Hawaii Bioenergy Master Plan

Financial Incentives And Barriers; And Other Funding Sources

Prepared for:
Hawai‘i Natural Energy Institute
University of Hawai‘i at Manoa
1680 East West Road, POST 109
Honolulu, HI 96822

Prepared by:
University of Hawai‘i Economic Research Organization
Energy and Greenhouse Gas Solutions
University of Hawai‘i at Manoa
Saunders Hall Room 540

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Executive Summary

The goal of this section of the Hawaii Bioenergy Master Plan is to identify and evaluate financial incentives and barriers at points along the bioenergy industry value chain (feedstock production, feedstock logistics, conversion, distribution, and end use) and their potential impact on the production of biofuels at levels sufficient to contribute a significant renewable energy resource to the State of Hawai‘i.

This section provides a comprehensive list of the financial barriers and incentives to entry and operation in the biofuel industry in the State of Hawai‘i. The scope covers both Federal and State financial instruments, including the American Recovery and Reinvestment Act of 2009. It includes discussion of innovative public and private financing vehicles for alternative energy and greenhouse gas (GHG) emissions reductions. The analysis was conducted through a legislative scan, stakeholder interviews, and surveys. Appendices summarize existing State and federal biofuel incentives, legislation proposed during the 2009 Hawai‘i legislative session, and policies for other Pacific region states and for selected countries.

A historic overview of biofuels legislation and industry activity provides a backdrop for the understanding of Hawai‘i’s present landscape. Hawai‘i biofuels initiatives date back to the mid-1970s, following a period of rapid fossil fuel price inflation. While biofuels have been used for electricity generation and transportation fuels, the development of a Hawai‘i industry has been slow. There does not currently exist local production or refining of Hawai‘i grown feedstock other than the long-established use of bagasse for electricity production.

This study analyzes the key threats to bioenergy across the value chain. Briefly, biofuels investors appear not to be confident in long-run profitability given challenges that they face in land acquisition, competition from energy substitutes (e.g. electric vehicles), highly concentrated purchasers, and fragmented State support.

The following recommendations are provided:

- Frame Hawai‘i’s bioenergy strategy around vital State interests. Energy security and greenhouse gas emissions reduction targets could provide justification for bioenergy support.
- Design a priori measurement and monitoring mechanisms to evaluate alternative individual projects based on State interests, particularly for the distribution of land leases.
- Act swiftly to capture funding made available through the American Recovery and Reinvestment Act of 2009, though recognize the funding would need to be balanced by sustained sources to carry the operation year after year.
Consider House Concurrent Resolution 195 (HCR 195) and the subsequent recommendations of the Hawai‘i Energy Policy Forum (HEPF). Further study is required to determine the most appropriate incentives at each part of the biofuels value chain. In particular, analysis is needed to determine: Locations for biomass project; Options for leasing state land for fuel crop development; Opportunities for state and county governments and private investors to secure federal grants to support the development of fuel crops and the conversion of fuel crops to generate electricity; and feasibility of setting up a revolving fund as a mechanism to provide incentives necessary to stimulate investment in fuel crops and the conversion of fuel crops to generate electricity.

Establish a sub-committee of people with a mix of public and private experience raising capital for infrastructure and energy projects to put together the specific financial incentives to support the Hawaii Bioenergy Master Plan (HBMP). The sub-committee should, at a bare minimum, evaluate the incentive concepts proposed by HEPF in their response to HCR 195 (Appendix G).

Create a dedicated office that will maintain an up-to-date list of State and Federal incentives, and provide guidance for prospective business owners in biofuel on how to apply for incentives (grants, loans, tax credits, etc.). This office could also be the resource that guides business owners on the steps needed to valuate the environmental credits from the project. Perhaps this office could even provide business planning guidance. For example, a biomass power plant will likely be eligible for a waiver from the competitive bid process to provide HECO electricity. However, the waiver is for a period of 4 months. That is a prohibitively short period of time to get all the aspects of a plant’s operations lined up for negotiation of a power purchase agreement with the utility.

Coordinate and make transparent the process for land acquisition for biofuel feedstock producers. Bioenergy and land use policy involves multiple State agencies (DLNR, DHHL, DOA, DBEDT). Biofuels may be perceived as competing with other land uses, such as food production and residential development. The State interest in bioenergy should be articulated relative to competing interests.

Reconcile investor’s concern for exit strategies with biofuels incentives. “What are the business options if ethanol demand falls?” “What are my exit strategies?” “What other outlets exist for large ethanol stocks if transportation demand tanks?” Biofuels investors' decisions are typically based on 10-20 years for biofuel refinery plants.

Align a flex fuel ethanol-based transportation strategy with the emergence of potential new transportation modes, including rail, and vehicle technologies, such as electric and hybrid vehicles. The State and counties are committed to alternative transportation strategies, and the role of biofuels should be assessed in that context.

Synergize the biofuels master plan with the Hawai‘i Clean Energy Initiative goals. A higher profile for both will likely lead to more Federal dollars.

Investigate Renewable Identification Number (RIN) market opportunities stemming from the Federal Renewable Fuel Standard (RFS). At present, Hawai‘i is
opted-in to the Federal RFS. (Anon. 2008d) While further study is required, opportunities may exist to establish a complete, localized bioenergy value chain in Hawaiʻi’s using the Federal RFS. One resource we suggest to investigate is the RINMARK exchange (http://www.rinxchange.com/).

• Facilitate the measurement and monitoring of greenhouse gas emissions. An approach might include mandatory reporting through The Climate Registry (TCR). TCR sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions.

• Coordinate biofuels policy with State goals to reduced GHG emissions. GHG emission reductions have actualized and perceived economic value in current and proposed initiatives to mitigate anthropogenic climate change. Provide research, education, and outreach on the role that biofuels might play relative to other strategies.
# TABLE OF CONTENTS

Introduction ....................................................................................................................... 1  
Overview ........................................................................................................................1  
Rationale ........................................................................................................................ 1  
Background ................................................................................................................... 1  

Objectives........................................................................................................................... 6  
Scope............................................................................................................................... 6  
Area of study .................................................................................................................. 7  

Key information sources............................................................................................... 7  
List of Incentives............................................................................................................. 8  

Activities engaging stakeholders and experts ............................................................ 8  
Stakeholders .................................................................................................................. 8  
Stakeholder meetings ................................................................................................. 8  
Survey ............................................................................................................................ 9  
In-Depth Interview ..................................................................................................... 10  

Other funding sources/information ............................................................................. 11  
Private investment capital ......................................................................................... 11  
Renewable energy trading: Renewable Identification Numbers ............................... 12  
Biofuels and greenhouse gas emissions reductions .................................................... 13  

Findings............................................................................................................................ 14  
Recommendations for the Hawaii Bioenergy Master Plan: ........................................ 18  

References........................................................................................................................ 20  
Appendix A: .................................................................................................................... 23  
Appendix B: .................................................................................................................... 26  
Appendix C: .................................................................................................................... 38  
Appendix D ...................................................................................................................... 44  
Appendix E ...................................................................................................................... 76  
Appendix F ...................................................................................................................... 79  
Appendix G ...................................................................................................................... 81  
Appendix H: .................................................................................................................... 87  
Appendix I: ..................................................................................................................... 87  
Appendix J....................................................................................................................... 94  
Appendix K ...................................................................................................................... 99  
Appendix L ....................................................................................................................... 100
Introduction

“Biomass is the single renewable resource that has the potential to supplant our use of liquid transportation fuels now and help create a more stable energy future.” (Anon, 2008a)

Overview

Act 253, Session Laws of Hawai‘i 2007, called for the development of a Hawai‘i Bioenergy Master Plan (HBMP) to manage Hawai‘i’s transition to energy self-sufficiency based in part on biofuels for power generation and transportation. The University of Hawai‘i Economic Research Organization’s Energy and Greenhouse Gas Solutions (EGGS) group was retained by the Hawai‘i Natural Energy Institute (HNEI) to prepare an evaluation of the financial incentives and barriers to developing and using biofuels in Hawai‘i, as well as identifying other sources of available funding. (Task 8)\(^1\).

Rationale

Identifying and evaluating the current financial incentives and barriers are critical to the HBMP. As indicated by the U.S. Department of Energy’s (DOE) Biomass: Multi-Year Program Plan, “growth of (the biofuel) industry is currently constrained by limited infrastructure, high production costs, competing energy technologies, and other market barriers. Market incentives and legislative mandates are helping to overcome some of these barriers.” (Anon, 2008a) Knowledge of existing financial barriers and those incentives designed to overcome the obstacles will facilitate how to move bioenergy development and use forward in Hawai‘i.

