

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

---- In the Matter of ----)
)
PUBLIC UTILITIES COMMISSION) DOCKET NO. 2019-0323
)
Instituting a Proceeding to)
Investigate Distributed)
Energy Resource Policies)
Pertaining To The Hawaiian)
Electric Companies.)
_____)

DECISION AND ORDER NO. 38062

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DECISION AND ORDER

By this Decision and Order,¹ the Public Utilities
Commission ("Commission"): (1) denies approval of

¹The Parties to this proceeding are HAWAIIAN ELECTRIC COMPANY, INC. ("HECO"), HAWAII ELECTRIC LIGHT COMPANY, INC. ("HELCO"), MAUI ELECTRIC COMPANY, LIMITED ("MECO") (collectively, HECO, HELCO, and MECO are referred to as "Hawaiian Electric" or the "Companies") and the DIVISION OF CONSUMER ADVOCACY (the "Consumer Advocate"), an ex officio party, pursuant to Hawaii Revised Statutes § 269-51 and Hawaii Administrative Rules § 16-601-62(a). In addition, the Commission has granted Intervenor status to the HAWAII PV COALITION, the DISTRIBUTED ENERGY RESOURCES COUNCIL OF HAWAII, and the HAWAII SOLAR ENERGY ASSOCIATION, collectively, "the DER Parties." Order No. 36777, "(1) Granting Motions to Intervene Filed By Hawaii PV Coalition, Distributed Energy Resources Council Of Hawaii, And Hawaii Solar Energy Association; (2) Dismissing Without Prejudice The Motion To Participate Filed By Itron, Inc.; (3) Enlarging Time For Itron, Inc. To File A Motion To Participate; And (4) Addressing Other Preliminary Matters," filed November 15, 2019.

Hawaiian Electric's AI Workplan² and AI Workplan Supplement;³ (2) approves the Parties'⁴ Stipulation of Revisions, subject to the condition contained herein;⁵ (3) approves the Parties' Volt-Watt Stipulation, subject to the conditions contained herein;⁶ and (4) provides guidance on immediate next steps for the Technical Track of this docket.

²Letter From: K. Katsura To: Commission Re: Docket No. 2019-0323 - Instituting a Proceeding to Investigate Distributed Energy Resource Policies; "Hawaiian Electric's Advanced Inverter Workplan," filed May 29, 2020 ("AI Workplan").

³Letter From: K. Shinsato To: Commission Re: Docket No. 2019-0323 - Instituting a Proceeding to Investigate Distributed Energy Resource Policies; "Hawaiian Electric's Advanced Inverter Workplan Supplement," filed October 15, 2020 ("AI Workplan Supplement").

⁴Hawaiian Electric, the Consumer Advocate, DERC, HPVC, and HSEA (collectively the "Parties").

⁵"Stipulation of Revisions to Appendix I of Rule 14H to Harmonize Rule 14H with IEEE 1547-2018 and for Approval of URP Settings; Exhibits A-D; Certificate of Service," filed April 26, 2021 ("Stipulation of Revisions").

⁶"Stipulation for Proposed Revisions to Tariff Rule 14H Volt-Watt Function; Exhibits A-F; Certificate of Service," filed August 19, 2021 ("Volt-Watt Stipulation").

I.

RELEVANT BACKGROUND AND PROCEDURAL HISTORY

A.

Order No. 35746

On October 12, 2018, in Docket No. 2014-0192, the initial docket established to investigate distributed energy resource (“DER”) policies, the Commission issued Order No. 35746,⁷ which approved, in part, Hawaiian Electric’s Rule 14H and Rule 27 revisions. To address the issues that Order No. 35746 did not determine, the Commission ordered Hawaiian Electric to “hold the first in a series of stakeholder meetings (“AI Stakeholder Meetings”) to develop an inverter update policy and workplan,”⁸ and advised Hawaiian Electric that further guidance on the issue of updating legacy inverters would be provided in a subsequent order.⁹ The Commission also used Order No. 35746 to direct Hawaiian Electric to “work with the Parties and [C]ommission staff to develop an inverter update policy and workplan to address the issue of updating advanced inverters going forward,” and provided

⁷Docket No. 2014-0192, Order No. 35746, “Approving, in Part, the Hawaiian Electric Companies’ Proposed Revisions to Rule No. 14H and Proposed Rule No. 27, Filed August 27, 2018,” filed October 12, 2018 (“Order No. 35746”).

⁸Order No. 35746 at 60.

⁹Order No. 35746 at 60.

the following specific guidance for what the workplan should address, namely:

(1) updates to legacy inverters that received interconnection approval from [Hawaiian Electric] prior to January 1, 2016; (2) updates to legacy inverters that received interconnection approval from [Hawaiian Electric] after January 1, 2016; and (3) updates to inverters that may be required in the future on a going forward basis.¹⁰

The Commission cautioned that Hawaiian Electric should seek to ensure that, to the extent possible, the inverter upgrade process would avoid duplicative work, unnecessary costs, and market disruptions, and that "[Hawaiian Electric] shall not use the advanced inverter update provision in Rule 14H to disconnect a customer's DER system until a workplan to address this issue has been developed and implemented."¹¹ Lastly, the Commission advised that it would consider the results of the series of stakeholder meetings, in conjunction with the discussions of the Parties and other stakeholders to inform the Commission's forthcoming guidance on the issue of updating legacy inverters. The Commission indicated that in developing its further guidance, its considerations would include review of identified areas of agreement as well as disagreement, and that it would also take note of the complexity of the issues raised. The Commission

¹⁰Order No. 35746 at 46-47.

¹¹Order No. 35746 at 47.

identified that this guidance would be included in a subsequent order.¹²

B.

Advanced Inverter Stakeholder and
Interstate Renewable Energy Council ("IREC") Meetings

Pursuant to Order No. 35746, Hawaiian Electric held the first, and following that, several AI Stakeholder Meetings, including on November 8, 2018, December 5, 2018, January 14, 2019, February 12, 2019, March 7, 2019, May 9, 2019, June 6, 2019, July 24, 2019, and August 23, 2019.¹³ These meetings surfaced considerations that informed and helped develop the basis for Hawaiian Electric's initial approach to updating legacy inverters.¹⁴

The discussions that began in the AI Stakeholder Meetings raised topics that required ongoing discussion. Noting a need to update Rule 14H in alignment with the technical capabilities being planned for, Hawaiian Electric retained IREC to help harmonize Rule 14H with the recently published Institute of Electrical and Electronics Engineers ("IEEE") 1547-2018 standard. The first of the harmonization meetings began on November 15, 2019,

¹²Order No. 35746 at 48.

¹³AI Workplan at 2, n.10.

¹⁴AI Workplan at 2.

hosted by IREC and Hawaiian Electric, subsequent to which meetings were held twice a month thereafter, until January 27, 2020.¹⁵ Hawaiian Electric offers that the findings from both the AI Stakeholder Meetings and the harmonization meetings informed its AI Workplan.¹⁶

C.

Order No. 37066 - Establishing the Technical Track

On April 9, 2020, in the instant docket, the Commission issued Order No. 37066, in which the Commission stated that the:

Technical Track will cover many of the technical issues that have been carried over from Docket No. 2014-0192, including the ongoing discussion about improvements to the interconnection process for DER, the importance of updating interconnection standards and requirements to better utilize the capabilities of DER, and the need to consider upgrading legacy equipment (e.g., inverters) that have been installed over the years but do not provide the same level of functionality as modern equipment.¹⁷

The Commission identified the following primary objectives of the Technical Track:

¹⁵AI Workplan at 3, n.11.

¹⁶See generally AI Workplan at 2-3.

¹⁷Order No. 37066, "Establishing Procedural Details and Modifying Hawaiian Electric's Customer Grid Supply Plus Program for Hawaii Island," filed April 9, 2020 ("Order No. 37066"), at 19.

- Streamlining and improving the interconnection process[;]
- Harmonizing [Hawaiian Electric's] Rule 14H requirements with current [IEEE] standards[;]
- Developing policies and procedures for the activation of additional advanced inverter functions[; and]
- Developing policies and procedures to update legacy equipment, including inverters, to allow for participation in new DER programs.¹⁸

D.

Hawaiian Electric's Proposed Advanced Inverter ("AI") Workplan

On May 29, 2020, Hawaiian Electric filed its AI Workplan and indicated that the AI Workplan was a "proposed initial approach to updating legacy inverters," and that Hawaiian Electric "intends to supplement this AI Workplan with further detail as ongoing discussions and efforts continue with stakeholders regarding this advanced inverter issue[.]"¹⁹ Hawaiian Electric's AI Workplan addressed the three Commission-identified categories of Pre-2016 inverters, Post-2016 inverters, and Updates Going Forward.²⁰ Hawaiian Electric also used the AI Workplan to advise the Commission that it intends to continue working with

¹⁸Order No. 37066 at 19.

¹⁹AI Workplan at 2-3.

²⁰AI Workplan at 2.

Enphase Energy, Inc. ("Enphase") and other interested DER stakeholders on the Legacy Product Update Program ("LPUP"), and intends to present specific proposals in its AI Workplan Supplement.²¹ Lastly, Hawaiian Electric introduced the Utility Required Profile ("URP") document which, through its Rule 14H harmonization work with IREC, has been developed "to address technical settings and specifications for [Customer Energy Resources ("CERs")] and advanced inverters installed in [Hawaiian Electric's] territories."²²

Pre-2016 inverters. Hawaiian Electric provides "that the only advanced inverter functions that Hawaiian Electric will require to be activated are Transient Overvoltage (TrOV-2), Full Voltage Ride-Through and Full Frequency Ride-Through ("Pre-2016 Advanced Inverter Functions")."²³ Hawaiian Electric further provides that it will not require retroactive application of the other advanced inverter functions (required under Rule 14H for systems approved on or after January 1, 2016) for any Pre-2016 inverters. Finally, Hawaiian Electric states that it "intends for the AI Workplan Supplement to address the advanced inverter

²¹AI Workplan at 7-8.

²²AI Workplan at 6.

