PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION **RESOLUTION E-5357**
December 19, 2024

R E S O L U T I O N

Resolution E-5357. Approves Pacific Gas and Electric Company's, Southern California Edison Company's, and San Diego Gas & Electric Company's request to be relieved of the obligation to maintain the Common Smart Inverter Profile and directs the course of action for near-term updates and ongoing maintenance.

PROPOSED OUTCOME:

- This Resolution approves in part as modified the proposal included in Pacific Gas and Electric Company (PG&E) Advice Letter (AL) 7305-E, Southern California Edison Company (SCE) AL 5323-E, and San Diego Gas & Electric Company (SDG&E) AL 4462-E.
- This Resolution approves PG&E's, SCE's, and SDG&E's (collectively, Large Investor-owned Utilities' or Large IOUs') request to be relieved of the obligation to maintain the Common Smart Inverter Profile (CSIP or CSIP Implementation Guide). This approval is held in abeyance until another organization formally commits to and commences work on updating and maintaining the CSIP Implementation Guide.
- This Resolution requires that PG&E, SCE, and SDG&E: (1) participate in working groups to update and maintain the CSIP Implementation Guide and CSIP Test Procedures; and (2) participate in the Smart Inverter Working Group (SIWG).

SAFETY CONSIDERATIONS:

- CSIP updates could improve the Large IOUs' ability to manage Distributed Energy Resources (DERs) in the field in response to grid conditions, supporting grid reliability. The updates could lead to an increase in the use of DERs without compromising grid safety.

ESTIMATED COST:

- There are no additional costs associated with this Resolution.

By PG&E AL 7305-E, SCE AL 5323-E, and SDG&E AL 4462-E, Submitted on June 25, 2024.

SUMMARY

Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E), collectively the large investor-owned utilities (Large IOUs), jointly submitted PG&E Advice Letter 7305-E *et al.* (the Joint AL) requesting to be relieved of the obligation to maintain the Common Smart Inverter Profile (CSIP or CSIP Implementation Guide). CSIP was created as a guide to help implement the Institute of Electrical and Electronics Engineers (IEEE) standard IEEE 2030.5 for CPUC jurisdictional Large IOUs. IEEE 2030.5 is an international protocol for Distributed Energy Resource (DER) communications.[1] The Smart Inverter Working Group (SIWG) Phase 2 recommendations, adopted in Decision (D.) 16-06-052, required the Large IOUs to collectively develop and maintain this implementation guide. D.16-06-052 states: the "guide shall provide detailed communication requirements and implementation guidelines that ensure consistent interoperability of DER systems with all of the [CPUC jurisdictional Large IOUs' systems]."[2]

This Resolution relieves the Large IOUs of their obligation to maintain the CSIP Implementation Guide. This relief is held in abeyance until another organization formally commits to and commences work on updating and maintaining the CSIP Implementation Guide. We ask IEEE, a third-party international Standards Development Organization (SDO), to commit to being responsible for near-term updates and ongoing maintenance of the CSIP Implementation Guide. We ask that the SunSpec Alliance (SunSpec) continue to steward its CSIP Conformance Test Procedures (CSIP Test Procedures) first developed in 2018.[3] This Resolution requires the Large IOUs to participate in IEEE and SunSpec working groups to update and maintain the CSIP Implementation Guide and CSIP Test Procedures. In the event of conflict between

[1] More Information regarding IEEE 2030.5 is available at https://standards.ieee.org/ieee/2030.5/11216/.
[2] Decision 16-06-052, Attachment E at 4.
[3] The SunSpec CSIP Conformance Test Procedures can be accessed via the SunSpec Alliance website: https://sunspec.org/sunspe-csip-conformance-test-procedures/.

Rule 21 and any of the standards listed herein, the requirements of Rule 21 shall take precedence for CPUC jurisdictional entities.

The Commission emphasizes that it is still the responsibility of the Large IOUs to ensure consistent interoperability of DER systems with the CPUC jurisdictional Large IOUs' systems. Therefore, this Resolution directs the Large IOUs to participate in ongoing SIWG meetings to address interoperability challenges, communications and testing requirements, and other topics related to CSIP and ensuring consistent interoperability. The Large IOUs shall also use this venue to inform participants of the progress of CSIP updates and maintenance and any other changes to Rule 21 interconnection requirements. In addition to participating in regular biweekly SIWG meetings, the Large IOUs shall work with Energy Division as appropriate to place topics on the agenda and shall be responsive to questions and requests for comments that may arise in the course of the SIWG.

Given the need for transparency around ongoing requirements to have equipment approved for Rule 21 interconnection, this Resolution requires that the Large IOUs develop, openly publish, and maintain an instruction sheet detailing the steps to test and certify a new product or equipment in conformance with CSIP, and any other Rule 21 testing and certification requirements that need clarity. Furthermore, it requires that the Large IOUs monitor whether the creation of a CSIP version specific to California is needed. If so, the Large IOUs are required to (1) work with the SIWG to create such a version and (2) propose changes to Rule 21 via Tier 3 ALs.

BACKGROUND

A. Proceeding (R.11-09-011)

The Commission initiated Rulemaking (R.) 11-09-011 on September 22, 2011 to review and, if necessary, revise the rules and regulations governing the interconnection of generation and storage facilities to the electric distribution systems of the Large IOUs. The Large IOUs' rules and regulations pertaining to the interconnection of generating facilities are set forth in Electric Tariff Rule 21 (Rule 21).

B. Smart Inverter Working Group (SIWG) Formation and Phase 2 Recommendations

Generating resources interconnecting to the utility grid via Rule 21 that produce direct current (DC) power require an inverter to convert the DC power to the voltage and frequency of the alternating current (AC) distribution system. In early 2013, parties of R.11-09-011 formed the SIWG to develop proposals to take advantage of the new, rapidly advancing technical capabilities of inverters.

In February 2015, the SIWG completed its recommendations for Phase 2 communications.[4] The group specified the default communication protocol as the Institute of Electrical and Electronics Engineers (IEEE) 2030.5 standard. IEEE 2030.5 defines a framework for communication between the utility and generating resource(s).

C. Decision 16-06-052

On June 23, 2016, the Commission adopted D.16-06-052, which directed the Large IOUs to file proposed revisions to Rule 21 to propose adoption of any agreed-upon technical requirements, testing, and certification processes, and effective dates for Phase 2 functions via advice letters no later than six months from the effective date of that decision. On November 17, 2016, the Commission's Energy Division hosted a public workshop for the purpose of providing guidance to the Large IOUs on the advice letter filings. During the workshop, it was determined that there was sufficient consensus for the Large IOUs to propose revisions to Rule 21 to adopt the Phase 2 recommendations for communication protocols.