Background

The State of Hawai‘i has been active in pursuing biofuels since the 1970s, promoting research and development as well as passing legislation to overcome market barriers. To give context to the present challenges and initiatives in place for Hawai‘i that relate to the financial incentives and barriers, a brief review of the activities around biofuels in Hawai‘i is useful.

The 1973 oil embargo of Organization of Arab Petroleum Exporting Countries (OAPEC) led crude oil prices to rapidly quadruple. (Anon, 2008b) Hawai‘i, highly dependent on imported oil, responded in 1974 with Act 235 (SLH 1974) that established the Hawai‘i Natural Energy Institute along with the State Program for Energy Planning and Conservation, and the Natural Energy Laboratory of Hawai‘i Authority. The goals of Act 235 (SLH 1974) were to (1) diminish Hawai‘i's total dependence on imported fossil fuels; (2) meet the state's increasing energy demands with little or no environmental

\(^1\) Task Objective under Memorandum of Agreement Scope of Work for Task 8 of the Hawaii Bioenergy Master Plan project: To identify and evaluate financial incentives and barriers at points along the bioenergy production value chain (feedstock production, feedstock logistics, conversion, biofuel distribution, and end use) and their potential impact on the production of biofuels at levels sufficient to contribute a significant renewable energy resource to the State. To provide information, analysis, and recommendations related to this evaluation.
degradation; and (3) contribute to the technology base for finding solutions to the national and global energy shortage.

In 1980, two organizations proposed full-scale feasibility studies in Hawai‘i to produce ethanol from molasses - C. Brewer and Company and Pacific Resources, Incorporated (owner of Hawai‘i Independent Refinery, Inc.). (Shleser, 1994) Following completion of the study, C. Brewer and Company chose not to construct a facility, but released an often quoted press release stating, “We have put a great deal of time, effort and expense into ethanol ... but we cannot invest $15 million in capital to produce a product we cannot be assured of marketing within the Hawaiian market as we have no gasoline stations of our own.” (Shleser, 1994) This finding, almost three decades ago, pointed to the need for industry coordination.

In 1993, the Hawaiian Sugar Planters Association, led by Robert V. Osgood and Nicklos S. Dudley, published *Comparative Studies of Biomass Yields for Tree and Grass Crops Grown for Conversion to Energy*. They concluded that at 1993 fuel prices it was not profitable to produce, deliver and process biomass fuels for electricity production exclusively from grasses or trees. (Osgood, et al., 1993) Osgood and Dudley indicated that the State should focus on higher value products including fuel alcohols, chemical feedstocks, paper pulp and manufactured lumber and veneer over using biomass for combustion. (Osgood, et al., 1993)

In his 1994 report on ethanol production in Hawai‘i, Robert Shleser documents experts claiming, “during the last two to three years there has been more progress in the technology for the conversion of lignocellulosic materials to ethanol than in the previous twenty years.” (Shleser, 1994) Fifteen years later, this research into this technology is still being conducted.

Following the National Energy Policy Act of 1992, which required increasing alternative fuel use starting in 1994, Act 199 (SLH 1994) was signed into law in Hawai‘i requiring gasoline to contain 10% ethanol. Despite its passage, legal, technical, logistical, and economic challenges delayed this mandate from going into effect until April 2006. Chapter 486E, Hawai‘i Revised Statutes (HRS), repealed and replaced by Chapter 486J in 1997, indicated that the director of the Department of Business, Economic Development, and Tourism (DBEDT) has the authority to allow sale of gasoline that does not meet the ethanol content requirement:

- a) To the extent that sufficient quantities of competitively-priced ethanol are not available to meet the minimum requirements of this section; or
- b) In the event of any other circumstances for which the department determines compliance with this section would cause undue hardship.

These exclusion clauses and the delay in enforcing Act 199 are indicative of the barriers to biofuel development and growth in Hawai‘i. Now that the ethanol mandate has been implemented, Hawai‘i’s decades long experience can be instructive of barriers to biofuels growth and development at different points along the biofuels value chain.
In 2002 at a Hawai‘i Ethanol Workshop, Maurice Kaya (then Administrator of DBEDT’s Energy, Resources and Technology Division) outlined the existing incentives to ethanol, in addition to the mandate set in 1994: (Kaya, 2002)

- **Ethanol Production Credit**
  - equivalent to $0.30/gallon fuel-grade ethanol produced
  - credit for up to 15 million gallons per year per facility
  - available up to 8 years if investment was less than $50 million; up to 10 years for investment greater than $50 million
  - Facility must be in Hawai‘i and in production before January 1, 2012.

- **Exemption from 4% state excise tax on retail sales**
  - Fuel mixture consisting of at least 10% biomass-derived alcohol
  - Applies to E10 and E85
  - Exemption terminates on December 31, 2006

- **Reduced highway taxes on E85**
  - Alternate fuels subject to 0.5 effective state highway tax of diesel fuel
  - applies to E85
  - Does not apply to E10 or oxy-diesel

Kaya indicated that the obstacle to the implementation of the ethanol requirement was largely at the refinery level. (Kaya, 2002) For gasoline to be sold, the fuel had to meet the American Society for Testing and Materials (ASTM) specification D4814 - Standard Specification for Automotive Spark-Ignition Engine Fuel. In Hawai‘i, gasoline could not have a Reid vapor pressure (RVP) greater than 11.5 pounds per square inch (psi). (Kaya, 2002) A testing report indicated the gasoline RVP range at 9.7-11.4 psi and adding ethanol to this gasoline would likely result in out-of-spec fuel for Hawai‘i. (Kaya, 2002) Quoting Kaya, “Bottom line: in Hawai‘i, refiner participation is necessary.”

As additional support for industry development, in 2002, HNEI provided a Bioenergy and Biomass Resource Assessment for the State of Hawai‘i in which then current stocks of animal wastes, forest products residues, agricultural residues, and urban wastes were evaluated for their energy potentials. (Turn, et al., 2002a) In the same year, HNEI completed the Analysis of Hawai‘i Biomass Resources for Distributed Energy Applications, also for the State. It indicated use of macadamia nut shells and sugarcane bagasse for distributed generation applications (DER), but also concluded that the potential for other biomass use in DER depends “on the local, national, and/or international market economics and the policy and regulatory environment.” (Turn, et al., 2002b)

Stillwater Associates further described the existing challenges in 2003 in an assessment of the impact of blending of ethanol into Hawai‘i’s gasoline pool on the overall fuel balance, refinery economics, and gasoline distribution costs. Among other items, Stillwater Associates concluded that (Gieskes, et al., 2003)

- The local refineries would incur a loss through reduced gasoline demand, which would force them to produce and export more naptha at lower margins.
- Vapor pressure changes to gasoline due to the added ethanol would require refineries to modify operations and spend capital on distillation and storage facilities.
- Most of the locally produced ethanol should be exported to California to provide a market of suitable scale. This would provide benefits to the local economy through agriculture,
ethanol plant investment and renewable power generation, but minimize losses in local excise tax revenue (incentive in place at the time) and minimize higher gasoline expenditures.

- Ultimately, large scale ethanol production could generate up to $100 million in annual revenues, add as much as $300 million to the Hawai‘i economy and add up to 200 new jobs.

Following considerable public dialogue about these conclusions and the readiness of Hawai‘i to implement the 10% ethanol blending requirement, in September 2004, Governor Lingle signed the administrative rule providing for implementation of the mandate. (Anon, 2004) The oil companies were cited as supportive of the use of ethanol, in general, but concerned about the expense of modifying their operations being passed on to the consumer, and the lack of any locally produced ethanol. (Natarajan, 2004a) Ethanol proponents indicated that with the mandate going into effect eighteen months from the signing of the rule, they had ample time to develop local production. (Natarajan, 2004b) At least three ethanol production projects were in development at the time, with other projects in an incubation phase. (Natarajan, 2004a)

Also in 2004, the Federal Volumetric Ethanol Excise Tax Credit (VEETC) was created as part of H.R. 4520, the American Jobs Creation Act of 2004. This incentive provided a tax credit of $0.51 per gallon of ethanol that is blended with gasoline.

