

FIT Reliability Standards Key Points

With the recent filings made in the Feed-in Tariff (FIT) docket on reliability standards, there have been many questions from renewable developers and others about the Hawaiian Electric companies' position on connecting renewable energy projects on each of the islands.

- Our goal remains getting as much of all kinds of cost effective renewables on our grids as possible, consistent with our overarching clean energy goal to stabilize and, if possible, reduce the cost of electricity now produced mostly by fossil fuels. In doing so, we must:
 - Meet our obligation to provide reliable service for all customers;
 - Ensure that output from existing renewable energy projects is not curtailed as new projects are added; and
 - Avoid situations where new projects are added that the owners cannot get full value from because the grid cannot reliably accept the electricity.

These are not simple issues and we take our responsibility to meet all of these goals very seriously. We need to address them in a responsible way, while continuing to move forward on Hawaii's important clean energy goals.

- So to be clear: HECO, HELCO and MECO are *continuing to accept and connect PV systems on all islands we serve*.
 - In some cases there may be individual circuits that are already so heavily loaded with intermittent renewable energy that adding more could create reliability problems for customers on that circuit. We will work with the developers/customers in those cases to help them find other options.
- At the same time, we have asked the PUC to quickly establish a Reliability Standards working group -- to include the utility, renewable energy developers and other local and national technical experts -- to identify actions -- in the near-term, mid-term and long-term -- to add more distributed, customer-sited renewable projects while avoiding reliability problems already experienced, particularly on Hawaii Island.

The group will work in an open, transparent fashion to frame the issues and the solutions as quickly as possible.

- We continue to accept net metering applications on all islands up to the existing program levels set by the PUC. We propose future increases be evaluated through the Reliability Standards working group.
- We will continue to process standard interconnection agreement applications (known as "no-sale" interconnection requests or Rule 14-H agreements).
- For purchase power agreements (PPAs), we are continuing to move forward to finalize negotiations with numerous projects in progress on Oahu, Maui and Hawaii Island.
 - For other intermittent renewable energy providers seeking PPAs, HELCO and MECO will continue to work with developers to evaluate proposal completeness and viability. Determinations on performance requirements, curtailment and contracting priority will await establishment of the FIT reliability standards. On Oahu, with a larger grid, we will continue to work as quickly as possible to move viable renewable projects forward.

Background & Q&A:

- As an important step in the Feed-in Tariff docket, the PUC asked our utilities to develop reliability standards and noted the utilities have an “**obligation to ensure system reliability**” and should not add projects that substantially jeopardize reliability or result in curtailment of output from existing renewable energy projects when new projects are added.
- Hawaii utilities are already national leaders (all in the top 10 for solar watts per customer) in integrating solar energy into their grids, according to the Solar Electric Power Association (SEPA).
- Oahu, with a larger grid, has room for considerably more renewables, but Maui and Hawaii islands already have very high levels of intermittent renewable energy sources.

Island	Total intermittent Renewables (MW)	Percentage of System Peak
Oahu	9.8 MW	0.8%
Hawaii	56.4 MW	29.0%
Maui	34.6 MW	17.3%
Lanai	1.22 MW	26.0%
Molokai	0.29 MW	5.0%

- An independent consultant, hired to help develop the FIT reliability standards proposal, found those islands have at times experienced grid instability and other reliability problems due to the high amount of intermittent renewable energy on those islands. This is especially an issue for the Big Island.
- Although our reliability standards filing for the FIT did recommend a pause in adding even more *intermittent* renewable energy on the neighbor islands until we can ensure it can be added without reliability problems on their grids, and without hurting existing renewable projects: (1) we have since clarified that this does not mean an immediate stop; (2) this proposal is still subject to review and a ruling by the PUC, and (3) it is our hope and intent that solutions from the stakeholder working group can mitigate the need for such deferment.

In the meantime we are continuing to interconnect systems and we are continuing to work aggressively to add more renewable energy from other firm power sources and other major renewable projects already in process.

Q&A

Why are reliability standards important?

- Reliability and power quality (reliable power at 60 Hz) are essential for high tech equipment in customers’ homes, hospitals, businesses (like bank data centers, for example). Poor power quality can damage customers’ electronic equipment and even lead to outages and damage to the grid.
- In the PUC’s FIT ruling, it ordered development of reliability standards that “define most circumstances in which a FIT project can or cannot be incorporated on each island.” The PUC noted the utilities have an “obligation to ensure system reliability” and therefore **an obligation to refuse to interconnect projects** that will substantially compromise reliability.”

- Also the standard must not “markedly increase curtailment for existing or new renewable energy projects.”
- With the high amount of variable renewables already on Maui and the Big Island, the output of existing renewable energy generators is already curtailed at times when renewable energy projects may be producing more electricity than the grid can use at that time.
- System operators on those islands are already experiencing under-frequency, stability and other system reliability issues.*

* Background info: PV is highly variable. It changes during the course of the day as the angle of the sun to the panel changes from morning to night. Also, for example, clouds causing a shadow or leaves falling on the panels can change the output within seconds.

What’s next?

- Other parties to the docket, including the Consumer Advocate, can submit their own reliability standard suggestions and comment on the utilities’ proposal
- Ultimately, the PUC will consider the proposals of the parties and issue a decision and order.
- In the meantime, we will continue to interconnect PV and other renewable energy systems.
- In parallel, the Hawaiian Electric companies will immediately convene a working group with the other parties in the FIT docket, other industry stakeholders and technical experts, to work transparently to better understand the constraints and technology options available. .

Why isn’t Kauai Island Utility Co-op imposing such limits on distributed RE systems?

Unlike Hawaii and Maui, Kauai does not have any wind farms and therefore the challenges we are discussing in balancing these types of intermittent resources are not present. The other current source of renewable energy on Kauai is "run-of-the-river" hydro power, which is subject to river flow levels during the course of the year. While it is flowing, it provides consistent power and does not fluctuate as much as wind or solar. Kauai's ability to accept increasing levels of PV should therefore remain strong for some time, unless they install wind farms on their grid.

According to KIUC, they are continuing to interconnect PV systems on their distribution circuits to determine what their limitations on renewable DG are before power quality issues arise. They note that while they do not have caps in place, there are definite limits and they will learn as they go to determine what they are.

What about limits on Oahu?

Oahu is a much larger grid and current distributed renewable penetration on Oahu is much lower. There is a lot more room for distributed RE projects on Oahu before the reliability issues already being experienced on Maui and the Big Island are encountered and the solutions from the working group could prevent this from being an issue on Oahu.

###