The recommendations for Phase 2 communication protocols included a "California IEEE 2030.5 Implementation Guide," later to be known as the "Common Smart Inverter Profile," or CSIP. The following language directed how the guide was to be developed and maintained:

> Each utility handbook shall make reference to a common "California IEEE 2030.5 Implementation Guide" [now known as CSIP] that will be developed and maintained collectively by the California [Large IOUs]. This implementation guide shall provide detailed communication requirements and implementation guidelines that ensure consistent interoperability of DER systems with [the CPUC jurisdictional Large IOUs' systems]. This guide may be updated periodically to support advances in technology or updates in tariffs and other California DER rules.[5]

D. CSIP Development

The Large IOUs collaborated with industry stakeholders to develop CSIP during 2015 and 2016. The Large IOUs and industry stakeholders updated CSIP to its current version, CSIP v2.1, using the updated 2018 version of IEEE 2030.5. CSIP v2.1 was published in March 2018. Upon its release, SunSpec volunteered to host the document on its website for easier dissemination.

---

[4] The SIWG Phase 2 communications recommendations can be found attached to Decision 16-06-052.
[5] Decision 16-06-052, Attachment E at 4.

E. Resolution E-4832

On April 6, 2017, the CPUC issued Resolution E-4832 adopting tariff changes to incorporate the Phase 2 communications requirements into each Large IOUs' Rule 21 tariff language.

F. Issuance of SunSpec Alliance CSIP Conformance Test Procedures

On their own initiative, the SunSpec Alliance developed and issued the SunSpec Common Smart Inverter Profile (CSIP) Conformance Test Procedures (CSIP Test Procedures) on May 22, 2018.[6]

G. Resolution E-5000

On February 11, 2019, CALSSA submitted a petition to modify Resolution E-4832 (the Petition) and the smart inverter Phase 2 requirements. On July 12, 2019, the CPUC issued Resolution E-5000 addressing the issues raised in the Petition. Resolution E-5000 Ordering Paragraph 2 directed PG&E, SCE, and SDG&E to adopt the testing pathway as described in the Petition and outlined in Appendix C[7] as the primary method of determining compliance with the Phase 2 requirements. The SIWG was designated as the primary venue for implementing Resolution E-5000's ordering paragraph directives.

H. Resolution E-5036

On December 5, 2019, the Commission issued Resolution E-5036 to clarify the testing requirements for smart inverter Phase 2 communications. Appendix D of Resolution E-5036 laid out a revised version of CSIP testing requirements. In the "Approved Testing Pathway," Resolution E-5036 notes that a Nationally Recognized Testing Laboratory (NRTL) "should test conformance gateways to IEEE 2030.5 in accordance with the [SunSpec CSIP Test Procedures]."[8] The Approved Testing Pathway defines which specific SunSpec CSIP Test Procedures should be performed. It also notes that SunSpec may use one of the NRTL-produced test reports to certify that the gateway[9] conformed to CSIP.

---

[6] The SunSpec CSIP Test Procedures validate conformance to CSIP testable requirements for server, DER client, and DER aggregator client implementations. The objective of these test procedures is to verify that the implementation is compliant with the IEEE 2030.5 functionality and options as specified in the CSIP document. More Information available via the SunSpec Alliance website: https://sunspec.org/sunspe-csip-conformance-test-procedures/.

[7] See Resolution E-5000 Appendix C.

[8] Resolution E-5036 at 22.

[9] From Resolution E-5036 at 24: *A "gateway" is anything other than the DER that provides a communications interface (CSIP/IEEE 2030.5) to the utility for the purposes of exchanging the content contained in the communications messages with one or more DERs.*

I. Post-Resolution E-5036 Activity (December 5, 2019 through Present)

The CSIP Implementation Guide has not been updated since 2018. Given the introduction of smart inverters into the Rule 21 tariff and the passage of several years, it is now apparent that CSIP near-term updates and ongoing maintenance require greater commitment and expertise than what was understood in 2016 when the Large IOUs were tasked with this responsibility.

The need for such near-term updates and ongoing maintenance has been repeatedly voiced by stakeholders in the SIWG. The SIWG has been a venue for utilities, developers, and other stakeholders to confer regarding potential CSIP updates, as well as other technical topics related to, for example, smart inverters, interconnection and certification standards, and emerging DER or interconnection technologies. During the April 25, 2024, SIWG meeting, Enetrics and the SunSpec Alliance presented on the need to update CSIP to address a variety of technical issues. These issues included updating CSIP to conform with standards, such as IEEE 1547-2018[10] and IEEE 2030.5-2023, that had been updated since it was published. In addition, it was reported that use of CSIP is growing outside of California, both nationally and internationally. For example, CSIP forms the basis for CSIP-AUS in Australia.[11] During the July 18, 2024, SIWG meeting, the Interstate Renewable Energy Council (IREC) presented on CSIP compliance testing. They mentioned the need to update the CSIP Implementation Guide, as well as create a testing pathway to verify gateways with CSIP on the utility side and IEEE 1547 on the DER side.

J. Joint PG&E Advice Letter 7305-E, *et al.*

On June 25, 2024, the Large IOUs jointly submitted PG&E Advice Letter 7305-E, *et al*. requesting to be relieved of the obligation to maintain CSIP and recommending a pathway forward. The Large IOUs noted that "rulemaking in specific jurisdictions, such as California, should be based on the standards emerging from international standards development organizations (SDOs), such as IEEE, [International Electrotechnical

[10] IEEE Standard 1547™ establishes a technical standard for interconnecting distributed energy resources (DER) with electrical power systems (EPSs). Available at https://innovationatwork.ieee.org/what-is-ieee-standard-1547/.

[11] Australia has its own version of CSIP—the "'Common Smart Inverter Profile – Australia' is developed by the DER Integration API Technical Working Group (DERIAPITWG). …The group determined that the most appropriate starting point to promote interoperability amongst DER and [Distribution Network Service Providers] DNSPs in Australia was to leverage existing standards, namely the IEEE 2030.5-2018 specification, and the Common Smart Inverter Profile (CSIP). These standards were chosen principally due to their coverage of relevant data communications, and uptake in related international jurisdictions." See https://arena.gov.au/assets/2021/09/common-smart-inverter-profile-australia.pdf at 4-5.