As the April 2006 effective date of the Hawai‘i ethanol mandate approached, it was the petroleum companies that were ready. On March 2, 2006, Aloha Petroleum announced it had received 5 million gallons of ethanol from Jamaica that it planned to blend. Aloha Petroleum was cited as spending $3 million in equipment and plant modifications to make the gasoline blend. (Anon, 2006a) From the initial 5 million gallons blended, the VEETC likely resulted in a $2.55 million credit for Aloha. On March 13, 2006, Chevron announced it had completed its first new blending facility in Honolulu, and that three more facilities would open soon in Hilo, Port Allen, and Kahului. (Anon, 2006b) Later in 2006, Chevron Corp. rolled out a new biofuels unit, citing that worldwide, the company blends about 300 million gallons of ethanol into its gasoline. (Scanlon, 2006) This could result in a VEETC of $153 million per year within the US. Further indicating the momentum shift for the petroleum companies, Aloha Petroleum wanted to install pumps for E85 for $100,000 a site, but safety concerns stalled the effort. (Anon, 2006c)

Meanwhile, ethanol production in Hawai‘i has been non-existent. Projects discussed in the period leading up to the 2004 signing have yet to produce any fuel. (Anon, 2008c)

Given the resistance to Act 199 (SLH 1994) by the petroleum industry, why has the petroleum industry been the most progressive component of the biofuels value chain? What barriers were overcome and by what incentives? The answer may have little to do with biofuel incentives.

Unrelated to national or local biofuel development efforts, the 1990 amendment of the Federal Clean Air Act, originally passed in 1963, mandated that oxygenating agents be added to gasoline to reduce pollution from vehicle exhaust. Methyl tertiary butyl ether (MTBE) use quickly rose from 83,000 barrels/day in 1989 to 161,000 barrels/day in 1994
to more than 260,000 barrels/day in 2002. (Anon, 2000) Refineries favored MTBE over other oxygenating agents (such as ethanol) due to its superior blending properties, lower cost, and ease of distribution and storage. (Nersesian, 2006) In the late 1990s, concerns began to rise over MTBE being detected in drinking water supplies, and research indicated that lab animals were developing cancer when exposed to the compound. (Anon) States moved to ban MTBE and lawsuits began to be filed. The federal government moved to develop a position on the claims and decided to phase out MTBE. (Anon, 2000) The Energy Policy Act of 2005 originally sought to ease the country off MTBE by: 1) including language to limit liability for the MTBE manufacturers against lawsuits; 2) extending the phase out period to 2014; and 3) providing $2 billion transition assistance. (Dingell, et al., 2005) These provisions were removed before passage, ultimately leaving an immediate and large risk exposure for MTBE manufacturers and the refineries that used the product. The oil industry rapidly switched over to ethanol to protect itself from the risk exposure in 2006. (Swanson, 2008)

In 2006, in addition to the 10% ethanol mandate going into effect, the following events transpired:

- The State supported analysis for both ethanol production (Keffer, et al., 2006) and biodiesel crop production (Poteet, 2006);
- Act 240, signed in 2006, established a State alternative fuel standard (AFS) for highway fuel demand – 10% by 2010; 15% by 2015; and 20% by 2020;
- Act 162 (SLH 2006) amended the Renewable Portfolio Standard (RPS) to include definitions of biogas, biomass and biofuels as forms of renewable energy (RE) among other RE sources, and gave the Public Utilities Commission (PUC) the authority to assess penalties on utilities that fail to meet the RPS (among other powers);
- House Concurrent Resolution 195 (HCR 195) was adopted by the Legislature, “Encouraging Hawai‘i’s landowners, investors, county governments, and regulated electric utilities to pursue development and conversion of fuel crops for electricity generation, and requesting the Hawai‘i Energy Policy Forum to make recommendations.”

HCR 195 specifically requested the following to be addressed:

1. Financial incentives that may be necessary to stimulate development of fuel crops and the conversion of fuel crops to generate electricity, including incentives to reduce the risk of falling oil prices for investors;
2. The most suitable locations for undertaking biomass projects independent from, or in conjunction with, municipal solid waste-to-energy programs;
3. Options for leasing state land for fuel crop development;
4. Opportunities for state and county governments and private investors to secure federal grants to support the development of fuel crops and the conversion of fuel crops to generate electricity; and
5. The feasibility of setting up a revolving fund as a mechanism to provide incentives necessary to stimulate investment in fuel crops and the conversion of fuel crops to generate electricity.

The response to HCR 195 eventually contributed to the language of Act 253, SLH 2007, and the articulation of the Hawai‘i Bioenergy Master Plan.

Objectives

The primary objective of this work is to develop an up-to-date, comprehensive list of financial barriers and active financial incentives in the area of growing a biofuel industry in the State of Hawai‘i to assist with an understanding of appropriate financial incentives for industry support. This includes existing Hawai‘i State and Federal incentives, relevant incentives from the Federal American Recovery and Reinvestment Act of 2009, as well as bills proposed during the 2009 Hawai‘i Legislative Session.

Another focus of this work is to describe the perceptions of the investment capital sector towards biofuel projects. The goal of government incentives and mandates is to ultimately direct the flow of investment capital to a targeted area, not to create industries dependent on continuing government support.

This work also includes describing the increasing activity in the development and use of innovative public and private financing vehicles for alternative energy and greenhouse gas (GHG) emissions reductions. Two examples in particular will be discussed: 1) the renewable identification numbers (RIN) market created from the Federal 2007 Renewable Fuels Standard program; and 2) the American Clean Energy and Security Act of 2009. This bill, introduced at the Federal level by Waxman and Markey, describes a renewable energy standard, an energy efficiency standard and GHG cap and trade program, all with market incentives that include biofuels.

Lastly, this work aims to deliver a set of recommendations on how the HBMP can incorporate this information and analysis.

Scope

Lying clearly within the scope of this issue area (Task 8) of the HBMP project are the existing and proposed federal and Hawai‘i mandates and incentives. Also included are relevant mandates and incentives from other states and countries.

Given the structure of the HBMP team, however, it would be redundant for the scope of this work to reach too far into the particulars of any given point along the value chain. The subject of financial barriers, financial incentives, and funding sources permeates all points along the bioenergy value chain. In light of the independent, extensive analysis by other parties of the HBMP team, the scope of this work will consider and analyze the value chain primarily from the perspective of an investor, and not include the details of technical challenges, resource limitations, permitting and labor.
Finally, given that Act 253 was enacted in 2007, the scope of data collection will be largely confined to sources produced and made available from 2006 to the beginning of April 2009.

**Area of study**

The area of study is framed by the questions:

- What is the perspective of private investment capital on biofuels in general and in Hawai‘i?
- What are the perceived, present financial barriers to growing a biofuels industry in Hawai‘i, and what are the available Hawai‘i and federal financial incentives for a local biofuels industry?
- What relevant financial incentives exist in other states? Internationally?
- How well do these components align?
- What are the existing Hawai‘i and federal activities that relate to developing a local biofuels industry?
- What additional funding sources could be pursued, particularly in light of innovative financial instruments used for renewable energy and GHG abatement?

**Key information sources**

To answer the questions framing this study, information was gathered from a variety of sources. Reports from academic sources, non-governmental organizations, and government offices were evaluated that address biofuel development and associated policies. Presented below are the reports found to be most relevant:

1. *Hawai‘i Biofuels Summit Technical Synopsis*. Rocky Mountain Institute, September 28, 2006
2. *Hawai‘i Biofuels Summit Briefing Book*. Rocky Mountain Institute, August 8, 2006

In general, an exhaustive review of international, national and state programs and legislation related to biofuel development produced considerable data on both barriers
and incentives. This included directly accessing government legislation portals (e.g. www.capitol.hawaii.gov) to assess the exact language of relevant bills.

**List of Incentives**

<table>
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<tr>
<th>Incentives</th>
<th>Appendix</th>
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<tr>
<td>Existing Hawai‘i incentives</td>
<td>Appendix A</td>
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<td>Existing Federal incentives</td>
<td>Appendix B</td>
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<tr>
<td>Relevant incentives from American Recovery and Reinvestment Act of 2009</td>
<td>Appendix C</td>
</tr>
<tr>
<td>Proposed Hawai‘i legislation relevant to biofuels</td>
<td>Appendix D</td>
</tr>
<tr>
<td>Selected incentives from other states</td>
<td>Appendix E</td>
</tr>
<tr>
<td>Selected incentives from other countries</td>
<td>Appendix F</td>
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<tr>
<td>Financial incentives described in HCR 195</td>
<td>Appendix G</td>
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*Activities engaging stakeholders and experts*

**Stakeholders**

A list of relevant stakeholders was provided by HNEI, which had received and updated a record from the State of Hawai‘i DBEDT. In addition to using this resource, stakeholders and experts were directly engaged at two separate meetings, by survey, and in individual conversations. A description of the events and data collection process, and a summary of the resulting information are presented below.

