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THE ALLIANCE FOR SOLAR CHOICE

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Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007-2996

RE: Docket No.: RE-00000A-07-0609

To the Arizona Corporation Commission:

The Alliance for Solar Choice ("TASC") appreciates this opportunity to respond to a June 26, 2015 Utilities Division Staff Memo ("Staff Memo") regarding the Arizona Corporation Commission's ("Commission") draft proposed rules for interconnection of distributed generation facilities (Docket RE-00000A-07-0609).

TASC advocates for establishing and maintaining successful distributed solar generation ("DSG") policies throughout the United States. TASC represents the majority of the nation's rooftop solar market including Demeter Power, Silveo, SolarCity, Solar Universe, Sunrun, Verengo, and ZEP Solar. TASC's members are responsible for tens of thousands of residential, school and commercial solar installations across the country and have brought thousands of jobs and many tens of millions of dollars of investment to the nation's cities and towns. TASC was formed on the belief that everyone should have the option to switch to DSG for at least a portion of their energy supply and to realize the financial benefits thereof. □

TASC is generally very supportive of the draft proposed rules and believes they will greatly improve the efficiency and transparency of interconnection in the state of Arizona. In addition to general feedback, Staff requested responses to three specific questions regarding: 1) IEEE Standard 1547.6, 2) the use of supplemental review for certain projects that fail the penetration screen, and 3) the application of a utility external disconnect switch ("UEDS") requirement. In the following comments, TASC responds to these questions and provides some additional feedback regarding the incorporation of energy storage into the State's interconnection procedures.

Responses to Staff's questions:

Question 1: TASC supports revision to sections R14-2-2616(D) and R14-2-2621 that would bring these sections into compliance with the now active IEEE 1547.6.

Question 2: TASC strongly supports the use of supplemental review to screen Fast Track projects that fail the initial 15% penetration screen specified in R14-2-2617(A). The use of the

supplemental review option in such cases is an emerging best practice that has been adopted by such "high penetration" states as California, Hawaii, Massachusetts and Ohio. This approach was also adopted in Federal Energy Regulatory Commission ("FERC") Order 792, revising the federal Small Generator Interconnection Procedures ("SGIP") in late 2013.[1]

Considering the use of this practice in other states, however, TASC would recommend the Commission increase the 50 percent of daytime minimum load ("DML") to 100 percent of DML. Recent studies have shown that 100 percent of DML, when this data is available, is an effective way to safely increase DSG penetration.[2] The Massachusetts Department of Public Utilities also increased its supplemental review screen from 67 to 100 percent of DML, based on an assessment and recommendation by the State's Technical Standards Review Group.[3] In addition, in light of recent testing, the Hawaiian Electric Company filed a request with the Hawaiian Public Utilities Commission to increase its penetration limits for rooftop solar from 120 percent of DML to 250 percent.[4]

To allay any safety concerns that utilities might have, it is important to note that this supplemental review penetration screen should not be the sole determinant of interconnection approval. Rather, FERC and states that have adopted a 100 percent (or greater) DML penetration screen have concurrently adopted two additional supplemental review screens that also consider 1) safety and reliability and 2) power quality and voltage on the line section.[5] Along with these two safety and power quality screens, FERC found that the use of 100 percent of DML in the supplemental review process was "sufficiently conservative."[6] In Order 792, FERC further stated that,

> Taken as a whole, the supplemental review screens provide the flexibility to identify circumstances when additional studies may be required while avoiding an unjust and unreasonable increase in expense and delay in interconnection. That is, the three screens in the supplemental review are designed to strike a balance between handling the increased volume of interconnection requests and penetrations of small generators and maintaining the safety and reliability of the electric systems.[7]

Question 3: TASC believes that utility external disconnect switch ("UEDS") requirements are redundant for inverter-based systems and add unnecessary cost to the interconnection process. Many states have prohibited utilities from requiring a UEDS for inverter-based systems up to 10 or 25 kilowatts (kW), including Arkansas, New Jersey, New Mexico, New York, Utah,

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[1] 145 FERC ¶ 61,159, Order No. 792

[2] See, e.g. Nelson, A. et al., *Inverter Load Rejection Over-Voltage Testing*, published by the National Renewable Energy Laboratory, February, 2015, available at http://www.nrel.gov/docs/fy15osti/63510.pdf.

[3] MA DPU Order 11-75-F at 12-14.

[4] *Hawaiian Electric Companies' Motion for Approval of NEM Program Modifications and Establishment of Transitional Distributed Generation Program Tariff*, Docket No. 2014-0192, filed on January 20, 2015.

