



**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

FILED
07-31-13
04:59 PM

Order Instituting Rulemaking on the Commission's own motion to improve distribution level interconnection rules and regulations for certain classes of electric generators and electric storage resources

Rulemaking 11-09-011
(Filed September 22, 2011)

**JOINT COMMENTS OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION
AND THE CALIFORNIA SOLAR ENERGY INDUSTRIES ASSOCIATION**

Bernadette Del Chiaro
Executive Director
California Solar Energy Industries Association
1107 9th Street, Suite 820
Sacramento CA 95814
Telephone: (916) 228-4567
E-mail: bernadette@calseia.org

GOODIN, MACBRIDE, SQUERI,
DAY & LAMPREY, LLP
Jeanne B. Armstrong
505 Sansome Street, Suite 900
San Francisco, CA 94111
Telephone: (415) 392-7900
Facsimile: (415) 398-4321
E-Mail: jarmstrong@goodinmacbride.com
Attorneys for The Solar Energy Industries Association

July 31, 2013

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. OVERVIEW OF THE PARTIES' RECOMMENDATIONS	2
III. DETAILED COMMENTS	4
A. Governance	4
B. Standards Development Process	5
C. Realistic Schedule	9
D. Narrower Scope	12
E. Tiered Requirements	15
F. Financial Assurances	17
IV. CONCLUSION	19

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking on the Commission's own motion to improve distribution level interconnection rules and regulations for certain classes of electric generators and electric storage resources

Rulemaking 11-09-011
(Filed September 22, 2011)

**JOINT COMMENTS OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION
AND THE CALIFORNIA SOLAR ENERGY INDUSTRIES ASSOCIATION**

I. INTRODUCTION

Pursuant to the June 11, 2013, Ruling of the Presiding Administrative Law Judge in the above captioned proceeding,¹ the Solar Energy Industries Association (SEIA) and the California Solar Energy Industries Association (CALSEIA) (collectively, the "Joint Parties")² provide these comments. The comments presented are based on a detailed review of the recommendations made by the Smart Inverter Working Group (SIWG) as included in the following documents (jointly, the "DER Filings"):

- *CEC/CPUC Candidate DER Capabilities: Recommendations for Updating Technical Requirements in Rule 21*, Version 15, dated May 22, 2013, filed June 11, 2013.
- *CEC/CPUC Candidate DER Capabilities: (Draft) Test Plan and Procedures for Smart Distributed Resources Systems (DER) Interconnecting with Electric Power Systems*, Version 5, dated May 22, 2013, filed June 11, 2013.

¹ See Administrative Law Judge's Ruling to (1) Issue Working Group Paper on Autonomous Inverter Functionalities (2) Set Comment Dates and Workshop (3) Enter Working Paper into the Record and (4) Announce New Rule 21 Working Group, R. 11-09-011 (June 11, 2013).

² The comments contained in this filing represent the position of SEIA and CALSEIA as organizations, but not necessarily the views of any particular member with respect to any issue.

The Joint Parties support the overall goals of the SIWG to provide a California-based forum for the development of standardized Advanced Grid Functionality (AGF) capabilities and a corresponding test plan. The Joint Parties commend the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) for taking leadership roles in the area of AGF Standards development in the United States. As a leader in the adoption of Distributed Energy Resources (DER), California is uniquely positioned to share its experiences and positively impact renewable energy policy in the United States.

Select AGF requirements are beginning to be introduced in certain European countries which have high penetration levels of renewable energy systems. While additional study is needed, the initial results from Europe indicate that when the appropriate requirements are specified, AGF can be an effective strategy for operating the electricity grid with high penetration levels of DER. Use of AGF expands the grid's capacity to handle distributed energy systems and, when properly implemented, improves overall system safety and stability.