**Stakeholder meetings**

**February 13, 2009** - The Hawai‘i Science & Technology Council held a “Tech Download” event titled: *Biotechnology: Feeding, Fueling and Healing Hawai‘i - Policy Challenges for a Sustainable Economy.*

This event focused on bioenergy with three members of the Hawai‘i biofuel community presenting and participating in a panel discussion: Robert King, Founder, Pacific Biodiesel; Michael Poteet, Agronomist, Hawai‘i Agriculture Research Center; and Paul Zorner, CEO, Hawai‘i Bioenergy. The audience included investors, DBEDT officials, University of Hawai‘i administrators and researchers, and business leaders. At the beginning of the event, an opportunity was provided to announce the objective of Task 8 of the Bioenergy Master Plan project to the active stakeholders present.

The panel discussed challenges along the value chain, citing technology constraints of second and third generation biofuels, present local biofuel feedstock shortages, and equipment needs. When directly asked what incentives could work in Hawai‘i and what incentives had worked elsewhere, the panel did not have an answer. The most concrete opinion and insight gathered from the event was from a retired, French investment banker who had attended looking for investment opportunities. When chased down in the parking lot, he indicated biofuels, in general, were not an attractive investment given the unproven technology, high costs, and high risks. He favored solar investments.

**April 2, 2009** – HNEI hosted a *Hawai‘i Bioenergy Master Plan Stakeholders Meeting* co-sponsored by the U.S. Department of Energy and DBEDT
In support of developing the HBMP a stakeholder meeting was held. Hawai‘i bioenergy stakeholders were invited to learn about the progress of the HBMP, and provide input during facilitated breakout sessions. The parties responsible for the eleven tasks of the HBMP developed questions for bioenergy stakeholders. These questions were grouped into larger themes by the HBMP project coordinators and facilitators to be addressed during the breakout sessions.

Two breakout sessions were devoted to addressing:

1. What are the primary barriers that inhibit the economic feasibility and competitiveness of locally grown biofuels?
2. In the next two-years, what financial incentives will create economic feasibility and encourage the competitiveness of locally grown biofuels?
3. In the next 2-3 years, what policy changes will create economic feasibility and encourage the competitiveness of locally grown biofuels?
4. The biofuel industry is often seen as a way to change communities dependent on agricultural land or that have some connection to the land. Please share examples you know of that demonstrate the impact of the biofuels industry on rural communities.
5. What best practices would you recommend to assure a win/win experience for biofuel industries and rural/agricultural regions of Hawai‘i? How can we minimize negative impacts and optimize positive impacts?

A summary of the stakeholder discussion on these questions was generated by the event facilitators and is in Appendix H. Upon receipt of this account, a series of tables and observations were compiled aligning existing Hawai‘i and Federal incentives with perceived barriers to biofuels development (see Appendix I).

Survey

A survey was designed then distributed to a number of available potential bioenergy producers, feedstock producer and suppliers, and producers of bioenergy as a byproduct of higher value products. Respondents were asked to rank the level of risk associated with the various stages of the supply chain including: feedstock, production, distribution and end use, on a scale of 1-7, with 7 as very risky. A sample of the survey is in Appendix J.

A summary of the riskiest areas of the value chain identified in the survey is below (Table 1). Risks are grouped according to the role of the respondent.

<table>
<thead>
<tr>
<th>Feedstock</th>
<th>Conversion</th>
<th>Distribution</th>
<th>End use</th>
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<tr>
<td><strong>Bioenergy Producer</strong></td>
<td><strong>Feedstock-product spread vs. fixed cost</strong></td>
<td><strong>Product spread vs. fixed costs</strong></td>
<td><strong>Biofuel cost vs. Petroleum</strong></td>
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<tr>
<td>Real Estate</td>
<td>Tenure of off-take contract vs. debt</td>
<td>Security of feedstock supply/ availability/ liquidity</td>
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<tr>
<td>Production</td>
<td>Lead-time for feedstock vs. market demand</td>
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Table 1: Summary of risk identified through survey
Feedback from the surveys indicates that financial incentives are extremely important to the future of bioenergy on the island. One survey respondent noted, “You can’t have a biofuels market without incentives.” Other respondents also expressed the importance of building a sustainable industry and one respondent gave specific information about “wanting to make sure they can pay a living wage, keep Hawai‘i green, have a zero carbon footprint and enhance a non-tourism place for the economy.” Other sentiments included confusion over “where we are in these incentives.” It was also suggested by one respondent that the primary difficulty in building anything is finding equity money stating, “We need to persuade independent investors to invest in Hawai‘i. There is a perception that Hawai‘i is unfriendly to business. It’s 90 percent about process. What matters is that you go through all the hoops…particularly with the EIS system.” Some perceive the process challenge as a mechanism to stop projects, not protect the environment.

In-Depth Interview

In May, 2009 the team sought feedback from the Hawai‘i biofuel community, particularly from those active in developing projects in both ethanol production and electricity generation from biomass. Stakeholders were given a list of perceived barriers developed from the April 2 stakeholder meeting and asked to comment about how they may or may not affect a biofuels operation in Hawai‘i. Four main points surfaced:

1. The High Technology Investment Tax Credit (Act 221) is not a practical incentive for many biofuels, especially first generation ethanol. Non-fossil fuel qualifiers must meet criteria for innovative research (41D IRS Code). Given that it is unlikely that production of first generation ethanol will require innovative research, the incentive will not apply and proven biofuel technologies cannot take advantage of this important incentive.

2. The State General Excise Exemptions/ Enterprise Zones and Federal Volumetric Ethanol Excise Tax Credit are beneficial.

3. Though the competitive bidding process for providing power to the electric utility theoretically provides a market for Hawai‘i biofuel ventures, the process appears as a significant barrier. For biofuel companies to move forward they either have to meet a capacity requirement or receive a waiver of competitive bid. To bid
outright, a prospect must demonstrate it can meet capacity, competitively. The lack of biopower production thus far in Hawai‘i is exacerbated by the requirement to make a bid outright. As mentioned previously, the prospect can apply for a waiver, which when granted allows four months to put a proposal together. Under a waiver, the applicant must negotiate a purchase agreement with the utility, which is largely contingent on being able to meet capacity. Thus, the prospect needs to source and close on a feedstock contract, demonstrate its plant can operate and deliver to the utility, and lock down all other operational needs prior to getting a purchase agreement – all within a four month period. This process requires a significant amount of capital, which is difficult to finance because there is no chance of getting a purchase agreement prior to demonstrating that capacity can be met. The circular nature of the challenge has been a significant barrier to biofuel prospects participating in the competitive bidding process even with the waiver clause.

4. Related to point three, it is the feedstock provider that faces the most severe constraints upon entering the market. Current market conditions and financial incentives do not presently provide a viable prospect for start-up feedstock producers. The challenge for a farmer is meeting costs to establish operations (land, equipment, fertilizer, greenhouse, etc.). To finance, the farmer needs a purchase agreement from a buyer. The feedstock buyer requires guaranteed delivery, which the farmer can’t provide without, at a bare minimum, land. To lease land, the land-owner needs a robust tenant with a purchase agreement. Here, again, is the circular nature of the challenge.

Other funding sources/information

For the purposes of this report “other funding sources” has been defined as private investment capital and innovative market mechanisms that add value to bioenergy development.

Private investment capital

A perspective on private capital and investments in biofuels is provided by Michael Swanson, Senior Agricultural Economist with Wells Fargo Bank described the challenge facing biofuels in the eyes of an investor (Swanson 2008). According to Swanson, biofuels providers are offering a commodity that is not differentiated in the marketplace. Thus, biofuel provided will be ‘price takers’ and will not be in a position to set a premium price above the general market price. The key to success in commodity markets, according to Swanson (2008), is to be the low cost supplier.

Swanson indicates a number of competitive pressures facing new entrants into the biofuels industry. The prices for biofuels crops are sensitive to alternative fuel prices, which fluctuate. Other considerations are the intra-industry competitiveness for local growers. Key factors include competitive advantage in terms of growing conditions,
proprietary technology, raw materials, and economies of scale. Quality soil, growing
days, and water are all key for growing cellulosic crops.

According to Swanson (2008), the demand for biofuels and thus the price and
profitability of the industry depend on several factors. Crude oil price fluctuations impact
biofuels profitability. Higher federal fuel efficiency standards also diminish demand for
biofuels, as do mass transit and electric vehicles. Foreign suppliers of biofuels will also
place downward pressure on prices.

