Pay Grid Costs for Private Solar Customers

Private solar customers rely on the utility grid all the time, but do not share equitably in the costs of operating and enhancing the grid like other customers. Retail net metered customers generally are credited for the electricity they sell to the grid, with their electric meter essentially spinning backwards to provide a credit against the electricity that these customers must buy from their electric company at night or during other periods when their electricity use exceeds their private solar system's output. By way of illustration, a private solar customer can size a solar array to become a "net-zero" consumer, meaning that over the course of the year the system is producing as much energy as the customer uses. Of course, on a day-to-day basis, the customer is not a net-zero consumer of grid services, but is using the grid all the time. In effect, these customers are using the grid as a "free battery," although no actual storage of energy occurs. Unlike other commodities, and in the absence of specific energy storage technologies such as large-scale batteries, which remain very expensive at this time, electricity must be used when it is produced.

As a result, during the day, private solar customers use the power grid to export excess electricity for use by other customers, and, during the night, private solar customers use the grid to import electricity from other generation resources into their homes. Moreover, they rely on the grid to smooth out peaks and valleys in their generation profile due to the variability of distributed

generation, including rooftop solar. And, if there is a failure with their solar system, private solar customers can rely on the grid to meet their full power needs and can call their electric companies for support.

It is important to remember that net-metering customers are not sharing equitably in the costs of any of these services—not the cost of operating and upgrading the power grid, not the cost of metering and billing services, and not the cost of voltage and other support services. In fact, they are actually being paid for the grid services that they are using. These costs are recovered from the remaining non-private solar customers who are part of that same residential customer class. Recently, the Nevada PUC found the cost shift in that state to be approximately $16 million annually.[23] The California PUC commissioned a similar study, which estimated that, by 2020, approximately $1.1 billion would be shifted annually from private solar to non-private solar customers under California's retail net energy metering construct.[24] That same study also found that non-solar customers are less affluent than the private solar customers they are subsidizing, which raises additional equity issues. *See id.*

This preferential treatment of private solar, therefore, creates an unfair cost shift as the costs of providing grid services to private solar generators are passed through and recovered from all other non-solar customers. This is why consumer groups like AARP oppose retail net metering.

III. Competition Issues

The goal of any antitrust review is to protect competition, not competitors. To protect competition, the FTC assesses whether potentially exclusionary conduct has occurred, which requires consideration of the existence of market power as well as any barriers that would prevent competitors from entering the market. While some have speculated that antitrust may

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[23] Public Utilities Commission of Nevada, Modified Final Order, *Application of Nevada Power Company d/b/a NV Energy for Approval of a Cost-of-Service Study and Net Metering Tariffs*, Docket Nos. 15-07041, 15-07042, February 17, 2016.

[24] E3, *California Net Energy Metering Ratepayer Impacts Evaluation* (Oct. 2013), http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=4292.

have a role to play in expanding the use of private solar systems,[25] the actual record does not bear this out.

A. Myth: Customers Installing Private Solar Face Barriers

Electricity end-use customers have always had the right to install their own generation to meet their own electricity needs.[26] Long before solar PV entered the market, some electricity customers chose to install backup generators, CHP systems, and other generation options to meet some or all of their electricity needs.

Electric companies are required by law to interconnect smaller renewable generators and purchase their power as a result of the passage of PURPA. While electric suppliers and distribution companies are obligated to provide and deliver affordable, reliable power to all customers, customers are not and have not ever been required to purchase a minimum amount of electricity from their suppliers. However, customers are expected to pay a just and reasonable price for the company facilities and services that they use.

While there is a very public retail net metering debate about the price paid to private solar generators for solar power sold back to the grid and the price of grid and other services used by private solar customers, there are no structural or regulatory barriers to installing private DG solar panels for one's own use.

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[25] *See, e.g.,* Jon Wellinghoff and Steven Weissman, *The Right to Self-Generate As A Grid-Connected Customer,* ENERGY L.J. (Nov. 16, 2015).

[26] As noted previously, whether customers have the right to install private solar is separate from whether they have a right to be paid the retail rate for electricity sold back to the grid or the right to sell power directly to others.

