

Net Energy Metering (NEM)

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Maui Electric Company, Ltd.

What is Net Energy Metering (NEM)?

- A program that allows customers to receive retail-value credit for the net energy produced by their interconnected renewable energy system
- Net Energy Formula
$$\begin{array}{l} \text{kWh from Utility (Consumption)} \\ - \text{kWh from Customer (Production)} \\ \hline = \text{Net kWh} \end{array}$$



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NEM Procedure for Systems $\leq 10\text{kW}$

- Does not require pre-approval from MECO to begin installation
- When system is installed, the following steps must take place:
 1. NEM agreement must be completely filled out and submitted to MECO.
 2. MECO will set up an appointment to inspect your system.
 3. An inspection done by the County of Maui (COM) must be scheduled, completed and approved by COM standards.
 4. MECO will process the NEM agreement when the above steps are completed in their entirety.



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NEM Procedure for Systems >10kW and <100kW

- Requires pre-approval from MECO to begin installation
 1. Submit Exhibit A (from NEM Agreement for Systems >10kW and <100kW), single-line diagram, and inverter and generation module spec sheets to MECO
 2. Submit Inverter Setting Confirmation Form if system size > 30kW to MECO (Certifies that inverter can meet frequency trip requirements as specified by MECO)
 3. MECO has 15 business days to conduct technical analysis of proposed system
 4. If proposed system meets MECO requirements, an official notification is given to applicant (usually installer), where a timeline of 6 or 9 months will be specified (for systems ≤ 30 kW or >30 kW, respectively).



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NEM Procedure for Systems >10kW and <100kW

- Within given timeframe, the following criteria must be met:
 - Project Installation
 - Submission of completed NEM agreement
 - Submission of line diagrams (three-line diagrams if system is greater than 30 kW)
 - Passing MECO Inspection
 - Passing County of Maui Inspection
 - Submission of Certificate of Insurance, naming MECO as additionally insured