Renewable energy trading: Renewable Identification Numbers

The most relevant, concrete example of innovative markets adding value to biofuels
comes through the Renewable Fuels Standard (RFS) created by the Energy Independence
and Security Act of 2007 (EISA). EISA set mandated levels for 2008 through 2022 for
various types of renewable fuel to be blended with diesel and gasoline. The ultimate per
annum goal is thirty-five billion gallons ethanol and one billion gallons biodiesel. The
U.S. Environmental Protection Agency (EPA) tracks and enforces this mandate through
the use of Renewable Identification Numbers (RINs). RINs are issued at the point of
production or import. (Wisner, 2009a) When a RIN-issued batch of ethanol is blended
into gasoline, the blender turns the RIN into the EPA to demonstrate compliance.
(Wisner, 2009a) If a blender has excess RINs, beyond what is required for the mandate,
the excess can be sold to another blender to apply to the current year’s mandate or banked
for future use. (Wisner, 2009a)

RINs are currently traded on an internet-based exchange called RINMARK, operated by
Renewable Trading Services, LLC, though not exclusively.

Ron Kotrba described in the Ethanol Producer Magazine (April, 2009) one way this
system could channel investment to ethanol plants: (Kotrba, 2009)

According to Bill Day, corporate spokesman for Valero Energy Corp., the oil refiner’s 2008
overall production averaged 1.19 million barrels per day of “gasoline and related blend stocks”
equaling roughly 18.2 billion gallons a year. The U.S. EPA has declared that this year’s RFS is
11.1 billion gallons, which equals 10.21 percent volume ethanol blend requirement for each of the
obligated parties. Assuming Valero’s 2009 gasoline production projections are similar to its 2008
production its share of the 10.21 percent would come to about 1.9 billion gallons of ethanol
blending in 2009.

Valero could purchase renewable identification number (RIN) credits to satisfy its obligation. If
the oil refiner were to only purchase RINs to satisfy its RFS obligation and blended zero ethanol
into its supplies—an unrealistic scenario but interesting to entertain, nevertheless—figuring a
historically high RIN credit price of 15 cents per credit, the oil refiner could pay $285 million in
RIN credit accumulations to satisfy its obligation for 2009. Instead, Valero proposes to pay $280
million for capital assets that, year after year, will continue to help it internally meet obligations
under the RFS. It is also interesting to note that the five VeraSun plants in question have a
cumulative nameplate capacity of 560 MMgy, which could satisfy between a quarter and a third of
Valero’s ethanol blending obligations for 2009. The five ethanol plants at $280 million with a 560
MMgy cumulative production capacity could amount to the oil company paying only 50 cents per
installed gallon of production capacity.
Kotrba indicated the numerous idled U.S. ethanol plants, poor ethanol blend margins, and the 2008 year-end reporting deadline approaching quickly on Feb. 28, 2009, have together caused RIN prices to skyrocket. (Kotrba, 2009)

At present, Hawai‘i is opted-in to the Federal RFS. (Anon. 2008d) While further study is required, opportunities may exist to establish a complete, localized bioenergy value chain in Hawai‘i’s using the Federal RFS. One resource we suggest to investigate is the RINMARK exchange (http://www.rinxchange.com/).

Biofuels and greenhouse gas emissions reductions
The largest, clearest signal that there will be funding opportunities for biofuels from quantified greenhouse gas emissions reductions comes from observing the U.S. Department of Agriculture (USDA) over the past few years. In late 2006, USDA issued a regulation “to broaden the use of private sector markets for environmental goods and services through emerging voluntary market mechanisms such as environmental credit trading and voluntary reporting registries. USDA believes market-based environmental stewardship can encourage competition, spur innovation, and achieve environmental benefits, while helping USDA constituents comply with environmental regulations.” The regulation continues to clearly identify its strategy of including “environmental credits” as a means to promote agriculture (Copy of Regulation in Appendix K).

Even more indicative of the USDA’s aggressive pursuit of market mechanisms for agriculture is the naming of the USDA as the regulating body of GHG offsets in rural and agricultural areas in HR 2454, American Clean Energy and Security Act (ACESA). Legislation is moving quickly, with the regulation of GHGs a high priority of President Obama. HR 2454 passed the U.S. House of Representatives on June 26, 2009.

ACESA establishes a "cap and trade" system in which emissions of greenhouse gases would be capped overall and allowances for such emissions either given away to polluters or sold. The Congressional Quarterly Fact Sheet states, “the bill provides agribusinesses with unique opportunities to make money in a renewable energy market, through such activities as […] growing crops suitable for the production of biofuels. The bill even provides assistance to agricultural enterprises during a transition to a renewable energy market by providing them with free emissions allowances.” (Hannett, 2009)

According to stakeholders, a key component of a recent biofuel power purchase agreement grants a Hawai‘i utility ownership of “environmental credits” from the biofuel operation. Clearly, utilities understand the potential future importance of greenhouse gas emissions offsets and other environmental benefits of biofuels, and place a monetary value on environmental credits today.

Act 234 (SLH 2007) commits the State to reduce GHGs to 1990 levels by the year 2020. Currently the State’s GHG Emissions Reduction Task Force is working to provide an action plan that would include market-based mechanisms. In any policy involving biofuels, the HBMP should encourage careful measurement and monitoring of
greenhouse gas emissions. As supported by the USDA, an approach might include GHG reporting through a registry, like The Climate Registry (TCR). TCR, of which Hawai‘i is a founding member, is a nonprofit collaboration among North American states, provinces, territories and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions into a single registry. The Registry supports both voluntary and mandatory reporting programs and provides comprehensive, accurate data to reduce greenhouse gas emissions.

Findings

In very simple terms, the largest barrier to biofuels growth is the uncertainty of whether an investment in bioenergy can be profitable at each of the stages in the biofuels value added chain: biofuels feedstock production, conversion, distribution, and end-use. A review of these barriers, back through the value chain, is summarized below.

From the perspective of end-users, Hawai‘i grown biofuels are a commodity and should be substitutable with other transportation energy sources, such as foreign biofuels and petroleum. With new advances in automotive technologies, plug-in hybrid vehicles are creating an opportunity for electricity to substitute or even replace gasoline and diesel in a portion of the state’s vehicles. Federal and State mandates and regulations may advance improved vehicle fuel efficiency standards, greenhouse gas emissions standards, or other environmental policies that impact consumer demand. The end use demand for biofuels thus remains subject to competition and uncertainty, with market prices being determined by global market forces as well as government policy.

Small market size and geographic isolation from competitors confines the current number of refineries to Chevron and Tesoro. In addition, the Hawaiian Electric Company plans to import vegetable oil or biodiesel for power production. The concern of the State’s two refineries is the cost of Hawai‘i grown biofuels as an input relative to other fuels, the volume available, and the reliability of supply. Foremost are several risks. Refineries are concerned about lost revenues from petroleum refining due to biofuels displacement and managing the profitability of their existing petroleum refining operations. Refineries must reliably provide power and fuel to end users, and at reasonable costs as determined by their regulators and competitive pressures. Refineries face fluctuating oil prices, ranging from as high as $140 to current price of ~$70. To some degree, biofuels and petroleum fuels are interchangeable. Refineries also face fixed costs in adapting plants and equipment to specific fuel types or blends, such as ethanol sourcing to meet the E10 mandate. With high fixed costs and other sources of volatility, their success in the marketplace requires the ability to earn profits to compensate for market risks. Among these volatilities are concerns over the certainty of feedstock supply and consumer markets.

Biofuels producers that are considering entering the Hawai‘i market face a highly-specialized, niche market. With a limited number of buyers (refineries and other
distributors), biofuels producers must demonstrate that their fuel is the preferred option (cost, quality, or other criteria) and that it can be provided reliably. They must demonstrate sufficient supply to justify an investment by distributors into specialized equipment and technologies. Biofuels producers face additional challenges on the supply side:

1. Investments in plants and equipment are costly and generally require financing.
2. Production technologies are often specific to selected feedstock and cannot be easily adapted.
3. If demand from the limited number of buyers is not consistent or sustainable, biofuel producers are faced with very limited exit options.

What are the alternative uses for facilities? To give context to these points, a June 2009 report entitled, “The Ethanol Crisis,” the author described that current ethanol production exceeds demand under the Energy Independence Security Act of 2007 federal mandate and will likely exceed demand past 2012. (Wisner, 2009)

At the beginning of the value added chain are feedstock growers. In Hawai‘i, biofuel farmers will face challenges shared by farmers everywhere, such as volatility in weather, labor cost and availability, and commodity price fluctuations. Hawai‘i’s agribusiness environment provides unique opportunities and challenges. One positive aspect is that Hawai‘i supports a year round growing season. However, several factors tend to undermine the cost competitiveness of biofuel crops in Hawai‘i. Land costs are relatively high, and land ownership is highly concentrated. Labor costs are also much higher than would be the case in competing supply markets, such as Brazil or Jamaica. Feedstock producers face establishment costs (Greenhouse, farming equipment, etc) that may require financing. However, it is difficult for producers to obtain credit in markets that are not established, where purchase agreements are not in place.