²³AI Workplan at 3.

functionality that will be required of Pre-2016 Inverters when such inverters must eventually be replaced.”²⁴

Post-2016 inverters. Hawaiian Electric highlights that the Commission approved the updates required for Post-2016 inverters, which “include the Pre-2016 Advanced Inverter Functions, plus the additional advanced inverter functions as follows: (1) activation of the Volt-Var and Frequency-Watt functions and (2) deactivation of Fixed Power Factor (the “AI Updates”).”²⁵ Hawaiian Electric advised that it will not require additional advanced inverter functions to be retroactively applied to post-2016 inverters at the time of the AI Workplan. Further, Hawaiian Electric points out that “[customers] will need to have systems that are compliant with Rule 14H if they choose to participate in grid services; as such, non-compliance will impede their opportunity to do so,” and that Hawaiian Electric “will continue to discuss the topic of compliance in future stakeholder meetings and will update the Commission on the status in the next Supplement to this Workplan.”²⁶

²⁴AI Workplan at 3.

²⁵AI Workplan at 3.

²⁶AI Workplan at 4 and 5.

Inverter updates going forward.

Hawaiian Electric

offers that on a going-forward basis, updates to system inverters of DERs should include, but not be limited to the following:

- (1) any Commission-approved activation of additional advanced inverter functions (e.g., Return to Service, Frequency-Watt Adjustment and Volt-Watt);
- (2) updating Pre-2016 Inverters to meet the current UL 1741 SA standard upon the eventual replacement of such inverters; and
- (3) Hawaiian Electric's plans to adopt the IEEE 1547-2018 certification and IEEE 1547.1-2020 testing standards, including the certification of remote communications capabilities; and
- (4) employing a version control approach (i.e., grouping updates where practical) when additional advanced inverter settings are approved by the Commission.²⁷

E.

DER Parties' Comments on Hawaiian Electric's AI Workplan

On July 16, 2020, the DER Parties filed their DER Comments on the AI Workplan.²⁸ Therein, the DER Parties noted

²⁷AI Workplan at 6.

²⁸"Hawaii Solar Energy Association's, Hawai'i PV Coalition's, and Distributed Energy Resources Council's Comments on the HECO Companies' Advanced Inverter Update Workplan; and Certificate Of Service," filed July 16, 2020 ("DER Comments on the AI Workplan") which includes as an attachment the DER Parties' September 18, 2018 Letter ("Attachment").

their perspective that the AI Workplan “shows an overall lack of proactive initiative and progress, [and] falls short on necessary technical detail and support[.]”²⁹ The DER Parties specifically draw attention to the lack of cost benefit analysis provided in the AI Workplan noting that “[w]hile definitive cost-benefit calculations may be difficult, some level of understanding is necessary to enable an informed discussion of the extent and timing of any necessary upgrades and a meaningful opportunity for the parties to collaborate in developing pragmatic, cost-effective solutions.”³⁰ Throughout the DER Parties’ Comments, they offer suggestions and considerations, which they posit would address, if not remedy, the AI Workplan deficiencies identified in their Comments. Summarily, the DER Parties request Commission guidance and suggest that the Commission “direct [Hawaiian Electric] to submit a new workplan with (1) adequate technical analysis and support, (2) fair representation and consideration of the costs and benefits of requiring inverters to be updated, and (3) pragmatic solutions that minimize the impacts to customers and disruptions to the market.”³¹

²⁹DER Comments on the AI Workplan at 2.

³⁰DER Comments on the AI Workplan at 5.

³¹DER Comments on the AI Workplan at 10.

Pre-2016 inverters. The DER Parties generally disapprove of what they perceive to be Hawaiian Electric's "little or no action"³² approach to addressing Pre-2016 systems and find particular contention with Hawaiian Electric not having first identified "the potential problems and the costs of addressing [Pre-2016 inverters][.]"³³ The DER Parties acknowledge that the Pre-2016 inverters are abundant in number on the system, and are less likely to include functions to support the grid. Additionally, the DER Parties acknowledge that the "purported cumulative impact of these older inverters would be much more significant than the impacts of the [P]ost-2016 inverters."³⁴ Despite this, the DER Parties offer that a preferred approach would be for Hawaiian Electric to first identify whether the Pre-2016 systems are in fact causing a "bona fide technical issue," and if so, then to determine "[i]f these problems would be most cost-effectively addressed by updating older DER systems on the grid[.]"³⁵ In alignment with this suggestion, the DER Parties offer that if:

the technical issues do not rise to the level of justifying such efforts and expenditures, then the Company should consult California's model in

³²DER Comments on the AI Workplan at 4.

³³DER Comments on the AI Workplan at 7.

³⁴DER Comments on the AI Workplan at 4-5.

³⁵DER Comments on the AI Workplan at 7 and 8.

encouraging updates at the time of a warranty replacement or equipment failure – while providing clear exceptions where the inverter is replaced with a like-for-like replacement under the terms of the contract or there are limits based on safety or operational needs.³⁶

As a general matter, the DER Parties advocate for Hawaiian Electric to pursue a proactive, cost-benefit analysis informed approach that allows for consideration of customer compensation (via creative, flexible, incentive-based programs) for “providing and maintaining the capability for their DER systems to be flexibly updated on demand by the utility, if [Hawaiian Electric deems] such capability to be valuable.”³⁷

Post-2016 inverters. The DER Parties highlight their understanding that “most systems installed after 2016 that can be remotely updated have been updated[,]”³⁸ and “estimate that a substantial majority – around two-thirds to three-fourths – of the inverters installed in Hawai’i since January 1, 2016 include the capability to perform remote, Internet-based software updates.”³⁹

The DER Parties reiterate that they are not opposed to Hawaiian Electric’s “current request for existing customers to activate the specific advanced inverter functions,

³⁶DER Comments on the AI Workplan at 8.

³⁷DER Comments on the AI Workplan at 8.

³⁸DER Comments on the AI Workplan at 6.

³⁹DER Comments on the AI Workplan, Attachment at 6.

including frequency-watt and Volt-VAR, that the Commission approved in D&O No. 34924.”⁴⁰ However, the DER Parties are concerned that implementing Hawaiian Electric’s requested approach may present a burden for customers, and note that the Parties should focus on tailoring their plans and expectations with an awareness of the potential burdens.⁴¹ In particular, the DER Parties claim that beyond the “easier” updates, truck rolls will be required for inverters without remote configurability, and that “[t]ruck rolls cost several hundred dollars for each visit and may require hours of contractor time to monitor and verify the update process.”⁴² The DER Parties also identify that there are some “customers whose original installer is no longer in business, and who thus have no readily available means to respond to the threat of their system being shut off.”⁴³ To address these and other pressing concerns, the DER Parties implore the Commission to “expressly address the issue of retroactive application and impacts in any future approvals of changes in advanced inverter functions[,]”⁴⁴ such that

⁴⁰DER Comments on the AI Workplan, Attachment at 6 (citation omitted).

⁴¹See DER Comments on the AI Workplan, Attachment at 6.

⁴²DER Comments on the AI Workplan, Attachment at 7.

⁴³DER Comments on the AI Workplan, Attachment at 7.

⁴⁴DER Comments on the AI Workplan, Attachment at 8.

"a systematic and practical work plan"⁴⁵ can be developed for the implementation of Hawaiian Electric's pending AI Workplan.

Inverter updates going forward. The DER Parties emphasize "the need for the Commission, in any future approvals of changes in advanced inverter functions, to expressly consider and decide, based on a full discussion and sufficient record, the specific issue whether or not such future changes should be applied retroactively to existing customers."⁴⁶ The DER Parties' highlight their ongoing concerns regarding items they deem critical, and believe have yet to be addressed sufficiently.

The DER Parties recommend:

that the Commission staff convene a series of work plan meetings to focus and expedite this process. The meetings should include inverter companies, representatives from the solar industry, and other stakeholders, and the discussions should address, among other objectives: (1) establishing a better shared understanding of the work required and potential challenges in the current update; (2) allowing different timelines for implementation based on different types of customer situations; (3) providing ways to service customers whose contractors are no longer in business; (4) determining an acceptable "response rate" to the update request among existing customers, based on the overall costs and benefits of implementation; and (5) developing a set of criteria for allowing exceptions to the upgrade requirements.

⁴⁵DER Comments on the AI Workplan, Attachment at 7.

⁴⁶DER Comments on the AI Workplan, Attachment at 2.

This work plan should specifically include the consideration and accommodation that, if further retroactive changes are contemplated in the foreseeable timeframe, customers should be allowed to wait until all the changes can be implemented together, in order to maximize efficiencies and avoid duplicative costs and burdens.⁴⁷

In sum, the DER Parties believe that the Commission should require Hawaiian Electric to submit a new AI Workplan, and that "the ultimate solution should also include upholding the Rule 14H requirement and principle that the Companies bear proper responsibility for such costs and not simply shift all costs onto customers."⁴⁸

F.

Consumer Advocate's Comments on Hawaiian Electric's AI Workplan

On July 16, 2020, the Consumer Advocate filed its Response to the AI Workplan,⁴⁹ therein noting "the tremendous efforts made by many inverter manufacturers and solar contractors and installers to update their legacy Post 2016 Inverters and

⁴⁷DER Comments on the AI Workplan, Attachment at 7.

⁴⁸DER Comments on the AI Workplan at 10.

⁴⁹Letter From: Consumer Advocate To: Commission Re: Docket No. 2019-0323 - In the Matter of Public Utilities Commission Instituting a Proceeding to Investigate Distributed Energy Resource Policies Pertaining To The Hawaiian Electric Companies, filed July 16, 2020 ("CA Response to the AI Workplan").

Pre 2016 Inverters[,]"⁵⁰ and that it is encouraged by the ongoing efforts the relevant stakeholders have undertaken. Namely, the Consumer Advocate highlights that in its assessment, the AI Workplan captures two main themes: "1) the harmonization of the Hawaiian Electric Companies' rules, especially Rule 14H, with relevant standards such as those promulgated by [IEEE]; and 2) working with inverter manufacturers, solar contractors, and other stakeholders to develop an implementation plan to address the remaining legacy inverters."⁵¹ The Consumer Advocate heralds the existing and planned efforts presented in the AI Workplan as important, but notes that "further understanding the potential issues with upgrading legacy inverters and the means by which legacy inverters can be efficiently and cost-effectively upgraded"⁵² will need to be undertaken and such efforts can be enhanced through increased data availability. The Consumer Advocate also identifies that:

the update of these legacy inverters is important in helping to allow the opportunity for customers to participate in grid services programs that can provide circuit and system benefits, helping to achieve longer-term policy initiatives aimed at facilitating higher and broader levels of integration of [DER], and mitigating unintended

⁵⁰CA Response to the AI Workplan at 3.

⁵¹CA Response to the AI Workplan at 3-4.

