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IN THE MATTER OF THE APPLICATION ) DOCKET NO. E-01345A-13-0248  
OF ARIZONA PUBLIC SERVICE COMPANY )  
FOR APPROVAL OF NET METERING COST )  
SHIFT SOLUTION )

**INITIAL COMMENTS OF THE VOTE SOLAR INITIATIVE**

The Vote Solar Initiative (Vote Solar) appreciates the opportunity to share our perspective with the Arizona Corporation Commission (Commission) and its staff on Arizona Public Service's (APS) proposal to alter net metering. As a participant in the APS technical conference process, we have been deeply engaged in this emerging conversation.

Vote Solar is a non-profit grassroots organization working to foster economic opportunity, promote energy independence and address climate change by making solar a mainstream energy resource across the United States. Since 2002, Vote Solar has engaged at the state, local and federal levels to remove regulatory barriers and implement the key policies needed to bring solar to scale. Vote Solar has 3,500 members in AZ.

Vote Solar is particularly focused on rate design issues related to distributed solar generation (DSG), including the billing arrangement known as net metering. Recognizing the importance of this policy for supporting customer-sited solar and other renewables energy technologies, Vote Solar is actively participating in net metering and broader rate design regulatory proceedings in states across the U.S, including: California, Colorado, Idaho, Minnesota, Nevada, New Mexico, New York and Vermont among others.

On July 12, 2013, APS submitted an application to alter its net metering program. In its Application, APS describes the recent growth of distributed solar in its territory and presents the claim that such growth and the commensurate sales reductions create a cost shift between DSG and non-DSG customers. APS proposes two alternatives for new residential net-metering customers without any evidentiary factual support other than hypothetical situations, illustrative examples, and self-described "typical" customers:

**ECT-2 Option:** The first option would require customers take service under the existing ECT-2 residential rate, a rate that includes a significant demand charge (largely unavoidable as explained below) and a completely unavoidable basic service charge

nearly double that of the E-12 rate, APS's most popular residential rate. The ECT-2 effective average energy rate is 55% lower than the E-12, greatly decreasing any benefit for customers to reducing their energy bill by reducing their consumption through technology adoption or behavioral changes.

**Bill Credit Option:** The second option is a "buy all/sell all" approach that fully segregates the solar generation and compensation from the customer's electricity consumption, effectively turning a solar customer into a mini-wholesale generator who would need to sell all their power to the utility to see any economic benefit from investing in a solar energy system. None of the solar generated electricity could be used by the customer to become more independent and self-sustaining. This approach should be rejected outright as the solution for developing a solar market.

Each alternative is without evidentiary support, would impair the customer economic value of installing solar generating resources on homes, and thus greatly suppress the DSG market in Arizona. Vote Solar urges the staff to reject APS's proposals. Instead, we propose that the Commission initiate its own workshop process to investigate the issues raised by APS and by other parties in a thoughtful and methodical way. If such a process uncovers the need for rate design changes, then APS should offer a rate design proposal in an appropriate venue, e.g. their next rate case.

## I. Introduction

At the outset, we note that the growth of distributed solar energy on homes and businesses in APS territory is exactly the designed outcome of the public policies established by the ACC. Solar businesses have grown up in or come to Arizona, responded to the price signals presented and have driven down the cost of DSG for Arizona consumers. We have seen dramatic reductions of utility financial incentives over a much shorter time frame than expected because thriving competition in this market has led to aggressive cost declines.

Homeowners and businesses invest in solar generation for a variety of reasons including the desire to be self-sufficient, as a hedge value against future electricity price increases – particularly important to customers on a fixed income - and for the environmental benefits. As customer-owned or leased solar energy generating systems become more affordable, it is being discussed by the utility industry as a real 'disruptive threat'.<sup>1</sup> Understandably APS - like most regulated investor owned utilities operating in a previously uncompetitive markets - is struggling to present solutions that will allow this new market "disruption" to continue to grow. Instead the utility is only offering solutions that will halt solar development.

Utility regulatory agencies in many states are purely economic regulators, i.e. focused nearly exclusively on actual embedded costs of the utility with little authority to address values outside of the narrow traditional ratemaking construct. Broad public policy goals in those states are generally developed through the legislative process and implemented by administrative agencies.