The current environment for biofuels development in Hawai‘i is most constrained in the feedstock and production areas. The strongest consensus among stakeholders is on the following four points.

1. The High Technology Investment Tax Credit (Act 221) is not a practical incentive for many biofuels, especially first generation ethanol. Non-fossil fuel qualifiers must meet criteria for innovative research (41D IRS Code). Given that it is unlikely that production of first generation ethanol will require innovative research, the incentive will not apply and proven biofuel technologies cannot take advantage of this important incentive.

2. The State General Excise Exemptions/ Enterprise Zones and Federal Volumetric Ethanol Excise Tax Credit are beneficial.

3. Though the competitive bidding process for providing power to the electric utility theoretically provides a market for Hawai‘i biofuel ventures, significant problems are outstanding. For biofuel companies to move forward they either have to meet
a capacity requirement or receive a waiver of competitive bid. To bid outright, a prospect must demonstrate it can meet capacity, competitively. The lack of biopower production thus far in Hawai‘i is exacerbated by the requirement to make a bid outright. As mentioned previously, the prospect can apply for a waiver, which when granted allows four months to put a proposal together. Under a waiver, the applicant must negotiate a purchase agreement with the utility, which is largely contingent on being able to meet capacity. Thus, the prospect needs to source and close on a feedstock contract, demonstrate its plant can properly operate and deliver power to the utility, and lock down all other operation needs, prior to getting a purchase agreement by the end of the four month period. This process requires a significant amount of capital, which is difficult to finance because there is no chance of getting a purchase agreement prior to demonstrating that capacity can be met. The circular nature of the challenge has been a significant barrier to biofuel prospects participating in the competitive bidding process even with the waiver clause.

4. Related to point three, we conclude that it is the feedstock provider that faces the most severe constraints upon entering the market. Current market conditions and financial incentives do not presently provide a viable prospect for start-up feedstock producers. The challenge for a farmer is meeting his/her establishment costs (land, equipment, fertilizer, greenhouse, etc.). To finance, the farmer needs a purchase agreement from a buyer. The feedstock buyer requires guaranteed delivery, which the farmer can’t provide without, at a bare minimum, land. To lease land, the land-owner needs a robust tenant with a purchase agreement. Here, again, is the circular nature of the challenge.

Vertical integration of land ownership, feedstock production, and conversion facility operation, a typical model for plantation agriculture in Hawaii, could serve to reduce the barriers identified in (3) and (4) above.

In general, a number of key economic threats to the viability of biofuels are identified.
- First, the current economic recession and the recently high prices of fuel are likely to dampen demand for transportation fuels for some time to come.
- Second, hybrid, electric, and hydrogen cars are increasingly becoming available with technologies that provide alternatives to liquid transportation fuels. Hawai‘i has made ambitious infrastructure commitments to the electric car platform. Again, investors may question biofuel forecasts that do not include these initiatives.
- Third, mass transit and the introduction of rail will also change the transportation infrastructure in ways that impact fuel demand.
- Fourth, locally grown feedstock will compete with biofuel imports that may be lower priced.
- Fifth, biofuel entrepreneurs do not have confidence in the profitability of feedstock or fuel production under current conditions.
In reviewing the events that led up to Hawaii’s rollout of the ethanol mandate, it became evident that a liability risk related to human health greatly contributed to U.S. refineries adopting ethanol blending. (Swanson, 2008) MTBE was the preferred oxygenating additive until lawsuits surfaced citing impacts on drinking water and carcinogenic properties. EPAct 2005 abruptly exposed the petroleum refiners to litigation risk, prompting a rapid switch to ethanol. Regardless the extent to which Hawaii used or did not use MTBE, EPAct 2005 dramatically altered ethanol markets. (Swanson, 2008, Wisner, 2009b) For the refineries, this influence was perhaps more significant than the ethanol mandates that went into effect at the same time in 2006. It is not clear if petroleum companies are committed to the ethanol mandates or whether they will fight them in the future. For example, the Pacific Business News article describes House Bill 1271, passed during the 2009 Hawaii legislative session, also known as the the “Barrel Tax Bill.” (Kalani, 2009) The author writes that the legislation would suspend the state’s ethanol law for three years, however, this language was not included in the bill that eventually passed. Though it is unclear why the language was originally included, this point is raised to illustrate the uncertainty of ethanol demand based on the State’s E10 mandate.

As a stakeholder in the HBMP, SunFuels Hawai‘i, LLC submitted a letter to the HBMP team dated June 8, 2009. Among a variety of insights and perspectives offered, the discussion of the importance to the biofuels investment community of establishing appropriate, specific, data-driven targets is worth highlighting. Like other Hawai‘i biofuel stakeholders encountered during this study, SunFuels Hawai‘i is not requesting incentives, but a clear, well thought out, transparent plan (and process) in which to invest their money. Synergizing the goals of the Hawai‘i Clean Energy Initiative, the Global Warming Solutions Act (Act 234 SLH 2007), and the HBMP may provide the stability investors are seeking.

One general note on a method of evaluating the economics of biofuels, energy return on investment (EROI) analyses can present biofuels as unattractive, though results can vary depending on method, crop type, and fuel. An EROI, also referred to as net energy, is either expressed as a unit-less number or ratio of energy returned to society per energy required to get that energy. (Hall et al., 2009) An EROI of greater than 1 means there is a net gain of energy. Hall et al. argue corn-based ethanol has very low net energy yields (e.g. Hall et al. (2009) where corn ethanol EROI is less than 3:1. (2009) However, these metrics vary, especially when considering 2nd and 3rd generation sources. For example, Hammerschlag’s 1990-2006 review (2006) presents that though corn ethanol yields an EROI of 0.84-1.65, cellulosic ethanol EROI’s range from 4.40-6.61. Schemer et al. (2008) demonstrate switchgrass yields 500% more renewable energy than energy consumed in its production and has significant environmental benefits, as estimated by net GHG emissions as well as soil conservation benefits. HBMP should plan for the transition to higher yields of 2nd and 3rd generation biofuels to maximize EROI.

In conclusion, this study compiled a comprehensive list of financial incentives that are now available to Hawai‘i biofuels industry from State and Federal sources. The policy landscape in other U.S. states, and foreign countries is also included to illustrate
alternative options that Hawai‘i might consider. Financial barriers were cataloged and an investor’s perspective of these obstacles is provided. Along with a perspective of private capital, a description of innovative financial instruments is supplied.

Recommendations for the Hawaii Bioenergy Master Plan:

Recommendations for the Hawaii Bioenergy Master Plan:

Frame Hawai‘i’s bioenergy strategy around vital State interests. Energy security and greenhouse gas emissions reduction targets could provide justification for bioenergy support.

Design *a priori* measurement and monitoring mechanisms to evaluate alternative individual projects based on State interests, particularly for the distribution of land leases.

Act swiftly to capture funding made available through the American Recovery and Reinvestment Act of 2009, though recognize the funding would need to be balanced by sustained sources to carry the operation year after year.

Consider House Concurrent Resolution 195 (HCR 195) and the subsequent recommendations of the Hawai‘i Energy Policy Forum (HEPF). Further study is required to determine the most appropriate incentives at each part of the biofuels value chain. In particular, analysis is needed to determine: Locations for biomass project; Options for leasing state land for fuel crop development; Opportunities for state and county governments and private investors to secure federal grants to support the development of fuel crops and the conversion of fuel crops to generate electricity; and feasibility of setting up a revolving fund as a mechanism to provide incentives necessary to stimulate investment in fuel crops and the conversion of fuel crops to generate electricity.

Establish a sub-committee of people with a mix of public and private experience raising capital for infrastructure and energy projects to put together the specific financial incentives to support HBMP. The sub-committee should, at a bare minimum, evaluate the incentive concepts proposed by HEPF in their response to HCR 195 (Appendix G).

Create a dedicated office that will maintain an up-to-date list of State and Federal incentives, and provide guidance for prospective business owners in biofuel on how to apply for incentives (grants, loans, tax credits, etc.). This office could also be the resource that guides business owners on the steps needed to valuate the environmental credits from the project. Perhaps this office could even provide business planning guidance. For example, a biomass power plant will likely be eligible for a waiver from the competitive bid process to provide HECO electricity. However, the waiver is for a period of 4 months. That is a prohibitively short period of time to get all the aspects of a plant’s operations lined up for negotiation of a power purchase agreement with the utility.