Commission] IEC, and [Underwriter's Laboratory] UL. SDOs have well established processes for engaging industry expertise in the writing, vetting, and approval of international standards."[12] They also observed that "the correct role of IOUs, vendors, and other stakeholders is to participate in the committees and working groups of the SDOs."[13] The Large IOUs described the need for CSIP updates, as well as the likelihood that future maintenance and updates will require a larger number of stakeholders and resources than the Large IOUs have available for such purposes. The Large IOUs thus formally requested to be relieved of the responsibility to maintain CSIP.

The Large IOUs recommended that SunSpec, a global alliance of distributed energy industry participants, take on the maintenance of CSIP. They noted that SunSpec already handles the CSIP implementation test suite,[14] specifies other IEEE 2030.5 profiles, and maintains similar standards such as the SunSpec Modbus standard for smart inverters.[15] They noted, however, that SunSpec is not an established international SDO.[16]

NOTICE

Notice of PG&E AL 7305-E, SCE AL 5323-E, and SDG&E AL 4462-E was made by publication in the Commission's Daily Calendar. PG&E, SCE and SDG&E state that copies of the Advice Letters were mailed and distributed in accordance with Section 4 of General Order 96-B.

PROTESTS/RESPONSES

On June 26, 2024, CPUC Energy Division Staff informed parties via e-mail to the R. 17-07-007 service list that, pursuant to G.O. 96-B Section 7.4.1, protests on the Joint PG&E AL 7305-E, *et al.* (the Joint AL) were due within 20 days of submittal (i.e., due July 15, 2024), but that Energy Division staff would also consider late-submitted protests or responses received by July 25, 2024. The R.11-09-011 service list was inadvertently excluded from the original message and informed on July 15, 2024 of this extension.

[12] Joint PG&E AL 7305-E et al at 2.
[13] Joint PG&E AL 7305-E et al at 3.
[14] This includes the CSIP Test Procedures, certifying labs to perform CSIP certification tests, and issuing CSIP product certificates.
[15] Joint PG&E AL 7305-E et al at 3.
[16] Joint PG&E AL 7305-E et al at 4.

On July 3, 2024, UL Solutions filed a timely protest to the Joint AL. On July 15, 2024, The California Solar & Storage Association (CALSSA) filed a timely response to the Joint AL. The Large IOUs filed a timely reply on July 22, 2024.

Late-submitted protests/responses to the Joint AL were received as follows:

- The SunSpec Alliance (SunSpec) filed a response on July 20, 2024.
- The Distributed Energy Resource Integration Application Programming Interface Technical Working Group (DERIAPITWG) and Australian Standards Committee EL-062 on Smart Energy (EL-062) filed a protest on July 23, 2024.
- Kitu Systems filed a response on July 24, 2024.
- SwitchDin filed a protest on July 25, 2024.
- Enetrics, Camus Energy, SwitchDin, and a representative from the IEEE Communications Society Power Line Communications Standards Committee (IEEE COM/PLC representative) filed a joint protest on July 25, 2024.

In an email sent to the Large IOUs on July 29, 2024, the Energy Division accepted these late protests and responses and directed the Large IOUs to submit a reply within five business days. The Large IOUs filed a timely reply on August 5, 2024.

Protests and responses primarily focused around two issues: (1) whether the Large IOUs should be relieved of the obligation to maintain CSIP and (2) if so, which organization(s) should manage CSIP near-term updates and ongoing maintenance.

Issue 1: Should the Large IOUs be relieved of the obligation to maintain CSIP?

All parties agreed that the Large IOUs should be relieved of the obligation to maintain CSIP. CALSSA notes that "Utilities are usually highly active in SDO discussions, so they would have the opportunity to help shape the updates without being required to manage the process."[17]

Issue 2: If the IOUs are relieved of the obligation to maintain CSIP, which organization(s) should manage near-term updates and ongoing maintenance?

There was a lack of consensus around which organization(s) should manage CSIP near-term updates and ongoing maintenance. The conversation focused primarily on the

[17] CALSSA Response to PG&E 7305-E, Concerning the Obligation to Maintain CSIP Standard at 1.

CSIP Implementation Guide. Kitu Systems commented on CSIP testing process management as well.

Party comments fell into the following categories:

1. Protesting the Large IOUs' recommendation that SunSpec take on CSIP Implementation Guide near-term updates and ongoing maintenance, instead advocating for IEEE to be the venue (UL Solutions; CALSSA; DERIAPITWG and EL-062; SwitchDin; and, jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative);
2. Supporting SunSpec taking on the CSIP Implementation Guide near-term updates and ongoing maintenance (SunSpec); and
3. Proposing a collaborative solution in which both SunSpec and IEEE play a role (Kitu Systems).

Position 1: IEEE Should Manage Near-Term Updates to and Ongoing Maintenance of the CSIP Implementation Guide.

Multiple parties disagreed with the Large IOUs' recommendation that SunSpec be the primary venue for near-term updates to and ongoing maintenance of the CSIP Implementation Guide. Parties opposing this recommendation include UL Solutions; CALSSA; DERIAPITWG and EL-062; SwitchDin; and, jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative. The protesting parties generally argue that IEEE provides the best venue for necessary updates and ongoing work. Primary reasons include the following:

A. **IEEE is an American National Standards Institute (ANSI) accredited Standards Development Organization.** Being an ANSI-accredited SDO includes having well-documented policies and procedures for, as UL Solutions notes, "following consensus development procedures including balanced membership, review, and ballot protocols."[18] Jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative note that "such policies and procedures become increasingly important as more organizations with diverse interests and opinions participate."[19] SunSpec, while having contributed greatly to the DER ecosystem, is not an ANSI-accredited SDO at this time.

[18] UL Solutions Protest of Recommendations in CPUC advice letter 7305-E, et al, dated June 25, 2024 at 1.
[19] Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative joint Protest of PG&E Advice 7305-E, SCE Advice 5323-E, SDG&E Advice 4462-E at 2.

a. Parties arguing this include UL Solutions; CALSSA; DERIAPITWG and EL-062; SwitchDin; and, jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative.

B. **IEEE is more internationally recognized, allowing for ease of CSIP adoption internationally.** Both IEEE and SunSpec have an international presence, although that of IEEE is more established, especially given its status as an ANSI-accredited SDO. Jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative note that "Such adoption would benefit the Joint Utilities, manufacturers, and service providers that have already invested in CSIP, as well as the ratepayers of California, by increasing the size of the market that CSIP has established."[20]
   a. Parties arguing this include DERIAPITWG and EL-062; SwitchDin; and, jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative.

C. IEEE publishes the standard on which CSIP is based: IEEE 2030.5. Having IEEE manage both the IEEE 2030.5 standard and the CSIP Implementation Guide could increase participation of IEEE 2030.5 experts, as well as reduce burden on industry players who would otherwise need to participate in both SunSpec and IEEE.
   a. Parties arguing this include SwitchDin and; jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative.