While the future benefits of AGF are becoming clear, the Joint Parties oppose the approach outlined by SIWG in the DER Filings and disagree with several aspects of the recommendations presented. The SIWG fails to clearly demonstrate a need for implementing AGF capabilities in California at today's low levels of DG penetration and fails to justify the long list of mandatory and redundant solutions being proposed. In addition, the DER Filings are incomplete, technically inaccurate and, in several cases, the recommendations presented are inconsistent with certain national requirements.

II. OVERVIEW OF THE PARTIES' RECOMMENDATIONS

It is the position of the Joint Parties that the work to date, while considerable, has been presented prematurely. Therefore the Joint Parties request that the ALJ not rule on the proposed

recommendations. Instead, the Joint Parties recommend that the ALJ instruct SIWG to undertake additional work and resubmit a report which is more technically accurate, consistent with national requirements and that better represents the views of all stakeholders involved. A summary of the Parties' recommendations to improve the process for the development of AGR requirements is presented below:

1. Governance – Create a more balanced working group which better reflects the views and needs of all stakeholders. As structured today, the utilities have an overriding influence in the SIWG. The process must be fundamentally restructured to create a fair, representative and balanced consensus building effort. Any requirements developed must address the concerns of all stakeholders involved.
2. Standards Process – Conduct the requirements development effort under one of the nationally recognized processes of IEEE 1547 or ANSI/UL 1741. These processes include open meetings, public notice and comment periods, balloting of draft documents and balanced representation of all stakeholders. Moving outside of a national standard process could result in significant negative repercussions to the solar industry on the national level.
3. Realistic Schedule – Revise the schedule to be realistic and consistent with best practices used in other similar standards, *i.e.* IEEE 1547 and ANSI/UL1741. The schedule proposed by the SIWG is unachievable and, if approved, will create significant disruption to the solar industry in California. In addition, the proposed changes are far too drastic to implement on such a large scale without any gating validation requirements. Milestones must be established that not only verify that the changes are not introducing new problems, but that prevent further implementation if problems are discovered. A revised schedule must be created that includes clear gating milestones and a permissive adoption period of not less than 18 to 24 months before requirements in published standards become mandatory.
4. Narrower Scope – Reduce the number of AGF to only those of proven efficacy and value. There is no clear consensus within the SIWG on what features are needed even in the near-term. As a result, the proposal requires implementation of several solutions to address the same problem. Mandatory requirements for features that will not be used in the future add unnecessary cost to DER systems, which will ultimately result in higher rates for California ratepayers in order to achieve Governor Brown's goals renewable energy and distributed generation goals. Furthermore, SIWG has not provided any use cases that clearly motivate the need for these changes nor allow for proper development of solutions to remedy the concerns. The impacts of the more controversial functions need to be studied before their implementation is required throughout California's

investor-owned utility territories. This analysis is needed to ensure that these functions do not compromise anti-islanding and create unforeseen safety and grid stability issues.

5. Tiered Requirements – Restructure the AGF requirements to avoid unreasonable financial burdens on small systems. The recommendations submitted by the SIWG apply equally to all system sizes in all locations. This places an unreasonable cost burden on smaller residential systems which is not justified given the minimal benefits provided to the utility. A tiered requirement structure is needed with exemptions for smaller systems. Similarly, given the high cost of retrofitting already deployed inverters to meet AGF requirements, we strongly encourage that any new requirements be applied on a going-forward basis only.

6. Financial Assurances – Provide specific and detailed language ensuring that revenue streams of system owners will not be negatively impacted through unilateral action of the utilities. Some of the AGF modes proposed could result in a significant negative impact on system revenue. New rate structures are needed which more accurately represent the value of AGF on the grid. Until those new rate structures are created, operation of systems in modes that negatively impact revenue must be done only with mutually agreed consent.