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<sup>1</sup> Edison Electric Institute. "Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business." January 2013. <http://www.eei.org/ourissues/finance/Documents/disruptivechallenges.pdf>

In contrast, the Commission is a fourth branch of the Arizona government structure established by Article 15 of the Arizona Constitution. Only seven states have constitutionally formed Commissions. By virtue of the Arizona Constitution, the Commissioners function in an Executive capacity, they adopt rules and regulations thereby functioning in a Legislative capacity, and they also act in a Judicial capacity sitting as a tribunal and making decisions in contested matters. As such, it sets both broad and diverse policies that are in the public interest of all Arizonans (e.g. from creation of renewable energy goals to railroad and pipeline safety) while overseeing the fully regulated, vertically integrated electric utility market.

The Commission is clearly familiar with the ongoing dialogue happening at a nation level about the how the electric utility industry should respond to DSG. Papers have been written discussing the fact that DSG and other factors are leading to sales reductions<sup>2</sup>. Other papers discuss the role of regulators in managing risk levels and tolerance<sup>3</sup> to disruptive technologies such as DSG.<sup>4</sup> As a state with the 2<sup>nd</sup> largest amount of solar, much of it DSG, Arizona regulators are particularly poised to set precedent around many of the regulatory questions surrounding a higher penetration DSG future. We hope that the Commission and its staff take thoughtful, and measured steps to ensure that DSG continues to have a future in Arizona.

As the Commission evaluates APS's proposal to replace net metering, a cornerstone policy for encouraging the deployment of DSG, we hope it keeps in mind the guiding principle that individual customers have the right to choose how much electricity or other energy to use, how to use it, and when to use it. These choices cannot be dictated by the utility.

## II. DSG Growth Projections in Arizona – A Helpful Perspective

APS brings its Application before the Commission at this time because “rooftop solar installations have increased significantly” – over 18,000 total systems and growing at 500 new systems per month. While this sounds like a large number, it is important to keep in mind that APS is a very large company that serves 1.1 million retail customers in 11 of Arizona's 15 counties, and expecting to add 750,000 new customers by 2030, an average of nearly 45,000 new customers each year.

APS insists that this issue needs to be addressed now “before it becomes too large to fix with a balanced solution.” Below we present data on how quickly distributed solar generation is expected to grow in APS territory. The following chart uses APS data to compare the *expected* incremental solar deployment between now and 2025<sup>5</sup> with the projected incremental sales growth in APS's most recent integrated resource plan. It's important to note the *expected* solar deployment case in the APS/SAIC study is twice the distributed generation carve-out compliance level embodied in the REST.

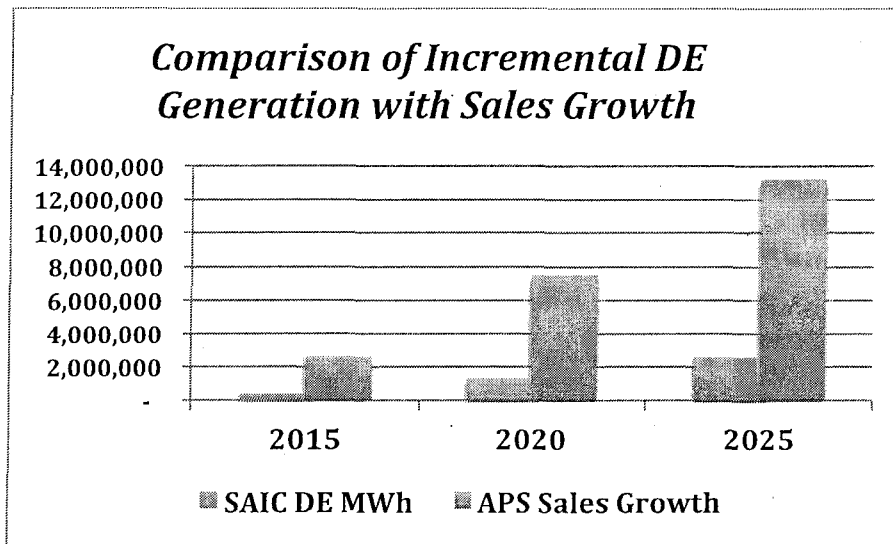
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<sup>2</sup> Deloitte Center for Energy Solutions: [http://www.deloitte.com/view/en\\_US/us/Industries/power-utilities/24d2878b0898a310VgnVCM2000003356f70aRCRD.htm](http://www.deloitte.com/view/en_US/us/Industries/power-utilities/24d2878b0898a310VgnVCM2000003356f70aRCRD.htm)

<sup>3</sup> Binz et al., “Risk Aware Regulation, What Every Regulator Needs to Know, <http://www.ceres.org/resources/reports/practicing-risk-aware-electricity-regulation>

<sup>4</sup> EEI Disruptive Challenges: <http://www.eei.org/ourissues/finance/Documents/disruptivechallenges.pdf>

<sup>5</sup> Source: 2013 APS/SAIC update of the RW Beck analysis.