D. **Having IEEE manage ongoing updates to the CSIP Implementation Guide would separate power between the organization that develops the CSIP Implementation Guide and the commercial organization(s) that test and certify the profile.** Jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative note that it is a well-known principle in standardization to have this separation and "evidenced by many examples including IEEE 802.11 and the Wi-Fi Alliance, IEEE 802.3 and the Ethernet Alliance, and IEEE 802.15.4 and the Connectivity Standards Alliance, to name a few."[21]
   a. Parties arguing this include, jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative.

[20] Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative joint Protest of PG&E Advice 7305-E, SCE Advice 5323-E, SDG&E Advice 4462-E at 1.
[21] Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative joint Protest of PG&E Advice 7305-E, SCE Advice 5323-E, SDG&E Advice 4462-E at 2.

E. **IEEE submitted a Project Authorization Request (PAR)[22] for CSIP to be adopted as IEEE 2030.5.1, meaning that work to update the CSIP Implementation Guide could begin expeditiously upon its contribution to IEEE**. Jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative write that this "will likely speed up the process for standardization yet follow appropriate and proper policies and procedures."[23]
    a. Parties arguing this include SwitchDin and; jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative.

Position 2: SunSpec Should Manage Near-Term Updates to and Ongoing Maintenance of the CSIP Implementation Guide.

The SunSpec Alliance submitted a response accepting the Large IOUs' nomination to manage and develop the CSIP updates and provided supporting reasons for its doing so. Primary reasons include the following:

A. **SunSpec has extensive IEEE 2030.5 experience.** SunSpec has participated in the IEEE 2030.5 standard technical committee for more than a decade, developed the definitive test procedures for the IEEE 2030.5 standard and CSIP, developed extensive academic curricula pertaining to IEEE 2030.5, engaged with test tool developers to support IEEE 2030.5 and CSIP, and trained test labs to evaluate IEEE 2030.5 implementations.
B. **SunSpec also has robust consensus-based participation procedures.** The SunSpec Alliance Membership Agreement and Bylaws require that all SunSpec specifications, standards, and application profiles are developed on a consensus basis by qualified participants, in order to ensure that they meet the needs of industry and can be adopted free of charge.
C. **SunSpec provides open access to its standards.** The open, royalty-free licensing terms of SunSpec standards and application profiles assure that any organization may create its own certification program.
D. **SunSpec is a de facto SDO and a DER standards promoter**. SunSpec has a standards development process that adheres to industry best practices.[24]

---

[22] A Project Authorization Request (PAR) is how standards projects are started within the IEEE Standards Association (IEEE SA). PARs define the scope, purpose, and contact points for the new project. More information can be found at https://standards.ieee.org/faqs/pars/.
[23] Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative joint Protest of PG&E Advice 7305-E, SCE Advice 5323-E, SDG&E Advice 4462-E at 2.
[24] SunSpec Alliance Response to PG&E 7305-E Concerning the Obligation to Maintain the CSIP Application Profile at 1.

In its protest, SunSpec notes that CSIP is an application profile, meaning that it describes how to utilize the IEEE 2030.5 standard to manage DERs and is not a standard itself. SunSpec disagrees that ANSI accreditation should be a requirement for the developer of the CSIP application profile for two reasons:

> 1) By definition, an application profile may not violate the requirements of the standard it addresses to ensure that the safety, security, and interoperability aspects of the standard are preserved.
> 2) The development of application profiles is the domain of software implementors and IT/OT professionals such as the SunSpec Alliance and its members; who are engaged in developing, adapting, and rapidly refining solutions that interpret the standard to address particular use cases.[25]

Position 3: Both SunSpec and IEEE Should Play a Role in CSIP Near-term Updates and Ongoing Maintenance.

Kitu Systems (Kitu) suggested a phased approach in which both SunSpec and IEEE play a role in the CSIP Implementation Guide updates. SunSpec would be responsible for near-term, non-controversial items while IEEE would take on long-term items requiring more discussion. Kitu Systems asserted that this approach would leverage the strengths of both organizations. Kitu noted the following pros and cons of IEEE vs. SunSpec managing the CSIP updates.

IEEE		**SunSpec**	
Pros	**Cons**	**Pros**	**Cons**
IEEE is an internationally recognized SDO.	IEEE's development process is slow relative to SunSpec.	SunSpec's development process is faster relative to IEEE.	SunSpec is not an SDO.
IEEE has well-defined, public policies and procedures.	There is a potential higher cost for participation.	The cost to participate would potentially be lower.	SunSpec has unclear policies and procedures.
There may be synergies of	The choice of participation model	SunSpec has experience in CSIP-related areas.	SunSpec's development model may not

[25] SunSpec Alliance Response to PG&E 7305-E Concerning the Obligation to Maintain the CSIP Application Profile at 2.

developing CSIP under IEEE 2030.5.	may preclude some participants.		scale well with a large number of participants.
	Like any other IEEE standard, it is necessary to purchase the published standard.[26]	SunSpec standards are generally free to access.	There are potential membership issues.[27]

Regarding the recommended phased approach leveraging both SunSpec and IEEE's strengths, Kitu states the following:

> We propose the updating of CSIP occur in two phases with the end goal of having IEEE, an internationally recognized SDO, take ownership of the CSIP standard …. Phase One is to address fast-track items that can be accomplished in 6-12 months. Phase One addresses immediate, non-controversial issues that may hinder implementation and deployment of CSIP systems …. Phase Two is to address more complicated items that will take longer to achieve consensus. The development timeline is envisioned to take 1 to 2 years …. We believe having both SunSpec and IEEE play key roles in the development process is better than an either-or proposition.[28]

Kitu lists an alternate division of work if its first suggested allocation of responsibilities is not possible:

> Another possibility is to assign the standards development part to IEEE and the test/certification development part to SunSpec. Currently, there is ambiguity on exactly what testing and certification path is needed to be CSIP compliant. Clarity on the testing and certification process would remove this impediment to CSIP adoption and deployment. SunSpec is a good candidate to do this job.[29]

[26] Kitu Systems' Recommendations and Analysis on PG&E Advice Letter 7305-E at 4.
[27] Kitu Systems' Recommendations and Analysis on PG&E Advice Letter 7305-E at 3.
[28] Kitu Systems' Recommendations and Analysis on PG&E Advice Letter 7305-E et al at 4 through 5.
[29] Kitu Systems' Recommendations and Analysis on PG&E Advice Letter 7305-E et al at 5.

