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and demand response, to support load shifting, frequency response, and voltage control, among other ancillary services[,]” and that “the use of microgrids would build energy resiliency into our communities, thereby increasing public safety and security.”<sup>1</sup> Accordingly, Act 200 directed the commission to open a proceeding to establish a microgrid services tariff (“MGS Tariff”) to encourage and facilitate the development and use of microgrids throughout Hawaii.

The stated purpose of Act 200 “is to encourage and facilitate the development and use of microgrids through the establishment of a standard microgrid services tariff.”<sup>2</sup>

Act 200 revised Chapter 259 of the Hawaii Revised Statutes (“HRS”) to add a new section, now codified as HRS § 269-46.

HRS § 269-46 defines a microgrid services tariff as a tariff approved by the commission that:

- (1) Is designed to provide fair compensation for electricity, electric grid services, and other benefits provided to, or by, the electric utility, the person or entity operating the microgrid, and other ratepayers;
- (2) To the extent possible, standardizes and streamlines the related interconnection processes for microgrid projects; and

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<sup>1</sup>H.R. 2110, 29th Leg., Reg. Session (Haw. 2018) (“Act 200”), Section 1.

<sup>2</sup>Act 200, Section 1.

(3) Does not apply to a municipal utility cooperative.<sup>3</sup>

Specifically, a "microgrid project" is defined by HRS § 269-46 to mean

a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the utility's electrical grid and can connect to a public utility's electrical grid to operate in grid-connected mode and can disconnect from the grid to operate in island mode, and that:

- (1) Is subject to a microgrid services tariff; and
- (2) Generates or produces energy.<sup>4</sup>

In particular, Act 200 referenced Puerto Rico and its efforts to develop regulations addressing microgrid development in the aftermath of Hurricane Maria in 2017.<sup>5</sup> Act 200 further directed that "[i]n establishing a microgrid services tariff, the [commission] shall consider the actions taken to establish and deploy microgrids in other jurisdictions, including the actions taken by Puerto Rico following the 2017 Atlantic hurricane

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<sup>3</sup>HRS § 269-46(c).

<sup>4</sup>HRS § 269-46(c).

<sup>5</sup>Act 200, Section 1, and In re: Puerto Rico Energy Comm'n, Case No. CEPR-MI-2018-0008, Order, filed on May 16, 2018, available at: <http://energia.pr.gov/wp-content/uploads/2018/05/Order-Regulation-on-Interconnection-CEPR-MI-2018-0008-1.pdf>.

season, and the prescriptive steps the State can take to address potential similar local disasters in the future."<sup>6</sup>

HRS § 269-46(b) provides that:

[a]ny person or entity may own or operate an eligible microgrid project or projects; provided that the person or entity complies with all applicable statutes, rules, tariffs, and orders governing the ownership and interconnection of the project or projects.<sup>7</sup>

B.

Procedural History

On July 10, 2018, the commission issued Order No. 35566, opening this docket in response to Act 200 ("Order No. 35566"). Order No. 35566 named HAWAIIAN ELECTRIC COMPANY, INC., HAWAII ELECTRIC LIGHT COMPANY, INC., and MAUI ELECTRIC COMPANY, LIMITED (collectively, "the HECO Companies") and DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, DIVISION OF CONSUMER ADVOCACY ("Consumer Advocate" or "CA") as Parties to the proceeding and invited interested individuals and organizations to file motions to intervene or participate in this proceeding.<sup>8</sup>

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<sup>6</sup>Act 200, Section 3.

<sup>7</sup>HRS § 269-46(b).

<sup>8</sup>Order No. 35566 at 6-7.

Subsequently, eight movants<sup>9</sup> filed motions to intervene, and by Order No. 35884, the commission granted intervention to all eight movants (collectively, "Intervenors").<sup>10</sup>

Order No. 35884 also: (1) scheduled a Technical Conference for January 9, 2019;<sup>11</sup> (2) outlined Preliminary Questions that the Parties were expected to address at the Technical Conference and in their Opening Briefs;<sup>12</sup> and (3) set forth deadlines for the Opening Briefs and Reply Briefs.<sup>13</sup>

On January 9, 2019, the commission held a Technical Conference in this docket. The Technical Conference was comprised of two main components: (1) presentations from certain microgrid project developers and other organizations and entities having experience in developing and/or planning microgrid projects in Hawaii, and (2) presentations from the Parties to this docket,

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<sup>9</sup>The eight movants were RENEWABLE ENERGY ACTION COALITION OF HAWAII, INC. ("REACH"), DISTRIBUTED ENERGY RESOURCES COUNCIL OF HAWAII ("DERC"), LIFE OF THE LAND ("LOL"); PUNA PONO ALLIANCE; the MICROGRID RESOURCES COALITION ("MRC"); ENERGY ISLAND; ENERGY FREEDOM COALITION OF AMERICA, LLC ("EFCA"); and ULUPONO INITIATIVE LLC ("ULUPONO").

<sup>10</sup>Order No. 35884, "(1) Granting Motions to Intervene; (2) Scheduling Technical Conference; and (3) Setting Deadlines for Opening Briefs and Reply Briefs," filed on November 21, 2018 ("Order No. 35884"), at 28.

<sup>11</sup>Order No. 35884 at 24.

<sup>12</sup>Order No. 35884 at 24-26.

<sup>13</sup>Order No. 35884 at 26.



specifically addressing the Preliminary Questions outlined in Order No. 35884. Parties and stakeholders attended in person and via Skype meeting. Slide decks of the presentations were also filed into the record.<sup>14</sup>

On January 22, 2019, the commission issued Order No. 36106, "(1) Providing Additional Guidance for Opening Briefs, and (2) Extending Deadline for Reply Briefs" ("Order No. 36106"), in which the commission, among other matters, provided additional guidance to the Parties for answering the commission's Preliminary Questions that had been set forth in Order No. 35884.

On February 8, 2019, the HECO Companies, the Consumer Advocate, DERC, EFCA, Energy Island, Life of the Land, Puna Pono Alliance, MRC, and Ulupono filed their Opening Briefs.<sup>15</sup>

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<sup>14</sup>See Letter From: Commission To: Service List Re: Presentations for Technical Conference, filed on January 8, 2019; Letter From: Commission To: Service List Re: Additional Presentations for Technical Conference, filed on January 9, 2019.

<sup>15</sup>Energy Island, LOL, and Puna Pono Alliance jointly filed an opening brief. See "Energy Island's[,] Life of the Land's[,] [and] Puna Pono Alliance's Opening Brief; and Certificate of Service," filed on February 8, 2019 ("Energy Island/LOL/Puna Pono Alliance Opening Brief"). Also on February 8, 2019, REACH filed a Motion to Withdraw from this docket. The Consumer Advocate filed its response to REACH's Motion to Withdraw on February 15, 2019, and no other Parties filed a response to REACH's Motion to Withdraw. On March 22, 2019, the commission issued Order No. 36224, granting REACH's Motion to Withdraw and dismissing REACH from this

On March 11, 2019, the HECO Companies, the Consumer Advocate, and EFCA each filed a Reply Brief; Ulupono, DERC, Energy Island, LOL, Puna Pono Alliance, and MRC filed a Joint Reply Brief; and MRC filed a Supplemental Reply Brief.

## II.

### PARTIES' POSITIONS

Below, the commission summarizes the Parties' responses to each of the Preliminary Questions set forth in Order No. 35884.

#### Preliminary Question No. 1:

How should the term "microgrid" be defined for purposes of the microgrid tariff?

Overall, the Parties' proposed definitions appear to be similar to that already provided in Act 200. EFCA in particular "believes that the definition of a 'microgrid project' as provided in Act 200 is reasonable and should be used for purposes of the microgrid services tariff."<sup>16</sup> EFCA also contends that

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proceeding. Order No. 36224 at 7. Therefore, REACH is no longer a party to this proceeding.

<sup>16</sup>"Energy Freedom Coalition Of America, LLC's Opening Brief And Certificate Of Service," filed on February 8, 2019 ("EFCA

"[n]on-grid-connected microgrids should be excluded from the scope of this proceeding."<sup>17</sup>

The HECO Companies recommend using the following definition:

"Microgrid" is defined for the purposes of the microgrid services tariff as a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the public utility's electrical grid and can connect to the public utility's electrical grid to operate in grid-connected mode as part of normal operations and can disconnect from the grid to operate in island mode during emergency and other non-regular situations.<sup>18</sup>

Opening Brief"), at 5. See also Act 200 (defining "Microgrid Project" to mean:

a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the utility's electrical grid and can connect to a public utility's electrical grid to operate in grid-connected mode and can disconnect from the grid to operate in island mode, and that:

- (1) Is subject to a microgrid services tariff, and
- (2) Generates or produces energy.

<sup>17</sup>EFCA Opening Brief at 13.