This chart demonstrates the new distributed solar generation projected over the next 12 years is a small fraction of the sales growth APS projects over the same period. We fail to see the urgency for addressing this issue at this time, and especially in such a draconian manner.

**III. Regulatory Standards Ignored in APS’s Application**

There are numerous problems with the tariff option in the APS Application, but we will focus on just three in these initial comments. First, APS is only targeting residential net-metered customers, ignoring non-residential net-metered customers and the benefits this customer class offers to the grid. For the same reasons that single-issue ratemaking is not allowed, it would be improper to not consider all net metered customers in this proceeding. Next, APS is targeting the net metering policy only, and ignoring equivalent sales reductions that occur for a variety of other reasons. Finally, APS looks only at embedded costs built into current rates tied to its last rate case, but does not consider future cost reductions that it will experience as a result of solar deployment during the pendency of the rates, or beyond.

A. Selective treatment of residential net metering customers

The Commission should take careful note that APS is proposing only to change the structure of residential net-metering saying only: “APS's proposal pertains to residential customers only-Net Metering would continue for commercial and industrial customers in its current form.” (Application page 2) The reason, as we will show, is that commercial net-metering customers for example allow the utility to avoid more costs than the customers receive in the form of bill savings, thus subsidizing the remaining commercial customer population. While we disagree with the APS claim that residential net-metering customers do not pay for grid services they use, it is clear that commercial customers receive insufficient credit for the benefits they provide, and if APS wants to address cross-subsidies between net-metered DSG customers and non-DSG customers, then the cross-subsidy that exists to the detriment of commercial net metered DSG systems should also be discussed.

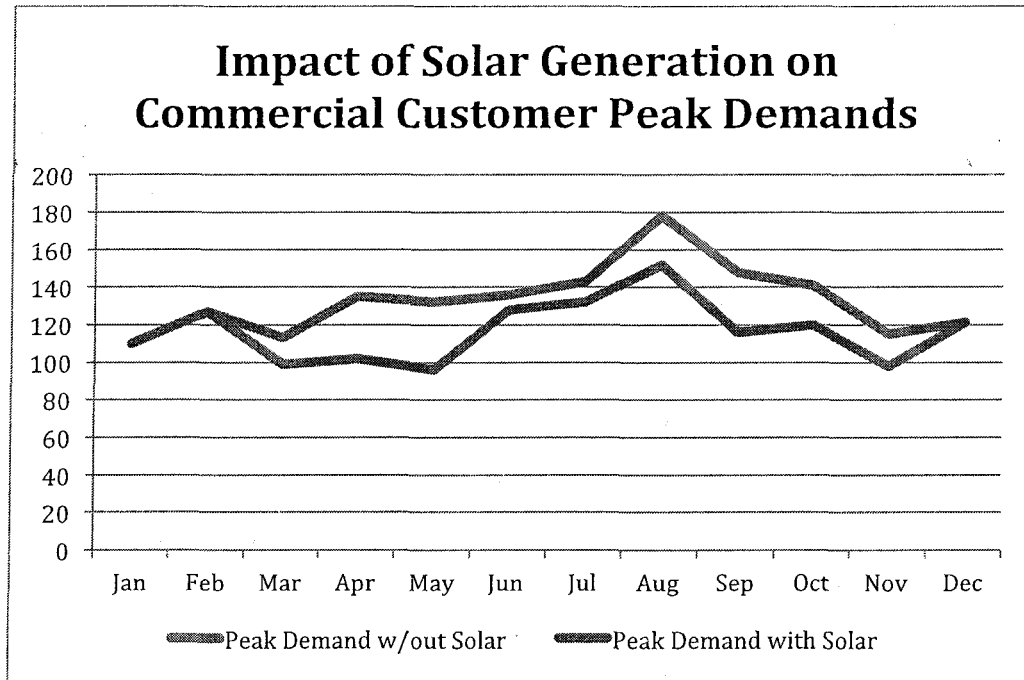
First, the energy generated by a commercial DSG system produces a *bill* savings based on average fuel (and other variable) costs, but a *cost* savings to the utility based on marginal costs. The implication is that the fuel savings to the utility are greater than the benefits to the customer for the energy charge/revenue portion of his bill alone.