Coordinate and make transparent the process for land acquisition for biofuel feedstock producers. Bioenergy and land use policy involves multiple State agencies (DLNR, DHHL, DOA, DBEDT). Biofuels may be perceived as competing with other land uses,
such as food production and residential development. The State interest in bioenergy should be articulated relative to competing interests.

Reconcile investor’s concern for exit strategies with biofuels incentives. “What are the business options if ethanol demand falls?” “What are my exit strategies?” “What other outlets exist for large ethanol stocks if transportation demand tanks?” Biofuels investors' decisions are typically based on 10-20 years for biofuel refinery plants.

Align a flex fuel ethanol-based transportation strategy with the emergence of potential new transportation modes, including rail, and vehicle technologies, such as electric and hybrid vehicles. The State and counties are committed to alternative transportation strategies, and the role of biofuels should be assessed in that context.

Synergize the biofuels master plan with the Hawai‘i Clean Energy Initiative goals. A higher profile for both will likely lead to more Federal dollars.

Investigate Renewable Identification Number (RIN) market opportunities stemming from the Federal Renewable Fuel Standard (RFS). At present, Hawai‘i is opted-in to the Federal RFS. (Anon. 2008d) While further study is required, opportunities may exist to establish a complete, localized bioenergy value chain in Hawai‘i’s using the Federal RFS. One resource we suggest to investigate is the RINMARK exchange (http://www.rinxchange.com/).

Facilitate the measurement and monitoring of greenhouse gas emissions. An approach might include mandatory reporting through The Climate Registry (TCR). TCR sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions.

Coordinate biofuels policy with State goals to reduced GHG emissions. GHG emission reductions have actualized and perceived economic value in current and proposed initiatives to mitigate anthropogenic climate change. Provide research, education, and outreach on the role that biofuels might play relative to other strategies.
References


Nersesian, R. 2006. Energy for the 21st century: a comprehensive guide to conventional and alternative sources. ME Sharpe,


Appendix A:

Existing Hawai‘i State Incentives as of June 2009

High Technology Business Investment Tax Credit [§235-110.9]
Value Chain: Most likely Conversion
Status: Expires on December 31, 2010.
Incentive type: Tax Credit
Description:
• The tax credit shall be as follows:
  - In the year the investment was made, 35 per cent;
  - In the first year following the year in which the investment was made, 25 per cent;
  - In the second year following the investment, 20 per cent;
  - In the third year following the investment, 10 per cent; and
  - In the fourth year following the investment, 10 per cent;
• Of the investment made by the taxpayer in each qualified high technology business, up to a maximum allowed credit:
  - $700,000 in the year the investment was made;
  - $500,000 in the first year following the year in which the investment was made;
  - $400,000 in the second year following the year in which the investment was made;
  - $200,000 in the third year following the year in which the investment was made;
  - And $200,000 in the fourth year following the year in which the investment was made.
For each qualified ethanol production facility, the annual dollar amount of the ethanol facility tax credit during the 8 year period shall be equal to 30 per cent of its nameplate capacity if the nameplate capacity is greater than 500,000 but less than 15,000,000 gallons. A taxpayer may claim this credit for each qualifying ethanol facility; provided that:

- The claim for this credit by any taxpayer of a qualifying ethanol production facility shall not exceed 100 per cent of the total of all investments made by the taxpayer in the qualifying ethanol production facility during the credit period;
- The qualifying ethanol production facility operated at a level of production of at least 75 per cent of its nameplate capacity on an annualized basis;
- The qualifying ethanol production facility is in production on or before January 1, 2017; and
- No taxpayer that claims the credit under this section shall claim any other tax credit under this chapter for the same taxable year.

Farm and Aquaculture Sustainable Projects Loan [§219-6 (H)]
Value Chain: Feedstock Production; Feedstock Logistics
Status: Effective Date: 7/1/2008 - Still Effective.
Incentive type: State Loan Program
Description:
- Class H: Aquaculture sustainable project loans shall provide for:
  - The purchase, construction, or improvement of essential farm buildings, including the improvement of existing farm buildings related to the project;
  - The improvement of land that may be required by the project;
  - The purchase of equipment and payment of any related expenses, including materials, labor, and services;
  - Operating expenses associated with the project; or
  - The liquidation of indebtedness incurred for any of the foregoing purposes.
- The loans shall be for an amount not to exceed $1,500,000 or 85% of the project cost, whichever is less, and for a term not to exceed 40 years.

State Business Tax Credit / Enterprise Zones [§209E-10]
Value Chain: Across
Status: TBD.
Incentive type: Tax Credit
Description:
- Except for the general excise tax, the credit shall be:
  - 80 per cent of the tax due for the first tax year,
  - 70 per cent of the tax due for the second tax year,
  - 60 per cent of the tax due for the third year,
  - 50 per cent of the tax due the fourth year,
  - 40 per cent of the tax due the fifth year,
  - 30 per cent of the tax due the sixth year, and
  - 20 per cent of the tax due the seventh year;
- Any tax credit not usable shall not be applied to future tax years. Tax credits provided for in this section shall only apply to taxable income of a qualified business attributable to the conduct of business within the enterprise zone. In addition, any qualified business shall be entitled to a tax credit against any taxes due the State in an amount equal to a percentage of unemployment taxes paid. The amount of the credit shall be equal to
  - 80 per cent of the unemployment taxes paid during the first year,
- 70 per cent of the taxes paid during the second year,
- 60 per cent of the taxes paid during the third year,
- 50 per cent of the taxes paid during the fourth year,
- 40 per cent of the taxes paid during the fifth year,
- 30 per cent of the taxes paid during the sixth year, and
- 20 per cent of the taxes paid during the seventh year;
• Tax credits provided for in this section shall only apply to the unemployment tax paid on employees employed at the qualified business' establishment or establishments located within the enterprise zone.

State general excise exemptions / Enterprise Zones [§209E-11]
Value Chain Target: Across
Status: TBD
Incentive type: Tax Exemption
Description:
• Any qualified business is exempt from the payment of general excise taxes on the gross proceeds from the manufacture of tangible personal property, the wholesale sale of tangible personal property, the engaging in a service business by a qualified business, or the engaging in research, development, sale, or production of all types of genetically-engineered medical, agricultural, or maritime biotechnology products;
• The exemption shall extend for a period not to exceed 7 years;

Reduced Tax Rates for Alternative Fuels [§243-4]
Value Chain: Distribution
Status: Shall be repealed and reenacted on December 31, 2009.
Incentive type: Favorable Rates of Taxation
Description:
• With respect to alternative fuels, the only tax collected shall be:
  - Every distributor of any alternative fuel for operation of an internal combustion engine shall pay a license tax to the department of one-quarter of 1 cent for each gallon of alternative fuel sold or used by the distributor;
  - Every distributor, in addition to the tax required under paragraph 1 of this subsection, shall pay a license tax to the department for each gallon of alternative fuel sold or used by the distributor for operating a motor vehicle or motor vehicles upon the public highways of the State at a rate proportional to that of the rates applicable to diesel oil, rounded to the nearest one-tenth of a cent, as follows:
    • Ethanol, 0.145 times the rate for diesel;
    • Methanol, 0.11 times the rate for diesel;
    • Biodiesel, 0.25 times the rate for diesel;
    • Liquefied petroleum gas, 0.33 times the rate for diesel; and
    • For other alternative fuels, the rate shall be based on the energy content of the fuels as compared to diesel fuel, using a lower heating value of 130,000 BTU per gallon as a standard for diesel, so that the tax rate, on an energy content basis, is equal to one-quarter the rate for diesel fuel.
Appendix B:

Existing Federal Incentives

Biorefinery Project Grants
Value Chain: Conversion
Status: Still Effective.
Incentive type: Research Grants
Description:
  • Provides funds for cooperative biomass R&D for the production of fuels, electric power, chemicals, and other products;
  • Variable qualified applicant and authorization year to year, depending on program goals in a given year;

Alternative Fuel Excise Tax Credit
Value Chain: Distribution; End Use
Status: Expires on December 31, 2009.
Incentive type: Tax Credit
Description:
  • Available for alternative fuel that is sold for use or used as a fuel to operate a motor vehicle;
  • A tax credit in the amount of $0.50 per gallon;
  • Qualified alternative fuels: Compressed natural gas (based on 121 cubic feet), Liquefied natural gas, Liquefied petroleum gas, Liquefied hydrogen, P-Series fuel, Liquid fuel derived from coal through the Fischer-Tropsch process, and Compressed or liquefied gas derived from biomass;
  • Not allowed if an incentive for the same alternative fuel is also determined under the rules for the ethanol or biodiesel tax credits;
  • Expires December 31, 2009, except for liquefied hydrogen which expires September 30, 2014;