⁵²CA Response to the AI Workplan at 4.

consequences to circuit and grid operations related to the settings or operation of legacy inverters.⁵³

Although much collaboration has taken place from various stakeholders, the Consumer Advocate notes that “[e]ven though there is a theoretical overlap in the objectives of the stakeholders . . . , the implementation of the necessary efforts to upgrade legacy inverters has been challenging.” The Consumer Advocate concludes that to achieve shared stakeholder objectives, on-going efforts will be necessary, particularly with regard to finding common ground and committing to data availability.⁵⁴

G.

Hawaiian Electric’s Proposed
Source Requirement Document (“SRD”) Version 2.0

On June 26, 2020, Hawaiian Electric filed its SRD V2.0 document, which includes the required operational functions and operating parameters for advanced inverter testing,⁵⁵ and contains

⁵³CA Response to the AI Workplan at 3.

⁵⁴CA Response to the AI Workplan at 4.

⁵⁵Letter From: K. Katsura To: Commission Re: Docket No. 2019-0323 - Instituting a Proceeding to Investigate Distributed Energy Resource Policies, IEEE 1547.1-2020 Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces, filed June 26, 2020 (“SCT Procedures”), which includes Hawaiian Electric’s Source Requirement Document Version 2.0 (“SRD V2.0”) as an Attachment.

both a Part 1 - General section, and a Part 2 - Non Standardized Requirement section.

Hawaiian Electric advises that with SRD V2.0, it is enabling the pathway for manufacturers to certify equipment to meet the current national standard 1547-2018.⁵⁶ In evidence of this pathway approach, Hawaiian Electric states that it "will allow manufacturers the option to complete on-going certification to the UL 1741 Supplement SA standard until July 1, 2021," and that "[a]fter January 1, 2022, [Hawaiian Electric] will transition to a single list of qualified equipment for only the IEEE 1547.1-2020 and SRD V2.0 standards."⁵⁷ Hawaiian Electric offers that rather than wait for the completion of the Rule 14H harmonization effort, the "SRD V2.0 is being issued at this time, . . . , in order to support the manufacturers who are ready to promote Hawaii's transition to the latest national standard[,]"⁵⁸ and that if "there is a need to update this SRD V2.0, [Hawaiian Electric] will [allow] the equipment that was previously certified (or substantially in the process of being certified) prior to the issuance of any updates."⁵⁹

⁵⁶See generally SRD V2.0.

⁵⁷SCT Procedures at 2.

⁵⁸SCT Procedures at 2.

⁵⁹SCT Procedures at 3.

Neither the DER Parties nor the Consumer Advocate filed immediate comments in response to Hawaiian Electric's SCT Procedures and SRD V2.0.

H.

Hawaiian Electric's AI Workplan Supplement

On October 15, 2020, Hawaiian Electric filed its AI Workplan Supplement which was comprised of its further developed proposals to:

- Address the grid support performance as defined by IEEE 1547-2018 national standard that will be required of Pre-2016 Legacy Inverters when such inverters must eventually be replaced;
- Address the timeline for implementation for other IEEE 1547-2018 grid support functions (e.g., Return to Service, Volt-Watt);
- Update the Commission on the status of Rule 14H compliance;
- Incorporate stakeholder feedback and utilize the "completed [URP] in its approach to inverter updates on a goingforward basis; and
- Present specific proposals to further address the technical, programmatic and regulatory issues identified in the Technical Working Group stakeholder discussions with the objective of developing policies and procedures to update Pre-2016 Legacy Inverter equipment to allow for participation in new grid services programs as contemplated in Order 37066.⁶⁰

⁶⁰AI Workplan Supplement at 4.

Pre-2016 inverters. Hawaiian Electric provides that it “will not retroactively require Pre-2016 Legacy Inverters to activate the other advanced inverter functions (required under Rule 14H for Post-2016 Legacy Inverters).”⁶¹ Further, Hawaiian Electric explains that the “limited requirement to meet the activation of the current Rule 14H grid support functions is largely due to the fact that most, if not all, of the Pre-2016 Legacy Inverters are technically incapable of meeting [Hawaiian Electric’s] certification requirements for the IEEE 1547-2018 national standard.” Additionally, Hawaiian Electric acknowledges that current DER customers lack “the market incentive to upgrade Pre-2016 Legacy Inverters to the latest IEEE 1547-2018 certified advanced inverters,” and that “[t]he traditional warranty replacement programs offered by most inverter manufacturers are not intended to upgrade the capability of existing Pre-2016 Legacy Inverter equipment to the IEEE 1547-2018 national standard when such legacy inverters fail under warranty.”⁶² Hawaiian Electric notes the Enphase LPUP as an example of such a warranty replacement program.

⁶¹AI Workplan Supplement at 4.

⁶²AI Workplan Supplement at 5.

Hawaiian Electric offers the following concepts for “further vetting in this proceeding”⁶³ in support of instituting much needed technical and administrative interconnection improvements and developing timely market transformation policies:

- Opt-In, Incentive-Based Approach - This approach is meant to encourage customers’ early adoption of the best available technology, a needed support to enable customer participation in new grid support programs. Hawaiian Electric proposes that the incentive structure be designed with a goal of encouraging participants to replace their Pre-2016 Legacy Inverters with advanced inverters. To accomplish this, Hawaiian Electric suggests providing an incentive structure that allows for both a rebate and a financing option.
- Upgrade Costs - Hawaiian Electric proposes that the DER customer be required to pay for the full upgrade costs for their Pre-2016 Legacy Inverters. Such upgrade costs may include, but are not limited to, costs associated with upgrading other components of the customer’s [photovoltaic (“PV”)] system (e.g., wiring, breakers, and, in rare cases, service panels), electric service upgrades, and inspections.

⁶³AI Workplan Supplement at 5-6.

- 1 kW Limit Modification - To facilitate the migration to advanced inverters, and to support the activation of reactive power capabilities for Volt-Var activation, Hawaiian Electric will propose modifications to the current 1 kW administrative limit for changes to existing DER systems that is currently captured in Rule 14H.
- Sunset Date on Legacy Warranty Replacements - Hawaiian Electric will maintain its January 1, 2022 sunset date for equipment eligibility, and in conjunction with this, will require that all equipment warranty replacements after January 1, 2022 must also meet the same IEEE 1547-2018 certification standard at the time of equipment upgrade.⁶⁴

Post-2016 inverters. Hawaiian Electric is concerned with non-compliant systems, and the “fundamental unfairness in the market”⁶⁵ that such systems create. To highlight this concern, Hawaiian Electric identifies that “three of [its] five top installers have completed updates on more than 70% of their impacted systems; whereas the other two contractors have yet to

⁶⁴AI Workplan Supplement at 5-6.

⁶⁵AI Workplan Supplement at 7.

complete 55% of their updates.”⁶⁶ Hawaiian Electric suggests that “compliance and top performance should be expected of all parties involved in supporting a customer's decision to invest in DER, the utility and the DER industry alike.”⁶⁷ To this end, Hawaiian Electric advises that it intends to explore possible resolutions through discussions with the DER Parties.

Updates Going Forward. Hawaiian Electric champions the work done with [Electric Power Research Institute's (“EPRI's”)] to develop a new industry standard URP format, noting that “EPRI's URP gives [Hawaiian Electric] and installers a consistent, standards-based approach to configure and verify Company settings for interconnection[.]”⁶⁸ Hawaiian Electric explains the importance of the URP approach for updates on a going-forward basis by highlighting its expectation that maintaining and managing changes to the grid are likely to rapidly and dynamically evolve as time progresses. In awareness of this likely trend, Hawaiian Electric provides that it is also working to develop a URP Range of Adjustment, which it proposes that the Commission consider pre-approving. Hawaiian Electric offers that such an approval would allow it the “flexibility to implement a

⁶⁶AI Workplan Supplement at 7.

⁶⁷AI Workplan Supplement at 7.

⁶⁸AI Workplan Supplement at 9.

specific URP setting within the Commission pre-approved ranges of adjustment,” and notes that “as the URP is updated, previously installed inverters will not be required to upgrade settings until a newer replacement certified inverter is capable of the upgrade.”⁶⁹ Hawaiian Electric advises that it intends to utilize [Distributed Energy Resource Management System (“DERMS”)] to be the system of record for the administration of URPs, as the system must record the URP installed for each PV system.”⁷⁰

I.

DER Parties’ Comments on
Hawaiian Electric’s AI Workplan Supplement

On November 12, 2020, the DER Parties filed their Comments on the AI Workplan Supplement,⁷¹ and note at the outset that their comments address pre-2016 legacy inverters and updates going forward, as “[t]he issue of updates of post-2016 inverters is currently under discussion among the parties and will be addressed in subsequent filings.”⁷² As a general matter,

⁶⁹AI Workplan Supplement at 8-9.

⁷⁰AI Workplan Supplement at 9.

⁷¹“Comments of the Hawai’i Solar Energy Associations, Hawai’i PVA Coalition, and Distributed Energy Resources Council on the HECO Companies’ Advanced Inverter Workplan Supplement,” filed November 12, 2020 (“DER Comments on the AI Workplan Supplement”).

⁷²DER Comments on the AI Workplan Supplement at 1.

the DER Parties assert their support of deploying advanced technologies that “enhance the capabilities of DER systems to provide grid services,”⁷³ and believe that policies should be in place to “encourage deployment and full activation of advanced inverters, rather than mandating upgrades or penalizing noncompliance.”⁷⁴

Pre-2016 inverters. The DER Parties express their expectation that over time the DER fleet will by and large be upgraded, and in particular, that inverters installed prior to 2016 will upgrade to “smart inverters that provide enhanced capabilities.”⁷⁵ The DER Parties offer that there are likely to be “[l]imited exceptions to this general practice [], such as when inverters fail before the end of their useful life and are still subject to a warranty that requires a like-for-like replacement[.]”⁷⁶ Notwithstanding these suspected trends, the DER Parties believe that the Commission “should adopt a customer-centric approach similar to California’s for pre-2016 inverters, by encouraging early upgrades but providing flexibility

⁷³DER Comments on the AI Workplan Supplement at 2.

⁷⁴DER Comments on the AI Workplan Supplement at 2-3.

⁷⁵DER Comments on the AI Workplan Supplement at 2.