<sup>18</sup>"Hawaiian Electric Companies' Opening Brief, Exhibits 1 - 9, And Certificate Of Service," filed on February 8, 2019 ("HECO Companies Opening Brief"), at 12 (footnote omitted) (the underlined words "show the differences between the proposed definition of 'Microgrid' and the relevant portion of the ACT 200 definition of a Microgrid Project."); "Hawaiian Electric Companies' Reply Brief And Certificate Of Service," filed on March 11, 2019 ("HECO Companies Reply Brief"), at 13-14 (footnote omitted).

The Consumer Advocate "generally concurs with" the HECO Companies' proposed definition, but also contends that "it is important to note that there are various types of microgrids."<sup>19</sup>

Ulupono, DERC, Energy Island, LOL, Puna Pono Alliance, and MRC (hereinafter, the "Joint Parties") propose the following definition of "microgrid," based on the definition provided by Act 200, with modifications indicated by underlining:

A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to a public utility's electrical grid and can connect to a public utility's electrical grid to operate in grid-connected mode as part of normal operations of the grid and can disconnect from the grid to operate in island mode.<sup>20</sup>

The Joint Parties, in their Reply Brief, also note that a microgrid "may, depending upon its size and configuration, have more than one point of interconnection with the grid, the specific arrangements for which should be configured with the utility."<sup>21</sup>

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<sup>19</sup>CA Reply Brief at 5.

<sup>20</sup>"Joint Reply Brief By Ulupono Initiative LLC, Distributed Energy Resources Council, Energy Island, Life Of The Land, Puna Pono Alliance, And The Microgrid Resources Coalition; And Certificate Of Service," filed on March 11, 2019 ("Joint Parties Reply Brief"), at 5-6.

<sup>21</sup>Joint Parties Reply Brief at 6.

Preliminary Question No. 2:

What characteristics of a microgrid should be included in the definition of a microgrid?

Overall, the Parties recommend that the definition of a microgrid should include: (i) islanding capability and (ii) use of renewable energy resources.

Regarding a microgrid's islanding capabilities, the Joint Parties assert that "the essential characteristic of a microgrid . . . is its capability to disconnect from the grid and operate in an island mode and thereafter to reconnect to the grid in a manner that supports, or in any event does not detract from or impede, the grid's operation."<sup>22</sup> Similarly, EFCA contends that "the microgrid needs to have islanding capability[,] reasoning that such a requirement "is already reflected in the Act 200 definition and should be retained."<sup>23</sup>

The establishment of a renewable energy requirement was also a characteristic considered by the Parties. The HECO Companies contend that the microgrid services tariff should

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<sup>22</sup>Joint Parties Reply Brief at 6.

<sup>23</sup>EFCA Opening Brief at 8.

require microgrids to use only renewable energy resources, except in emergency situations.<sup>24</sup>

The Joint Parties state that they "support the use of renewable energy for microgrids . . . ." <sup>25</sup> However, the Joint Parties also acknowledge that "creating an effective islanding capability requires flexible resources to balance internal load and to operate for longer periods of time, and that these functions will require the use of fossil-fueled generation, at least for the foreseeable future."<sup>26</sup>

EFCA similarly contends that "any qualifying microgrid should be subject to a minimum renewable energy contribution requirement . . . ." <sup>27</sup> In particular, EFCA recommends that the minimum renewable energy contribution requirement be "measured as a percentage of the energy generated by the generation resources deployed as part of a microgrid."<sup>28</sup>

Generally, the HECO Companies contend that "All MGS Tariff microgrids should be required to (i) satisfy minimum

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<sup>24</sup>HECO Companies Opening Brief at 15, 28; HECO Companies Reply Brief at 19.

<sup>25</sup>Joint Parties Reply Brief at 7.

<sup>26</sup>Joint Parties Reply Brief at 7.

<sup>27</sup>EFCA Opening Brief at 8.

<sup>28</sup>See EFCA Opening Brief at 8.

technical criteria, (ii) provide islanding and grid re-connection capabilities, (iii) satisfy consumer protection requirements, and (iv) use only renewable energy resources (except in emergency situations)."<sup>29</sup>

The HECO Companies further suggest that "(t)he MGS Tariff should compensate 'Public-benefit Microgrids' (i.e., microgrids that provide needed services that benefit the public and are not compensated under other tariffs or programs) for the resiliency services they provide."<sup>30</sup>

The Consumer Advocate asserts that "additional discussion is necessary in the on-going processes to help determine the characteristics of the type of microgrid that will meet the objectives of Act 200 and other considerations identified by the other Parties . . . ."<sup>31</sup> Thus, the Consumer Advocate recommends that the commission "prioritize and focus on addressing what resiliency needs should be met with urgency and the benefits of resiliency should ultimately serve all customers, not just individual customers, to meet the objectives of Act 200."<sup>32</sup>

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<sup>29</sup>HECO Companies Opening Brief at 15; see also HECO Companies Reply Brief at 16.

<sup>30</sup>HECO Companies Reply Brief at 16.

<sup>31</sup>"Division Of Consumer Advocacy's Reply Brief And Certificate Of Service," filed on March 11, 2019 ("CA Reply Brief"), at 8.

<sup>32</sup>CA Reply Brief at 3.

The Consumer Advocate clarifies that "[b]y resiliency, the Consumer Advocate essentially means the ability to provide service after major disruptions that cause or are expected to cause a lengthy electric outage that could take days (rather than hours) to restore service."<sup>33</sup>

Preliminary Question No. 3:

What ownership structures should be included in the microgrid services tariff?

The Parties generally agree that the microgrids services tariff include all ownership structures, at this point in time, including public utilities.<sup>34</sup>

Similarly, the Consumer Advocate acknowledges that various ownership structures, including "[c]ustomer, utility and third-party ownership options[,] may be reasonable structures for ownership of distributed generation."<sup>35</sup> The Consumer Advocate

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<sup>33</sup>CA Reply Brief at 3-4.

<sup>34</sup>See HECO Companies Opening Brief at 23, HECO Companies Reply Brief at 25, 27 (asserting that a microgrid services tariff should not limit the types of permissible microgrid ownership structures).

<sup>35</sup>"Division Of Consumer Advocacy's Opening Brief And Certificate Of Service," filed on February 8, 2019 ("CA Opening Brief"), at 20.



furthermore agrees with several Parties that ownership of microgrid equipment, particularly microgrid generation resources, can vary.<sup>36</sup> "The Consumer Advocate also notes that in some microgrids, [u]tility owned facilities may be involved to provide continuity between customers and generators."<sup>37</sup> Therefore, based on these factors, the Consumer Advocate "recommends that ownership should not be explicitly defined for microgrids at this time."<sup>38</sup>

Likewise, the Joint Parties assert that "the microgrid services tariff should not contain any provisions or requirements dealing with the ownership of microgrids[,]"<sup>39</sup> which would allow the tariff to meet the statutory purposes of the tariff and accommodate "existing and future microgrids in Hawaii [that] are, and may be, owned by various parties in different types of ownership arrangements . . . ."<sup>40</sup> In particular, Energy Island, LOL, and Puna Pono Alliance recommend that "[a]ll other ownership models outside of utility/affiliate ownership should most likely be allowed for microgrids."<sup>41</sup> In addition, DERC specifically

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<sup>36</sup>CA Reply Brief at 10.

<sup>37</sup>CA Reply Brief at 10.

<sup>38</sup>CA Reply Brief at 10.

<sup>39</sup>Joint Parties Reply Brief at 9.

<sup>40</sup>Joint Parties Reply Brief at 9.

<sup>41</sup>Energy Island/LOL/Puna Pono Alliance Opening Brief at 9.

contends that ownership structure "is not germane to the microgrid services tariff" but rather "is . . . determined by the requirements behind the meter, and outside of the jurisdiction of the tariff."<sup>42</sup> EFCA similarly suggests that "the tariff generally [should] avoid limiting the type of ownership structures that are allowed to participate" and to let the market determine the structures to support microgrid development throughout the state.<sup>43</sup>

In its Opening Brief, MRC specifically "recommends that the microgrid services tariff should focus on microgrids developed and owned by customers or by third-party providers for the benefit of the customers."<sup>44</sup> MRC also asserts that private ownership of microgrids "provides many benefits to ratepayers, utilities, and the microgrid customer"<sup>45</sup> and also "allows for greater flexibility and better risk management in implementing changes in technology."<sup>46</sup> MRC further suggests that "[o]ne role

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<sup>42</sup>See "Distributed Energy Resources Council Of Hawaii's Opening Brief And Certificate Of Service," filed on February 8, 2019 ("DERC Opening Brief"), at 4.

<sup>43</sup>EFCA Opening Brief at 9.

<sup>44</sup>"Opening Brief Of The Microgrid Resources Coalition And Certificate Of Service," filed on February 8, 2019 ("MRC Opening Brief"), at 5.