III. DETAILED COMMENTS

A. Governance

The document submitted by the SWIG is heavily biased towards the utilities and does not adequately reflect the concerns and perspectives of other stakeholders. The awareness of the SIWG activities in the solar industry and regulatory compliance/standards development community has been minimal. The first widespread awareness of the SIWG did not occur until public notice of document filing on June 11, 2013. A survey of key stakeholders in attendance at the IEEE 1547 meeting on June 11th revealed that there was almost no awareness of the SIWG activities among members of the solar industry. Additionally, the Chair of IEEE 1547, the Principal Engineer for UL 1741, the Chair of the NIST Smart Grid Working Group, senior members of the DOE staff present and inverter manufacturers, including some of the leading inverter vendors in the US, were each unaware of the SIWG activities. Upon review of the recommendations, those in attendance expressed almost unanimous concern regarding many of

the requirements presented and the unrealistic schedule proposed.

The Joint Parties respectfully request that the ALJ instruct the SIWG to restart its outreach efforts to other stakeholders and to create a working group which better reflects the various constituencies involved. The Joint Parties can assist in those outreach efforts to their respective membership and will provide a contact list for key regulatory personnel as well as media outlets commonly followed by the solar industry. Only after a more representative, inclusive and balanced group is formed can the SIWG represent the views of all stakeholders. A cursory review of the schedule milestones presented in Table 1 of the test plan illustrates the unbalanced nature of the process to date. For example, every gating item begins with the word “utilities.” While a few of these items are actually the responsibility of the utilities, the majority of the items are the responsibility of Standards development organizations or equipment manufacturers. A review of the list of participants following the process also reveals a clear utility bias towards utility participation. This inherent bias must be corrected before the Joint Parties can support any recommendations produced by the SIWG.

B. Standards Development Process

A basic premise of the SIWG is that the existing nationally recognized standards development processes, *i.e.*, IEEE 1547 and ANSI/UL 1741, are moving too slowly and California must urgently move ahead independently. The Joint Parties disagree with both of these assertions. Section 1254 of the Federal Energy Act of 2005 recommends that all interconnection requirements be governed by IEEE 1547. The basic functional capabilities described in the SIWG documents would therefore ideally be governed by IEEE 1547. Unfortunately, some of the functionality described in the DER Filings is currently prohibited under 1547. IEEE is addressing this issue through publication of more permissive language

through an amendment to the 1547 document, IEEE 1547a.

The IEEE 1547 working group met on June 11-13, 2013 and produced a set of recommended amendments, IEEE 1547a. The amended IEEE 1547a includes permissive language allowing virtually all of the functionality requested by the SIWG. The draft language has been approved by the IEEE working group and the ballot pool is now being formed from IEEE SA members. Balloting of the amended 1547a standard is anticipated within 60 days. A straw poll conducted during the 1547a working group meeting indicated a >75% approval rate amongst those in attendance. Ratification of IEEE 1547a therefore seems highly likely before the end of the year. Since ratification of 1547a appears likely in the near-term there is no need for California to move outside of the IEEE process. The specific technical requirements and test plan for grid interactive functions are described in IEEE 1547.1. IEEE has already begun work on the amendment to this document, 1547.1a. The first meeting of the IEEE 1547.1a working group is now scheduled for August 13-14, 2013.

The SIWG points to the use of AGF in Europe and asserts that it is a trivial matter for manufacturers to add this functionality to US products. While some manufactures have already developed functionality in European products, this does not mean those products or functions can be transferred immediately to the US or that the testing and certification of those products can be completed in the timeframe suggested by the SIWG. However, it is important to recognize that the United States relies on a fundamentally different approach to regulatory compliance as compared to that used in Europe. Europe relies on a process whereby governmental bodies develop requirements and manufacturers self-certify compliance with relevant requirements. Because products are self-certified, manufacturers can move faster and compliance testing can be completed faster and at lower cost. In contrast, US Standards and technical requirements are

developed using an open, consensus-based development process. This process moves more slowly but, for the proposed AGF requirements, substantial progress has recently been made.

