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Comment for the Federal Trade Commission: Competition and Consumer Protection Issues in Solar Power

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This note responds to the FTC request for public comment attendant upon the workshop scheduled for June 21, 2016 on the topic "Competition and Consumer Protection Issues in Solar Power," as described on the FTC website, and detailed in a pdf document with that title. That document here is referenced as "the FTC discussion paper."

I. General Observations

The emphasis in the FTC discussion paper is on improved "competition" in the solar photovoltaic market narrowly and the electric power sector more generally, as a condition yielding enhanced consumer wellbeing. "Competition" seems (rather obviously) to be defined as the number of competitors, which is incorrect analytically, and which may move policy analysis in the wrong direction if certain wholly-plausible cost conditions (e.g., scale economies or diseconomies on the intensive or extensive margins) are present.

Competition (or the process of competing) itself is not costless, a reality made obvious by the fact that we have accepted regulated "monopoly" as a means of capturing the scale economies offered by an industry characterized by very large fixed costs. Whether the system of rate regulation yields net improvement in resource allocation is an interesting question outside the scope of this comment.

Perhaps more to the point: "Competition" or "competitiveness" in industrial structure is seen (implicitly) in the FTC discussion paper as a condition furthering the goal of economic efficiency, that is, resource allocation that maximizes the social value of aggregate output given the constraints imposed by the availability of resources, the level of technology, and the like. But, again, "competition" implicitly is defined as the number of competitors. And so increased "competition," however defined or measured,

is the wrong focus. Instead, the issue relevant for policy analysis is the extent to which public policies and other parameters tend to foster allocational outcomes consistent with the aggregate goal of maximizing the value of the consumption basket, which is very different from a narrow focus on "competition" in a single economic sector, or in the context of the FTC discussion paper, a single subsector of the electric power industry.

Accordingly, net metering and other policies increasing the number of competitors in the solar photovoltaic market do not necessarily further the larger---and far more fundamental---goal of maximizing the aggregate economic consumption basket, that is, consumer wellbeing. Indeed, increasing the number of competitors in the solar photovoltaic market artificially through net metering payments and other explicit and implicit subsidies is almost certainly inconsistent with consumer wellbeing even in the electric power market narrowly. This larger truth stems from the reality that solar PV electricity is inefficiently expensive to produce; that is what it means to say that the solar PV market would collapse in the absence of the broad array of subsidies just noted. (That inference is supported by the EIA estimates of the levelized costs of generation with alternative technologies; that the EIA estimates are problematic does not mean that the relative figures are biased.)

Because solar PV electricity consumes more real resources than other power technologies per unit of output---even given the costs of transmission and distribution attendant upon conventional generation and other renewable technologies---the discussion in the FTC discussion paper of the correct (economically efficient) net metering price for excess solar PV generation is incorrect. As discussed below, there are no environmental or other arguments that justify the imposition of such excess costs upon consumers. Accordingly, the economically correct net metering price is zero, because public policies should not encourage the generation of overly expensive power, particularly when other policies (e.g., the investment tax credit) yield power markets in which too much solar PV electricity is produced even in the absence of an additional net metering subsidy.

Even the discussion in the FTC discussion paper of the relative merits of net metering prices pegged at retail or wholesale misses the forest for the trees: Solar PV power sold back to utilities obviously is will be resold to other consumers. Therefore, the correct price cannot be the retail price; it must be the wholesale price, however measured, and even that is too high because, as just noted, solar PV power uses too many real resources to produce. It is, therefore, inconsistent with aggregate consumer wellbeing, the ultimate goal that must underlie the FTC emphasis upon "competition."

The FTC discussion paper refers a few times to the cross-subsidy issue; the obvious emphasis is on efficient pricing for net metering sales of power by consumers to utilities, that is, implicitly to other consumers. No one can deny that traditional rate-of-return regulation based upon accounting costs inexorably must yield many cross-subsidies among numerous consumer classes---the definitions of which inevitably are arbitrary to greater or lesser degrees---but measurement of those cross-subsidies is very difficult, and an effort to adjust regulated rates so as to reduce most of them is unlikely to

prove workable as a practical matter. Allowing consumers to purchase power from any willing provider might help to solve that problem even as it might create others; but that is not the issue raised in the FTC discussion paper.