<sup>45</sup>MRC Opening Brief at 6.

<sup>46</sup>MRC Opening Brief at 7.

that utilities may play in the microgrid arena is through utility-private partnerships for hybrid microgrids."<sup>47</sup>

In their joint Opening Brief, Energy Island, LOL, and Puna Pono Alliance recommend that "[i]nitially, the utility and its affiliates should be restricted to microgrids serving primarily LIHEAP<sup>48</sup> [-qualifying] customers and minigrids."<sup>49</sup>

Preliminary Question No. 4:

What microgrid services or functions should be considered in developing a Microgrid services tariff?

In contrast to services or functions "that enhance reliability or resilience<sup>50</sup> of the grid and thereby provide public benefits[,] " the HECO Companies contend that "services or functions that benefit only the customers of the microgrid . . . should not be further compensated under the tariff" because such

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<sup>47</sup>MRC Opening Brief at 7.

<sup>48</sup>LIHEAP refers to the Low Income Home Energy Assistance Program. See <https://humanservices.hawaii.gov/bessd/liheap/>. ("LIHEAP provides heating and/or cooling assistance to needy Hawai'i households by assisting with a one-time payment towards their utility bill (electric or gas) . . . .").

<sup>49</sup>Energy Island/LOL/Puna Pono Alliance Opening Brief at 9.

<sup>50</sup>See HECO Companies Opening Brief at 24 n.39 (explaining distinction between "resilience" and "reliability").

services and functions "will typically be the driving force behind development of the microgrid . . . ." <sup>51</sup>

The Consumer Advocate contends that some of the services or functions that other Parties mention, such as "reduction of distribution line losses and avoidance or deferral of new utility infrastructure[,] . . . are not functions or services."<sup>52</sup> Rather, such capabilities "may be the result of installing and operating generating equipment . . . ." <sup>53</sup> The Consumer Advocate further contends that "achiev[ing] such results would require a case by case evaluation and is not something that can be readily or easily identified in a tariff because an avoided infrastructure investment is site specific and the need for the investment can change over time."<sup>54</sup>

Ulupono observes in its Opening Brief that "[t]he type, nature and availability of services or functions that a microgrid

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<sup>51</sup>HECO Companies Opening Brief at 24, HECO Companies Reply Brief at 27.

<sup>52</sup>CA Reply Brief at 11.

<sup>53</sup>CA Reply Brief at 11.

<sup>54</sup>CA Reply Brief at 11.

might be able to provide will substantially depend on the type of microgrid involved[.]”<sup>55</sup>

Ulupono also observes that “[t]he microgrid function and service that have currently received the most attention [are] its capability of ‘islanding’ for a prolonged period of time should the electric utility grid system shut down . . . .”<sup>56</sup>

Ulupono asserts that “[t]his islanding capability clearly enhances the resiliency of the microgrid and its capabilities to serve its constituency . . . .”<sup>57</sup>

However, Ulupono recommends that including islanding capability in the microgrid services tariff “should be very carefully and fully evaluated[,] and its practicality should be rigorously examined.”<sup>58</sup>

MRC, rather than suggest specific microgrid services or functions, recommends an approach whereby customized services are procured through Requests for Proposals (“RFPs”) and contracts for microgrid generation services are treated as regulatory assets (which MRC describes as being similar to the Potomac Electric Power

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<sup>55</sup>“Ulupono Initiative LLC’s Opening Brief, Annex 1, And Certificate Of Service,” filed on February 8, 2019 (“Ulupono Opening Brief”), at 15.

<sup>56</sup>Ulupono Opening Brief at 16.

<sup>57</sup>Ulupono Opening Brief at 16.

<sup>58</sup>Ulupono Opening Brief at 18.

Company's filing with the Maryland Public Service Commission for public purpose microgrids).<sup>59</sup> MRC reasons that "Procuring customized services on a mid- to long-term contracted basis often provides a cost-effective alternative to a utility implementing a traditional physical system capacity upgrade (often called a wires solution)."<sup>60</sup> MRC also contends that "[c]ompetition for long-term contracts assures fair pricing, and respondents to RFPs may well have more knowledge around technical solutions and the economics of those solutions that depend on optimizing customer systems to respond to the grid's planning and operational needs."<sup>61</sup>

Jointly, in their Opening Brief, Energy Island, LOL, and Puna Pono Alliance assert that "[m]icrogrids can provide ancillary services . . . while meeting societal needs in providing emergency power for civil-defense shelters and/or critical infrastructure including water, wastewater, transportation (including airports/air bases) and telecommunications equipment."<sup>62</sup>

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<sup>59</sup>MRC Opening Brief at 9.

<sup>60</sup>MRC Opening Brief at 8 (emphasis removed).

<sup>61</sup>MRC Opening Brief at 8.

<sup>62</sup>Energy Island/LOL/Puna Pono Alliance Opening Brief at 10.

In their Joint Reply Brief, the Joint Parties state that, of the various microgrid functions and services that are currently available or are expected to be available to the HECO Companies "through their existing tariffs and proposed tariffs and programs[,] . . . the capability of a microgrid to operate in island mode with the result of enhancing energy and electric grid resiliency[] is the unique function and value that a microgrid might provide to the electric grid and the utility's customers."<sup>63</sup>

Upon review, there are several commonalities between the HECO Companies and the Joint Parties on the various services and functions that can be offered by a microgrid, mainly expressing that the services are already covered and/or compensated by existing tariffs or programs.

For example, the HECO Companies list "Fast Frequency Response ('FFR'); Capacity; Regulation services; Non-spinning reserves; Reactive power supply and voltage control; Non Transmission Alternative ('NTA'); Distribution Non-Wires Alternative; Distribution reactive power and voltage control; Distribution Reliability; and Black Start capabilities" as "services that may potentially benefit the grid[,]" and state that

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<sup>63</sup>Joint Parties Reply Brief at 10.

"most of these services are eligible for compensation under other tariffs or programs."<sup>64</sup>

Likewise, the Joint Parties assert that various functions and services that a microgrid "could provide . . . are, or are becoming available, to the HECO Companies through their existing tariffs and proposed tariffs and programs."<sup>65</sup>

These functions and services include:

- the sale of electric energy and possibly capacity to the electric utility, including from renewable energy resources (in Hawaii, currently and most prominently, solar energy) and stored energy from energy storage systems;

- demand response services, including peak shaving, load shifting and other services;

- energy storage capabilities and characteristics (including thermal storage);

- ancillary services, including frequency response and regulation, inertial response, reactive power, voltage control, and operating reserves;

- islanding capability;

- black start capability;

- reduction of transmission and distribution line losses, depending upon the location of the microgrid;

- avoidance or deferral of new utility infrastructure (e.g., a new generation unit, new transmission and/or distribution lines, new transformers and power conditioners, a new substation, etc.); and

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<sup>64</sup>HECO Companies Reply Brief at 29.

<sup>65</sup>Joint Parties Reply Brief at 10.



- reduction in demand in a grid emergency or critical situation (including grid shutdown) to enable the utility to resume grid operation in the most effective manner.<sup>66</sup>

The Joint Parties furthermore assert that, "[f]or the purposes of developing a microgrid services tariff, there is no need to duplicate other HECO Companies' tariffs . . . ." <sup>67</sup>

Relatedly, EFCA recommends "map[ping] each of the various services that the microgrids can perform to the various pathways through which compensation for those services would be provided[,]" which would "help identify if there are any gaps in the current means through which these services are procured and compensated[,]" and whether any incremental approaches need to be developed as part of the microgrid services tariff."<sup>68</sup> EFCA furthermore "supports . . . systematically assessing whether there are any barriers to the ability of a microgrid owner or operator to be compensated for those services. If such barriers do exist, efforts should be undertaken to remove those barriers or allow for additional compensation within the microgrid services tariff."<sup>69</sup>

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<sup>66</sup>Joint Parties Reply Brief at 9-10 (citation omitted).

<sup>67</sup>Joint Parties Reply Brief at 10.

<sup>68</sup>EFCA Opening Brief at 10.

<sup>69</sup>"Energy Freedom Coalition Of America, LLC's Reply Brief And Certificate Of Service," filed on March 11, 2019 ("EFCA Reply Brief") at 7.

Additionally, as an overall matter all Parties believe there is an opportunity to explore specific services and functions that are related to resilience.<sup>70</sup>

Preliminary Question No. 5:

Should a microgrid owner/operator be required to provide a minimum set of services to its customers/subscribers? If so, identify those services, including level of service, where applicable.