Second, most commercial DSG customers take service under a rate structure that includes a demand charge to recover the utility's fixed costs. Additionally, some have a demand ratchet which further minimizes revenue loss to the utility. With respect to the demand charge itself, APS provided data for a typical commercial customer in its Navigant "Billing Gap" study<sup>6</sup> submitted to the Commission on December 6, 2012 by Arizona Public Service in its Renewable Energy Standard (Docket Nos. E-01345A-10-0394 and E-01345A-12-0290). Table 10 in Appendix B delineates the demand charge reductions for a commercial customer assuming a solar installation that matches its peak load of 178 kW. As the APS-Navigant study demonstrates, solar generating resources have little effect overall on the peak demand of the customer – only about 10% of the PV system capacity (not the customer demand), upon which demand charges are based.

Month	Peak kW Demand w/out Solar	Peak kW Demand with Solar	Solar Impact on Peak - kW	% of Solar System Size
Jan	110	110	0	0%
Feb	127	127	0	0%
Mar	113	99	14	8%
Apr	135	102	33	19%
May	132	96	36	20%
Jun	136	128	8	4%
Jul	143	132	11	6%
Aug	178	152	26	15%
Sep	148	116	32	18%
Oct	141	120	21	12%
Nov	115	98	17	10%
Dec	121	121	0	0%
Average kW Reduction			16.5	9%

<sup>6</sup> It's important to note that the Navigant study is not a cost/benefit or valuation study in any way. It is simply a before and after estimate of the effect of sales reductions on current revenue and current costs.

The following graph shows the impact of solar on a commercial customer's peak demand.

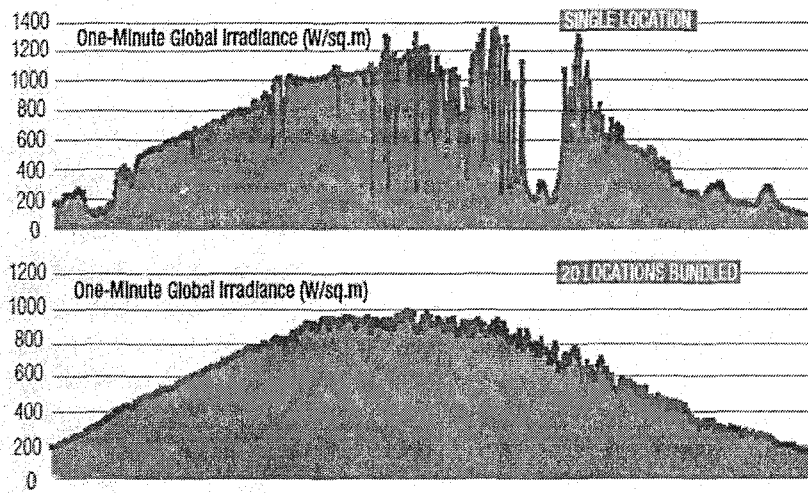


On-site solar resources have small impacts on the commercial customer's demand charges due to the intermittency of the resource related to afternoon cloud events, when customers tend to be experiencing their peak demands. Demand charges are based upon a 15 minute peak load, which can easily be impacted by passing clouds. This effect results in the utility recovering nearly all its demand charge revenue -- its means of recovering fixed costs.

Interestingly, in the same way that diversity of load reduces the utility's overall peak demand (i.e. the sum of all individual customer peak demands is much greater than the total utility peak demand), the geographic diversity of solar resources tends to smooth out the cloud events experienced by individual systems. It's the best of both worlds for the utility -- they can rely on the capacity value of the diverse set of solar resources while still recovering the revenue necessary to cover its embedded fixed costs. This graphic 'smoothing' effect is represented below (Source: Public Utilities Fortnightly, February 2009):

FIG. 1

REGIONAL DISPERSION AND RELIABILITY



Comparing the solar irradiance at one location on a single partly cloudy day (top) to that of 20 locations dispersed over approximately 100 square miles illustrates how system-wide distribution greatly reduces variability in solar energy.

Thus, the commercial customer's electric utility bill (and hence revenue to APS) is reduced by on-site energy generation as applied to the (average) energy charge, and a small portion (about 10%) of the AC capacity of the solar system as applied to its demand charge. Thus, the marginal fuel cost savings and the capacity benefits alone provide more cost savings to the utility than revenue lost, and if APS is concerned about fairness, then commercial customers should receive an additional bill credit from the utility.