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Feeder Penetration Limits

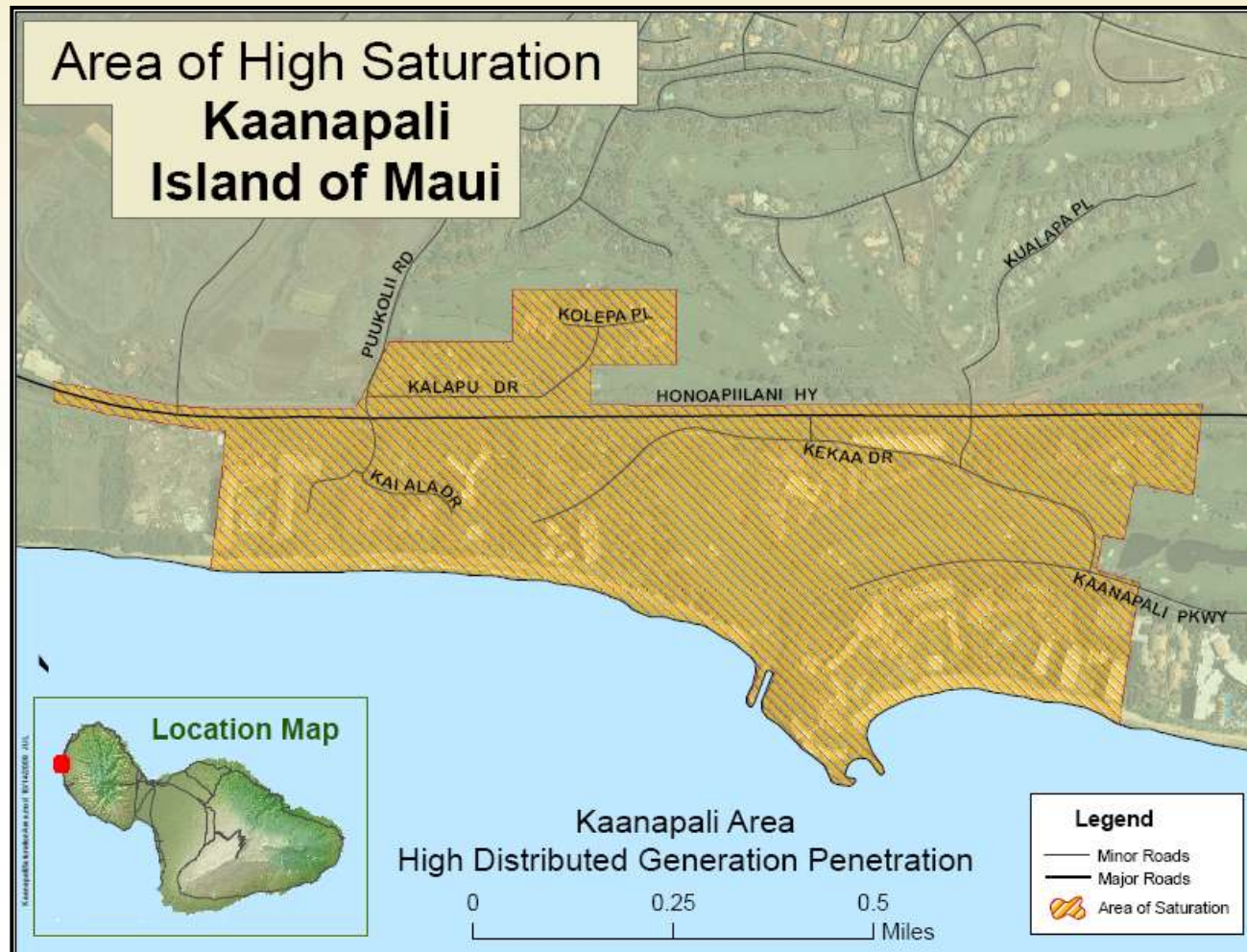
- Areas of high saturation denote circuits that are approaching, have reached or exceeded the 15% feeder penetration level
 - Approaching Areas:
Wailuku/Kahului, Ukumehame/Olowalu/Lahaina
 - At or Exceeded Areas:
Kaanapali (Maui), Kaunakakai (Molokai), Manele (Lanai)
- If a project site is within area of saturation, an interconnection study must be conducted to proceed
- PUC (Public Utilities Commission) approved increase from 10% to 15%, effective May 27, 2010



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Feeder Penetration Map



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Where Can I Learn More?

- Visit the National Renewable Energy Laboratory website (www.nrel.gov)
- Visit www.mauielectric.com → Click on “Renewable Energy Tab”
 - To learn more about the program, click on “Net Energy Metering” (shown in following slides)
 - To learn about feeder penetration, click on “Important Updates”, then “Feeder Penetration Limits” (shown in following slides)



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MECO Website: Net Energy Metering



The screenshot shows the Maui Electric Company website. At the top left is the MECO logo. To its right is the company name "Maui Electric Company, Ltd." and a search bar with a "go >" button. Below the search bar are links for "Account Login" and "Contact Us". A green navigation bar contains the following menu items: "Residential Services", "Business Services", "Renewable Energy", "Safety and Emergency", "Jobs", and "About Us". Below the navigation bar is a breadcrumb trail: "Home / Renewable Energy / Renewable Energy Presentation Page". The main heading is "Renewable Energy". On the left is a sidebar menu with the following items: "Renewable Energy Basics", "Our Support for Renewables", "Integrated Resource Planning", "Research Projects", "How You Can Help", "Net Energy Metering" (circled in red), "Sun Power for Schools", "Wind Maps", and "Important Updates". The main content area has the heading "Renewable Energy for Hawaii" and a sub-heading "Renewable Energy". Below this is a horizontal line with three circular icons: a sun, a sunset, and a wave. Below the icons is a paragraph of text: "Using sun, wind, biomass, geothermal and other resources, Hawaii is a leader in the use of renewable energy. About 7%* of the electricity sold to customers of Hawaiian Electric Company (HECO) and its subsidiaries, Hawaii Electric Light Company (HELCO) and Maui Electric Company (MECO), comes from renewable energy resources, compared to the nationwide average of only 2%.**"