Product certification in the US requires third party verification testing by Nationally Recognized Testing Labs (NRTL) using the requirements of IEEE 1547 as the basis for testing. Both the Standards development process and NRTL certification process are conducted under strict procedural guidelines as defined by ANSI (standards development) and OSHA (certification testing). The ANSI process mandates the critical stakeholder input and peer review necessary for the development of a true consensus document. The UL Standards Technical Panel (STP) for ANSI/UL 1741 is scheduled to be convened sometime later this year. Here, again, progress is occurring in a manner which makes it difficult to understand the need to depart from well-established processes that serve California and the Nation well.

The SIWG has stated that California cannot wait and has suggested bypassing the normal ANSI/UL 1741 Standards development process. The SIWG is advocating using a UL Certification Requirements Document (CRD) in lieu of a true published Standard. A CRD is the weakest form of technical Standards and is not accepted by all jurisdictions in California. The Los Angeles Department of Building Safety, for example, does not accept certification to a CRD in lieu of a true ANSI/UL Standard. The proposed California requirements would not be a true ANSI/UL Standard and it is highly likely that the testing protocol would change once 1547.1a was published. When this occurs products certified under the CRD would need to be retested for compliance. There are 12 functional requirements outlined in the SIWG recommendations and each is relatively complex. The cost for third party compliance testing is high, particularly where complex functionality with large ranges of adjustability is required. When these tests are multiplied by the 12 required functions the costs for compliance testing become unreasonable.

This is especially true when it appears likely that the new requirements of IEEE 1547.1a will come into effect in the near to mid-term. The Joint Parties see no critical problem on the California grid to justify such expenses which would ultimately be borne by California consumers in the form of higher prices for renewable energy systems.

The clear intent of Section 1254 of the Energy Act of 2005 is to develop national interconnection standards through the IEEE 1547 process. A national interconnection standard reduces costs and ensures consistency of functionality. Development of California-specific requirements outside of the IEEE and ANSI/UL processes sets a dangerous precedent which runs counter to more than 15 years of progress in this area. If California develops its own unique requirements outside of these formal processes, then other utilities and states could follow suit. This could lead to a proliferation of similar but differing interconnection requirements. In a worst case scenario, there could be thousands of different individual utility requirements, making verification of proper configuration very difficult for utilities. Additionally, this would significantly increase the costs of renewable energy equipment to cover costs of geometrically expanded compliance testing efforts.

In light of the recent and projected near-term progress in regulatory development, it appears likely that the established national standards development will meet California's needs in the near to mid-term. The Joint Parties see no widespread existing or near-term foreseeable problems on the California grid which would support development of requirements outside of the normal IEEE or ANSI/UL process. The high cost of redundant certification testing and the many potential negative ramifications of differing California standards are simply not justified. Instead, the Joint Parties encourage the CPUC, the CEC, and the SIWG to take a more active role in the IEEE and ANSI/UL processes which will be of benefit to both to California and the nation.

C. Realistic Schedule

The schedule proposed by the SIWG is of grave concern to the Joint Parties as well as a broad coalition of NRTL's and standards development organizations, *i.e.* IEEE, UL, ETL and CSA. It would be difficult to overstate the concerns for, and widespread opposition to, the proposed schedule. The schedule as presented in Table 1 of Section 1.2 of the Test Plan document is unachievable. Adoption of mandatory requirements on the present schedule represents a serious threat to the solar photovoltaic industry in California. The Joint Parties strongly urge the ALJ to reject the proposed schedule in total and instruct the SWIG to develop a new schedule which is achievable and supported by the standards development organizations, the NRTL and a consensus of inverter equipment manufacturers.