⁷⁶DER Comments on the AI Workplan Supplement at 2.

in the overall transition.”⁷⁷ The DER Parties recommend a customer-centric process that (1) is simple, fast, and easy for customers to understand and implement; (2) relies on incentives designed to encourage early retirement of legacy inverters and upgrades to advanced inverters; (3) prioritizes inverter upgrade incentives for DER customers on critical circuits; and (4) adheres to Rule 14H requirements and principles that the utility bear proper responsibility for inverter upgrade costs and not simply shift costs onto its customers.⁷⁸

The DER Parties note the following⁷⁹ in response to the proposals made by Hawaiian Electric in its AI Workplan Supplement:

- The DER Parties support “in principle and concept” the proposal of an “incentive-based approach” to encourage customers to replace their pre-2016 inverters with advanced inverters.
- The “incentive-based approach” in addition to the proposal to modify the 1 kW administrative limit to allow larger system size increases appears to “be still in a conceptual, formative stage, and the actual details remain unclear. This makes it difficult to assess how

⁷⁷DER Comments on the AI Workplan Supplement at 2-3.

⁷⁸DER Comments on the AI Workplan Supplement at 3-4.

⁷⁹DER Comments on the AI Workplan Supplement at 4-6.

effective an 'incentive' these proposals would actually provide."⁸⁰

- The DER Parties urge the Commission to reject the "Sunset Date on Legacy Warranty Replacements" proposal, claiming that a "mandated 'sunset-date' on legacy warranty replacements would impose undue burdens on certain groups of customers."⁸¹ Instead the DER Parties offer that "the Commission should adopt an approach of encouraging upgrades, along similar lines as the [California Public Utilities Commission ("CPUC")] decided, and also direct [Hawaiian Electric] to more concretely develop programs that offer real and effective incentives for the desired levels of response and action."⁸²

Further, regarding Pre-2016 inverters, the DER Parties reiterate the need for cost-benefit analysis and that "all proposed inverter upgrades should be guided by such analysis—regardless of when the inverters were installed and who may be nominally responsible for paying the upgrade costs."⁸³

⁸⁰DER Comments on the AI Workplan Supplement at 5.

⁸¹DER Comments on the AI Workplan Supplement at 5.

⁸²DER Comments on the AI Workplan Supplement at 6.

⁸³DER Comments on the AI Workplan Supplement at 9.

Updates Going Forward. The DER Parties express support of conformity with IEEE 1547-2018 and implementation of a URP method of communicating inverter settings for future inverter upgrades.⁸⁴ However, the DER Parties caution that “these URP settings should not deviate from standard Rule 14H settings without good cause, mutual consent, or clear programmatic allowances for the grid support services provided through the changed settings.”⁸⁵ The DER Parties request “consideration of aggregator-based methods of communication that are used in other jurisdictions,”⁸⁶ and request that with regard to non-standard URPs, Hawaiian Electric be required to submit technical justification and reporting on “any occurrences that trigger the need for such changes.”⁸⁷ Finally, the DER Parties recommend “a system and process should be developed for documenting, justifying, and implementing such proposed inverter changes.”⁸⁸

⁸⁴DER Comments on the AI Workplan Supplement at 9.

⁸⁵DER Comments on the AI Workplan Supplement at 9-10.

⁸⁶DER Comments on the AI Workplan Supplement at 9.

⁸⁷DER Comments on the AI Workplan Supplement at 9-10.

⁸⁸DER Comments on the AI Workplan Supplement at 10.

J.

The Consumer Advocate's Comments on
Hawaiian Electric's AI Workplan Supplement

On November 12, 2020, the Consumer Advocate filed its Comments on Hawaiian Electric's AI Workplan Supplement,⁸⁹ wherein it acknowledged the on-going discussions "between the stakeholders regarding various aspects of [Hawaiian Electric's] proposal, which is still being fully developed."⁹⁰ The Consumer Advocate also notes its understanding of the importance of timely adoption and implementation of the IEEE 1547-2018 standard, and offers the following as practical considerations as discussions and decisions progress. The Consumer Advocate encourages involved parties to consider:

- The length of manufacturer warranties and the impact the requirement of replacement to IEEE 1547-2018 standard inverters would have on the warranty for both Pre-2016 [and] Post-2016 Legacy Inverters.
- The cost to customers to upgrade their legacy systems to IEEE 1547-2018 standard inverters.
- The level of incentives by Hawaii Energy and the Hawaii Green Infrastructure Authority

⁸⁹Letter From: Consumer Advocate To: Commission Re: Docket No. 2019-0323 - In the Matter of Public Utilities Commission Instituting a Proceeding to Investigate Distributed Energy Resource Policies Pertaining to the Hawaiian Electric Companies, filed November 12, 2020 ("CA Comments on the AI Workplan Supplement").

⁹⁰CA Comments on the AI Workplan Supplement at 4.

Administrator that would ultimately be paid by all customers.

- The impact to a customer's payback period of its DER system for both Pre-2016 and Post-2016 Legacy Inverters related to the replacement to IEEE 1547-2018 standard inverters.
- [Hawaiian Electric's] ability to optimally integrate further levels of DER systems without costs and investments that could be avoidable by both [Hawaiian Electric] and future participating customers.⁹¹

K.

Hawaiian Electric's Harmonization and URP Proposal

On November 30, 2020, Hawaiian Electric filed its Harmonization and URP Proposal,⁹² stating that "[t]he adoption of IEEE 1547-2018 and SRD V2.0 are one of the primary objectives of the Companies' harmonization efforts to align Rule 14H with the latest national standard."⁹³ Hawaiian Electric asserts that "[a]pproval of the proposed modifications to Rule 14H will confirm the certainty needed for inverter manufacturers to prioritize the resources needed to support the January 1, 2022 certification

⁹¹CA Comments on the AI Workplan Supplement at 4.

⁹²Letter From: K. Shinsato To: Commission Re: Docket No. 2019-0323 - Instituting a Proceeding to Investigate Distributed Energy Resource Policies; "Hawaiian Electric Companies' Harmonization Proposal for IEEE 1547-2018 and URP Ranges of Adjustment," filed November 30, 2020 ("Harmonization and URP Proposal").

⁹³Harmonization and URP Proposal at 2.

deadline.”⁹⁴ As such, Hawaiian Electric requests approval of its Harmonization and URP Proposal no later than March 31, 2021, which, if achieved would support a staged process for Hawaiian Electric to transition from SRD V1.1 to SRD V2.0.

Changes to Rule 14H: Hawaiian Electric presents that aligning Rule 14H with IEEE 1547-2018 technical specifications and requirements for normal operating performance (Category B) and abnormal operating performance (Category III) is necessary “to meet the changing grid needs as a result of Hawaii’s current high penetration levels of DER systems[.]”⁹⁵ Hawaiian Electric explains that “Rule 14H will now require the best available technology and substantially align standards with larger DER markets and national standards, while future-proofing DER with capabilities that are needed in Hawai’i today and into the future.”⁹⁶ Revisions to “Rule 14H include updates to incorporate IEEE 1547-2018 content and remove any duplicative items in Rule 14H Appendix I, Section 1 (Definitions), Section 4 (Operating Requirements), and Section 4A (Inverter-Based Generating Facility Operating Requirements).”⁹⁷

⁹⁴Harmonization and URP Proposal at 2.

⁹⁵Harmonization and URP Proposal at 3.

⁹⁶Harmonization and URP Proposal at 3.

⁹⁷Harmonization and URP Proposal at 3.

URP Ranges of Adjustment: Hawaiian Electric believes that "Commission approval of the proposed URP Ranges of Adjustment will balance the reliability and operational flexibility needs of the grid without negatively impacting customer production, while achieving the goals of the Performance-Based Regulation proceeding to expedite the approval of DER systems interconnections and improve the interconnection experience of customers."⁹⁸ Thus, Hawaiian Electric's proposed URP Ranges of Adjustment "are limited to the set of grid support functions that were previously approved by the Commission in Rule 14H, with the addition of the activation of the Return to Service function."⁹⁹ Additionally, Hawaiian Electric offers that it will seek Commission approval first for changes to the URP that are outside of the Ranges of Adjustment.¹⁰⁰ In acknowledgement of the potential need for alternative settings, Hawaiian Electric offers that if "any of the parties to an interconnection application or agreement require settings for an individual interconnection other than those conveyed through the URP, alternative settings may be used under mutual agreement between the parties."¹⁰¹ Hawaiian Electric

⁹⁸Harmonization and URP Proposal at 4.

⁹⁹Harmonization and URP Proposal, at 4.

¹⁰⁰See Harmonization and URP Proposal at 4-5.

¹⁰¹Harmonization and URP Proposal at 5.

provides that prior to proposing changes to URP settings, it will sufficiently vet said changes with DER Parties and stakeholders, but does not expect that such changes will be needed “more frequently than annually.”¹⁰² Following sufficient vetting with DER Parties and stakeholders, Hawaiian Electric provides that it “will informationally notify the Commission and the DER Parties of any changes to the default URP settings within the applicable URP Range of Adjustment with a minimum of 90-days notice.”¹⁰³ Hawaiian Electric also intends to notify the Commission if and when any revisions to the URP Ranges of Adjustment become necessary.

Improvements to the Interconnection Process.

Hawaiian Electric notes its multi-year engagement with the DER stakeholder community “to streamline and improve the interconnection process[,]”¹⁰⁴ and highlights that its adoption of the URP standardized file format and the proposed Rule 14H revisions will contribute to clarifying and streamlining said process.¹⁰⁵ Hawaiian Electric provides that the URP’s “standardized file format eliminates guesswork between different

¹⁰²Harmonization and URP Proposal at 5.

¹⁰³Harmonization and URP Proposal at 5.

¹⁰⁴Harmonization and URP Proposal at 5.

¹⁰⁵See Harmonization and URP Proposal at 5.

brands of models of DER equipment for which settings need to be modified to meet [its] requirements.”¹⁰⁶ Additionally, Hawaiian Electric advises that it used the “opportunity of revising Rule 14H to propose modifications to Appendix III to better reflect the interconnection process a customer would experience today,” by “removing steps that have since been streamlined or automated with the help of the online Customer Interconnection Tool and adding steps that have become increasingly relevant, but not formally memorialized, in the current Rule 14H.”¹⁰⁷

L.

DER Parties’ Comments on
Hawaiian Electric’s Harmonization and URP Proposal

On December 17, 2020, the DER Parties filed their Comments to Hawaiian Electric’s Harmonization and URP Proposal¹⁰⁸ in which they express general support for Hawaiian Electric’s

¹⁰⁶Harmonization and URP Proposal at 6.

¹⁰⁷Harmonization and URP Proposal at 6.