Utility Replies to Protests

In their replies submitted on July 22 and August 5, 2024, the Large IOUs note that they "do not object to the Commission or Energy Division conducting its own assessment of potential candidates and selecting an entity to assume the responsibility of maintaining the CSIP standard, provided that the assessment process is open and transparent and considers the Joint Utilities as only an interested stakeholder in the process."[30] Given the pressing need to update CSIP, they "urge the Commission and Energy Division to expeditiously determine how best to dedicate and identify the resources responsible for the CSIP effort."[31]

DISCUSSION

Issue 1: Should the Large IOUs be relieved of the obligation to maintain CSIP?

Commission Determination: The Large IOUs should be relieved of the obligation to maintain CSIP. This relief is held in abeyance until another organization formally commits to and commences work on updating and maintaining the CSIP Implementation Guide.

The Commission has reviewed the Joint Advice Letter, protests, responses, and replies and finds that the Large IOUs should be relieved of the responsibility to maintain CSIP. This aligns with the position of the Large IOUs; SunSpec; UL Solutions; CALSSA; DERIAPITWG and EL-062; Kitu Systems; SwitchDin; and, jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative. We find that before the Large IOUs are relieved of this obligation, another organization must first formally commit to and commence working on updating and maintaining the CSIP Implementation Guide.

As the Large IOUs and parties stipulated, the Large IOUs are not well positioned to maintain CSIP. Transferring CSIP maintenance to a third party will enhance interoperability between DERs and utility systems. This will increase DER integration and thus support Commission goals to reduce greenhouse gas emissions. A third party

[30] Joint Utilities (PG&E, SCE, SDG&E) Reply to Protest of UL Solutions and Response of CALSSA to Advice 7305-E [Request of PG&E, SCE, and SDG&E to be Relieved of the Obligation to Maintain CSIP Standard Adopted in Decision 16-06-052] at 2.

[31] Joint Utilities (PG&E, SCE, SDG&E) Reply to Protest of UL Solutions and Response of CALSSA to Advice 7305-E [Request of PG&E, SCE, and SDG&E to be Relieved of the Obligation to Maintain CSIP Standard Adopted in Decision 16-06-052] at 3.

may better respond to advancements in the industry and reflect those in updates to CSIP.

The Commission emphasizes, however, that it is still the responsibility of the Large IOUs to ensure consistent interoperability of DER systems with all of the Large IOUs' systems.[32] We find that it is also the responsibility of the Large IOUs to inform stakeholders of changes to interconnection requirements.

There is precedent for using SIWG as a venue to inform stakeholders about changes to interconnection requirements as well as discuss topics such as interoperability.[33] The mission of the SIWG has evolved from its inception and is now used to discuss technologies and topics technical in nature related to interconnection.[34] We find value in continuing such discussions in this venue with the participation of the Large IOUs. To maintain transparency in the interconnection process and make requirements easily identified, we find that the Large IOUs must inform affected stakeholders about changes in equipment specification, testing, and certification requirements to interconnect under Rule 21. The Large IOUs shall, therefore, leverage the SIWG as a venue to inform participants of the progress of CSIP updates and maintenance.

Furthermore, the Large IOUs shall work with stakeholders and Energy Division staff through the SIWG to comprehensively identify barriers to consistent interoperability of DER systems with the Large IOUs' systems and to develop proposed next steps and remediation actions.

We find that ongoing participation from the Large IOUs in the SIWG is mandatory. In addition to participating in regular biweekly SIWG meetings, the Large IOUs shall work with the Energy Division as appropriate to place topics on the agenda and shall be responsive to questions and requests for comments that may arise in the course of the SIWG. As stated in D. 16-06-052: "Consensus proposals pertaining to SIWG recommendations or Rule 21 interconnection more broadly may be brought forward for

[32] Decision 16-06-052 Attachment E 4.
[33] See Resolutions E-5000 and E-5036.
[34] The SIWG has also been used to foster proactive, constructive communication between utilities, developers, and other impacted stakeholders about how these technologies are implemented for interconnection purposes and conduct discussions on issues of a more technical nature from interconnection proceedings. Example topics include smart inverters, advances in technology to streamline interconnection, Power Control Systems, interconnection and various other standards, and DER and interconnection technologies.

Commission consideration by the Utilities in the form of Advice Letters or Applications as appropriate."[35]

We delegate to the Energy Division the discretion to place agenda items in the SIWG and schedule SIWG meetings as appropriate, including extending assigned hours of the bi-weekly meetings if needed. Special SIWG meetings may be scheduled separately from the regularly held SIWG meetings. Energy Division staff may record SIWG meetings and publicly share the recordings to promote transparency.

Kitu Systems noted that currently "there is ambiguity on exactly what testing and certification path is needed to be CSIP-compliant. Clarity on the testing and certification process would remove this impediment to CSIP adoption and deployment."[36] As CSIP maintenance shifts, transparency around the requirements to obtain CSIP certification will become increasingly important. The Large IOUs shall therefore develop, openly publish, and maintain an instruction sheet detailing the steps to test and certify a new product or equipment in conformance with CSIP. This instruction sheet shall also detail any other Rule 21 interconnection testing and certification requirements that need clarity as identified through stakeholder engagement. This includes specifying what standards are required for each option to interconnect, such as CSIP and IEEE 1547.1/UL 1741 SB, and the required tests and procedures to receive certification. Based on stakeholder feedback, this instruction sheet may include the various ways the Large IOUs update their interconnection portals with approved equipment lists, and whom within the Large IOUs to contact with questions on the Rule 21 requirements. Discussions may also touch upon means to streamline the Rule 21 interconnection process, including making DER settings more readily or easily available to industry and clarifying which functions are activated.

The Large IOUs, within 3 months of the issuance of this Resolution, shall begin meeting with the SIWG to discuss the contents of this instruction sheet and incorporate feedback. The Large IOUs shall present the finalized instruction sheet at a SIWG meeting within 6 months of the issuance of this Resolution. Energy Division staff may record this meeting and post it publicly on the SIWG webpage. The Large IOUs shall publish the finalized instruction sheet clearly on a webpage pertaining to Rule 21 generation interconnection on each of the Large IOUs' websites. The Large IOUs shall update the instruction sheet within 60 days of any substantial shift in testing and/or certification requirements, such as the release of updated CSIP Test Procedures or

[35] Decision 16-06-052 at 41.
[36] Kitu Systems' Recommendations and Analysis on PG&E Advice Letter 7305-E at 5.

change in the product types that receive certification. The Large IOUs shall notify Energy Division staff when they detect that a substantial shift has occurred. Outside of Large IOU notification, we delegate the authority to the Energy Division to determine when such a substantial shift in testing and/or certification requirements has occurred.