The HECO Companies assert that microgrid owners/operators should provide safe, reliable, and appropriate services. The HECO Companies contend that, "[a]t a minimum, microgrid owners or operators must ensure that all of their customers receive safe, reliable, and resilient utility-grade electrical services"<sup>71</sup> and appropriate consumer safeguards

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<sup>70</sup>See HECO Companies Opening Brief at 24 (reiterating that their answer to Preliminary Question No. 2 that "the MGS Tariff should focus on those services that enhance the reliability or resilience of the grid and thereby provide public benefits[]") (citation omitted); CA Opening Brief at 11 (this proceeding "should focus on a tariff that encourages microgrids that meet the State's resilience objectives."), CA Reply Brief at 10 ("that the primary purpose of a microgrid is to enhance statewide resiliency through the ability to operate in island mode when emergencies and non-regular situations occur.").

<sup>71</sup>HECO Companies Opening Brief at 27.

and protections.<sup>72</sup> The HECO Companies further recommend that "microgrids should be held to the same standards as the public utilities . . . , including relevant standards related to safety, power quality, reliability, frequency control, voltage levels and stability, quality engineering, metering, recordkeeping, customer service, billing, and achievement of the RPS during normal operations."<sup>73</sup>

The Consumer Advocate and EFCA recommend that this proceeding prioritize resiliency objectives and services to meet those objectives.<sup>74</sup>

In particular, EFCA contends:

Fundamentally, resiliency investments represent a form of insurance to safeguard the system from force majeure events that have the potential to wreak havoc absent available contingency resources. . . . [H]aving that capacity in place can provide tremendous value should a relatively low probability, but very high impact event, like a Category 4 or 5 hurricane making landfall in Hawaii, actually occur.<sup>75</sup>

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<sup>72</sup>HECO Companies Opening Brief at 28; HECO Companies Reply Brief at 30, 32.

<sup>73</sup>HECO Companies Reply Brief 30.

<sup>74</sup>CA Reply Brief at 17 (contending that "it is in the public interest to focus any investigation in this proceeding on resiliency objectives."<sup>74</sup>), EFCA Reply Brief at 6.

<sup>75</sup>EFCA Reply Brief at 6.

The Consumer Advocate advises that "[t]ackling this objective will require careful consideration to properly frame the definition of resiliency and what resiliency objectives should be addressed as quickly as possible, including, but not limited to, identifying the critical loads and the design and incentives that might be required to encourage microgrid developments to serve those loads."<sup>76</sup>

The HECO Companies agree with the Consumer Advocate that "studies should be performed to identify needs that could be served by microgrids and that the scope of the compensable services must be fleshed out prior to implementation of the MGS Tariff."<sup>77</sup>

Collectively, the Joint Parties, in their Reply Brief, assert that the services that a microgrid owner/operator would be required to provide to its customers should be determined by the contractual arrangements between the microgrid owner/operator and its customers or members; thus the Joint Parties are opposed to requiring that a microgrid owner/operator provide a minimum set of services under a microgrid services tariff. Specifically, the Joint Parties contend that "[t]he microgrid services tariff should . . . not seek to govern the relationship between the

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<sup>76</sup>CA Reply Brief 3.

<sup>77</sup>HECO Companies Reply Brief at 31.

microgrid owner or operator and the microgrid customers or members[,]” but instead the commission should “leave those terms and conditions to the contractual arrangements between the microgrid owner and its customers or members.”<sup>78</sup> Such services would include “the purposes of the microgrid, the terms under which energy and other services will be provided by the microgrid to its customers or members, internal load-shedding protocols, allocation of the benefits of providing services to the grid, compensation rates and other provisions.”<sup>79</sup> Individually, DERC notes that requiring a minimum set of services “is outside the scope of the [commission’s] regulatory responsibilities for assets located behind the meter[,]” and that “[t]he scope of this tariff defines the rules and dependencies for exchanges between the microgrid and the larger utility grid, not the exchanges and activities that occur between micro grid[sic] operator, owners, or customers behind the meter.”<sup>80</sup> Similarly, MRC asserts that “letting sophisticated customers make their own deals will best promote the expansion of microgrids.”<sup>81</sup>

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<sup>78</sup>Joint Parties Reply Brief at 11.

<sup>79</sup>Joint Parties Reply Brief at 10-11.

<sup>80</sup>DERC Opening Brief at 5.

<sup>81</sup>MRC Opening Brief at 9.

Further, EFCA,<sup>82</sup> Ulupono,<sup>83</sup> and MRC<sup>84</sup> do not believe that a microgrid owner/operator should be required to provide a minimum set of services to its customers/subscribers, beyond the capabilities of a microgrid inherent to its definition.

Preliminary Question No. 6:

How should existing tariffs/programs be coordinated and harmonized with the microgrid services tariff, if at all?

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<sup>82</sup>See EFCA Opening Brief at 11 (stating that "[b]eyond meeting the renewable contribution threshold and providing islanding capability, EFCA does not support requiring a minimum set of services to customers or subscribers.").

<sup>83</sup>See Ulupono Opening Brief at 21 (asserting that "it would be of limited value" to require a microgrid ownership group or operator to provide a minimum set of services or requirements).

<sup>84</sup>See MRC Opening Brief at 9 (contending that that the basic requirements for a microgrid are that it: (1) "reliably meets the energy needs of its customers[,]" and (2) "can operate as an island when the utility grid is disrupted[;]" and contending that "[n]o other services should be required, though they should be encouraged.").

The HECO Companies,<sup>85</sup> Consumer Advocate,<sup>86</sup> and Joint Parties indicate that existing and anticipated tariffs/programs cover and/or provide compensation for services that a microgrid project would offer.<sup>87</sup> However, the Joint Parties state that,

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<sup>85</sup>See HECO Companies Opening Brief at 30 (contending that "all of the services potentially provided by a microgrid for the operation of the grid during normal conditions are already eligible for compensation under existing DER and other tariffs and programs."); HECO Reply Brief at 33 (reiterating that "most microgrid services that can benefit the utility grid are compensated under other existing or contemplated tariffs and programs.").

<sup>86</sup>See CA Opening Brief at 9 (asserting that "[b]ecause a microgrid is a combination of existing customer[-]owned and existing utility[-]owned facilities, existing tariffs already provide for service to the existing customer, connection of customer[-]owned energy resources[,] and rates to recover the cost of company[-]owned facilities that currently serve customers and would make up a microgrid project.").

<sup>87</sup>See infra note 89 (HECO states that various existing DER tariffs can compensate a microgrid for services). With respect to specific programs, the Parties state as follows:

Rule 22 (Customer Self Supply ("CSS")): Some of the Parties state that CSS might also apply to microgrids and also provide for an interconnection agreement and for the applicability of HECO Rule 14H (Interconnection of Distributed Generating Facilities with the Company's Distribution System). See Joint Parties Reply Brief at 12-13; see also Uluono Opening Brief at 23. However, the Consumer Advocate believes that the CSS program "may not be suitable for use with microgrids that connect to the utility system and that can operate as an island." CA Opening Brief at 28, CA Reply Brief at 13.

HECO Rule 24, Customer Grid-Supply Plus ("CGS Plus/CGS+"): Most of the Parties assert that CGS Plus/CGS+ might apply to microgrids. CA Opening Brief at 28; CA Reply Brief at 13; Joint Parties Reply Brief at 12-13; see also Uluono Opening Brief at 23. Furthermore, most of the Parties agree that CGS+ might also provide for an interconnection agreement and the

with respect to HECO No. Rule 22 (Customer Self-Supply), HECO No. Rule 24 (Customer Grid Supply Plus), and HECO No. Rule 25 (Smart Export Program), "no specific coordination or harmonization with a microgrid tariff would appear to be necessary or desirable at this time."<sup>88</sup>

According to the HECO Companies, various DER tariffs already exist that can compensate a microgrid for services,<sup>89</sup> and Rule 14.H also allows customers to "interconnect

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applicability of HECO Rule 14H. See Joint Parties Reply Brief at 13; see also Uluono Opening Brief at 23.

Rule 25 (Smart Export): According to the Joint Parties, Rule 25 the Smart Export program might also apply to microgrids and also provide for an interconnection agreement and the applicability of HECO Rule 14H (Interconnection of Distributed Generating Facilities with the Company's Distribution System). See Joint Parties Reply Brief at 13; see also Uluono Opening Brief at 23.

Rule 26 (CBRE): According to the Consumer Advocate (see CA Opening Brief at 28 and CA Reply Brief at 13) and the Joint Parties (see Joint Parties Reply Brief at 13), Rule 26/CBRE also addresses various renewable energy services, but "it is unlikely that microgrids would be an appropriate structure for CBRE projects" because of "the nature and organizational structure of [Rule 26] CBRE projects[.]" Joint Parties Reply Brief at 13.

<sup>88</sup>Joint Parties Reply Brief at 12, 13; Uluono Opening Brief at 22-23.