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MECO Website: Net Energy Metering



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Net Energy Metering in Hawaii

- [What is net energy metering?](#)
- [What is the value of net energy metering?](#)
- [What types of generators are eligible?](#)
- [Does a solar water heating system qualify for net energy metering?](#)
- [How many customers can sign up?](#)
- [Why is the number of customers who may sign up limited?](#)
- [Do I need a new meter and, if so, do I need to pay for it?](#)
- [What happens if I generate more electricity than I use from the utility?](#)
- [How do I sign up?](#)
- [Why are these requirements necessary?](#)
- [How are requirements established for net energy metering?](#)
- [How to get more information about systems that might qualify?](#)



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MECO Website: Feeder Penetration



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Renewable Energy for Hawaii

Renewable Energy



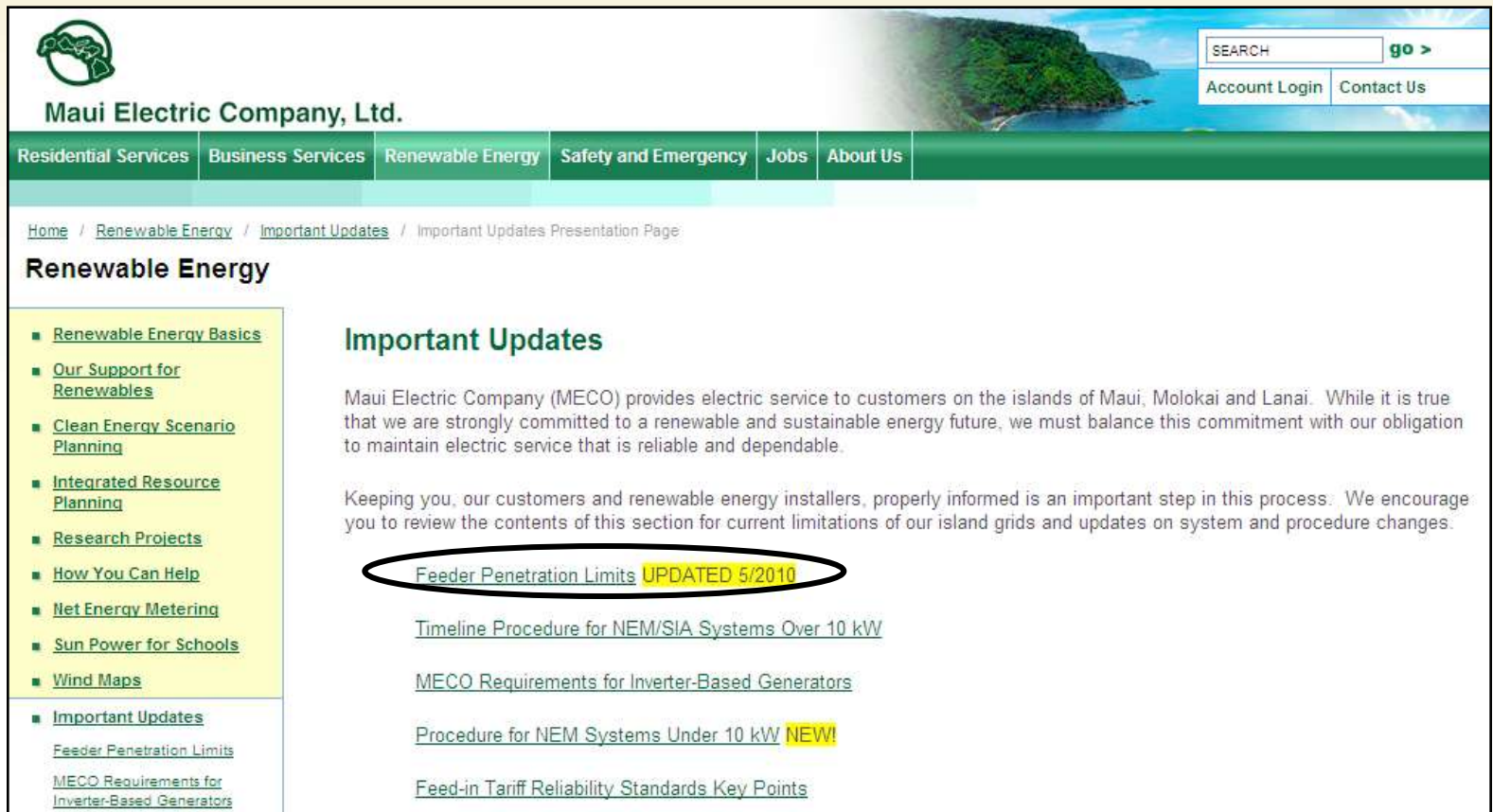
Using sun, wind, biomass, geothermal and other resources, Hawaii is a leader in the use of [renewable energy](#). About 7%* of the electricity sold to customers of Hawaiian Electric Company (HECO) and its subsidiaries, Hawaii Electric Light Company (HELCO) and Maui Electric Company (MECO), comes from renewable energy resources, compared to the nationwide average of only 2%.**