The Commission cannot simply look at one class of customers selected by the utility to demonstrate its perception of a cost shift, but must consider whether the same policy or program as utilized by customers in other rate classes produces a countervailing effect.

B. Sales Reductions

According to APS, the cross-subsidy they are concerned about results from a reduction in kilowatt hour (kWh) sales to residential customers, which results in less revenue to recover fixed costs. APS spends a great many pages of its proposal describing its view of the "subsidy" due to reduced sales and revenue. We take no issue with the fact that a sales reduction results in lower revenue and reduced fixed *embedded* cost recovery for classes whose rates are based on a single-part energy rate. This phenomenon is also true for sales reductions due to energy efficiency technologies, weather conditions, or shrinking households, not to mention the economic recession. It should also be noted that increases in sales due to weather effects, growing households, new appliances or electric vehicles will lead to increased fixed cost recovery, and the potential for over-recovery. This has been the nature of the regulated electric utility business for decades, with revenue from sales increases offsetting decreases. To our knowledge, there has never been any suggestion that customers using less energy than they did during a rate case test year be asked to make up the difference. And, as pointed out above, the expected growth in

DSG is far outpaced by APS's own projections of its sales growth. Vote Solar takes issue with unfairly singling out net-metering of all residential solar generation, regardless of amount, as the revenue reduction that requires such drastic action. Is APS willing to make the same case for any technology or behavioral changes that results in customers using less energy? We do not believe that APS has proven its case for why residential net metered DSG customers should be singled out.

### C. Ratemaking Implications

APS's Application presents its view that only embedded costs matter, and no future cost savings resulting from the deployment of rooftop solar generation – and inuring to the benefit of all customers - should be taken into account. Whether a historic test year or future test year is used in developing electric rates, the accounting costs (assets and expenses) are adjusted to reflect future conditions via “known and measurable” changes. This is properly done so that the newly developed rates more closely recover the costs the utility is incurring at the time the rates are in effect, not the adjusted test year costs.

When sales are reduced due to rooftop solar generation, or for any other reason, there is little disagreement that a direct reduction of fuel and other variable costs related to the reduced utility generated kWhs (solar generation plus losses) occurs. It is also quite obvious that investments already made (a.k.a. sunk costs) cannot be undone. Yet the solar generation has beneficial effects on the utility's generation, transmission, and distribution system that should not be ignored. These benefits have been well documented in studies across the country<sup>7</sup> and in the Crossborder Energy Study in Arizona.<sup>8</sup> APS appears to be one of the only stakeholders that adamantly discounts the avoided costs and other values provided by DSG. Whether these benefits occur immediately through freeing up generation and transmission capacity, or in the future by avoiding distribution upgrades, they nevertheless do occur and reduce costs for all customers. These benefits must be taken into account when considering the impact of the net-metering policy on non-net metered customers.

A useful analogy comes from the resource planning process and the selection and development of new utility generation such as coal, nuclear or natural gas plants. Regardless of the technology chosen, such plants have a long lead time, and tend to be large to capture economies of scale. These characteristics have numerous ramifications, but we focus here only on the lumpiness of new generation. When a large new plant goes into service and is placed in the utility rate base for cost recovery, all customers pay the full cost of the plant, despite the fact that it places them in an overcapacity situation – having more generating capacity than is actually needed to serve the utility's projected load, sometimes for many years to come. Thus current customers are subsidizing future customers by paying the high costs of new generation well in advance of when it may be fully utilized instead of presumably higher-cost market power purchases. This principle applies to other utility asset groups as well, such as transmission. We raise this point to show examples of current practices that take future cost savings into account.

<sup>7</sup> Rocky Mountain Institute. “A Review of Solar PV Benefit & Cost Studies.” July 2013. <[http://www.rmi.org/Content/Files/eLab-DER\\_cost\\_value\\_Deck\\_130722.pdf](http://www.rmi.org/Content/Files/eLab-DER_cost_value_Deck_130722.pdf)>.

<sup>8</sup> Crossborder Energy. “The Benefits and Costs of Solar Distributed Generation for Arizona Public Service.” May 2013. <http://www.seia.org/sites/default/files/resources/AZ-Distributed-Generation.pdf>.



Further, the APS Application implicitly assumes that rates for an individual customer recovers the precise cost of serving that customer, yet we know very little about the energy characteristics or trends of the existing subset of customers that have chosen to install solar generation and utilize net-metering. And we know nothing about the new customers that will install solar in the future.