<sup>89</sup>See HECO Companies Opening Brief at 31-32 (DER Tariffs that can compensate microgrid services include Rule No. 18 (Net Energy Metering - although the program is "[c]losed to new customers as of October 12, 2013"), Rule No. 22 (Customer Self-Supply), Rule No. 23 (Customer Grid Supply), Rule No. 24 (Customer Grid Supply Plus), Rule No. 25 (Smart Export), and Rule No. 27 (Net Energy Metering Plus)).



self-generation through a Standard Interconnection Agreement ('SIA')[.]”<sup>90</sup> To “unif[y] the various terms and features of the various DER tariffs,” the HECO Companies represent that they “plan to pursue a Standard DER Tariff[.]”<sup>91</sup>

According to the HECO Companies, microgrid services could also be covered by the DR Portfolio, which the HECO Companies describe “is in the process of transitioning from utility-administered ‘programs’ into a services-oriented competitive procurement model[,]”<sup>92</sup> drawing from “a potentially growing collection of grid services within an evolving Grid Services Tariff framework” that would “accommodate any beneficial grid services that the [HECO] Companies might develop.”<sup>93</sup> Ultimately, the HECO Companies “envision that microgrid owners may serve as a ‘Supplier[,]’ with whom the HECO Companies “could engage in a multi-year contract . . . for the procurement of any number of services over time, in which case the microgrid would be competing with other potential Suppliers for delivering the same

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<sup>90</sup>HECO Companies Opening Brief at 32.

<sup>91</sup>HECO Companies Opening Brief at 32.

<sup>92</sup>HECO Companies Opening Brief at 32.

<sup>93</sup>HECO Companies Opening Brief at 32-33.

services in a manner that is cost effective for utility grid customers."<sup>94</sup>

According to the HECO Companies, current efforts related to microgrids within the Integrated Grid Planning ("IGP") process include the efforts of IGP working groups to "address[] resiliency criteria" and "structural changes to further develop market opportunities for DER and microgrids through new services and streamlined procurement processes."<sup>95</sup> "In addition to the potential for larger microgrid developers to contract bi-laterally via procurements, targeted programs for smaller customers and microgrids may also be identified in the planning process."<sup>96</sup>

Furthermore, the Joint Parties assert that "[o]ther resources, such as demand response, distributed energy resources, grid support services, and other services, are, or are planned to be, covered under existing and impending tariffs and programs

The HECO Companies recommend that "compensation under the MGS Tariff should focus on otherwise-uncompensated resiliency services provided by microgrids."<sup>97</sup>

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<sup>94</sup>HECO Companies Opening Brief at 33.

<sup>95</sup>HECO Companies Opening Brief at 34. See Docket No. 2018-0165, Instituting a Proceeding to Investigate Integrated Grid Planning.

<sup>96</sup>HECO Companies Opening Brief at 34.

<sup>97</sup>HECO Reply Brief at 33.

The HECO Companies recommend that "compensation under the MGS Tariff should focus on otherwise-uncompensated resiliency services provided by microgrids."<sup>98</sup>

The Consumer Advocate asserts that at this time, there are no rates that are applicable to situations in which a microgrid "disconnect[s] and operate[s] independently from the utility's grid during an outage situation," which "can help with the resiliency of services to those customers in the microgrid area and provide benefits to the utility's system (decreased demand) in restoring service to the other customers."<sup>99</sup>

DERC asserts that "the ability for a customer to island and to maintain power during an outage has a resiliency benefit that . . . can be quantified and should be compensated as a community resource."<sup>100</sup> DERC further contends that "a mechanism should exist for both publicly held and privately held resources to be compensated for their resiliency benefits"<sup>101</sup> because "a community that has resiliency through microgrids public or private, or a mix of both, will be less of a burden on the grid

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<sup>98</sup>HECO Reply Brief at 33.

<sup>99</sup>CA Opening Brief at 13.

<sup>100</sup>See DERC Opening Brief at 6.

<sup>101</sup>DERC Opening Brief at 6.

and on response resources of all types in the event of a critical grid-level event."<sup>102</sup>

Although not presented as a direct response to Preliminary Question No. 6, EFCA's position is that "all microgrids that meet basic eligibility and technical requirements should be eligible to subscribe to and receive compensation for the provision of resiliency services[,] and that such compensation "be structured as a monthly capacity payment with the amount of payment scaling as a function of the amount and duration of the resiliency capacity being provided."<sup>103</sup>

EFCA further notes that quantifying the public benefits that can be derived from the provision of the resiliency services that are core to Act 200 "may differ depending on the type of customers that are directly receiving the resiliency benefit (e.g., critical infrastructure) or other factors."<sup>104</sup> Therefore, "and partially consistent with the ideas put forward by the Consumer Advocate," EFCA contends that "it may be worthwhile to consider providing a differentially higher incentive to microgrids that offer resiliency services to critical infrastructure, that serve customers located in localities where restoration of

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<sup>102</sup>DERC Opening Brief at 6.

<sup>103</sup>EFCA Reply Brief at 11-12.

<sup>104</sup>EFCA Reply Brief at 12.

service may be especially challenging, or that appear more vulnerable to electrical disruptions or outages."<sup>105</sup>

The HECO Companies suggest that the microgrid services tariff "should be structured as a rider to address grid resilience and reliability services as part of a programmatic approach to developing Public-benefit microgrids."<sup>106</sup>

Furthermore, the HECO Companies suggest that the microgrid services tariff "follow a similar structure to the grid service tariff structure proposed in Docket No. 2015-0412" and "specifically define the reliability or resiliency services that the customers or providers could deliver to the grid . . .

.<sup>107</sup> Structured this way, the HECO Companies explain that:

The MGS Tariff would have a rider and a service agreement, and may have a contract appended to it, which would include the incentive calculation for delivering that service. The service agreement would be used to enroll customers into the MGS Tariff by way of enrollment to a program-based rider. Alternatively, a contract could be used to enable an aggregator of DER to participate in providing grid services to the Companies in the formation of a Public-benefit microgrid combining utility assets and aggregated DER . . . .<sup>108</sup>

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<sup>105</sup>EFCA Reply Brief at 12-13 (citation omitted).

<sup>106</sup>HECO Companies Opening Brief at 30.

<sup>107</sup>HECO Companies Opening Brief at 35.

<sup>108</sup>HECO Companies Opening Brief at 35.

(a) The Microgrid Services Tariff Should Compensate for  
Services to the Public

The HECO Companies further contend that "[m]icrogrids should only be compensated for net services delivered to the public, taking into account utility services provided to the microgrid and the possible effect of microgrids on the utility grid customer base."<sup>109</sup>

(b) Microgrid Generation Capacity Limits Should Be Addressed

The Joint Parties note that "the HECO Companies' tariffs for Customer Self-Supply, Customer Grid Supply Plus and Smart Export Program have capacity size limits of 100 kW and deal with electricity generation[,] and that arrangements "where the HECO Companies seek to purchase electricity from generation systems that are greater than 100 kW . . . would be covered under power purchase agreements with the utility."<sup>110</sup>

(c) Rule 14H and Interconnection Issues Should be Revised

The Joint Parties contend that "microgrids that become grid-connected must comply with the HECO Companies' interconnection requirements, and those requirements, which include Rule 14H, will need to be revised to incorporate procedures

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<sup>109</sup>HECO Companies Opening Brief at 36.

<sup>110</sup>Joint Parties Reply Brief at 14.

for a microgrid to disconnect from, and reconnect to, a utility grid if a grid emergency or critical condition (such as a grid shutdown) occurs."<sup>111</sup>

To this end, the Joint Parties recommend that the HECO Companies, Joint Parties, and other interested stakeholders collaborate to "review further possible technical changes to Rule 14H and other interconnection procedures and protocols to permit islanding inverters and provide alternate forms of grid protection."<sup>112</sup>

Preliminary Question No. 7:

How should interconnection standards and procedures be modified, if at all, to enable the safe and reliable integration of microgrids with Hawaii's electric grids (including the development of new standards and procedures, if necessary)?

All Parties assert that interconnection standards and procedures need to be modified.

In particular, the HECO Companies assert that "[i]ncorporating microgrids into the utility grid will require both changes to the existing interconnection requirements and entirely new provisions (e.g., resource availability

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<sup>111</sup>Joint Parties Reply Brief at 14.

<sup>112</sup>Joint Parties Reply Brief at 14.

and scheduling, protection, relaying, and controls), especially if advanced microgrid control features are to be implemented (e.g., utility control of individual microgrid resources) . . . ."<sup>113</sup>

The Consumer Advocate notes that "[a] microgrid operated independently of the utility system will need voltage regulation[;]" however, "[t]he current interconnection standards do not allow customer generators to regulate the utility system voltage."<sup>114</sup>

In addition, the Joint Parties assert that the HECO Companies' interconnection standards and procedures "will need to be revised to incorporate procedures to enable microgrids to disconnect from the grid in a grid emergency or critical situation (such as a grid shutdown) and later reconnect to the grid when the utility is re-energizing the grid."<sup>115</sup> The Joint Parties furthermore state that they "are willing to work with the HECO Companies and other interested stakeholders on this matter."<sup>116</sup>

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<sup>113</sup>HECO Companies Opening Brief at 38, HECO Companies Reply Brief at 39.