¹⁰⁸Joint Letter From: R. Harris, W. Giese, C. Debone, and I. Moriwake To: Commission Re: Docket No. 2019-0323, Instituting a Proceeding to Investigate Distributed Energy Resource Policies; Comments on Hawaiian Electric Companies’ Harmonization; “Proposal for IEEE 1547-2018 and URP Ranges of Adjustment,” filed December 17, 2020 (“DER Comments on the Harmonization and URP Proposal”).

harmonization¹⁰⁹ and modernization¹¹⁰ efforts. While supportive of Hawaiian Electric's efforts, there remain a number of issues the DER Parties encourage Hawaiian Electric to address and for which the DER Parties have suggested approaches to remedy.

Changes to Rule 14H: The DER Parties suggest that the Commission may need to address a few key issues before it approves Hawaiian Electric's proposed changes. These issues and the DER Parties' suggestions for resolution were provided in table format and reproduced as presented immediately below:¹¹¹

Page/Section	Issue:	Explanation and Potential Solution
Page 4 and Appendix I, Sections 4 and 4A, Operating Requirements	[In] the Company's proposal to allow URP ranges of adjustment, the commitment to limit URP updates to real power output should be memorialized.	On page 4 of their cover letter, the Companies include discussion of how changes to the URP will be limited for those functions that have an impact on real power output. The Commission should either memorialize this commitment from the Companies in its Order or require the Companies to include it in Rule 14H itself, i.e., in the preambles to Sections 4 and/or 4A of Appendix I

¹⁰⁹DER Comments on the Harmonization and URP Proposal at 1.

¹¹⁰DER Comments on the Harmonization and URP Proposal at 3.

¹¹¹DER Comments on the Harmonization and URP Proposal at 3-4.

Page/Section	Issue:	Explanation and Potential Solution
Appendix I, Section 1, Definitions	Defined terms relying on deleted definitions	Some definitions still include terms that are defined terms for which there is no longer a definition (see, e.g., "Island" including "EPS" and "Area EPS," where EPS is not defined and Area EPS was never defined).
Appendix III, timelines in general	Timeline to Interconnection	Adding all of the timelines results in at least an 80-day interconnection experience if all steps are needed and full deadlines are utilized. While the DER Parties recognize most interconnections will not take this long, there is a concern the proposed amendments do not recognize the efficiency achieved over the past 4-5 years and seek to define a unduly conservative and outdated "worst-case scenario." At the very least, some of these steps should be streamlined or handled concurrently with other processes, consistent with the Companies' ongoing work to modernize their interconnection process.
Appendix III, page 34D-2, Step 1	Typo	The last sentence cuts off after "governed by" in the redline.

Page/Section	Issue:	Explanation and Potential Solution
Appendix III, page 34D-6, Step 2	Supplemental Review components	The Companies' proposal appears to eliminate the 20-day deadline to complete supplemental review. In order to allow a customer some reasonable expectation and potential appeal, some outer deadline for this process seems necessary, further, reference in this section to a[n] IRS cost estimate seems to be missing.
Appendix III, page 34D-7, Step 4	New application needed after revision	A revised application is needed "if the Customer changes the design or specifications of the Generating facility." The DER Parties suggest adding the word "material" to ensure immaterial changes can be accommodated.
Appendix III, page 34D-7, Step 5	Post- installation documentation	Fifteen days to verify documentation seems unnecessarily long. The DER Parties suggest 5 business days is a more realistic time frame.
Appendix III, Page 34D-30, Insurance Coverages	"Interconnection program"	Unclear what an interconnection program is, this probably should be "DER program."

URP Ranges of Adjustment: The DER Parties express concern that "[m]ore information is needed on the future use of the [URP] ranges of adjustment before [the] Commission grants [Hawaiian Electric] unlimited discretion to create site-by-site

specific interconnection standards.”¹¹² The DER Parties articulate a number of questions to which they encourage the Commission to give attention:

- Will unnecessary market confusion and delays in the interconnection process arise out of having numerous different URP settings?
- In the alternative, if only a few specific URP settings are expected to be used, could those specific settings be submitted for regulatory approval? For example, the Commission could approve URP settings “A,” “B,” and “C” as a means to address common technical issues found at different locations. During the interconnection process, [Hawaiian Electric] could indicate which setting is necessary depending on the DER location and particular technical issues found there.
- How often will URPs be adjusted and will these requirements be retroactively applied to already installed systems?
- If [Hawaiian Electric] anticipate[s] changing the URP settings for already installed systems, how would [Hawaiian Electric] propose handling this process? Would [Hawaiian Electric] bear the cost for maintaining communications with the DER and updating the URP?¹¹³

Out of concern for potential “customer/market confusion, increased equipment costs, increased operational expenses, and diminished performance of the individual DER systems[,]”¹¹⁴

¹¹²DER Comments on the Harmonization and URP Proposal at 1-2.

¹¹³DER Comments on the Harmonization and URP Proposal at 2.

¹¹⁴DER Comments on the Harmonization and URP Proposal at 2.

the DER Parties offer “an intermediary step”¹¹⁵ in support of the flexibility Hawaiian Electric is seeking with its proposed URP ranges of adjustment. The DER Parties suggest that the Commission consider approving “a couple of specific URP settings,” thereby allowing for a “utility pilot and real learning on how to utilize alternative local DER settings[,]”¹¹⁶ that would help to identify “who, how, why, and when URP settings should be changed and/or updated[.]”¹¹⁷ Such an approach, the DER Parties posit, would contribute to discovering how best to use the new capabilities presented by the URP settings approach.

M.

The Consumer Advocate’s Comments on
Hawaiian Electric’s Harmonization and URP Proposal

On December 17, 2020, the Consumer Advocate filed its Comments to Hawaiian Electric’s Harmonization and URP Proposal¹¹⁸ wherein it notes that it “generally agrees with several of the revisions in the Harmonization Proposal, noting that that these proposed revisions will not only help to streamline and improve

¹¹⁵DER Comments on the Harmonization and URP Proposal at 2.

¹¹⁶DER Comments on the Harmonization and URP Proposal at 2.

¹¹⁷DER Comments on the Harmonization and URP Proposal at 2-3.

¹¹⁸“Division of Consumer Advocacy’s Comments on Harmonization Proposal,” filed December 17, 2020 (“CA Comments on the Harmonization and URP Proposal”).

[Hawaiian Electric's] interconnection process, but will also help to provide greater transparency[.]”¹¹⁹

In particular, with regard to changes to Rule 14H, the Consumer Advocate highlights as meaningful and forward looking, Hawaiian Electric's revision to include a reference to the apparent power rating that future inverters will have.¹²⁰ While the Consumer Advocate commends the work and progress that has come of the continued engagement of the DER Parties, stakeholders, and Hawaiian Electric, it also observes that “there were several comments and issues that have not been resolved during the [Technical Working Group (“TWG”)] meetings,” namely, an issue related to Hawaiian Electric's “proposal regarding the URP setting, URP Range of Adjustment and the stakeholder process in which to allow annual updates.”¹²¹ The Consumer Advocate recommends that to address this and other outstanding issues, that “the TWG be given an opportunity to address any outstanding issues identified by each of the parties.”¹²²

¹¹⁹CA Comments on the Harmonization and URP Proposal at 3.

¹²⁰See CA Comments on the Harmonization and URP Proposal at 4.

¹²¹CA Comments on the Harmonization and URP Proposal at 5.

¹²²CA Comments on the Harmonization and URP Proposal at 4.

Finally, the Consumer Advocate calls attention to Hawaiian Electric's efforts in the area of improving the interconnection process by highlighting that Hawaiian Electric:

has already implemented measures to streamline and improve the interconnection process (e.g., activation of volt-watt to mitigate the need for interconnection requirements studies), several of which have been implemented through the working group process in this proceeding (e.g., swapping out revenue meters earlier in the interconnection process, allowing solar contractors to install temporary second meters for CGS+ systems, activation of smaller than 25 kW photovoltaic systems with certain inverter settings upon the building permit closing).¹²³

In light of the above, and other considerations, the Consumer Advocate expresses its support for greater flexibility and efficiency (in updating inverter settings with new equipment and technologies) coupled with its recommendation for continued investigation of identified issues.¹²⁴ While the Consumer Advocate acknowledges that updating inverter settings with new equipment and technologies will require accommodations, it advises that "once the filings have been made and stakeholders have an opportunity to review . . . , allowing an opportunity to

¹²³CA Comments on the Harmonization and URP Proposal at 2.

¹²⁴CA Comments on the Harmonization and URP Proposal at 5 (wherein the Consumer Advocate expresses its uncertainty about raised issues being adequately addressed in the TWG meetings).

provide additional information related to unresolved issues would help inform a decision on those outstanding issues.”¹²⁵

N.

The Parties’ Stipulation of Revisions

On April 26, 2021, the Parties filed their Stipulation of Revisions, wherein the Parties submit for Commission review and approval, their agreements pertaining to “(1) harmonizing the [Hawaiian Electric’s] Rule 14H tariffs with the [IEEE] 1547-2018 standard (the ‘national standard’), and (2) streamlining and improving the interconnection process for [DER] in the Technical Track of this proceeding[,]” as well as their “proposed [URP] settings[.]”¹²⁶

Changes to/Harmonization of Rule 14H with IEEE 1547-2018. The Parties agreed upon “modifications to Appendix I of [Hawaiian Electric’s] Rule 14H, . . . [to] address the critical need to update Rule 14H technical specifications to align with IEEE 1547-2018.”¹²⁷ The Parties state that their “proposed revisions align Rule 14H with IEEE 1547-2018’s technical specifications and requirements for normal operating performance

¹²⁵CA Comments on the Harmonization and URP Proposal at 4-5.

¹²⁶Stipulation of Revisions at 2.

¹²⁷Stipulation of Revisions at 5 (citation omitted).

(Category B) and abnormal operating performance (Category III)."¹²⁸ These revisions, the Parties note, provide the benefits of "the most up-to-date inverter functionality, including interoperability standards, to participate in grid services" and the URP concept provides an innovative approach that is meant to "improve the interconnection process by providing transparency and consistency in the commissioning, configuration, and verification process."¹²⁹

Further, the Parties offer that the set of URPs set forth in "Exhibit C contain[ing] the URP with default settings for DER with Volt-Watt functionality activated and Exhibit D contain[ing] the URP with default settings for DER without Volt-Watt functionality activated[,]"¹³⁰ will be impactful in assisting the DER industry's state-wide efforts to streamline and improve the transparency of the current interconnection and validation processes.¹³¹

Transition from SRD V1.1 to SRD V2.0. The Parties request a timely decision from the Commission, stating that approval of their Stipulation of Revision is needed by "June 24, 2021, to be effective five business days from the date

¹²⁸Stipulation of Revisions at 5 (citation omitted).