In regulatory circles, it is often said that ratemaking is an art, not a science. The process of determining revenue requirements, classifying and allocating costs, and designing rates is full of assumptions, estimates, modeled data, statistical methods, and adjustments made in a legitimate effort to spread cost responsibility to customer classes based on causation, and achieve a reasonably consistent relationship between costs and revenue so that the utility can have an opportunity to recover its costs and earn its authorized return on equity between rate cases. Moreover, even accepting all the approximations in the process, the rate for a class is designed for that mythical customer that represents the weighted mean of the group. Rates in general, and residential rates in particular, can be considered a reasonable approximation at best for an individual customer. Drastic changes to customers and customer classifications should only be considered where drastic impacts are expected. Such is not the case here.

In the case of the ECT-2 option, requiring a single rate class (and one that only 6% of residential customers have chosen) for all new residential net metered customers removes even the most basic choice for the customer – that of selecting a rate schedule that works best for its own current and future circumstances. For example, a high load factor customer would likely be better off under a rate containing a demand charge, whereas a low load factor customer is better off under an energy only rate. Under the APS proposal, new net-metered customers, which by their nature would likely have characteristics similar to low load factor customers, would be forced to the ECT-2 demand rate while other low load factor customers would continue to enjoy the relative flexibility and lower cost of a volumetric rate such as E-12. This appears to us to be discriminatory.

As the Commission begins to consider selective changes that move away from current structures and practices, careful examination of the bases for doing so and the potential consequences must be employed. For example, with volumetric (energy-only) rates, customers with the same demand can have very different usage and consumption patterns. Those with higher usage (and thus higher load factors) will contribute more to fixed cost recovery than will those with lower usage. While we recognize that it would be difficult if not impossible to assign costs and design a rate for each individual customer, that doesn't diminish the fact that a cross-subsidization is always occurring – both between customer classes and within rate classes..

Indeed, there are many cross-subsidies beyond the residential load factor issue described above built into existing rates, which for a variety of reasons have been deemed to be an 'acceptable tradeoff'. For example:

- *Return differentials among major customer classes:* According to APS itself, "From APS's latest rate case, which was based on a 2010 test year, there is a cross class subsidy from the general service class to the residential class of approximately \$126

million. Of this, roughly 57% comes from the extra-small and small general service class, 25% from the medium class, and 18% from other general service classes. During the test year there were approximately 990,000 residential customers and 127,000 general service customers.”<sup>9</sup>

- *Low income customers*: According to APS, “In 2012, the low-income discounts were approximately \$18.2 million with roughly 127,000 participants.”<sup>10</sup>
- *Other cost/revenue mismatches*:
  - Urban electricity service is generally lower cost to provide than is rural electricity service, yet the rates are the same;
  - Customers closer to a distribution substation require fewer assets for their electric service, yet there is no discount for the geographically advantaged customer;
  - Customers whose loads and consumption are static, i.e. do not grow, experience rate increases that only in part pay for replacement of assets necessary to serve them. A portion of those customers’ bill in fact pays for assets and expenses related to serving new customers and those customers whose load is growing.

The ratemaking implications of the APS Application are far reaching and simply cannot be bandied about outside the context of a rate case where all related matters and customer classes would be considered. Such single rate making is inappropriate and should be rejected by this Commission.

### **III. Additional Considerations**

The Application submitted by APS raises a host of issues. While we believe APS has failed to provide adequate support for its proposals and the Application should be rejected, the Commission has an opportunity here to fairly investigate DSG and its effects on the utility, net metered and non-net metered customers, and the public interest of the state of Arizona.

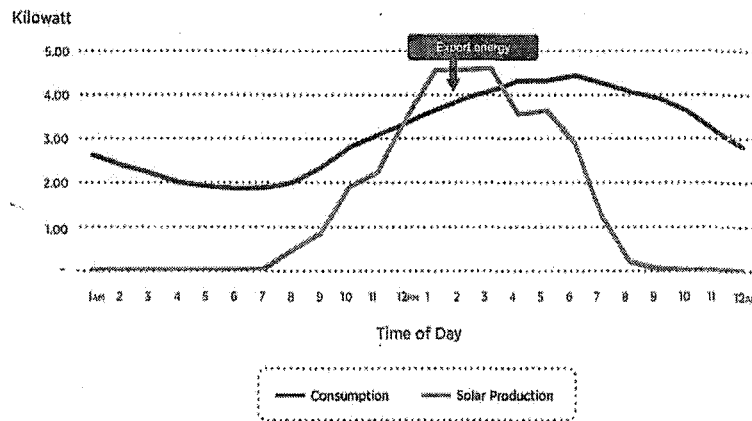
An example of an area for investigation is the APS breakdown of net metering into two components – self-consumption and exported energy. APS makes the bold claim that the self-consumption piece “permits them to avoid paying almost their entire electric bill.” (Application, page 6) APS has provided no evidence to support this claim. Clearly, solar is not producing power at night, and relatively small amounts of power in the evening hours when typical residential loads are at their maximum. APS’s own chart in its Application seems proof positive that this could not be the case.