<sup>114</sup>CA Opening Brief at 29.

<sup>115</sup>Joint Parties Reply Brief at 15-16.

<sup>116</sup>Joint Parties Reply Brief at 11.



In addition, DERC specifically recommends that Rule 14H be modified "to guide and regulate safe return-to-grid procedures."<sup>117</sup> MRC suggests adding the definition of a microgrid and the technical requirements of the microgrid tariff to Rule 14H.<sup>118</sup>

Similarly, EFCA states that it "supports efforts to streamline or otherwise modify Rule 14H to the degree that the existing interconnection rules are inadequate to support microgrid deployment."<sup>119</sup>

Uluono recommends that the interconnection standards and procedures for a microgrid project use "a somewhat more simplified set of PPA and IA document forms similar to those that have been developed for, and tailored to, the CBRE Phase 1 program."<sup>120</sup> In particular, Uluono suggests that a "Standard Form Contract (SFC)", or simplified PPA, could be used "for the delivery of electric energy from a CBRE program to the electric utility" and could "contain[] the basic provisions in [the HECO Companies'] more comprehensive renewable dispatchable generation PPA

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<sup>117</sup>DERC Opening Brief at 7.

<sup>118</sup>MRC Opening Brief at 11.

<sup>119</sup>EFCA Reply Brief at 11.

<sup>120</sup>Uluono Opening Brief at 30.

form . . . ."<sup>121</sup> This Standard Form Contract "will need to be revised and tailored for purposes of the microgrid PPA[.]"<sup>122</sup> The IA (Interconnection Agreement) would "cover[] the basic elements and requirements of the interconnection arrangement and is based on Rule 14H."<sup>123</sup>

DERC recommends "that the microgrid services tariff layers on top of the existing tariffs, in the same [way] that Rule 14H is the foundation for the existing tariffs[,] "<sup>124</sup> which would "provide[] a better basis of flexibility for the utility and customers."<sup>125</sup>

MRC, in its Opening Brief, contends that a microgrid "should be allowed to negotiate an interconnection capacity that is less than the aggregate capacity of the included generators (and storage discharge capability) based on the ability of the microgrid's hardware and/or software to control to a chosen capacity point or to a signal from the utility (the latter should be a compensated service)."<sup>126</sup>

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<sup>121</sup>Ulupono Opening Brief at 28.

<sup>122</sup>See Ulupono Opening Brief at 28.

<sup>123</sup>See Ulupono Opening Brief at 28.

<sup>124</sup>DERC Opening Brief at 7.

<sup>125</sup>DERC Opening Brief at 7.

<sup>126</sup>MRC Opening Brief at 11.

The Joint Parties strongly contend that the HECO Companies' interconnection review process needs to be streamlined and shortened.<sup>127</sup> In particular, Ulupono asserts that the current interconnection review process and its duration should be further streamlined.<sup>128</sup> The Joint Parties represent that they and other stakeholders "would likely be willing to work with the HECO Companies in this process."<sup>129</sup>

Similarly, EFCA states that it "supports efforts to streamline or otherwise modify Rule 14H to the degree that the existing interconnection rules are inadequate to support microgrid deployment."<sup>130</sup>

However, the Consumer Advocate cautions that "streamlining the interconnection process . . . may [] be difficult to achieve" because "proposed microgrids may be different from each other in physical configuration . . . ." <sup>131</sup> The Consumer Advocate instead recommends expediting or prioritizing microgrids for resiliency purposes that are able to operate in island mode during extended outages, "as opposed

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<sup>127</sup>Joint Parties Reply Brief at 16.

<sup>128</sup>Ulupono Opening Brief at 31.

<sup>129</sup>Joint Parties Reply Brief at 16.

<sup>130</sup>EFCA Reply Brief at 11.

<sup>131</sup>CA Reply Brief at 15-16.

to [other microgrids] that may be for the purpose of self-energy supply and unable to increase statewide resiliency."<sup>132</sup>

To address interconnection concerns, the HECO Companies recommend the following next steps:

- o Reviewing Rule 14.H in the context of monitoring and control requirements for aggregations of DER that participate in a microgrid during grid-connected operations and harmonizing Rule 14.H with the IEEE 1547-2018 and the Companies' requirements included within the Grid Services Purchase Agreements.<sup>133</sup>
- o Review Rule 14.H in the context of inverter requirements for anti-islanding.<sup>134</sup>
- o Review of Rule 14.H in the context of requirements for the interconnection process, specifically with respect to the functions and communications recommended by the Smart Inverter Working Group and the communication protocols specified in the Common Smart Inverter Profile.<sup>135</sup>
- o Review of Rule 14.H in the context of standardization of the utility-resource, utility-aggregator, or aggregator-resource functionality and/or communications.<sup>136</sup>

The Joint Parties suggest that "the HECO Companies form a working group with the Joint Parties and other interested stakeholders to review these changes to the HECO Companies' Rule 14H and other

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<sup>132</sup>CA Reply Brief at 16.

<sup>133</sup>HECO Opening Brief at 39.

<sup>134</sup>HECO Opening Brief at 39.

<sup>135</sup>HECO Opening Brief at 39.

<sup>136</sup>HECO Opening Brief at 40.

interconnection procedures and policies to provide for such disconnect and reconnect scenarios."<sup>137</sup>

EFCA recommends establishing "a systematic review of the interconnection process as it applies to microgrids" in order to determine "where existing requirements may run afoul of some of the key services that microgrids are intended to provide."<sup>138</sup>

Preliminary Question No. 8:

What other provisions, if any, should be considered in developing a Microgrid Services tariff?

To the extent not already discussed above, the commission notes these additional considerations raised by the Parties:

HECO Companies

The HECO Companies recommend "adopting a phased approach to the MGS Tariff with caps and sunsets."<sup>139</sup>

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<sup>137</sup>Joint Parties Reply Brief at 16.

<sup>138</sup>EFCA Opening Brief at 12.

<sup>139</sup>HECO Companies Reply Brief at 41 (citation omitted); HECO Companies Opening Brief at 40.

Consumer Advocate

The Consumer Advocate urges the commission to "give careful consideration that microgrid owners/operators under a microgrid tariff do not lessen the consumer protections provided to electric customers through the current regulatory process and laws that currently protect electric customers."<sup>140</sup> The Consumer Advocate contends that "to the extent that microgrid operators are providing service to unaffiliated entities, the customers of that microgrid should still be entitled to consumer protections . . . even if that service is not from the incumbent utility company . . . ." <sup>141</sup>

Joint Parties

With respect to the HECO Companies' distinction between "public benefit microgrids" versus "private benefit microgrids" initially raised by the HECO Companies during the January 9, 2019 Technical Conference, the Joint Parties represent:

During a subsequent informal meeting involving Ulupono and representatives of the HECO Companies on March 2, 2019, the representatives, in response to a question on this matter, clarified that the HECO Companies did not mean that the reference to "public benefit" and "private benefit" microgrids

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<sup>140</sup>CA Reply Brief at 16.

<sup>141</sup>See CA Reply Brief at 10.

definition that ability provides a "public benefit" because they benefit the grid as a whole and should therefore be compensated for those services when they are provided.

On the presumption that this clarification has been accurately stated, the Joint Parties believe that this confusion has been resolved. If this presumption proves to be incorrect, then the Joint Parties state that such a "public benefit" versus "private benefit" distinction is confusing and not useful, and that the only services that are listed in the microgrid services tariff should be services that by their nature provide such "public benefit" by serving the electric grid as a whole.<sup>141</sup>

#### Other Issues Raised

a.

##### Whether or Not Microgrids Should Be Included in HRS 269-1

The Joint Parties seem to also believe that a microgrid project should not be included within HRS § 269-1, as it asserts that the commission "may find it appropriate to seek a legislative amendment to HRS §269-1 to exclude specifically any person who owns, controls, operates, or manages a microgrid project or projects as defined in HRS §269-46(c) [,]"<sup>142</sup> based on "potential concerns from financing parties that microgrids

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<sup>141</sup>Joint Parties Reply Brief at 18 (emphasis added).