The schedule proposed by the SIWG is structurally inconsistent with schedules used in other standards development processes. The schedule does not include adequate time for public notice, comment and rebuttal prior to establishing basic functional requirements and must be revised to be more realistic and consistent with best practices used in other similar Standards, *i.e.* IEEE 1547 and ANSI/UL 1741. The Joint Parties believe that the SIWG should develop a milestone approach with input from industry and NRTL and authorities having jurisdiction. The approach should be developed in a manner that matches industry norms and achievable milestones. Any revised schedule must also include a permissive adoption period before published standards become mandatory. Inclusion of a permissive period is consistent with IEEE and ANSI/UL processes and would allow the utilities to begin near-term field testing of DER with advanced functionality. The ANSI/UL 1741 process is regulated by American National Standards Institute (ANSI) which requires the Standards Technical Panel (STP) to be made up of a balanced membership representing utilities, equipment manufacturers, national labs, NRTL, and other interested stakeholders. This permissive period is established by the

relevant STP, *i.e.*, the STP for ANSI/UL 1741. The length of the permissive period is based on the magnitude of the proposed changes and typically 18 to 24 months for changes of this magnitude (*e.g.*, an adoption period of 24 months was implemented following the publication of the IEEE 1547 requirements).

In addition to the unachievable dates presented, the schedule proposed by the SIWG in Table 1 is not consistent with the regulatory structure used in California and nationally. The SIWG has incorrectly identified roles and responsibilities in Table 1 and throughout the test plan document. Product certification testing can only be done by NRTL which is regulated by OSHA. It is not the role of California utilities to conduct product testing. None of the utilities in California is a certifying body and, thus, any testing or certification done by those utilities could not be used in other jurisdictions. To allow California utilities to test and certify manufacturers' products represents an unreasonable and unnecessary expense. Any product testing by utilities should be in the context of research and development at the utility's expense and not in the context of product certification. The Joint Parties understand the desire of California utilities to verify functionality but this is better done by NRTL during the product listing process, in research projects at national laboratories, or in field research projects.

The Joint Parties present an alternative schedule in the table below. This schedule was developed with input from the NRTL and numerous equipment manufacturers.

#	Implementation Schedule of DER Functions	Timeframe
1	Utilities develop a list of requested mandatory and recommended smart DER functions to be included in a revised CPUC Rule 21 based upon the smart inverter working group recommendations. The initial mandatory requirements will include the new functionality permitted under 1547a and allowed by ANSI/UL 1741, Revised: Jan 28 2010.	By Sept 2013

1.1	The CPUC issues a ruling based on the input provided by the Smart Inverter Working group and other industry Stakeholders.	By Oct 2013
2	Underwriters Laboratories works with utilities and other stakeholders to develop a detailed Test Plan as part of ANSI/UL 1741. The revised ANSI/UL 1741 will be used to certify the smart DER functions. The list of new Rule 21 requirements including Draft Test Plans is submitted to the CPUC and published on their website.	By Dec 2013
2.1	UL Publishes a revised version of ANSI/UL 1741 including Rule 21 requirements and associated Test Plan	By March 2014
3a	Equipment manufactures begin certification of products including the autonomous smart DER functions. This product testing covers the specified DER functions using default settings and over the complete range of adjustment. This is an optional requirement and manufacturers may elect to skip this step and proceed to Item 3b below.	By March 2014
4a	Equipment Manufactures complete production of certified products including the autonomous smart DER functions. This is an optional requirement and manufacturers may elect to skip this step and proceed to Item 4b below.	By June 2014
5a	Utilities commence the installation of certified DER systems with autonomous functions in pilot or experimental settings.	By July 2014
6a	Utilities commission the pilot smart DER systems with autonomous functions after site acceptance testing. Note: Commissioning and Site acceptance testing is anticipated in pilot phases only or in larger systems where commissioning and site acceptance testing would otherwise normally be required.	By July 2014
3b	Equipment manufactures begin certification of products including the autonomous smart DER functions with communications. This product testing covers the specified DER functions and communications functionality using default settings and over the complete range of adjustment.	By July 2015
4b	Equipment Manufactures complete production of certified products including the autonomous smart DER functions with communications including protocol converters and security.	By Sept 2015
5b	Utilities commence the installation of certified DER systems with autonomous functions, including protocol converters and security, in pilot or experimental settings.	By Oct 2015
6	Utilities commission the pilot smart DER systems with autonomous functions plus communications, after site acceptance testing. Note: Commissioning and site acceptance testing is anticipated in pilot phases only or in larger systems where commissioning and site acceptance testing would otherwise normally be required.	By Oct 2015
7	The CPUC allows utilities to begin system-wide deployment of smart DER systems on a permissive basis.	By Jan 2014