There are no licensing laws or similar state approval requirements for private solar generators or the companies that sell or lease them the solar panels.[27] Almost all other providers of power, including distribution companies, are subject to regulatory review, which entails applications and ongoing reporting requirements at either or both the state and federal levels. But, this is not the case for private solar generators or the companies that provide the solar PV panels.

Similarly, states do not require new private solar systems to demonstrate that there is a need for new market entrants. In fact, states and the federal government have created a number of incentives and subsidies to encourage and increase the amount of private solar. These incentives and subsidies help those interested in private solar by closing the economic gap between private solar and larger-scale universal solar power plants.

The interconnection of solar panels to electric company distribution systems requires assurances that the connections are safe and consistent with utility operations.[28] Therefore, it can take time to actually interconnect new private solar systems safely and reliably. With the advent of new smart technologies, distribution companies continue to learn more about the physical operations of the distribution system and the impact of substantial additions of distributed generation. FERC and state commissions are conducting proceedings to expedite interconnection and electric companies are making concerted efforts to reduce wait times and streamline application processes. For example, EEI member companies in California, where there is a large and growing number of private solar customers seeking interconnection every year, have made significant efforts to streamline the process, moving to a more automated, web-based application,

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[27] Contractors who install private solar systems may have to obtain the appropriate state or local license and some construction permits may be required, but private solar customers need not seek a license to have the solar panels installed on their homes.

[28] High solar penetration "introduces issues such as the nature, cost, and impact of interconnection, voltage stability, frequency regulation, and personnel safety." IEEE, IEEE Report to DOE on QER Priority Issues (Sept. 5, 2014), at p. 22, http://www.ieee-pes.org/images/files/pdf/IEEE%20QER%20Report%20September%205%202014%20HQ.pdf.

simplifying requirements, and increasing coordination among the various state and company actors.[29] These efforts have brought interconnection times down to a matter of days. Interconnection is not a barrier to entry. Solar companies that chose to exit Nevada did so in response to changes in net metering policy, not concerns about delays in interconnection. Indeed, a Solar Electric Industries Association (SEIA) report released in January found that residential solar grew by 50 percent in each of the last four years.[30] And, the solar industry more recently announced that there are one million different solar installations nationwide—each requiring its own interconnection.[31] This number is a huge achievement for all involved.

B. Distributed Generation Relies on Electric Company Services and Is Not Generally In Competition With Them

Electricity service relies on a complex system of infrastructure that falls into two general categories: (1) generation and (2) transmission and distribution.[32] The provision of transmission services is regulated by FERC and the provision of distribution services is regulated by state PUCs. The rates paid by customers for distribution services are set by state regulators, consistent with the costs of providing these services.

Private solar generation does not replace the transmission and distribution services provided by the LDC to all retail customers.[33] In fact, as discussed above, customers who install solar panels

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[29] *See, e.g.*, Kristen Ardani and Robert Margolis, National Renewable Energy Laboratory, *Decreasing Soft Costs for Solar Photovoltaics by Improving the Interconnection Process, A case Study of Pacific Gas and Electric*, NREL/TP-7A40-65066 (Sept. 2015).

[30] SEIA, *Solar Market Insight 2015 Q4*, http://www.seia.org/research-resources/solar-market-insight-2015-q4.

[31] SEIA, *Million Solar Strong,* http://www.seia.org/campaign/million-solar-strong.

[32] In reality, generation, transmission, and distribution work together in many complex ways to assure the reliability of electric service.

[33] If sited appropriately and if the LDC has visibility into and control over how and when a distributed generator produces electricity, the distributed generator can provide some benefits to the transmission and distribution system in terms of deferred upgrades. To date, however, few

continue to rely on the distribution system to provide them power when their systems are not generating electricity and to absorb and re-distribute any electricity generated that is not needed by the private solar customer. As a result, distributed generation supplements the generation of electricity, but does not replace the other services that the LDC provides.

Moreover, many electric distribution companies in the U.S. do not generate electricity. Many states and D.C. have implemented some form of retail competition. In these states, customers choose their own electricity providers, and LDCs are not allowed to own generation. By definition, then, these distribution companies do not compete with private solar generation.