<sup>142</sup>Joint Parties Reply Brief at 17.

amendment to HRS §269-1 to exclude specifically any person who owns, controls, operates, or manages a microgrid project or projects as defined in HRS §269-46(c) [,]"<sup>143</sup> based on "potential concerns from financing parties that microgrids proposed to be developed in Hawaii could be deemed to be subject to regulation as public utilities . . . ." <sup>144</sup>

In contrast, the HECO Companies contend that "until the Legislature decides otherwise, if an entity meets HRS § 269-1 criteria for a public utility, it will be a public utility."<sup>145</sup> The HECO Companies contend that "redefining HRS § 269-1 far exceeds the scope of Act 200[]" and assert that "the Legislature considered whether to exempt microgrids from HRS § 269-1 but expressly chose not to."<sup>146</sup>

b.

Whether the Microgrid Services Tariff should  
be Applicable to the HECO Companies

The HECO Companies contend that, based on the applicability of Act 200 and current active dockets, a microgrid services tariff "should not apply to the Companies[]" because

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<sup>143</sup>Joint Parties Reply Brief at 17.

<sup>144</sup>Joint Parties Reply Brief at 17.

<sup>145</sup>HECO Companies Reply Brief at 45.

<sup>146</sup>HECO Companies Reply Brief at 45.



"The Companies are already subject to standards and requirements to build microgrids and can be compensated for installing microgrids under the current ratemaking structure as well as in other dockets such as performance based ratemaking in Docket No. 2018-0088 ('PBR Docket')." <sup>147</sup> However, "[t]he MGS Tariff should not prohibit the Companies from building microgrids but should be aligned with other open dockets such as the PBR Docket to encourage collaboration, creation, and use of appropriately created utility microgrids." <sup>148</sup>

c.

Scope of a Regulatory Regime for Microgrids

EFCA asserts that, based on the proceeding so far, "it appears that there is currently a way for microgrids to be developed and deployed in Hawaii[,] and therefore "there is not a clear need to establish a comprehensive regulatory regime to govern the establishment of microgrids as suggested by the HECO Companies' extensive comments." <sup>149</sup> Rather, EFCA contends that the HECO Companies' approach "will undermine the statutory intent of

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<sup>147</sup>HECO Companies Reply Brief at 5. See also HECO Companies Opening Brief at 8 ("In reviewing the applicability of the MGS Tariff, ACT 200, and the current active dockets, it may not make sense to apply the MGS Tariff to the Companies.").

<sup>148</sup>HECO Companies Opening Brief at 8, HECO Companies Reply Brief at 5.

<sup>149</sup>EFCA Reply Brief at 9.

to slow the deployment of microgrids and/or prevent any entity from opting into the tariff[.]”<sup>149</sup>

### III.

#### DISCUSSION

The commission appreciates the extensive feedback offered by the Parties at this point in the proceeding, including the Technical Conference hosted in January and responses to the commission’s Preliminary Questions. Based on this feedback, the commission makes a number of observations and determinations that are intended to prioritize remaining work of the Parties in support of meeting the objectives of Act 200.

#### A.

##### Commission’s Observations in Support of Act 200 and a Microgrid Services Tariff

#### 1.

##### Improving Resiliency is a Primary Focus of Act 200 and should be the Initial Priority of Microgrid Services Tariff

Section 1 of Act 200 discusses the vulnerability of island energy systems to extreme weather events or other disasters, and the role that microgrids can play in building energy resiliency into communities, thereby increasing public safety and security.

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<sup>149</sup>EFCA Reply Brief at 9-10 (citations omitted).

and the role that microgrids can play in building energy resiliency into communities, thereby increasing public safety and security. The preamble also references the ability of microgrids to support integration of renewable energy systems and provide valuable services to the public utility electric grid.

The initial discussions in this docket have encompassed a broad spectrum of possible attributes and applications for microgrids. To better focus the commission's and Parties' near-term efforts on activities that can support the intent of Act 200, the commission's initial priority in developing the microgrid services tariff is to facilitate applications of microgrids that improve energy resiliency, particularly the islanding of microgrids during emergency events and grid outages to provide backup power to customers and critical energy uses. As discussed further, the commission will take broader feedback on potential modifications to existing programs that could improve opportunities for microgrids to provide grid services. However, given the priorities established by Act 200 and the remaining vulnerabilities of Hawaii's energy systems to extreme events, the focus for the remainder of this docket is to facilitate the ability of microgrids to island and provide backup power to customers and critical energy uses during contingency events.

2.

Current Programs and Interconnection Rules Provide Pathways to Develop Microgrids but may Limit Multi-Customer Applications

The Parties' presentations and briefs highlight a number of currently operating microgrids. These applications have been developed through existing DER programs and interconnection rules or through a utility application to the commission (i.e., applications made pursuant to the commission's General Order No. 7). As such, there may be opportunities to lower barriers for future customers and improve efficiencies of utilizing current programs.

3.

Multi-Customer Microgrids Currently Do Not Appear Feasible Without Direct Utility Participation

Based on the Parties' briefs and responses to the commission's Preliminary Questions, a group of customers (or accounts owned by same customer) that desire to utilize their DERs to supply critical loads during an emergency or sustained outage do not appear to have a clear pathway to use these resources for backup power, unless the utility is directly participating in the project, such as the Schofield Barracks Generation Station project. This appears to be a potentially significant limitation on future development of microgrids whether the project is designed

to support facilities with broader public benefits or solely for private use during an outage.

4.

Current Interconnection Standards For  
Microgrids Lack Standardization

Section 4i of the Company's Interconnection Standards (Appendix I to Rule 14) allows a customer to manually or automatically isolate their generating facility from the utility system after the utility approves the "alternative design proposal" submitted by a customer. This section also states that the utility shall not unreasonably withhold such approval. The commission is not aware of complaints from customers where approval was unreasonably withheld but posits that standardized technological requirements may better facilitate the microgrid development and the microgrid services tariff envisioned by Act 200. In this respect, utilities in New York and Puerto Rico have taken the next step by developing technical requirements for microgrid interconnection.<sup>151</sup>

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<sup>151</sup>See ConEdison's Technical Requirements for Microgrids, available at <https://www.coned.com/-/media/files/coned/documents/save-energy-money/using-private-generation/specs-and-tariffs/eo-2161.pdf?la=en> and Puerto Rico's Microgrid Interconnection Standards at <http://energia.pr.gov/wp-content/uploads/2018/05/Resolution-Adoptation-of-Microgrid-Regulation-Final.pdf>.

Existing Programs/Tariffs Provide  
Compensation But May Require Adjustments

Based on review of the Parties' comments, there appears to be consensus that existing programs provide a framework for compensation of energy and other grid services from the DERs within a potential microgrid.<sup>152</sup> Some Parties have noted possible limitations on program size that may impact the ability of a DER to supply a larger microgrid.<sup>153</sup> Several Parties have noted the lack of any compensation for resiliency and advocated that the microgrid services tariff provide compensation for this service.

Clarity On Distribution-Level Wheeling Rules Appears Necessary  
To Facilitate Private, Third-Party Microgrid Development

The lack of any rules or tariffs to utilize existing utility distribution infrastructure currently prohibits a group of customers with interconnected loads and DERs that meet the definition of a microgrid project (i.e., act as a single controllable entity that could disconnect from the grid in island

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<sup>152</sup>HECO Companies Reply Brief at 29, Joint Parties Reply Brief at 10, 12-15.

<sup>153</sup>Non-export limits set by an individual customer's load profile may be too restrictive when considering the diversified load of all interconnected customers.

mode) to act as a microgrid and provide service to those customers inside the microgrid during certain events. This present situation does not appear consistent with Section 269-46(b) which states, "Any person or entity may own or operate an eligible microgrid project or projects; provided that the person or entity complies with all applicable statutes, rules, tariffs, and orders governing the ownership and interconnection of the project or projects." Section 269-46 also makes clear that the microgrid services tariff needs to provide fair compensation for electricity, electric grid services, and other benefits provided to, or by, the electric utility, the person or entity operating the microgrid, and other ratepayers.

7.

Microgrid Demonstration at Natural Energy Laboratory  
of Hawaii Authority (NELHA)

Section 4 of Act 200 notes potential opportunities for microgrid demonstration projects at NELHA. NELHA is not a party to this proceeding but representatives working on a demonstration project at the site did participate in the January Technical Conference.<sup>154</sup> The commission is supportive of demonstrations

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<sup>154</sup>See Letter From Commission To Service List Re: Additional Presentations for Technical Conference, filed on January 9, 2019, at 11-12.

at the NELHA facility to test advanced technologies and market concepts that can facilitate microgrid development consistent with the purpose of Act 200. To the extent regulatory flexibility is necessary to test these applications, the commission is open to proposals from NELHA and the HECO Companies that would support these projects and further the objectives of Act 200.

B.