8	The CPUC requires system-wide deployment of smart DER systems. Systems without Smart DER functionality would no longer be permitted to interconnect.	By Jan 2016
---	--	-------------

D. Narrower Scope

Fundamentally, the recommendations presented by the SWIG represent an exhaustive wish list of all conceivable AGF envisioned by the California utilities without clear demonstration of the need for rapid implementation of these functions. The SIWG leadership has publically stated that the goal is to include “everything and the kitchen sink” in these recommendations without considering cost or necessity of these functions. Utility members of the SIWG have repeatedly indicated that widespread use of the proposed functionality is unlikely in the near-term, if at all. Nonetheless, the SIWG insists that all features must be included now in order to deal with future issues that may or may not occur. This proposed functionality wish list outlined in the DER Filings does not enjoy consensus even amongst the California utilities and it is unclear when or even if all of the features will be needed. In a recent SIWG meeting, representatives from SCE, SMUD and PG&E questioned the benefit of some of the proposed functionality. During the weekly SIWG call on July 18, 2013, the PG&E representative indicated he did not see PG&E using much of this proposed functionality in the near-term, if ever. The Joint Parties believe that a cost benefit analysis of the SIWG AGF be undertaken before these mandatory requirements are imposed.

The entire proposal appears designed to be a California-wide experiment that will allow the utilities to test the effectiveness of all the possible features that DER systems could provide. This is an ineffective, inefficient, and risky way to operate the California electricity grid. Furthermore, these features will increase the cost of DER systems and thus negatively impact utility ratepayers as progress is made toward achieving Governor Brown’s 12 GW DER goal.

Instead, the SIWG needs to determine which solutions are effective and safe and then request California-wide adoption of only these solutions. The SIWG can do this by working with DER system designers and equipment manufacturers (SEIA and CALSEIA members) to conduct small-scale tests and by reviewing what has been effective in the European networks referenced in its proposal. Rather than developing a solution to a specific problem that needs to be solved and then implementing that solution, the SIWG is proposing to embark on a massive investigation of all possible solutions without first identifying a prioritizing the issues these solutions are intended to address. As a result, many of these solutions will not be used once the investigation is complete and the money and effort spent on deploying them on a large scale will have been wasted.

In order to develop, test, and select the effective solutions that address the SIWG's concerns, the SIWG must define clear use cases that identify and prioritize the scenarios in which AGF would be used to address specific problems. The SWIG's proposal only makes a very broad reference to experience in European systems without any clear examples of the specific issues that AGF can and should be used to address.. Either references to examples from the European systems or utility circuits that demonstrate the concerns must be provided to sufficiently motivate these significant changes. Furthermore, without these use cases, it is very difficult to develop solutions to the problem and to develop test methods that verify the effectiveness of the solutions.

Additionally, before the final requirements are proposed for California-wide adoption, it must be verified that the solutions will not cause other stability problems for the grid. For example, while inverter based technologies can intrinsically provide voltage regulation functions, the effects of multiple parallel DER's providing voltage regulation autonomously and with no

overall supervisory control are unknown. Potential exists for interaction between the DER's voltage regulation functions and the distributed inductances and capacitances inherent on the grid. It is conceivable that these interactions could result in local oscillations which could reduce grid stability. The Joint Parties urge caution in this area and recommend additional study, including modeling of these functions. The solution should also be tested on several circuits with multiple DERs for 12 months to verify that stability is maintained on these circuits before it is required system-wide.

