

# Biomass Resource Assessments

The Hawaii Natural Energy Institute (HNEI) routinely performs assessments of renewable energy resources, both locally and internationally. In cooperation with the State of Hawaii's Department of Business, Economic Development & Tourism, HNEI has been working to explore opportunities for exporting technologies and professional services by assessing renewable energy resources and conversion options for selected countries in Asia and the Pacific.

## ***Bio-Energy Assessment for Hawaii***

Biomass has long been targeted as a major renewable energy resource for Hawaii. HNEI, under contract to the Department of Business, Economic Development & Tourism, recently completed an assessment of biomass and bioenergy resources in Hawaii. Findings of this study are available in the project report "[Biomass and Bioenergy Resource Assessment in the State of Hawaii](#)" [1].

A companion study was conducted to assess the suitability of selected resources identified in the resource assessment for use in distributed energy applications. The second report is titled "[Analysis of Hawaii Biomass Energy Resources for Distributed Energy Applications](#)" [2].

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## ***Assessment of Biofuels for Electric Power Generation***

The Hawaii Renewable Portfolio Standards (RPS) call for 8% of the total electricity produced in the state to come from renewable resources by 2005, 10% by 2010, 15% by 2015, and 20% by 2020. Approximately 8.4% of the electricity sales in Hawaiian Electric Company's (HECO's) service territories presently are reported to be derived from renewable resources. In a project done in cooperation with researchers from the University of Hawaii's Department of Molecular Biosciences and Bioengineering, HNEI conducted an evaluation of biofuels suitable for utility-scale, electric power generation. Use of biofuels would aid HECO in meeting RPS targets. The project had three technical objectives: (1) identify candidate biofuels and biofuel blends, and biofuel properties important to electric power generation; (2) assess the supply potential, availability, and pricing of the most promising biofuels; and (3) analyze and provide specifications for the most promising biofuels and blends.

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## ***Biomass Resources for Hydrogen Production via Gasification***

The Hawaii Natural Energy Institute recently participated as a member of a team headed by the Gas Technology Institute (GTI) that is laying the groundwork for the industrial use of GTI's gasifier technology

to produce hydrogen from biomass. Other members of the team include the Electric Power Research Institute, Calla Energy Partners, and Hawaiian Electric Company.

HNEI's task is to conduct an assessment of potential feedstocks, including sugarcane bagasse, switchgrass, and various nut shells, found throughout the United States and the world. Bagasse and nut shells are attractive potential feedstocks because they are low-value by-products of agricultural commodities. Switchgrass, meanwhile, has shown potential as a dedicated energy crop. HNEI researchers assessed the amount of biomass that could be available for hydrogen production from each feedstock at a central processing location. GTI used the data to perform design calculations for a hydrogen production facility based on their gasifier technology and to determine the most suitable feedstock to produce high yields of hydrogen gas.

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### ***Assessment of Food Waste and Used Vegetable Oil Resources in Hawaii***

It is estimated that food waste accounts for nearly 10% of the municipal solid waste generated on Oahu. Food waste that has been separated from other solid waste may be recycled for use as swine feed or as substrate for anaerobic digestion processes. Both practices divert material from landfills for beneficial reuse. Solid waste management is a growing problem for island economies in Hawaii and across the South Pacific. Knowing more about the size and distribution of food waste generation across the state is a first step in developing effective management plans. In addition, because food waste must be thermally processed prior to use for swine feed, understanding the current flow of food waste between food waste generators and swine producers can help keep Hawaii's pig population healthy. Researchers at HNEI and the University of Hawaii Department of Urban and Regional Planning are conducting an assessment of food waste and used vegetable oil generated in the state to aid in managing this potentially valuable resource.

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**Source URL:** <http://www.hnei.hawaii.edu/research/biomass/biomass-resource-assessments>

**Links:**

[1]

<http://www.hnei.hawaii.edu/sites/web41.its.hawaii.edu/www.hnei.hawaii.edu/files/page/2010/07/030505%20Hawaii%20Biom>

[2] <http://www.hawaii.gov/dbedt/info/energy/publications/biomass-der.pdf>

[3] <http://www.hnei.hawaii.edu/staff/scott-q-turn>