CSIP may begin to incorporate requirements beyond those needed in California due to its transition to a third-party manager. Therefore, the Large IOUs shall monitor whether the creation of a CSIP version specific to California is needed. This monitoring shall occur through the Large IOUs' participation in the IEEE and SunSpec CSIP update and maintenance working groups as well as from hearing stakeholder comments on the matter. If a California version of CSIP is needed, the IOUs shall work with the SIWG to determine which requirements should be incorporated into the California version from the broader CSIP Implementation Guide. The Large IOUs shall, in consultation with the Commission's Energy Division, submit a Tier 3 Advice Letter proposing the new version and report on which elements thereof were supported by the consensus of the SIWG. If the Large IOUs find that a standards making body[37] is best suited to develop this California version of CSIP, they may, in consultation with the Commission's Energy Division, submit a Tier 3 Advice Letter seeking the designation of a party to carry on this work.

Should changes to Rule 21 be required, the Large IOUs shall, in consultation with the Commission's Energy Division, propose necessary revisions to Rule 21 via separate Tier 3 Advice Letters. Possible reasons for changes include, but are not limited to, the creation of a California version of CSIP.

Issue 2: If the IOUs are relieved of the obligation to maintain CSIP, which organization(s) should manage near-term updates and ongoing maintenance?

Commission Determination: We find that it is prudent and reasonable for both IEEE and SunSpec to participate in managing CSIP, with IEEE managing the near-term updates to and ongoing maintenance of the CSIP Implementation Guide and SunSpec continuing to manage the CSIP Test Procedures.

[37] A standards making body, for the purposes of this Resolution, is a nationally or internationally recognized industry, professional, or technical association, or appropriate standard approving organization that can adequately update and maintain documents such as a California version of the CSIP Implementation Guide.

In their replies to protests/responses to the Joint AL, the Large IOUs urged "the Commission and Energy Division to expeditiously determine how best to dedicate and identify the resources responsible for the CSIP effort."[38] The Commission has reviewed the Joint Advice Letter, protests, responses, and replies. We ask that:

- IEEE manage both near-term updates to and ongoing maintenance of the CSIP Implementation Guide; and
- SunSpec continue to manage updates to and maintenance of the CSIP Test Procedures, as they have done since 2018.

We agree with Kitu Systems that having both IEEE and SunSpec play key roles in CSIP management going forward is better than an either-or proposition. We find, however, that the responsibilities would best be allocated between management of the CSIP Implementation Guide and CSIP Test Procedures rather than between phases of CSIP Implementation Guide updates. This removes the need to transfer the CSIP Implementation Guide from one party to another and may obviate any associated legal and timeline implications. Furthermore, SunSpec created the CSIP Test Procedures in 2018 upon the release of the CSIP v2.1 version and has updated them since. While IEEE could create similar testing procedures, we find that it is most appropriate for this responsibility to remain with SunSpec.

IEEE Should Manage Near-Term Updates to and Ongoing Maintenance of the CSIP Implementation Guide.

Our finding that it is prudent and reasonable for IEEE to manage the CSIP Implementation Guide aligns with the position of UL Solutions; CALSSA; DERIAPITWG and EL-062; SwitchDin; and, jointly, Enetrics, Camus Energy, SwitchDin and an IEEE COM/PLC representative. It aligns in part with the position of Kitu Systems. It does not align with SunSpec's position. We agree with stakeholder positions that IEEE should manage the CSIP Implementation Guide for the following primary reasons:

1. **IEEE is an ANSI-accredited Standards Development Organization (SDO):** We agree with UL Solutions; CALSSA; DERIAPITWG and EL-062; SwitchDin; and; jointly, Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative that there is merit in having an ANSI-accredited SDO perform

[38] Joint Utilities (PG&E, SCE, SDG&E) Reply to Protest of UL Solutions and Response of CALSSA to Advice 7305-E [Request of PG&E, SCE, and SDG&E to be Relieved of the Obligation to Maintain CSIP Standard Adopted in Decision 16-06-052] at 3.

near-term updates to and ongoing maintenance of the CSIP Implementation Guide. We acknowledge SunSpec's argument that ANSI-accreditation is not required to develop an application profile, otherwise known as an implementation guide. We find, however, that given the growth of usage that CSIP has experienced in the past eight years, becoming internationally recognized, it is justified that an ANSI-accredited organization take on the near-term updates to and ongoing maintenance of the CSIP Implementation Guide. This will ensure all stakeholders that robust balanced membership, review, and ballot protocols are used. Though SunSpec employs robust participation procedures and is likely able to publicize and implement policies to further align with those of an ANSI-accredited organization, IEEE has been ANSI-accredited for over 100 years and thus has more experience operating in this manner.[39] Furthermore, having an ANSI-accredited organization manage the CSIP Implementation Guide will allow more jurisdictions internationally to adopt CSIP. This will support the marketplace of CSIP-capable devices, as well as the refinement of the CSIP Implementation Guide as more localities discover improvements through implementation.

2. **Separation of Powers:**
   We agree with Enetrics, Camus Energy, SwitchDin, and an IEEE COM/PLC representative in supporting the separation of power between the organization that develops the CSIP Implementation Guide and the commercial organization(s) that test and certify equipment to CSIP. Our decision aligns with this standard industry practice.
3. **Timeline to Start and Perform CSIP Implementation Guide Updates:**
   We find that the estimated timeline to start and perform CSIP Implementation Guide near-term updates is likely comparable between SunSpec and IEEE. SunSpec is ready now to begin the process to update the CSIP Implementation Guide. IEEE submitted a Project Authorization Request (PAR) for CSIP to be adopted as IEEE 2030.5.1. The IEEE Standards Association Standards Board (SASB) will vote to approve or reject the IEEE 2030.5.1 PAR. A viable meeting date for this vote is January 29, 2025.[40] We expect that IEEE work to update the CSIP Implementation Guide can begin shortly after this PAR is approved. Given the expected adoption date of this Resolution, we do not find the difference of approximately 1.5 months significant. While SunSpec may be able to perform near-term CSIP Implementation Guide updates faster than IEEE, as Kitu Systems

[39] IEEE was one of the founding organizations of ANSI in 1916. More information available at https://www.ansi.org/about/history.
[40] The SASB meeting schedule is located at https://standards.ieee.org/about/sasb/meetings/.

