

Rooftop Solar System Adapts to Grid Interactive Regulations

Chilicon Power rooftop solar power systems now comply with utility regulations regarding power factor control and curtailment of power feed to grid, and also give homeowners real-time information regarding power consumption which they can use to reduce their electric bills.



IDEC Corporation, Sunnyvale, CA, January 21, 2016 – One of the main benefits of rooftop solar power systems worldwide is feeding excess power to the grid, which causes the utility meter to subtract electricity use from the customer's bill.

However, net metering programs in Hawaii are undergoing rapid change. The Hawaiian Electric Company (HECO) has mandated that the majority of newly installed distributed energy resources (DERs) should not supply power to the grid (backfeed), and should instead only supply energy to the customer's own power load. Chilicon Power's rooftop solar inverters and monitoring gateway now meet this challenge.

The power measurement device required for compliance with these new programs and regulations also provides graphically rich information regarding a home's real-time power consumption, allowing homeowners to make actionable choices for how much power to consume and when. Eventually, this device will allow utilities or Chilicon Power to issue power consumption advice to customers which will allow them to schedule electric water heating, HVAC control, charging of batteries and other elective power usage to minimize their electric bill charges.

The end of net metering in certain jurisdictions means that utility companies are now requiring providers of rooftop solar systems and some other DERs to provide a means to stop power feed to the grid (curtailment) upon notification from the utility. In addition, the Hawaiian Electrical Company (HECO) is leading the way in terms of smart inverter requirements with Rule 14H, which mandates that grid interactive inverter systems are able to supply reactive power to the grid.

Heavy electric motor and other loads can consume current out of phase with grid voltage. Utility company infrastructure costs can therefore be reduced if the reactive power needed to balance this current consumption is supplied locally by grid interactive inverter systems installed in DERs. Chilicon

Power's rooftop solar systems now comply with HECO's Self Supply and Smart Advanced Inverter regulations, helping to ensure grid stability as distributed generation becomes more prolific.

Chilicon's inverter systems are also California Rule-21 compliant. In HECO's jurisdiction, solar photovoltaic penetration approaches 15% on some electric distribution branches. While utilities on the mainland are years behind in terms of solar photovoltaic penetration rates, Rule-21 is widely expected to become the new standard for DER smart inverter control by utilities across the U.S.

The Chilicon Power CP-100 gateway energy monitor is a key component of Chilicon's rooftop solar systems and provides real-time curtailment of power production in compliance with the PUC Self-Supply Reverse Power Flow Elimination requirement. The system operates under 'Option 5 (Advanced Inverter Functionality)' of the PUC decision and order No. 33258.

Curtailment is provided via messaging to the gateway from the utility, with the power export level from the solar system inverters controlled continuously between 0W and 285W. Typical reaction time is 15 seconds between measurement of reverse power flow and curtailment of power flow from the inverters. The PUC allows up to 60 seconds. The inverters are not switched off during curtailment. Instead, their power export is reduced to meet the self-supply requirement.

The system works through connection of two current transformer (CT) clamps applied to each of the 120V phases at the utility meter of the customer's home. These CT clamps send magnitude and direction of power flow information wirelessly (at 908MHz) back to the Chilicon CP-100 gateway. The CP-100 gateway device monitors these CT clamps for sign of power backfeed to the grid.

If backfeed is imminent and if a curtailment request has been received from the utility, then a broadcast message is sent over the power line communication to the inverters to reduce their production. The inverters can be 'throttled' from 100% to 0% in order to provide full or no power production to comply with the PUC Self-Supply Reverse Power Flow Elimination requirement.

Beyond the existing gateway and inverters, only the installation of the inexpensive Chilicon Power wireless CT clamps accessory is required, simplifying compliance for new and existing systems.

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About Chilicon Power: Located in Los Angeles, Chilicon Power designs and manufactures microinverter products and power monitoring solutions for distributed generation applications. Chilicon has operated since 2010 and is delivering its second generation of products. The company believes in a sustainable business model and has operated in a cash flow positive manner throughout its growth. Chilicon Power

emphasizes quality in its products and has invested significant resources in its U.S.-based manufacturing processes. For additional information, visit www.chiliconpower.com