¹²⁹Stipulation of Revisions at 5-6 (citation omitted).

¹³⁰Stipulation of Revisions at 7.

¹³¹Stipulation of Revisions at 7.

of approval on July 1, 2021[,]”¹³² to “allow [Hawaiian Electric] a compressed schedule for a stated process to transition from [SRD V1.1] to [SRD V2.0] on July 1, 2021 as noted in [Hawaiian Electric’s] SRD V2.0 Filing.”¹³³ The Parties explain that “the July 1, 2021 date is important in order to facilitate the smooth certification transition from SRD V1.1 to SRD V2.0 and to allow manufacturers and [Hawaiian Electric] a firm date to complete on-going certification to the UL 1741 Supplement SA standard.”¹³⁴ The Parties further explain that “[t]hese efforts will help to maximize the latest grid supportive benefits for Hawaii’s markets and will give manufacturers the assurance needed to allocate resources for certification prior to the April 1, 2022 deadline for new interconnections.”¹³⁵

Lastly, regarding this stipulation, the Parties state that:

execution of this Stipulation by any Party is not intended to and shall not be construed to constitute waiver of or otherwise bar or limit the right of any party, jointly or severally, to propose and advocate for further and additional amendments, modifications, and revisions to Rule 14H and its appendices, or with respect to any

¹³²Stipulation of Revisions at 7 (citation omitted).

¹³³Stipulation of Revisions at 7-8 (citation omitted).

¹³⁴Stipulation of Revisions at 8.

¹³⁵Stipulation of Revisions at 8 (citation omitted).

other matters, in this or in any other proceeding.¹³⁶

O.

The Parties' Volt-Watt Stipulation

On August 19, 2021, the Parties filed their Volt-Watt Stipulation, wherein the Parties stipulate "to the proposed revisions in Exhibits E and F [of the Volt-Watt Stipulation], and request "the Commission's review, consideration, and approval of the stipulated proposed revisions to Appendix I of Rule 14H as soon as reasonably practicable."¹³⁷ The Parties also "request consideration and resolution of the outstanding issue regarding compensation for Volt-Watt[.]"¹³⁸

As a general matter, the Parties are in agreement that "enabling the system-wide activation of Volt-Watt in combination with the previously-approved Volt-VAR function" is likely to "not only allow for high levels of PV generation, but will also help ensure voltages remain within allowed safe ranges without significantly impacting PV energy production."¹³⁹ The Parties developed their support for the aforementioned approach based in

¹³⁶Stipulation of Revisions at 8-9 (citation omitted).

¹³⁷Volt-Watt Stipulation at 21.

¹³⁸Volt-Watt Stipulation at 21.

¹³⁹Volt-Watt Stipulation at 12 (citation omitted).

part on the findings and recommendations detailed in the Updated Voltage Regulation Operational Strategies Report ("Updated VROS Report"). The Updated VROS Report found that:

in the vast majority of locations (99% of customers) any curtailed PV production resulting from system-wide activation of volt/VAR - volt/Watt control for all new DERs is expected to be negligible (i.e., less than 2% of weekly energy production for a high voltage week, typically much less on an annualized basis since the average customer weekly curtailment is 0.23% for the high voltage week.).¹⁴⁰

In support of the Parties' agreed upon approach, the Parties offer that Hawaiian Electric's intent of the activation of the Volt-Watt function is not to act as a permanent voltage regulation solution, but rather is meant to contribute to safety and reliability by using the Volt-Watt function to protect against rare events and occasional temporary high-voltage.¹⁴¹

The Parties acknowledge the Commission's previous recommendation that before Volt-Watt activation becomes a mandatory requirement, DER-interested customers should be able to access information about the likely locations and potential magnitude of curtailment. The Parties point to the findings in the Updated VROS Report which indicate that implementing such a

¹⁴⁰Volt-Watt Stipulation at 1 (citation omitted), Exhibit B at 26-38.

¹⁴¹Volt-Watt Stipulation at 10.

recommendation would be hindered by the difficulty of accurately predicting (in advance) whether a particular location will experience high voltage issues before PV has been installed.¹⁴² As it stands, the Parties offer that "system-wide activation of Volt-Watt (combined with the previously-approved Volt-VAR function) is critical to avoiding or mitigating voltage problems as they arise."¹⁴³

The Parties highlight Hawaiian Electric's ongoing efforts to monitor customer meter voltages both before and after DER system installation. This monitoring effort relies on customers opting-in to this active monitoring, and helps Hawaiian Electric ensure voltage issues are quickly identified and properly addressed/mitigated. Coupled with the opt-in monitoring effort is Hawaiian Electric's broad deployment of advanced metering infrastructure ("AMI"), which is taking place on an opt-out basis. Together, the Parties offer, Hawaiian Electric expects that these two efforts will enable it to continue to "systematically monitor voltage, as well as have a host of additional data collection, monitoring and analysis capabilities at a system-wide and enterprise level."¹⁴⁴

¹⁴²Volt-Watt Stipulation at 11.

¹⁴³Volt-Watt Stipulation at 11.

¹⁴⁴Volt-Watt Stipulation at 12.

Expanded Implementation of Opt-In Program. The Parties identify that Hawaiian Electric expanded the implementation of the Volt-Watt Pilot Program, pursuant to Commission instruction, which entailed making the Program available "to customers that fail supplemental review due to overvoltage concerns and who may be permitted to interconnect by activating the Volt-Watt function on an opt-in basis."¹⁴⁵ The Parties also note that in furthering a customer's ability to interconnect after failing certain technical screens for high secondary voltage, Hawaiian Electric implemented the Advanced Inverter Business Process Improvement ("BPI"), making opting-in to Volt-Watt activation a mitigation option that allowed said customers a less involved interconnection opportunity. Lastly, the Parties include Hawaiian Electric's "Quick Connect" process as a Volt-Watt reliant process improvement, and explain that Quick Connect is a process which requires "the customer to activate Volt-Watt so that [Hawaiian Electric] can mitigate high-voltage risk in allowing customers to 'install first, get approval later.'"¹⁴⁶ The Parties point out that Hawaiian Electric's Quick Connect was developed in collaboration with the DER Parties and is aimed at implementing "a

¹⁴⁵Volt-Watt Stipulation at 13.

¹⁴⁶Volt-Watt Stipulation at 14.

number of process improvements to support customers and the solar industry through the COVID-19 pandemic.”¹⁴⁷

Taking the foregoing into account, the Parties offer their conclusion that Hawaiian Electric has indeed “expanded the use of Volt-Watt as an opt-in measure to mitigate high voltage.”¹⁴⁸ The Parties further provide that they are unaware of significant issues resulting from such Volt-Watt activation, and that subject to the voltage monitoring and consumer protection process articulated in the Volt-Watt Stipulation, they are amenable to moving forward with the system-wide activation of Volt-Watt (in conformity with the agreements contained in the Volt Watt Stipulation).¹⁴⁹

Voltage Monitoring and Consumer Protection. The Parties acknowledge that “consumer protection issues remain for those rare instances where customers may experience high curtailment due to the activation of Volt-Watt[,]” and propose the following to address these concerns:¹⁵⁰

- (1) Hawaiian Electric is deploying Advanced Metering Infrastructure (“AMI”) across its service

¹⁴⁷Volt-Watt Stipulation at 14.

¹⁴⁸Volt-Watt Stipulation at 14.

¹⁴⁹Volt-Watt Stipulation at 14-15.

¹⁵⁰Volt-Watt Stipulation at 15.

territories on an opt-out basis, as well as for DER customers, and Hawaiian Electric has an "AMI dashboard" to help analyze voltage issues;

(2) The Parties agree to a Proposed method wherein a PV system has full output when system voltage is above 1.06 p.u.;

(3) Through analysis of AMI voltage data, if issues are identified in (a) below, Hawaiian Electric will evaluate and implement voltage issue mitigation to protect customers from excessive volt-watt curtailment;

(a) Hawaiian Electric will trigger the need to investigate voltage issues based on those exceeding 1.05 p.u. (measured at the meter) for more than 2% of the 15-minute voltage readings during normal operating conditions;

(b) Once triggered, Hawaiian Electric will investigate the voltage issue with the Proposed Method to estimate the amount of curtailment, and Hawaiian Electric will proceed with solutions including upgrades in order to address the high-voltage risk;

(c) Hawaiian Electric commits to fixing the voltage issues within six (6) months for

overhead secondary mitigation or within nine (9) months for underground secondary mitigation, both starting upon identifying the voltage issue and triggering the need to investigate; and

- (4) Hawaiian Electric plans to provide to the Commission quarterly reports that (i) detail where voltage exceeds 1.05 p.u. more than 2% of the time between 9 a.m. and 4 p.m., (ii) provide the estimated curtailed energy based on the Proposed Method, (iii) identify customers that are eligible for upgrades including the costs that were incurred, and (iv) report on how many DER customers have Volt-Watt activated including how many of these customers also have AMI meters installed. Hawaiian Electric will track and report on costs associated with this Volt-Watt Stipulation in its quarterly report, and include other potential solutions considered as well as the costs of those solutions and the factors going into selection of an implemented solution.¹⁵¹

¹⁵¹See Volt-Watt Stipulation at 15-17.

Volt-Watt Compensation. The Parties state that “they were unable to find consensus at this time” regarding compensation for Volt-Watt curtailment.¹⁵²

The Parties articulate that Hawaiian Electric believes that “the proposed implementation of Volt-Watt to respond to abnormal voltage events *within* tariff-mandated voltage ranges should not be a compensated service, whereas the obligation to fix voltage problems *outside* of tariff ranges should be undertaken by [Hawaiian Electric].”¹⁵³

The Parties further identify that the DER Parties “have consistently maintained that Volt-Watt should be a compensated grid service,” but at this time, “the DER Parties are willing to proceed initially with the Companies’ proposed approach for addressing voltage issues, in which the implementation of Volt-Watt to respond to abnormal voltage events within tariff-mandated voltage ranges is not a compensated service, whereas the obligation to fix voltage problems outside of tariff ranges should be undertaken by [Hawaiian Electric].”¹⁵⁴

Finally, the Parties provide that the Consumer Advocate “notes that the value to the system of generation that is subject

¹⁵²Volt-Watt Stipulation at 18.

¹⁵³Volt-Watt Stipulation at 18 (emphasis in original).