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<sup>9</sup> Source: APS Response to IREC Question 1.7, Technical Conference Process

<sup>10</sup> Ibid.

FIGURE 3: EXCESS ENERGY EXPORT UNDER NET METERING



Moreover, the Public Utility Regulatory Policies Act (PURPA) allows retail customers to self-consume on-site generation, and we believe that customers have the right to use as much or as little electricity from the grid as they choose. Furthermore, and as discussed in detail above, any reduced consumption of grid-supplied electricity produces the same effect.

APS goes on to say that the exported energy can be *virtually* stored on the grid and used during hours when consumption exceeds on-site generation. Here we agree with APS, however the question of whether this represents fair treatment is a matter for Commission investigation and review. Understanding where the exported energy goes is a good way to begin. APS implies in their submittal that they must buy this energy from the customer, rather than buying non-firm energy on the open market, and resell it to other customers as if it were a wholesale transaction. The truth is that the exported energy will simply reduce the load that the APS system “sees” and no additional purchase of energy is necessary. As a matter of physics, the exported energy flows into the nearest load, usually the home next door. The next-door neighbor doesn’t pay his solar-powered neighbor for the power, but pays APS even though APS did not generate nor deliver it very far. Thus APS may not recover the retail rate from the customer that generated the power because net metering allows that customer to “use” the power later, but it does recover the retail rate from the non-solar powered neighbor for that exported energy.

APS makes some unsubstantiated claims regarding the self-consumption and the exported energy. The Commission should investigate these claims and require APS to provide evidentiary support.

- There is no supporting evidence provided for APS’s assertion that 20% of residential DSG system production is exported to the grid. Thus we don’t know if this is based on the typical summer peak day, on average for a month or beyond. Given the importance of the export levels to the case APS is attempting to make, their testimony is surprisingly unclear on this point.
- Similarly, there is no basis provided for the claim of a typical year-end purchase of 5%.

#### IV. Recommendations

Our initial recommendation is for the Commission to reject both of APS's options in their proposal. We do not believe there is any real and significant urgency that would require near-term changes to the current net metering structure for residential customers. APS offers two unsupported and ill-advised options. APS's underlying problem is that reduced sales results in reduced cost recovery. We do not disagree, but we believe APS's narrow approach of forcing a subset of customers to an expensive rate is not only unfair, but violates common rate making principles. We would suggest that sales reductions, its sources and impacts, be part of the overall discussion of rates, cost causation, and revenue recovery.

The second option, that of a buy all/sell all rate should be rejected outright. First, it removes the customer's right to determine his or her own future by consuming the output of his or her own system, forcing the customer to sell the system's power to APS. APS is a monopoly (single seller in a market) – it should not be allowed to be a monopsony as well (a single buyer in the market). Second, the revenue produced by the solar investment is subject to income taxes for the owner. Third, it removes the ability of the individual customer to hedge his energy costs by fixing a portion of them, an important matter to those on a fixed income. Fourth, it turns the solar installation into a business venture – the installation costs are well defined, whereas the revenue would not be well-defined, as the bill credit rate is subject to change at the utility's discretion. Also, what is to stop the utility in a few years from abruptly deciding it no longer wishes to buy DSG production? Given the uncertainty, and the low bill credit offering, few rational consumers would decide to invest in DSG going forward.

The path forward for the Commission should be one of caution. The Commission should address the near term concerns now, and address growing solar penetration later. We recommend the outcome of this process be a resolution that allows the industries to have certainty over policy and regulatory treatment for a 3-5 year period. With the current and projected minimal penetration of solar DG systems in mind, the lack of consideration of commercial customers, the discriminatory treatment of customers reducing grid energy purchases, and the imprecision of rates, the Commission should reject APS' proposal. Then it should investigate through a workshop and hearing process the claims made by APS, the benefits provided by solar generation on-site, and the rate impacts on all customers in all classes. If the Commission finds sufficient reason to address rate policy in this proceeding, we recommend consideration of the following:

- *Cost causation:* Perform a thorough review of APS's assets and expenses and the underlying cause for their incurrence. These cost causation principles form the basis of allocation of cost responsibility in rate cases, and to some extent of revenue recovery. We support a closer tie between cost causation and revenue recovery. This is particularly timely given the penetration of AMI metering and the expanded data now available. Moreover, a more decentralized future with more emphasis on the distribution network and less on generation and transmission should be considered.
- *Rates structures:* Time of use rates and potentially modest and gradual changes to the basic rate structure, that could include adding a small monthly customer charge or adding a demand charge.