However, of even greater concern is the increased potential for creation of unintentional islanding conditions if the proposed functionality is implemented. The primary anti-islanding behavior used by DERs today is fundamentally one of grid destabilization. Each inverter within a DER attempts to destabilize the grid slightly. If the grid voltage or frequency moves beyond established limits, the inverter trips offline. Several of the mandatory and recommended autonomous functions proposed call for the DER to counteract voltage and frequency excursions beyond normal limits. This represents a reversal of the fundamental anti-islanding behavior commonly used by DER today. When multiple DER's are operating in parallel this could significantly increase the probability of unintentional islands.

When questioned about multiple inverter anti-islanding at the June 21st workshop, the leading researcher on the subject, Sigfredo Gonzales from Sandia National Laboratory stated: "multiple inverter anti-islanding is not an issue using the methods in use today." He went on to say that if California implemented the functions recommended by the SIWG that "all bets are off." His statement indicates that there is a significant possibility that the anti-islanding capabilities of existing inverter-based technology may not be possible if some of the proposed SIWG advanced functions are implemented. His concerns were echoed by many of the inverter

manufacturers present at the workshop and, in subsequent conversations, by the Chairman of the Smart Grid Working Group at NIST. Given the likely increase in risk of unintentional islanding created by the proposed frequency and voltage regulating functions, the Joint Parties recommend elimination of solutions 2-6 of the Mandatory Autonomous DER Functions until it has been demonstrated that these solutions do not cause unintentional islands to be created.

It is important to realize that the current anti-islanding methodologies were developed more than 15 years ago when deployment of DER was in its infancy. While these methods have successfully realized today's requirements, it is unlikely that these methods will provide the needed levels of safety in future DER generators. New DER systems that operate on circuits with high penetration will clearly need to provide grid stabilization capabilities in addition to islanding protection. Thus, the Joint Parties believe that a fundamentally different approach to anti-islanding will need to be developed for these systems. With this goal in mind, the National Renewable Energy Laboratory (NREL) and Sandia Laboratories are beginning to research advanced anti-islanding methods. The Parties' equipment manufacturer members look forward to working within the SIWG and the National Laboratories to develop safe and effective solutions to this critical problem.

E. Tiered Requirements

The recommendations made by the SIWG apply equally to all inverter sizes and classes of systems. Clearly, the value of the AGF to the utility will vary depending on the size and type of the system. The Joint Parties recommend a tiered and time-phased approach, based on system size and customer class. Small residential systems should initially be exempted from much of the AGF functionality, which would be of little value to the utility, until such a time that the actual value of such functionality can be established.

Large multi-MW systems will require more advanced functions and, correspondingly, a

higher degree of control by the utility. The relative cost to add this functionality is trivial in larger systems but this feature would result in a significant relative increase in cost for residential system owners. Small residential systems are designed primarily to meet local self-consumption and rarely export significant power. Functions which require measurement of power or current at the Point of Common Coupling (PCC) are therefore of little value to the utility in these small residential systems. The costs to add this PCC measurement functionality is relatively high in residential systems, however, and is therefore difficult to justify the limited value it would provide. Requiring this functionality will add significant cost for residential systems due to the need to add additional measurement equipment. In numerous instances it may not be feasible to add equipment at the PCC and could thereby exclude such homes from being able to add DERs.

The SIWG recommends mandatory IP based internet communication for all DER systems. The SIWG does not, however, indicate who must bear the cost of maintaining that data connection. Cost for mandatory data services imposes an unfair and unreasonable burden on small residential systems. Small residential systems should thus be exempted from mandatory data connections and reporting requirements.

Requirements for VAR production also represent an unfair financial burden for residential customers since there are no rate schedules which address VAR production for residential services. Any production of VAR would reduce real power output and with no mechanism to compensate the residential customer. Until rate schedules are developed which address this issue, residential inverters should be exempt from these requirements.

The cost of mandatory requirements is likely to be significantly higher if applied to already deployed systems. Given this, any new requirements should be applied on a going-forward basis only.