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MECO Website: Feeder Penetration



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- [Our Support for Renewables](#)
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- [Net Energy Metering](#)
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- [Wind Maps](#)
- **Important Updates**
 - [Feeder Penetration Limits](#)
 - [MECO Requirements for Inverter-Based Generators](#)

Important Updates

Maui Electric Company (MECO) provides electric service to customers on the islands of Maui, Molokai and Lanai. While it is true that we are strongly committed to a renewable and sustainable energy future, we must balance this commitment with our obligation to maintain electric service that is reliable and dependable.

Keeping you, our customers and renewable energy installers, properly informed is an important step in this process. We encourage you to review the contents of this section for current limitations of our island grids and updates on system and procedure changes.

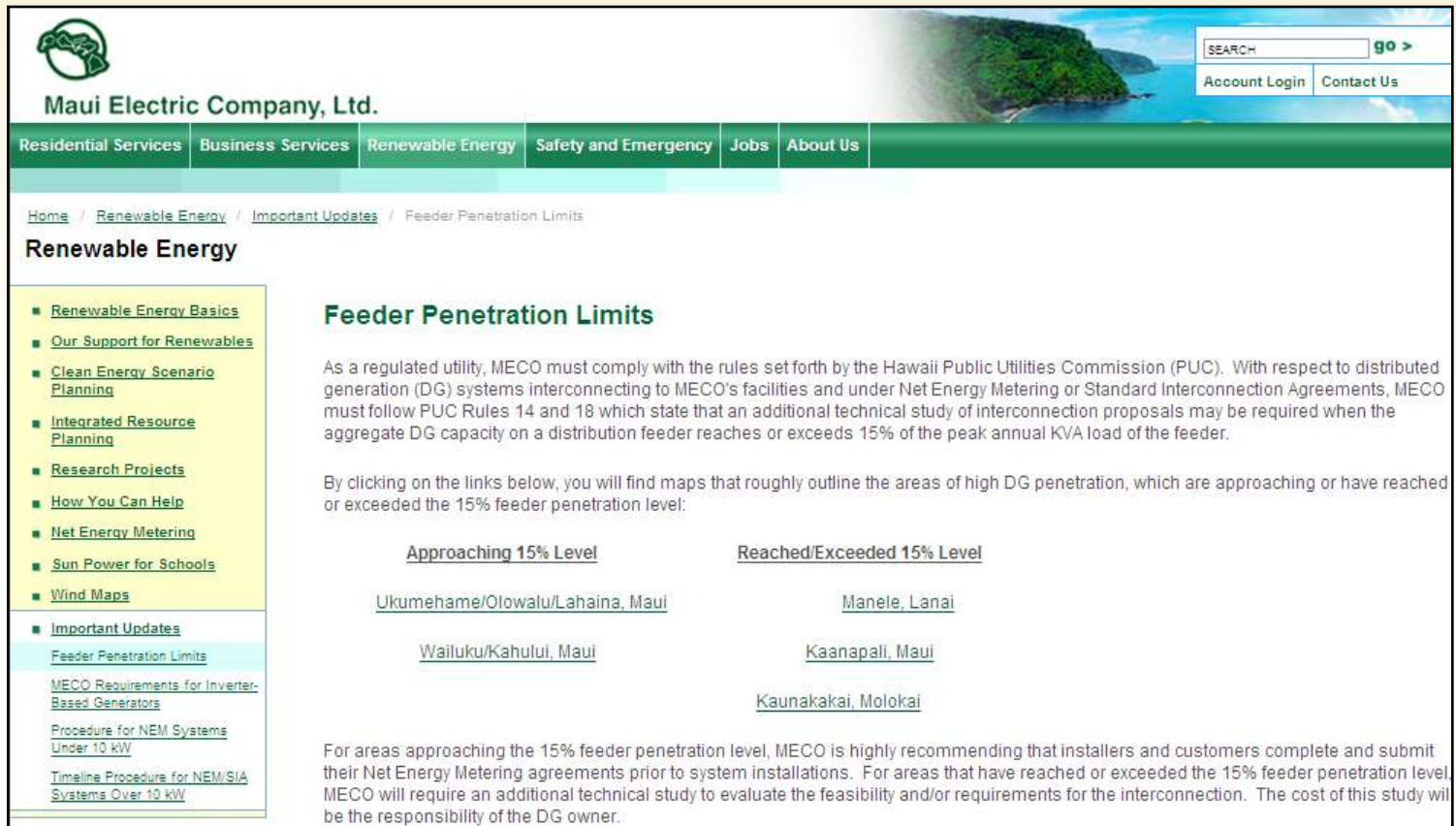
- [Feeder Penetration Limits **UPDATED 5/2010**](#)
- [Timeline Procedure for NEM/SIA Systems Over 10 kW](#)
- [MECO Requirements for Inverter-Based Generators](#)
- [Procedure for NEM Systems Under 10 kW **NEW!**](#)
- [Feed-in Tariff Reliability Standards Key Points](#)




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MECO Website: Feeder Penetration



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Feeder Penetration Limits