- *Differentiated incentives*: There are clearly certain locations on the APS system (and presumably those of other utilities) where solar generation may be more valuable for certain reasons, e.g. avoiding a distribution system upgrade. The current motivation for customers is to maximize electricity production from their solar systems, however strategically siting and orienting systems (to the Southwest for example) may provide additional support to the grid if so desired, even while reducing overall energy production somewhat.
- *Integrating other resources*: To address some of the concerns of the utility, integrating rooftop solar with other demand side technologies including combined heat and power, demand response technologies, and storage can dramatically improve the value of adding DSG to the grid.

## V. Conclusion

Utilities across the country, including APS, are experiencing major changes and shifts in the way customers use energy. Growth in retail sales on an aggregate basis, is slowing across the U.S., due largely to reduced economic activity coupled with increased deployment of demand side management technologies and distributed generation resources. According to the U.S. Energy Information Administration, total delivered electricity use in the all sectors is predicted to increase at an annual growth rate of 0.7 percent per year from 2010 through the year 2035.<sup>11</sup> Furthermore, The EIA projects that both DSG and microturbine electric generation additions between 2010 and 2035 will outpace the growth in conventional natural gas-fired cogeneration, wind, and fuel cells.<sup>12</sup> Many energy industry stakeholders and observers see the future electric utility industry being far more distributed than it is today.

APS is not immune to these meta-changes being felt by utilities across the nation. APS like many utilities is seeking incremental changes in certain aspects of their business model to cope with a changing energy landscape. However, it is possible that incremental changes are not sufficient. APS continues to operate itself under essentially the same traditional business and regulatory model virtually all regulated utilities have used for decades. APS will likely be focused on obtaining Commission approval for new rate mechanisms to provide quicker and more stable recovery of its costs as a means of reducing earnings uncertainty related to increased adoption of DSG and other load reduction technologies. However, we believe that this approach may address the symptoms but not the underlying problem.

Given the changing world APS finds itself in, in order to avoid a long series of rate increases, we believe the Company and the Commission should begin consideration of new paradigms of utility and regulatory operations in which sales growth is minimal, capital investment is limited to connecting new customers and replacing worn out assets, and expense growth is related primarily to inflationary levels. Minimizing significant capital additions in the future reduces the risk of future non-maintenance related stranded assets.

<sup>11</sup> Fortnight Magazine. Faruqi, Ahmad and Eric Shultz. "Demand Growth and the New Normal: Five forces are putting the squeeze on electricity consumption." December 2012. < <http://www.fortnightly.com/fortnightly/2012/12/demand-growth-and-new-normal/page/0/1?authkey=4a6cf0a67411ee5e7c2aee5da4616b72fde10e3fbe215164cd4e5dbd8e9d0c98>>.

<sup>12</sup> Ibid.

Indeed, the report cited above from the Deloitte Center for Energy Solutions addresses these very issues and concludes electric companies should rethink their strategies, and consider options that include very strict management of the “numerator,” i.e. the cost side of the equation, new regulatory structures and initiatives, development of new regulated revenue streams, and consideration of innovative business models and non-regulated business expansion.

While some continued infrastructure development may still be necessary, it is worthwhile to pause and consider whether the traditional utility model of building and rate-basing new power plants, transmission assets, and distribution infrastructure is still appropriate. For example, if sales growth were nil, can there be a *steady-state* utility that is only replacing aging poles and wires? If distributed generation becomes the most cost-effective resource from a customer perspective, perhaps integrated with storage, combined heat and power and demand response technologies, what is the role of the traditional utility? We believe that new major investments in long-lived utility assets need to be scrutinized in far greater detail than ever before, if the utility expects to receive cost recovery from its retail customers for these assets for the next 30-50 years. We suggest that the Commission consider opening a more comprehensive docket to explore this changing energy landscape further.

We thank the Commission and its staff for the opportunity to submit these comments and look forward to participating further.

Sincerely,



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