> and SunSpec noted, we do not find this timeline improvement substantial enough to justify allocation of CSIP Implementation Guide updates to SunSpec at this time. We find that the need for a robust, consensus-based process that aligns with ANSI protocols would likely render the speed to update the CSIP Implementation Guide in either venue comparable. Furthermore, we note that Kitu Systems recommended the use of "ad-hoc" sub-workgroups to speed development through IEEE.[41] Lastly, we find that the division of the CSIP Implementation Guide updates and CSIP Test Procedures management to IEEE and SunSpec, respectively, may allow for some of the work to occur in parallel. This may more quickly provide manufacturers with clarity around updated CSIP requirements so that they can produce certified equipment.

We ask that IEEE go through the necessary steps to formally commit to and commence work on CSIP Implementation Guide near-term updates and ongoing maintenance as soon as possible following the issuance of this Resolution. For the purposes of this Resolution, once the IEEE 2030.5.1 PAR is approved at an IEEE SASB voting meeting and added to the SASB list of approvals, then Energy Division staff may consider IEEE as having formally committed to taking on CSIP Implementation Guide near-term updates and ongoing maintenance.

We expect that IEEE will commence work on the CSIP Implementation Guide updates soon after the PAR approval. We delegate to Energy Division staff the authority to determine whether IEEE has commenced work. If IEEE does not commence work within a reasonable time following formal commitment, then the Large IOUs shall retain interim responsibility for CSIP and shall re-submit a Tier 3 Advice Letter recommending further actions.

SunSpec Should Continue to Manage Near-Term Updates to and Ongoing Maintenance of the CSIP Test Procedures.

We agree with Kitu Systems' recommendation regarding allocating responsibilities to both organizations and acknowledge that SunSpec has been the owner and maintainer of the CSIP Test Procedures since 2018. We ask that SunSpec continue to manage the CSIP Test Procedures, including any near-term updates and ongoing maintenance. Furthermore, we find that this will best ensure continued conformance with the testing specifications in Appendix D of Resolution E-5036.

[41] Kitu Systems' Recommendations and Analysis on PG&E Advice Letter 7305-E at 3.

We find that it is prudent and reasonable for SunSpec to continue to manage the CSIP Test Procedures due to the above statements regarding separating powers, the speed to perform overall CSIP updates, as well as the following reasons:

1. **SunSpec already manages the CSIP Test Procedures and is well positioned to update and maintain them as needed.** Since 2018, SunSpec has updated the CSIP Test Procedures using its working group process, most recently completing an update in October of 2023.[42] IEEE would likely need to start from scratch in creating CSIP test procedures. Furthermore, SunSpec authorizes testing laboratories to provide IEEE 2030.5/CSIP testing services and reviews the test reports to certify equipment. SunSpec offers Public Key Infrastructure (PKI) testing certificates free of charge, and offers the only production IEEE 2030.5 PKI in the world.[43] As the CSIP Implementation Guide is updated, SunSpec is well-positioned to continue updating the CSIP Test Procedures accordingly.
2. **Resolution E-5036 designates SunSpec CSIP Test Procedures in the Approved Testing Pathway to implement Phase 2 communications requirements and verify CSIP compliance**. As stated in Appendix D, "The NRTL should test conformance gateways to IEEE 2030.5 in accordance with the SunSpec CSIP Test [Procedures]."[44] We continue to align with this direction.

We ask that SunSpec commit to continue managing and maintaining the CSIP Test Procedures. This commitment may be via email to Energy Division staff and the SIWG service list, or as otherwise agreed upon between SunSpec and the Energy Division.

If industry members opine that changes to the CSIP Test Procedures are necessary to ensure consistent interoperability of DER systems with the Large IOUs' systems, we

---

[42] The most recent version of the SunSpec CSIP Test Procedures can be accessed via the SunSpec Alliance website or through contacting the SunSpec Alliance: https://sunspec.org/sunspe-csip-conformance-test-procedures/.

[43] Public key infrastructure (PKI) is designated as the method of authentication used for Institute of Electrical and Electronics Engineers Standard (IEEE Std.) 2030.5. A PKI is a set of roles, policies, hardware, software and procedures needed to create, manage, distribute, use, store and revoke digital certificates and manage public-key encryption. The purpose of a PKI is to facilitate the secure electronic transfer of information for a range of network activities such as e-commerce, internet banking, and confidential email. It is required for activities where simple passwords are an inadequate authentication method and more rigorous proof is required to confirm the identity of the parties involved in the communication and to validate the information being transferred. Available at https://sunspec.org/sunspec-public-key-infrastructure/ and https://en.wikipedia.org/wiki/Public_key_infrastructure.

[44] See Resolution E-5036 Appendix D.

recommend that SunSpec gather stakeholder comments and create implementation plans to improve the procedures. This work may be accomplished through the SIWG and/or SunSpec working groups. Should the industry request other changes to the compliance testing paradigm, we recommend that further discussion be had through the SIWG.

We encourage IEEE and SunSpec to collaborate as needed to support updates to the CSIP Implementation Guide and adjustments to the CSIP Test Procedures, including sharing any information regarding items that need to be updated between the organizations.

We recognize that this division of responsibilities will require parties interested in both the CSIP Implementation Guide and CSIP Test Procedures development to be involved with both IEEE and SunSpec. For this reason, we recommend that both IEEE and SunSpec, if they have not already done so, develop an option for interested stakeholders to participate in their respective processes without becoming paid members. This participation may be in a non-voting fashion. We recommend that Sunspec provide a public meeting or webinar on the policies involved in participating in a SunSpec working group when it becomes necessary to update the CSIP Test Procedures, such as in response to CSIP Implementation Guide updates. We further encourage SunSpec to, if it has not already done so, openly publish a clear guide to its working group operating procedures, including rules for membership, review, and balloting.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this Resolution must be served on all parties and subject to at least 30 days public review. Any comments are due within 20 days of the date of its mailing and publication on the Commission's website and in accordance with any instructions accompanying the notice. Section 311(g)(2) provides that this 30-day review period and 20-day comment period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day review and 20-day comment period for the draft of this Resolution was neither waived nor reduced. Accordingly, this draft Resolution was mailed to parties for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

The draft Resolution was mailed to parties on November 13, 2024. No comments were filed to the draft Resolution and therefore no revisions were made.