Accordingly, whatever the general interest in cross-subsidies on the part of the FTC---which has no jurisdiction over power rates in any event---this solar power/net metering inquiry necessarily will be focused upon the problem of allocating the fixed costs of capacity availability when some consumers generate their own (non-dispatchable) power while relying upon the regulated system for insurance against adverse sunlight (or other) conditions. That is the central cross-subsidy problem relevant to this FTC workshop, one certainly mentioned but not emphasized sufficiently in the FTC discussion paper.

It is curious that the FTC discussion paper does not mention the large subsidies bestowed upon the solar photovoltaic market, both explicit (e.g., tax credits) and implicit (e.g., renewable portfolio standards), without which it is obvious that the photovoltaic market would collapse either fully or in substantial part. (The economic incidence of the subsidies, determined by the relative demand and supply elasticities, is irrelevant in this context.) Given that the justifications for those subsidies are vastly weaker than commonly assumed, as discussed below, the issue raised by the FTC---Are net metering prices too high or too low?---again is beside the point, as the subsidies are inefficient economically, and so, therefore, net metering prices by definition are too high in the sense that too much solar PV power is being produced. And, therefore as well, too little conventional electricity is being produced and consumed because non-PV consumers must bear some nontrivial portion of the costs, both fixed and variable, of the PV power.

To be clear: The efficient met metering price is zero because solar PV electricity is too costly to be competitive; it survives only because it is subsidized heavily in ways both explicit and implicit. Consumers as a class should not be forced to pay for inefficiently expensive electricity; the discussion of the efficient net metering price in the FTC discussion paper is incorrect because it fails to recognize this larger economic parameter.

At a more general level, “competition” and “efficiency” in solar power investment and net metering pricing are the wrong focus. The correct focus is general efficiency in resource allocation, that is, the largest possible economic basket available to consumers. Obviously, this topic, like the general cross-subsidy issue noted above, is far too large for the FTC to address, but it is the correct context within which to address the solar PV/net metering problem discussed in the FTC discussion paper. If the solar PV market would not exist in the absence of the subsidies just discussed, then it must be the case that such power is too costly to produce from a social standpoint, so that a requirement that it be purchased is inefficient by definition. Again: I discuss below the “market failure” arguments for the solar PV/net metering system.

Finally, the FTC discussion fails to note the obvious problem of stranded assets potentially to be yielded by the net metering price system. That is the obvious

implication of the cross-subsidy condition raised by the FTC discussion paper; such cross-subsidies if sufficiently large must result in underutilization of existing capital investment, and over time a reduction in the size of the regulated (dispatchable) sector. It might be the case that the PV solar market is too small to have either or both of those effects, but that is an empirical question that should be addressed rather than assumed away.

II. Narrower Observations

(Page 2): As noted above, the efficient net-metering price for power sold to utilities is likely to be zero given that the solar PV market would be far smaller than is now the case in the absence of the various subsidies. Again: That the solar PV market would (largely) disappear in the absence of the subsidies is proof that such power is too costly to produce and therefore that *any* payments for this power are inefficient.

(Pages 2-3): That the sun shines during peak periods does not justify payments for power that consumes socially-excessive resources to produce. And: That regulated rate structures typically do not charge appropriate prices at peak demand periods does not justify an additional inefficiency. If there is too much investment in peak capacity because of regulated rate structures, the appropriate response is a reform of those rates rather than another layer of excessively-expensive power.

(Page 3): The justification of high net-metering prices on the grounds of avoided transmission and distribution costs is incorrect for the reasons already summarized above. Even including such costs, traditional baseload (and peak) power is cheaper to produce than solar power---even apart from unreliability costs and the like---and so it is inefficient to subsidize or to force consumers to pay for it. Production of solar PV power consumes more resources than the production and delivery of conventional power, so that subsidies and payments for the former yield resource waste, an aggregate consumption basket smaller than would be observed otherwise, and consumers unambiguously worse off in the aggregate.