Commission's Determinations Regarding Priority  
Items for Resolution in this Docket

Based on the foregoing observations, the commission makes the following determinations to prioritize items for resolution in this docket and establish a microgrid services tariff consistent with the objectives of Act 200:

- Standardized Interconnection language is necessary to facilitate broader adoption of microgrids.
- Revisions to existing programs/tariffs combined with interconnection process improvements may be more appropriate to support microgrid applications at individual customer sites.
- A microgrid services tariff combined with interconnection improvements can open market development opportunities for multiple customers/users:



- o The proposed initial focus for this tariff is the islanding of a microgrid during emergency conditions and outages to improve resiliency and provide service to customers and subscribers while the utility grid is down.
- o The commission is open to considering wheeling of power during these conditions to support resilience during outage events.
- o The Parties should consider appropriate compensation for utilization of utility infrastructure during an outage with no grid power source or anticipation of emergency event.
- o The commission is supportive of reducing or removing regulatory barriers to private investment in microgrids when primary resiliency benefits accrue to microgrid participants, but is not inclined to provide compensation from non-participants if there are limited or no broader benefits to the public and non-participants.
- o In cases with clear, broad-based public benefits, the commission may consider compensation through the MGS Tariff for resilience benefit, but the burden is on the Parties to justify this benefit.
- o The commission expects that microgrids developed under the MGS Tariff would be allowed to enroll in

existing and future programs to receive compensation for other grid services/value streams.

- o The commission requests recommendations to modify existing programs and introduce new programs in efforts to encourage the development of microgrids that bolster resilience, but expects that any actions on such recommendations would take place in other dockets.

C.

#### Working Groups

Based on these determinations, the commission requests that Parties form two working groups to address the issues identified and discussed above: (1) a Market Facilitation Working Group and (2) an Interconnection Standards Working Group, which are expected to complete the following tasks in the next six (6) months of the filing of this Order.

1.

#### Market Facilitation Working Group

The commission requests that the Market Facilitation Working Group recommend draft tariff language for the MGS Tariff, suggest modifications to existing tariffs and programs (including DER and DR), and propose new programs that would facilitate microgrid development consistent with the

guidance offered above. The commission asks that the Parties produce, at a minimum:

- Draft tariff language for an MGS Tariff that, as an initial step of development, supports resiliency of energy services during emergency events and grid outages;
  - This draft tariff language should include how the participating customers would opt-in to a microgrid, island from the grid, operate as a single controllable entity during islanded condition, and reconnect with the grid;
- Recommendations for determining compensation, if any, to the electric utility for use of the utility's distribution system during an outage, if necessary;
- Actionable recommendations on how to modify existing programs to support microgrid development, where appropriate;
- Actionable recommendations for new programs and services where applicable and deemed necessary; and
- Recommendations on appropriate compensation for clearly identified grid services, consistent with guidance above (i.e., microgrids that offer broad-based benefits for non-participants).<sup>155</sup>

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<sup>155</sup>See Section III.B.

The commission recognizes that the Parties may not reach consensus on all elements. Should this occur, the commission therefore asks that the Parties identify areas of consensus and provide their individual perspectives on areas of disagreement.

The primary expected end product of this working group will be actionable recommendations for the MGS Tariff language, proposed actions for existing DER programs, and potential new programs that would facilitate microgrid development.

2.

Interconnection Standards Working Groups

The commission requests that the Interconnection Standards Working Group develop a new section of Rule 14H specific to interconnection and islanding/reconnection of microgrids. The proposed interconnection changes should support microgrid and backup power applications under existing tariffs and the MGS Tariff. Consistent with Act 200, the new section of Rule 14H should standardize and streamline interconnection requirements and processes for existing and new microgrids. The commission understands that this is an emerging area for commercial applications, but some early examples are available (e.g., ConEdison and Puerto Rico). The Interconnection Standards Working Group should examine these examples and incorporate

aspects that are relevant to Hawaii's market. As with the Market Facilitation Working Group, the Interconnection Standards Working Group also should work to achieve consensus where possible and identify areas of disagreement/individual positions where appropriate.

3.

Process for Working Groups

The commission asks that the Working Groups collaborate independently of commission facilitation and be available for periodic (likely monthly) status conferences with the commission and commission staff. In these status conferences, the commission or its staff will inquire on each Working Group's respective progress towards reaching the commission-requested work products.

As an initial estimate, the commission is targeting an approximate six-month timeline for the Working Groups to develop and submit the requested work products. Upon submission, the commission will take appropriate actions to develop the final tariff language, Rule 14H updates, potential modifications to existing tariffs and programs, and new programs.

D.

NELHA Demonstration Site

Consistent with Act 200, the commission recognizes NELHA's facility and HOST tech park as a potential demonstration site for advanced technologies and commercial applications that can facilitate resiliency through microgrid development. If NELHA and/or the HECO Companies wish to request regulatory flexibility to support demonstration project(s) consistent with the intent of Act 200, specific requests can be made in the instant docket while open. The commission does not guarantee that the proposal(s) will be approved, but generally supports opportunities for regulatory flexibility at this specific site that can facilitate microgrid applications that improve resiliency of Hawaii's energy systems.

E.

Commission's Determinations Regarding Issues Raised by Order No. 35884 and Discussed in Parties' Opening and Reply Briefs

The following section discusses the areas by which the commission makes a determination on issues raised and discussed in response to the Preliminary Questions proposed in Order No. 35884, and raises topics for further discussion by the Parties.

1.

Definition of "Microgrid"

Having reviewed and given due consideration to the Parties' positions, the commission finds that the definition of "microgrid" currently used by the United States Department of Energy and iterated in Act 200 is appropriate for the purpose of the MGS Tariff. Therefore, the commission finds and concludes that, at this time the definition of "microgrid" will remain consistent with the definition used by the Department of Energy and Act 200.

2.

Renewable Energy Requirement

The commission notes that the HECO Companies, the Joint Parties, and EFCA support inclusion of a renewable energy component in the microgrid services tariff.<sup>156</sup> With respect to this recommendation, the commission believes that the renewable energy requirement under the MGS Tariff should be flexible enough to allow the capacity and duration necessary for proper grid restoration and extended grid support if necessary. The commission therefore will allow microgrids under the MGS Tariff to have a mixed resource profile.

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<sup>156</sup>See supra Section II., Preliminary Question 2.

Nonetheless, with the continued advancement of technology and opportunities for cost efficiencies, the commission expects the inclusion of more renewable resources in the energy portfolio of future microgrids that support the achievement of Hawaii's RPS goals. Those who participate in the microgrid services tariff should be cognizant of the State's broader energy policy goals, and aim to develop microgrids that primarily consist of renewable energy resources. As such, the commission further finds that the issue of whether the MGS Tariff should include a specific renewable energy threshold requires further discussion.

F.

Proposed Process for Remainder of Proceeding

In order to finalize the formation of the Working Groups and to review the commission's expectations of the Working Groups, the commission will host a Technical Conference in mid- to late-September 2019. All Parties should plan to attend. In this Technical Conference, commission staff will: (1) review the commission's determinations for priority items, (2) review the intended functions of the Working Groups, (3) review the tasks assigned to each Working Group as well as the specific deliverables and outputs expected, and (4) review the Working Group process and a potential schedule for the status conferences facilitated by the commission and commission staff.



The following table provides a high-level overview of the proposed process for the remainder of this proceeding. A formal procedural schedule will follow this order and the commission strongly encourages the Parties to begin Working Group discussions immediately.

Action	Schedule
Commission issues Procedural Order and Schedule	By end of August 2019
Technical Conference by Commission Staff to kickoff Working Group Discussions	Mid- to late-September 2019
Working Group Discussions and Status Conferences with Commission	Mid- to late-September 2019 through February 2020
HECO files Draft Microgrid Services Tariff and Rule 14H Updates	March 2020
Parties file comments on Draft Microgrid Services Tariff and Rule 14H Updates	April 2020
Commission Decision and Order	Subsequent to receiving comments on Draft Microgrid Services Tariff

IV.

ORDERS

THE COMMISSION ORDERS:

1. The Parties are directed to begin forming the following working groups: (1) the Market Facilitation Working Group and (2) the Interconnection Standards Working Group, which

are created pursuant to the guidance in this Order and to provide the work products and end products described above.

2. Requests by NELHA and/or the HECO Companies for regulatory flexibility to support demonstration project(s) consistent with the intent of Act 200 may be made in the instant docket.

3. For the purpose of this proceeding, the definition of "microgrid" will be the definition used by the United States Department of Energy and in Act 200.

4. After further review and discussion, the commission will make a determination on a specific renewable energy threshold. Until such time, the MGS Tariff will allow microgrids to have a mixed resource profile.

DONE at Honolulu, Hawaii AUG 20 2019

PUBLIC UTILITIES COMMISSION  
OF THE STATE OF HAWAII

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

APPROVED AS TO FORM:

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By Leodoloff R. Asuncion Jr. Leodoloff R. Asuncion Jr., Commissioner

CERTIFICATE OF SERVICE

The foregoing order was served on the date of filing by U.S. mail, postage prepaid, and properly addressed to the following parties:

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