¹⁵⁴Volt-Watt Stipulation at 18-19.

to curtailment from Volt-Watt operation has not been established, and that the appropriate compensation for generation and services provided through long-term DER programs is currently being assessed as part of the DER Program Track[.]”¹⁵⁵ The Parties also share that the Consumer Advocate “recommends that[] [Hawaiian Electric] should track and record data necessary for a study and/or facilitate a study as described to learn from such situations as well as report the amount of compensation paid to customers associated with Volt-Watt curtailment.”¹⁵⁶

In the absence of agreement on the issue of compensation for Volt-Watt, the Parties request the “Commission’s attention and consideration on how to proceed with addressing and resolving this issue.”¹⁵⁷

II.

DISCUSSION

A.

AI Workplan and Supplement

On May 29, 2020, Hawaiian Electric submitted its AI Workplan, and on October 15, 2020, Hawaiian Electric submitted

¹⁵⁵Volt-Watt Stipulation at 19-20.

¹⁵⁶Volt-Watt Stipulation at 20.

¹⁵⁷Volt-Watt Stipulation at 20.

its Advanced Inverter Workplan Supplement. The Commission received comments from the Consumer Advocate and the DER Parties on both the AI Workplan, and the Workplan Supplement. A consistent concern expressed by the DER Parties was the lack of data provided to support the necessity of the requirements Hawaiian Electric proposed. A particular point of concern raised by both the DER Parties and the Consumer Advocate was the cost to customers to upgrade their inverters compared to the benefits expected from advanced inverter functionality. The Commission understands that advanced inverter functionality may offer benefits that help to optimize system operation in an increasingly renewable energy powered grid. However, while Hawaiian Electric's AI Workplan and Workplan Supplement offered solutions to address the current and expected challenges associated with inverters that lack advanced functionality, the plans did not provide quantification of benefits of the suggested upgrades and updates, such that the benefits could be weighed against the costs.

As a result, the Commission finds that concerns about customer costs and concerns about clearly identifying the magnitude of the detriment that may occur if legacy and noncompliant systems are left unaddressed, have not been sufficiently responded to by Hawaiian Electric. Efforts to strike a balance between customer cost and system benefit/avoidance of detriment has yielded no agreed-upon way ahead. In the absence of

clearly articulated quantification of the net benefits of suggested upgrades and/or updates, as well as the absence of details regarding potential system detriment, the Commission finds that approval of Hawaiian Electric's AI Workplan and Workplan Supplement has not been adequately supported in the record. In light of the insufficiency of the information provided, the Commission declines approval of Hawaiian Electric's Workplan and Workplan Supplement. The Commission identifies immediate next steps for Hawaiian Electric to undertake as identified in Sub-Sections D.1. and D.2. below.

B.

Stipulation of Revisions

The Parties, in their Stipulation of Revisions, provided the Commission with an opportunity to address a component of the DER Technical Track that is ripe for decision-making, namely, agreements regarding Appendix I of Rule 14H Harmonization with IEEE 1547-2018 and agreements regarding URP Settings.

Harmonizing Hawaiian Electric's Rule 14H requirements with current IEEE standards is a primary objective of the Technical Track, and the Commission acknowledges the long-running collaborative efforts undertaken by each of the Parties, as well as other interested DER stakeholders to reach the current agreements captured in the Stipulation of Revisions.

The Commission agrees with the Parties that the most up to date inverter functionality is enabled by equipment that is certified to the latest national standards. To this end, the Commission finds the proposed revisions to Rule 14H that align it with IEEE 1547-2018 technical specifications and requirements for operating performance to be in support of enabling DERs to meet present and future grid needs while also retaining value for the DER Customer.

In furtherance of State policy goals to increase the amount of renewables on the electrical grid, the Commission agrees with the Parties that the URP process is indeed innovative and applauds the involved parties for working to develop an approach focused on transparency and consistency to improve interconnections. The Commission notes the agreed-upon URP implementation approach is for a pre-approved set of fixed URPs, as opposed to Hawaiian Electric's initial proposal for URP Ranges of Adjustment. As such, the Commission establishes the conditions of approval of the Stipulation of Revisions in Sub-Section D.2 of this Section. Summarily, the Commission finds that in the Stipulation of Revisions, the Parties have been responsive to the Commission's guidance as provided in Order No. 37066.¹⁵⁸ In light of the above, as contained in the record, and subject to

¹⁵⁸See Order No. 37066 at 19.

the conditions of approval identified in Sub-section D.3., the Commission hereby approves the Parties' Stipulation of Revisions.¹⁵⁹

C.

Volt-Watt Stipulation

The Parties, in their Volt-Watt Stipulation, provided the Commission with an opportunity to address another DER Technical Track issue that is ripe for decision-making, which was not part of the Stipulation of Revisions, namely, the issue of system-wide Volt-Watt activation, specifically addressed through agreements regarding Appendix I of Rule 14H for use of Volt-Watt as an advanced inverter function.

As an initial matter, the Commission acknowledges that stakeholders played a considerable role in ensuring Hawaiian Electric could be successfully responsive to the Commission's encouragement to supplement the record on the topic of Volt-Watt impacts through field data collection and validation studies and continued discussion and collaboration with

¹⁵⁹The Commission notes that the Parties requested an approval decision by June 24, 2021, to support transitioning from SRD V1.1 to SRD V2.0. Given the date of this approval order, the updates and requirements approved herein shall take effect no earlier than the effective date of the tariff.

stakeholders.¹⁶⁰ The Commission commends the Parties and stakeholders for their critical contribution to this effort, and finds that Hawaiian Electric has indeed satisfactorily responded to the Commission's aforementioned encouragement through the submission of the Volt-Watt Stipulation.

Additionally, the Commission appreciates the considerable effort taken by Hawaiian Electric to better study the issue of Volt-Watt curtailment, as well as the willingness by all Parties to come up with a workable solution for the near term. The Commission recalls its direction in Order No. 37066, wherein it identified the following primary objectives of the Technical Track:

[s]treamlining and improving the interconnection process[;] [h]armonizing the Company's Rule 14H requirements with current [IEEE] standards[;] [d]eveloping policies and procedures for the activation of additional advanced inverter functions[; and] [d]eveloping policies and procedures to update legacy equipment, including inverters, to allow for participation in new DER programs.¹⁶¹

In consideration of these objectives, the Commission agrees with the Parties that blanket activation of Volt-Watt (as identified in the Volt-Watt Stipulation), will improve both the

¹⁶⁰See Docket No. 2014-0192, Decision and Order No. 37924, filed October 20, 2017, at 155.

¹⁶¹Order No. 37066 at 19.

interconnection process and support integration of DERs on the secondary distribution grid.

The Commission notes that the aforementioned efforts reflect the Parties' commitment to meaningfully address the Commission's objectives related to the interconnection process and the activation of additional advanced inverter functions. In particular, the Commission finds that the proposed revisions to Rule 14H that address Volt-Watt activation (i.e., those identified in Exhibit E and F of the Volt-Watt Stipulation), and the Parties' specified consumer protections,¹⁶² support further integration of DERs into Hawaiian Electric's systems. Further, the Commission agrees with the Parties that Volt-Watt activation will also help enable DER to support Hawaiian Electric's system with voltage management. In light of the above, as contained in the record, and in consideration of the record as a whole, the Commission hereby approves the Parties' Volt-Watt Stipulation, subject to the conditions of approval identified in Sub-Section D.4.

¹⁶²See the Volt-Watt Stipulation at 15-17 for details regarding the consumer protections to which Hawaiian Electric has committed.

D.

Guidance on Immediate Next Steps and Conditions

In light of the Commission's decision to decline approval of Hawaiian Electric's AI Workplan and Workplan Supplement, and to approve, subject to conditions, the Stipulation of Revisions and the Volt-Watt Stipulation, and in consideration of the Consumer Advocate's recommendation that the TWG be given an opportunity to address proposed edits to Appendix III of Rule 14H, as well as any other outstanding issues identified by each of the Parties, the Commission establishes a 12-month timeframe within which the Parties shall come to consensus on outstanding issues, and Hawaiian Electric shall collect and report pertinent data to inform future decisions in the Technical Track of this Docket.

Specifically, Hawaiian Electric shall, over the next 12 months, hold quarterly meetings (or more frequent, as necessary), the first of which shall be held no later than 45 days following the issuance date of this Decisions and Order. The following sections identify the issues that Hawaiian Electric shall address in these quarterly meetings over the next 12 months and identify deliverables and their respective due dates. If additional meetings between the Parties are required to meet the identified deliverables and due dates, the Commission expects

Hawaiian Electric to convene the necessary meetings to accomplish the directives identified below.

1.

Further Revisions to Rule 14H

The Commission directs Hawaiian Electric to work with the Parties to propose revisions to Appendix III of Rule 14H, and to address the outstanding issues identified by each of the Parties in their respective comments during the Technical Track of this proceeding. Hawaiian Electric shall submit an update to the Commission, no later than 90 days following the issuance date of this Decisions and Order, detailing the approach it has developed (in conjunction with the other Parties to the Docket) to resolve the outstanding issues identified by the Parties regarding improvements to Rule 14H.

2.

Treatment of Pre-2016 and Post-2016 Inverters

The Commission appreciates the multiple years of effort the Parties have undertaken to develop their suggested way ahead. In some areas however, there remains uncertainty about direction. To inform the Commission's decision to address this uncertainty, the Commission took into account the Parties' filings, as well as the discussions had at TWG meetings with stakeholders.

In consideration of these inputs, the Commission finds that an incentive-based inverter upgrade plan for both Pre- and Post-2016 inverters, similar to what is proposed by Hawaiian Electric, but including certain safeguards proposed by the DER Parties, strikes an appropriate balance and should pave the way for a readily implementable way ahead. Thus, the Commission directs Hawaiian Electric to submit a detailed proposal, within 120 days of the filing date of this Decision and Order, that is responsive to the following guidance.

Hawaiian Electric shall develop an incentive-based inverter upgrade plan for *both* Pre-2016 and Post-2016 Inverters. In the plan, Hawaiian Electric shall identify and consider both utility and customer costs and benefits of the proposed upgrades in the development of the proposal. The cost-benefit analysis presented shall include estimates of the additional benefits of upgrades on critical circuits. Specifically, Hawaiian Electric's proposal shall identify and prioritize updates and upgrades on critical circuits.