(Page 3): The purported environmental advantages of solar PV (and other renewables) are an illusion. The (regulated) costs of conventional power in the U.S. include the costs of effluent controls and other environmental policies. Such environmental effects therefore are internalized at an efficient level, unless one argues that the allowed levels of such pollutants (whether per mWh or in total) are too high, in which case the appropriate policy would be to reduce the allowed levels of emissions. Subsidies for "clean" power are an inefficient response, and in any event the argument that solar PV electricity (and other such renewables as wind power) is "clean" is deeply problematic, as the production of solar PV cells carries its own set of adverse environmental effects, whether publicized or not and whether domestic or foreign.

Note: Even in terms of conventional (criteria) pollutants *and greenhouse gas emissions* (if we assume that latter to be "pollutants," a problematic assumption), it is far

from clear that such renewable generation as solar PV is beneficial on net. This is because of the fundamental unreliability of such generation---its inherent non-dispatchable characteristic---which means that conventional backup capacity must be cycled up and down depending upon the immediate availability of renewable power so as to preserve system reliability. This necessarily increases the heat rates of the conventional units, and their emissions per unit of output. A recent engineering study of Colorado and Texas (Bentek Energy, April 2010) found that aggregate emissions increased as the market shares of renewables rose.

(Page 3): The reference to "carbon-based sources of electricity" as an environmental justification for net metering payments is incorrect for an additional reason. Whatever one believes about the underlying climate science or evidence, the effect on temperatures in the year 2100 of a large-scale shift of power production from conventional generation to renewables generally or *a fortiori* to solar PV in particular, would be too small to measure. The entire Climate Action Plan of the Obama Administration, under assumptions highly favorable to the regulatory actions, will reduce those temperatures by fifteen one-thousandths of a degree, as estimated by the EPA's own climate model (MAGICC/SCENGEN). (The standard deviation of the surface temperature record is about one-tenth of a degree.) Artificially-high electricity costs imposed so as to achieve environmental benefits approximating zero cannot be justified in terms of standard benefit/cost analysis.

(Page 3): The discussion of rate reform is curious, as it is not the utilities that would determine a reformed rate structure. That responsibility would fall to the regulators, with important inputs from utilities, consumers, and the "consumer" groups, and so any inefficiency of resulting price signals is the responsibility of the regulators. In any event, this discussion in the FTC discussion paper ignores the larger truth that net metering payments are inefficient because solar PV power is inefficient.

(Page 3): The discussion in the FTC discussion paper on consumer information and related issues is incorrect. In order to achieve efficient outcomes, not all or even many consumers have to be well informed. It is necessary only that some consumers on the margin be well informed so as to engender efficiency in pricing and other parameters. This is true even for an unregulated "monopolist." Note that this is not a "wisdom of crowds" argument; instead, it summarizes the reality that it is behavior on the margin that drives investment, production, and price decisions.

(Page 4): The data requested in this discussion in the FTC discussion paper should be available from the Energy Information Administration and from the trade press, industry associations, and the like. The relative cost data must exclude subsidy effects, whether stemming from policies domestic or foreign; I am writing a paper now on the evolution of the EIA levelized cost estimates, but it is incomplete.

(Page 4): *Of course* "DG impose[s] additional costs on the grid…"; that is what it means to say that solar DG is costlier than conventional generation in terms of resource consumption. The "close[r] to the point of consumption" argument---smaller or zero

costs for transmission and distribution---is incorrect, as discussed above. Solar DG cannot yield "improve[d] power quality, reliability, and/or resiliency" even in principle; that is what it means to say that it must be subsidized to survive, and that net metering payments yield a cross-subsidy from consumers of conventional generation, who must pay more than their proportionate share of the fixed cost of reliability. The subsidies are delineated in detail at www.dsireusa.org.

(Pages 4-5): I have discussed the inefficiencies of net-metering payments above, and will not repeat them here .

(Page 5): As noted above, the focus on "competition" is misplaced. Economic efficiency is the appropriate focus, and subsidies for solar PV, explicit, implicit, or in the form of net metering payments, are inconsistent with that objective. If the policy choice on net metering prices is constrained to one between retail and wholesale prices, the latter is the correct (or less incorrect) one because DG power obviously is sold to the utility for resale to other consumers.

I will be pleased to respond to questions and comments at the email and phones listed above.