F. Financial Assurances

The majority of systems installed in California are installed using some form of third party financing. Third party investors need predictable returns in order to make the needed investments. Many of the functions recommended by the SIWG could result in a significant loss of revenue for owners of DER systems and are therefore a source of significant financial uncertainty. Real power curtailment, scheduled power production and limitations on total net power export are obvious examples. Less obvious examples are voltage regulation through reductions in real power or Volt/VAr control and fixed power factor operation. For example, the mandatory requirement under Rule 21 states that DERs be capable of providing power factor correction of +/-0.1. This effectively means that the utility could command the DER to completely cease real power production, thereby further extending the payback period on of customer-side DER investment. There are no limits placed on how often and at what time of days the utility could command the DER to perform this function. Under current rate structures, there are little to no incentives to encourage system owners to enable any of the recommended AGF. In order for AGF functions to be effective, some form of financial incentive for system owners will be needed or adoption rates will be very low.

The recommendations of the SIWG contain several requirements that introduce additional sources of potentially significant financial uncertainty. The test plan document requires periodic testing of the DER functions to “verify continued compliance with the requirements, particularly if changes have been made to the DER system, if nearby EPS configurations have been modified, or if significantly more DER generation and storage have been added in electrically neighboring locations.” It is important to note that changes to nearby EPS configurations, installation of significantly more DER or storage are all completely outside the control of the original system owner. This requirement implies that the utilities could make

unilateral decisions to modify the operational characteristics of the system, with a corresponding reduction in revenue, based on conditions that are outside the control of the system owner.

The test plan document also includes a requirement for product interoperability testing. Interoperability testing may be undertaken later when the complete suite of information and communications technologies (ICT) is specified and many products have implemented the smart DER functions. The Joint Parties recommend removal of this requirement as it is vague, undefined and open ended. No reference is given to corrective actions that will be taken, how such actions will be determined or who will bear the costs of such testing and corrective action. This requirement represents a source of unquantifiable additional unplanned expense for the system owners and therefore a source of possibly significant financial uncertainty.

The Joint Parties acknowledge that rate making is a separate activity and not a part of this rulemaking proceeding. However, given that the technical requirements recommended by the SIWG have such a potentially significant impact on revenue to the system owner, it is unreasonable to look at the two items in isolation. Until such time that new rates structures are created, the SIWG recommendations should include specific language that will prevent utilities from unilaterally changing system operational parameters that would result in a reduction of revenue. Any changes to operational parameters which result in revenue reductions must only be made by written mutual agreement between the utility and the system owner. In addition, utilities should be required to provide written estimates of the revenue impact of proposed operational changes in order to allow system owners to make informed decisions.

IV. CONCLUSION

The Joint Parties commend the CPUC and CEC for taking a leadership role in the area of AGF Standards development in the United States and we support the overall goals of the SIWG to provide a California-based forum for development of standardized AGF capabilities and a corresponding test plan. However, as detailed above, the Joint Parties oppose the approach taken by the SIWG and disagree with several aspects of the recommendations presented. Most importantly, the SIWG fails to demonstrate a need for implementing AGF capabilities in a very short time period in California given today's level of DER penetration and fails to justify the solutions being proposed.

The Joint Parties respectfully request that the ALJ not rule on the proposed recommendations made in the DER Filings and instead instruct SIWG to make a revised submission which is technically accurate, consistent with National requirements and that better represents the views of all stakeholders involved. The first step in this process should be to convene a reconstituted stakeholder group, one that more accurately reflects a broad cross-section of DER industry stakeholders.

Respectfully submitted this July 31, 2013, at San Francisco, California.

GOODIN, MACBRIDE, SQUERI,
DAY & LAMPREY, LLP
Jeanne B. Armstrong
505 Sansome Street, Suite 900
San Francisco, California 94111
Telephone: (415) 392-7900
Facsimile: (415) 398-4321
Email: jarmstrong@goodinmacbride.com

By /s/ Jeanne B. Armstrong
Jeanne B. Armstrong

3326/014/X154298.v1