The Commission does not believe the incentive-based approach should include a *requirement* to upgrade or update inverters in cases where a customer's warranty would be voided by such action (e.g., where the customer's warranty requires a like-for-like replacement). Rather, as suggested by the DER Parties, Hawaiian Electric's proposal should *encourage*

customers to upgrade or update inverters to the latest standards, but also permit reasonable flexibility for technical, safety, or other issues. Hawaiian Electric, informed by the cost-benefit analysis described above and in consultation with the other Parties, may propose a reasonable sunset date, not earlier than December 31, 2023, for customers whose inverter warranty does not require a like-for-like replacement and for customers whose inverter has reached the end of its useful life. Finally, the Commission agrees with the DER Parties that the Companies should ensure their proposal is simple and easy for customers to understand, which will promote participation and increase the benefits of the program.

3.

Conditions of Approval for the Stipulation of Revisions

The Commission directs Hawaiian Electric to utilize the quarterly meetings it shall host for the next 12 months to evaluate the URP approach approved in this Order. Hawaiian Electric shall use these quarterly meetings as an opportunity to share its learnings as it gains experience in utilizing alternative local settings. After 12 consecutive months of URP implementation and practice, the Hawaiian Electric shall submit an update to the Commission detailing the lessons learned and its determination on whether progression to the URP Ranges of Adjustment approach is

merited. The update shall be submitted no later than November 30, 2022. Hawaiian Electric shall coordinate with the Parties to address how and when stakeholders will be engaged to update URPs and shall provide a timeline for submittal of the interconnection guidebook referenced in the Parties' Stipulation of Revisions.

4.

Conditions of Approval for the Volt-Watt Stipulation

Although the Parties reached agreement on system-wide activation of Volt-Watt, the Commission notes that the Parties requested "attention and consideration on how to proceed with addressing and resolving" compensation for the impacts of Volt-Watt activation.¹⁶³ The Commission recognizes that Hawaiian Electric suggests that it would be responsible for fixing voltage problems outside of voltage tariff ranges, but that there is insufficient evidence in the record to determine the value of the Volt-Watt function.¹⁶⁴ The DER Parties' immediate suggestion is that compensation for Volt-Watt activation should be tied to

¹⁶³Volt-Watt Stipulation at 54.

¹⁶⁴Volt-Watt Stipulation at 18.

potential delays by Hawaiian Electric in addressing voltage problems caused by voltage outside of the voltage tariff ranges.¹⁶⁵

The Commission observes that the Consumer Advocate's proposed path forward appears to be most focused on the process by which compensation can be set for Volt-Watt activation whereas both Hawaiian Electric's and the DER Parties' suggestions appear to focus on identifying under what circumstances impacted customers should be compensated. The Commission further observes that Hawaiian Electric's and the DER Parties' suggestions are not mutually exclusive, and that there may be situations where the suggestions of both Parties could apply.

In considering the Parties' positions, the Commission sees an opportunity for immediate action in the Consumer Advocate's proposal to collect additional data. In furtherance of the Parties' efforts to identify if and how to compensate customers for Volt-Watt activation, the Commission finds that the Consumer Advocate's information gathering approach offers a reasonable way ahead. Thus, the Commission directs Hawaiian Electric to provide Volt-Watt Curtailment quarterly reports over the 12 months immediately following the issuance date of this Order, the specific timing of which is further described in the Ordering Paragraphs, below, that detail:

¹⁶⁵Volt-Watt Stipulation at 19.

- Estimated lost customer compensation (e.g., kWh curtailment x compensation rate);
- Estimated system cost to resolve or manage voltage issues for each month of the quarterly reporting period;
- Estimated cost of possible solutions other than Volt-Watt to correct voltage issues;
- Updates on the developments achieved in stakeholder meetings (discussed further below); and
- Any other specific metrics as agreed upon by participants of the stakeholder meetings (discussed further below).

The Commission directs Hawaiian Electric to further convene stakeholder meetings (at a time and cadence that works for the involved parties) during the aforementioned 12 months of data collection and quarterly reporting. The stakeholders in these meetings should consider the data that will be provided throughout the 12 months of Hawaiian Electric's Volt-Watt Curtailment quarterly reports. These meetings should, at a minimum, address and produce suggested approaches that identify when it would be appropriate to provide compensation on an out-of-tariff-range voltage issue, and when it would be appropriate to provide compensation for missing deadlines for resolution of voltage issues. Additionally, in the stakeholder meetings, Parties are encouraged to revisit the length of the currently agreed-upon deadlines for resolution of voltage issues, along with the amount of compensation that should be provided for

out-of-tariff-range Volt-Watt curtailment and compensation for failure to resolve voltage issues. Hawaiian Electric shall submit a proposal informed by the stakeholder meetings, that proposes a way forward for Volt-Watt activation Compensation, no later than November 30, 2022.

E.

Conclusion

The Commission notes the substantial amount of effort and collaboration put forth to develop the offerings put forward in the Technical Track and appreciates the Parties' commitment in coming to agreement on critical concerns, as evidenced by their Stipulations. Despite the substantial agreements that were achieved, there remain a number of issues for which an agreement has not been reached. To remedy this, the Commission encourages the Parties to continue their collaborative efforts to bring forth workable solutions that can be readily implemented and are designed to allow flexibility and to promote transparency.

As guidance, the Commission highlights its continued focus on the Technical Track primary objectives, as identified in its Order No. 37066. Thus, the Commission by this Decisions and Order (1) denies approval of Hawaiian Electric's AI Workplan and AI Workplan Supplement; (2) approves the Parties' Stipulation of Revisions, subject to the conditions contained herein;

(3) approves the Parties' Volt-Watt Stipulation, subject to the conditions contained herein; and (4) provides guidance on immediate next steps for the Technical Track of this docket.

III.

ORDERS

THE COMMISSION ORDERS:

1. The Commission denies approval of Hawaiian Electric's AI Workplan and Supplemental Workplan. Instead, Hawaiian Electric shall:

A. Hold quarterly meetings, the first of which shall be held within 45 days of the issuance date of this Decision and Order, in conformity with the guidance provided in Section II.D.;

B. Submit an update to the Commission no later than 90 days following the issuance date of this Decision and Order, detailing the approach developed to resolve the outstanding issues identified by the Parties, in conformity with the guidance provided in Section II.D.; and

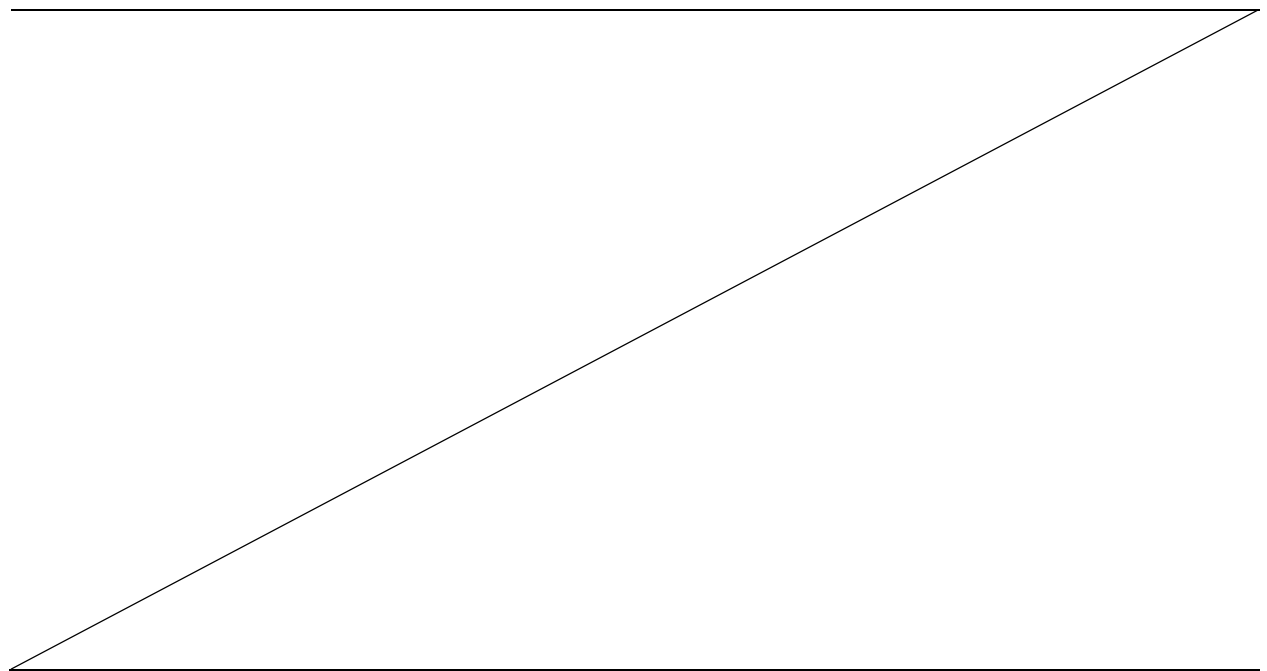
C. Submit a proposal not later than 120 days following the issuance date of this Decision and Order, which identifies the agreed-upon approach to Pre-2016 and Post-2016 Inverters, in conformity with the guidance provided in Section II.D.

2. The Parties' Stipulation of Revisions is approved, subject to the following condition:

A. Hawaiian Electric shall submit an update within 12 months of its URP implementation, which reflects input from the Parties and stakeholders, on the progression, lessons learned, and any suggested changes and/or additions related to its URP implementation. The update shall be due no later than November 30, 2022.

3. The Parties' Volt-Watt Stipulation is approved, subject to the following conditions:

A. Hawaiian Electric shall submit a Volt-Watt Curtailment quarterly report, due on the last day of the month following the last day of the quarter for the next 12 months following the issuance date of this Order (i.e., the first quarterly report will be due on January 31, 2022, and the last quarterly report will be due on January 31, 2023).



B. Hawaiian Electric shall convene the necessary number of stakeholder meetings to inform a proposal on what, if any, Volt-Watt activation Compensation scheme should be implemented, and shall submit a proposal informed by the stakeholder meetings that proposes a way forward for Volt-Watt activation Compensation, no later than November 30, 2022.

DONE at Honolulu, Hawaii NOVEMBER 4, 2021.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By James P. Griffin By Jennifer M. Potter
James P. Griffin, Chair Jennifer M. Potter, Commissioner

APPROVED AS TO FORM:

Rachel James By Leodoloff R. Asuncion, Jr.
Rachel M. James Leodoloff R. Asuncion, Jr., Commissioner
Commission Counsel

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CERTIFICATE OF SERVICE

Pursuant to Order No. 37043, the foregoing order was served on the date it was uploaded to the Public Utilities Commission's Document Management System and served through the Document Management System's electronic Distribution List.

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