[5] An example of these additional two screens can be found in the revised FERC SGIP, section 2.4, available at https://www.ferc.gov/whats-new/comm-meet/2013/112113/E-1.pdf, Attachment C.

[6] FERC Order 792 ¶ 141.

[7] *Id.*

Washington and West Virginia.[8] In the case of Florida and North Carolina, the state procedures allow a utility to impose a UEDS requirement but also mandate that utilities pay for the equipment if they choose to require one.[9]

There are many technical and procedural reasons why a UEDS is not necessary for smaller, inverter-based systems. The Solar America Board of Codes and Standards (Solar ABCs) published a comprehensive report that addresses this issue from a technical, legal and operational perspective.[10] Technically, UEDS equipment is not necessary, as all solar inverters that are UL 1741 listed have anti-islanding feature that prevents backfeeding onto the grid if the grid deviates from standard operating ranges. Moreover, the report notes that utilities rarely, if ever, actually use the switches in practice. OSHA standards require that line workers test and verify that a line is de-energized before beginning work and it is onerous to complete the documentation and tagging process to use the UEDS.[11] As such, TASC recommends the Commission remove this requirement for inverter-based systems up to 25 kW.

Additional Recommendation

In addition to the changes noted above, TASC recommends the Commission include energy storage devices as eligible equipment. Specifically, TASC recommends the definition of Generating Facility be modified to include the following underlined language:

> "Generating Facility" means all or part of the Customer's electrical generator(s) or inverter(s) <u>or storage system(s)</u> together with all protective, safety, and associated equipment necessary to produce <u>or store</u> electric power at the Customer's facility. A Generating Facility also includes any Qualifying Facility ("QF").

Energy storage is quickly becoming a major player in the distributed resource market. Increasing retail electric rates, heightened awareness of consumer energy usage, and the adoption of electric vehicles, are all propelling energy storage into the mainstream and helping to drive down costs of storage technologies at a rapid pace. While costs vary widely according to system size and technology type, commercial-scale lithium-ion batteries are currently in the $500/kWh range, which is half the cost of this technology a year earlier.[12] A recent market analyst predicted that U.S. utility customers would install 318 cumulative megawatts of behind-the-meter solar-plus-storage capacity through 2018.[13]

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[8] See the 2014 *Freeing the Grid* report, available at http://freeingthegrid.org/#download-ftg/.

[9] *Id.*

[10] Sheehan, Michael, "Utility External Disconnect Switch: Practical, Legal and Technical Reasons to Eliminate the Requirement," Solar ABCs, 2008, available at http://www.solarabcs.org/about/publications/reports/ued/pdfs/ABCS-05_studyreport.pdf.

[11] Solar ABCs report at 5.

[12] *See, Energy Storage Could Reach Big Breakthrough Price Within 5 years*, available at http://cleantechnica.com/2015/03/04/energy-storage-could-reach-cost-holy-grail-within-5-years/.

[13] See Munsell, Mike, "US Solar-Plus-Storage Market to Surpass $1 Billion by 2018," December 18, 2014, available at http://www.greentechmedia.com/articles/read/US-Solar-Plus-Storage-Market-to-Surpass-1-Billion-by-2018.

The California Public Utilities Commission (CPUC) has been actively working to streamline interconnection issues related to energy storage since it identified the interconnection process as a major hurdle to storage integration.[14] In 2014, the CPUC issued a decision to extend an interconnection cost waiver to joint renewable-plus-storage net metering systems;[15] which also put in place some sizing and metering restrictions to ensure that storage-paired systems do not abuse the net metering program. California continues to work on interconnection issues related to behind-the-meter, non-exporting storage in California Public Utilities Commission docket R.11-09-011.

FERC has also acknowledged the growing energy storage market, noting in Order 792 that "the energy industry has changed since [the previous SGIP order] was issued" and that the use of energy storage in combination with other devices was not considered at that time.[16] As a result, FERC determined that the SGIP's definition of Small Generating Facility should be clarified to explicitly include storage devices.[17]

Conclusion

Interconnection is a foundational policy for the DSG market and TASC appreciates the opportunity to weigh in on this matter. The draft procedures included in the Staff Memo would certainly streamline and improve upon the current interconnection process for both developers and utilities in the state. However, by incorporating the changes we outline in these comments, TASC believes that the Commission can help ensure a cost-effective, sustainable and safe solar market for many years into the future.

Sincerely,

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[14] R. 10-12-007, p. 7: the Order Instituting Rulemaking pursuant to Assembly Bill 2514 to consider the adoption of procurement targets for viable and cost-effective energy storage systems.

[15] *See* CPUC Decision 14-05-033, May 15, 2014.

[16] Order 792 ¶ 231

[17] Order 792 ¶ 228