As a regulated utility, MECO must comply with the rules set forth by the Hawaii Public Utilities Commission (PUC). With respect to distributed generation (DG) systems interconnecting to MECO's facilities and under Net Energy Metering or Standard Interconnection Agreements, MECO must follow PUC Rules 14 and 18 which state that an additional technical study of interconnection proposals may be required when the aggregate DG capacity on a distribution feeder reaches or exceeds 15% of the peak annual KVA load of the feeder.

By clicking on the links below, you will find maps that roughly outline the areas of high DG penetration, which are approaching or have reached or exceeded the 15% feeder penetration level:

<u>Approaching 15% Level</u>	<u>Reached/Exceeded 15% Level</u>
Ukumehame/Olowalu/Lahaina, Maui	Manele, Lanai
Wailuku/Kahului, Maui	Kaanapali, Maui
	Kaunakakai, Molokai

For areas approaching the 15% feeder penetration level, MECO is highly recommending that installers and customers complete and submit their Net Energy Metering agreements prior to system installations. For areas that have reached or exceeded the 15% feeder penetration level, MECO will require an additional technical study to evaluate the feasibility and/or requirements for the interconnection. The cost of this study will be the responsibility of the DG owner.

- [Important Updates](#)
- [Feeder Penetration Limits](#)
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Thank you

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