FINDINGS

1. Decision (D.) 16-06-052 required Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E), collectively the large investor-owned utilities (Large IOUs), to develop and maintain the Common Smart Inverter Profile (CSIP) implementation guide (CSIP Implementation Guide) to ensure consistent interoperability of DER systems with all of the CPUC jurisdictional Large IOUs' systems.
2. The current version, CSIP v2.1, was written using the 2018 version of IEEE 2030.5 and published in March 2018.
3. On their own initiative, the SunSpec Alliance (SunSpec) issued the SunSpec Common Smart Inverter Profile Conformance Test Procedures (CSIP Test Procedures) on May 22, 2018.
4. Resolution E-5036 specifies the Approved Testing Pathway for CSIP compliance and directly refers to SunSpec CSIP Test Procedures.
5. The CSIP Implementation Guide has not been updated since it was first published in 2018.
6. On June 25th, 2024, the Large IOUs jointly submitted PG&E Advice Letter 7305-E *et al.* (the Joint AL) requesting to be relieved of the obligation to maintain CSIP.
7. It is reasonable for the Large IOUs to be relieved of their responsibility to maintain CSIP. We find that this relief must be held in abeyance until another organization formally commits to and commences work on updating and maintaining the CSIP Implementation Guide.
8. We find that Energy Division staff have the appropriate knowledge to determine whether work has commenced on updating and maintaining the CSIP Implementation Guide.
9. It is still the responsibility of the Large IOUs to ensure consistent interoperability of DER systems with the Large IOUs' systems.
10. We find that it is the responsibility of the Large IOUs to inform stakeholders of changes to interconnection requirements, including in equipment specification, testing, and certification requirements to interconnect under Rule 21.
11. There is precedent for using SIWG as a venue to inform stakeholders about changes to interconnection requirements as well as discuss topics such as interoperability.
12. We find that the SIWG is an appropriate venue for the Large IOUs to inform participants of the progress of CSIP updates and maintenance.

13. We find that the SIWG is an appropriate venue for the Large IOUs to work with stakeholders and Energy Division staff to comprehensively identify barriers to consistent interoperability of DER systems with the Large IOUs' systems and to develop proposed next steps and remediation actions.
14. We find that ongoing participation from the Large IOUs in the SIWG is mandatory.
15. There is currently ambiguity regarding exactly what testing and certification path is needed to be CSIP compliant.
16. It is reasonable and prudent for the Large IOUs to develop an instruction sheet detailing the steps to test and certify a new product or equipment in conformance with CSIP and any other Rule 21 requirements needing clarity.
17. Energy Division staff have the necessary knowledge to determine when a shift in interconnection testing and/or certification requirements is substantial enough to warrant updating the instruction sheet.
18. CSIP may begin to incorporate requirements beyond those needed in California due to its transition to a third party.
19. We find that the Large IOUs are responsible for monitoring if a California version of CSIP is needed and, if so, shall work with the SIWG to create such a version.
20. It is reasonable for both SunSpec and IEEE to play key roles in CSIP management going forward.
21. It is reasonable for IEEE to become responsible for near-term updates to and ongoing maintenance of the CSIP Implementation Guide.
22. We ask that IEEE formally commit to being responsible for the near-term updates to and ongoing maintenance of the CSIP Implementation Guide.
23. It is reasonable for SunSpec to continue to update and maintain the CSIP Test Procedures, including updating them to reflect the updated CSIP Implementation Guide.
24. We ask that SunSpec commit to continue managing and maintaining the CSIP Test Procedures.
25. We recommend that both IEEE and SunSpec have an option for interested stakeholders to participate in their respective processes without becoming paid members, albeit perhaps in a non-voting fashion.
26. We recommend that SunSpec provide a public meeting, such as a webinar, on the policies involved in participating in a SunSpec working group when the time comes to update the CSIP Test Procedures pursuant to CSIP Implementation Guide updates.
27. We further encourage SunSpec to, if it has not already done so, openly publish a clear guide to its working group operating procedures, including rules for membership, review, and balloting.

28. We find that SunSpec is the appropriate organization to manage changes to the CSIP Test Procedures if updates are needed to ensure consistent interoperability of DER systems with the Large IOUs' systems.
29. In the event of conflict between Rule 21 and any of the standards listed herein, the requirements of Rule 21 shall take precedence for CPUC jurisdictional entities.

THEREFORE IT IS ORDERED THAT:

1. The utility requests included in Advice Letters Pacific Gas and Electric Company 7305-E, Southern California Edison Company 5323-E, and San Diego Gas & Electric Company 4462-E are approved in part as modified herein.
2. The request of Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company to be relieved of the obligation to maintain the Common Smart Inverter Profile (CSIP) is approved, held in abeyance until another organization formally commits to and commences work on updating and maintaining the CSIP Implementation Guide. We delegate to Energy Division staff the authority to determine whether work has commenced on updating and maintaining the CSIP Implementation Guide.
3. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company are ordered to participate in Smart Inverter Working Group (SIWG) meetings, work with the Commission's Energy Division as appropriate to place topics on the agenda, and be responsive to questions and requests that may arise in the course of the SIWG. The Large IOUs shall leverage the SIWG to inform stakeholders and carry out discussions as noted in the Discussion section of this Resolution. Energy Division staff may record SIWG meetings and publicly share them.
4. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall develop, openly publish, and maintain an instruction sheet detailing CSIP and Rule 21 interconnection testing and certification requirements in line with the specifications outlined in the Discussion section of this Resolution. The Large IOUs, within 3 months of the issuance of this Resolution, shall begin meeting with the SIWG to discuss the contents of this instruction sheet and incorporate feedback. The Large IOUs shall present the finalized instruction sheet at a SIWG meeting within 6 months of the issuance of this Resolution and then shall publish the finalized instruction sheet on their Rule 21 generation interconnection websites. The Large IOUs shall notify Energy Division staff when they detect that a substantial shift in testing and/or certification requirements has occurred and update the instruction sheet within 60 days of the shift. We also delegate the authority to Energy Division staff to determine when a substantial shift has occurred.

5. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall monitor whether the creation of a California version of the CSIP Implementation Guide is needed. If so, The Large IOUs shall work with the SIWG to create such a version and submit a joint Tier 3 Advice Letter proposing the California version.
6. Should revision to Rule 21 be required to accommodate an updated version of the CSIP Implementation Guide or Test Procedures, a California version of the CSIP Implementation Guide, or other changes to Rule 21 specification, testing, or certification requirements, Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall, in consultation with the Commission's Energy Division, propose necessary revisions to Rule 21 via separate Tier 3 Advice Letters.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted at a conference of the Public Utilities Commission of the State of California held on December 19, 2024; the following Commissioners voting favorably thereon:

/s/ RACHEL PETERSON
Rachel Peterson
Executive Director

ALICE REYNOLDS
President

DARCIE HOUCK
JOHN REYNOLDS
KAREN DOUGLAS
MATTHEW BAKER
Commissioners