In states that have not opted for retail competition, PUCs regulate the costs of the generation that is provided to customers. In addition, in these states, vertically integrated electric companies must also get approval from their PUCs to build new generation, so they cannot independently decide to install new generation in an effort to drive private solar out of the market.

Importantly, private solar has flourished in both states that do and do not participate in competitive markets. For example, North Carolina does not have retail choice, but has seen dramatic deployment of private solar in recent years. In 2015, 1,134 MW of solar capacity was installed, the second largest amount in the nation.[34]

C. Paying Private Solar Generation Above Market Rates is Inefficient and Harms Consumers

The combination of retail net metering and higher retail electricity rates, along with significant subsidies, has driven the expansion of distributed solar nationally. Five states—Arizona, California, Hawai'i, Massachusetts, and New Jersey—account for almost 80 percent of the private solar generation in the U.S. What these states have in common is not abundant solar

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existing distributed generators have installed the technology and communications equipment to realize these potential benefits.

[34] *See* SEIA, *State Solar Policy, North Carolina*, http://www.seia.org/state-solar-policy/north-carolina. SEPA does not separate installed capacity figures into private and universal categories.

resources, but higher retail electricity rates, retail net metering, and significant subsidies—all of which enable solar companies to sell or lease systems at prices much higher than systems in neighboring states with lower pricing. While this may help solar companies, it harms other lower-cost generation sources by reducing purchases from them.

Electric companies believe that private solar customers should be paid the competitive rate for their electricity and that these customers—if they continue to use the power grid for back-up power and to sell energy back—should share the costs of operating and enhancing the grid like all other customers. Importantly, this would not impinge on the customers' right to only pay for net electricity demanded. The original regulatory incentive for the solar customer—net metering—would remain unchanged. What would change would be the amount the customer is paid for energy sold back to the power grid. Seeking to pay competitive rates to private solar customers who sell power back to the grid is not anticompetitive or exclusionary behavior.

The competitive price is the price the market determines is appropriate or regulators determine is the lowest available in the market.[35] There are many reasons why the FTC should be in favor of a competitively determined rate.

Allocating the fixed costs of the power grid among different customers and different uses is complicated. State PUCs, which have jurisdiction over these issues and have been setting and reviewing electricity rates for 100 years, are experts in this area. Many state PUCs are looking at a variety of possible options, including net metering at a more competitive rate, demand charges, or creating separate rate classes for private solar DG customers. Any eventual modification of retail net metering policies does not represent anticompetitive behavior, but rather a logical response to the growing maturity of the technology.

Regardless of the rates that states decide private solar customers should pay for the grid and be paid for electricity sold back to the grid, states retain the right to incentivize increased

[35] Applying PURPA or similar state laws, utility commissions regularly determine this "avoided cost" based on reference to competitive conditions.

deployment through a variety of other means that do not directly distort competitive pricing. Federal and state governments and regulators have many mechanisms to promote clean generation, including private solar, and do so through tax incentives, subsidies, and other means that less directly affect prices and competition.

IV. Consumer Protection

The decision to purchase or lease a private solar system, a major purchase by any definition, can be a complex and potentially confusing process for customers who rarely, if ever, have experience in such transactions. These private solar systems typically cost tens of thousands of dollars and involve lease agreements that can last 20 to 30 years. The cost, complexity, and time commitment involved certainly warrant the FTC's attention to ensure that customers receive clear, accurate information to allow them to make informed decisions. While the Commission will surely receive excellent information from others who are truly the experts in this arena, there are a few issues that bear mentioning.

First, it is critical that consumers receive understandable, accurate information. As an industry, we have learned time and again the importance of transparency and customer education to the success of rolling out new technologies. This held true during the inception of energy efficiency programs and continues to hold true today as we roll out smart meters and other newer technologies. Targeted customer education by those with the information, presented in a clear and accurate way, enables customers to make informed decisions and appreciate the entirety of the transaction before making an installation decision. This is particularly important in the context of private solar because government policies and regulations that affect the value of a purchase or lease decision are not likely to be static, especially for 20 or 30 year lease terms.

Early on, many solar leasing companies estimated electric company rates would increase at an unrealistic 10-30 percent annually, which is unsupported by any realistic, factual analysis. Currently, uncertainty about the future of net metering policies raises a serious potential to mislead or deceive customers. This uncertainty already has become an issue in Nevada, where the PUC has openly questioned whether private solar sellers and marketers disclosed the direct

impact that recently enacted legislation could have on programs such as net metering.[36] Nevada is not an isolated case. Almost half of the states passed electric policy legislation in 2015, often relating to solar pricing issues, and several states this year specifically considered legislation related to whether to extend net metering caps and/or change net metering policies.[37]

In order to address some of these concerns, Arizona recently passed consumer protection legislation requiring certain disclosures around the terms, conditions, and total cost of the private solar contract or lease, including the tax incentives, the financing obligations, the potential for regulatory changes both in rates and programs, and the assumptions about future electric rates used to determine the savings projections for private solar customers.[38] The Arizona legislation will help customers better understand some of the complexities they should consider and that private solar is not free even if the fuel is free.

The FTC's own website also provides a helpful tool for customers interested in private solar in the Solar Power for Your Home guide.[39] Of particular note, the guide discusses the role that renewable energy certificates (RECs) play in determining what truly is and is not clean energy or green power. This is an excellent example of an issue where a large majority of customers do not understand that if they do not retain the RECs, they cannot be compensated for the renewable

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[36] Nevada PUC Order, *supra*, n.23.

[37] Solar leasing companies and their representatives have aggressively lobbied state legislatures and executives in these states. *See e.g.,* Fortune, *"Why Nevada Legislators (Plus Leo Dicaprio) Visited Telsa's Gigafactory,"* March 17, 2016, http://fortune.com/2016/03/17/nevada-legislators-tesla-gigafactory/; *see also,* The Washington Times, *"As Renewable Energy Debate Heated Up, Firms Doubled Lobbying,"* July 7, 2015, http://www.washingtontimes.com/news/2015/jul/7/ap-renewable-energy-firms-ramp-up-lobbying-in-mass/; *see also,* The Arizona Republic, *"SolarCity Funded Clean-Energy Advocacy Group that Targeting Arizona Utility Regulators,"* December 12, 2015, http://www.azcentral.com/story/money/business/energy/2015/12/13/solarcity-funded-group-targeted-arizona-utility-regulators/77105808/.

[38] Arizona SB 1465.

[39] *See* https://www.consumer.ftc.gov/articles/0532-solar-power-your-home. However, even this site does not fully advise consumers as to the potential risks and potential policy changes that could affect them.

attributes of the private solar systems that they may own or lease and, perhaps more importantly to many, the power that they use cannot be characterized as renewable energy. The REC situation creates a potential for misleading information and confusion in violation of the Commission's own advertising guides and can result in dissatisfaction for those customers seeking the environmental benefits.[40]

Finally, as the FTC looks at private solar through the lens of consumer protection, it is important to recognize that consumer protections are inherent in the electric power industry, which remains a heavily regulated business. Regulatory oversight by state PUCs remains highly focused on consumer protection, providing a clear and well understood process for customers and consumer advocates to participate to achieve desired goals. Customers know precisely where to go in the event that they have a complaint about a regulated electric company or LDC.

At the end of the day, when customers make the decision to lease, finance, or purchase a solar generation system, they are making a significant and long-term financial decision. Our work with large C&I customers demonstrates that there are many complexities and risks in the long-term purchasing of renewable power that residential customers are unlikely to understand.

There is great potential to mislead and deceive residential customers interested in a private solar system. EEI itself has received e-mails marketing solar from the "U.S. Solar Department" with an official-looking emblem. We see marketing that strongly implies solar is "free," that solar generators are "off the grid," and that promotes "going solar" without disclosing that the solar leasing company retains REC ownership. We are pleased that SEIA has improved its consumer guides to highlight some of these problems, but we would note that its guides have no real enforcement mechanisms for companies that engage in deceptive marketing, other than expulsion from SEIA.

We urge the FTC to look closely at consumer protection matters to ensure that marketing information is not false, deceptive, or misleading.