Alternative Fuel Infrastructure Tax Credit
Value Chain: Distribution
Status: Expires on December 31, 2010.
Incentive type: Tax Credit
Description:
  • Available for the cost of installing alternative fueling equipment placed into service after December 31, 2005;
  • Qualified alternative fuels: natural gas, liquefied petroleum gas, hydrogen, electricity, E85, or diesel fuel blends containing a minimum of 20% biodiesel;
  • Amount is up to 30% of the cost, not to exceed $30,000, for equipment placed into service before January 1, 2009.
  • Amount is up to 50% not to exceed $50,000, for equipment placed into service on or after January 1, 2009.
  • Allowed to use the credit towards each location for those who install equipment at multiple sites;
  • A tax credit of up to $1,000, which increases to $2,000 for equipment placed into service after December 31, 2008 for consumers who purchase residential fueling equipment;
• The maximum credit amount of $200,000 for hydrogen fueling equipment placed into service after December 31, 2008, and before January 1, 2015;

Alternative Fuel Mixture Excise Tax Credit
Value Chain: Distribution
Status: Expires on December 31, 2009.
Incentive type: Tax Credit
Description:
• A tax incentive on the sale or use of the alternative fuel blend (mixture) for use as a fuel in the blender’s trade or business;
• A tax credit in the amount of $0.50 per gallon of alternative fuel used to produce a mixture containing at least 0.1% gasoline, diesel, or kerosene;
• Qualified alternative fuels: compressed natural gas (based on 121 cubic feet), liquefied natural gas, liquefied petroleum gas, liquefied hydrogen, P-Series fuel, liquid fuel derived from coal through the Fischer-Tropsch process, and compressed or liquefied gas derived from biomass;
• Not allowed if an incentive for the same alternative fuel is also determined under the rules for the ethanol or biodiesel tax credits;
• Expires on December 31, 2009, except for liquefied hydrogen, which expires September 30, 2014;

Biodiesel Income Tax Credit
Value Chain: Distribution; End Use
Status: Expires on December 31, 2009.
Incentive type: Tax Credit
Description:
• A taxpayer that delivers pure, unblended biodiesel (B100) into the tank of a vehicle or uses B100 as an on-road fuel in their trade or business may be eligible for an incentive in the amount of $1.00 per gallon of biodiesel, agri-biodiesel, or renewable diesel;
• Qualified fuel: biodiesel, agri-biodiesel, and/or renewable diesel content (Renewable diesel is defined as liquid fuel derived from biomass);

Biodiesel Mixture Excise Tax Credit
Value Chain: Distribution
Status: Expires on December 31, 2009.
Incentive type: Tax Credit
Description:
• A biodiesel blender may be eligible for a tax incentive in the amount of $1.00 per gallon of pure biodiesel, agri-biodiesel, or renewable diesel blended with petroleum diesel to produce a mixture containing at least 0.1% diesel fuel.

Cellulosic Biofuel Producer Tax Credit
Value Chain: Conversion
Status: Expires on December 31, 2012.
Incentive type: Tax Incentive
Description:
• A cellulosic biofuel producer may be eligible for a tax incentive in the amount of up to $1.01 per gallon of cellulosic biofuel.
• If the cellulosic biofuel also qualifies for alcohol fuel tax credits, the credit amount is reduced to $0.46 per gallon for biofuel that is ethanol and $0.41 per gallon if the biofuel is not ethanol.
• Under current law, only qualified fuel produced in the U.S. between January 1, 2009, and December 31, 2012, for use in the U.S. may be eligible.

Volumetric Ethanol Excise Tax Credit (VEETC) [by the American Jobs Creation Act of 2004; §301]
Value Chain: Distribution
Status: Expires on December 31, 2010.
Incentive type: Tax Credit
Description:
• An ethanol blender may be eligible for a tax incentive in the amount of $0.45 per gallon of pure ethanol (minimum 190 proof) blended with gasoline.

Special Depreciation Allowance for Cellulosic Biomass Ethanol Plant Property [by the Tax Relief and Health Care Act of 2006, §209]
Value Chain: Conversion
Status: Expires on December 31, 2012.
Incentive type: Depreciation Allowance
Description:
• A taxpayer may take a depreciation deduction of 50% of the adjusted basis of a new cellulosic ethanol plant in the year it is put in service;
• Only applicable to cellulosic ethanol plants that break down cellulose through enzymatic processes;
• Any portion of the cost financed through tax-exempt bonds is exempted from the depreciation allowance;
• Only applicable to plants acquired after December 20, 2006, and placed in service before January 1, 2013. Any plant that had a binding contract for acquisition before December 20, 2006, does not qualify;

Business and Industry (B&I) Guaranteed Loans
Incentive type: Federal Loan Program
Description:
• This program provides guarantees for up to 90% of a loan made by a commercial lender. Loan proceeds may be used for working capital, machinery and equipment, buildings and real estate, and certain types of debt refinancing.
• Approximately $1 billion in loans are guaranteed annually.

Biomass Research and Development Initiative [by the Biomass R&D Act of 2000, §307; extended and mandatory appropriations provided by the Farm Bill 2002, §9008; extended and funding authorization expanded by the EPA 2005, §941]
Status: Effective by the end of 2015.
Incentive type: Grant
Description:
• Grants are provided for biomass research, development, and demonstration projects;
• Eligible projects include ethanol and biodiesel demonstration plants;
• Currently authorized at $200 million per year;
Small Agribiodiesel Producer Credit [by the EPA 2005, §1345]
Status: Expires on December 31, 2009.
Incentive type: Tax Credit
Description:
• A small agri-biodiesel producer may be eligible for a tax incentive in the amount of $0.10 per gallon of agri-biodiesel.
• A small producer is one that has, at all times during the tax year, not more than 60 million gallons of productive capacity of any type of agri-biodiesel.
• Agri-biodiesel is defined as diesel fuel derived solely from virgin oils, including esters derived from corn, soybeans, sunflower seeds, cottonseeds, canola, crambe, rapeseeds, safflowers, flaxseeds, rice bran, mustard seeds, and camelina, and from animal fats; renewable diesel does not qualify for the credit.
• The incentive applies only to the first 15 million gallons of agri-biodiesel produced in a tax year.

Small Ethanol Producer Credit [by the Omnibus Budget Reconciliation Act of 1990, §11502; extended by the American Jobs Creation Act of 2004, §301; expanded by the EPA 2005, §1347]
Status: Expires on December 31, 2010.
Incentive type: Tax Credit
Description:
• A small ethanol producer may be eligible for a tax incentive in the amount of $0.10 per gallon of ethanol.
• A small producer is one that has, at all times during the tax year, not more than 60 million gallons of productive capacity of any type of alcohol.
• The incentive applies only to the first 15 million gallons of ethanol produced in a tax year.

Renewable Diesel Tax Credit [by the EPA 2005]
Status: In effect until 2010.
Incentive type: Tax Credit
Description:
• Amends the biodiesel tax credits to include renewable diesel fuel, which is derived from biomass by a thermal depolymerization process;
• The credit is $1 per gallon of renewable diesel.

Credit for Installation of Alternative Fueling Stations [by the EPA 2005; §1342]
Value Chain: Distribution
Status: TBD
Incentive type: Credit
Description:
• Permits taxpayers to claim a 30% credit for the cost of installing clean-fuel vehicle refueling property to be used in a trade or business of the taxpayer or installed at the principal residence of the taxpayer. 85% of the volume must consist of ethanol, natural gas, compressed natural gas, liquefied natural gas, liquefied petroleum gas, and hydrogen. Any mixture of diesel fuel and biodiesel must contain at least 20% biodiesel.

Biomass Commercial Use Grant Program [by the EPA 2005; §210(b)]
Value Chain: End Use
Status: Authorized from 2006 to 2016.
Incentive type: Grant
Description:
• Authorizes placement of grants to improve the commercial value of forest biomass for electric energy, useful heat, transportation fuels, and other commercial purposes;
• Biomass commercial use grants may be made to any person in a preferred community that owns or operates a facility that uses biomass as a raw material to produce electric energy, sensible heat, or transportation fuels;
• To help offset the purchase cost of biomass, a qualified entity may receive up to a $20 per green ton for biomass delivered.

Bioenergy Program – University Biodiesel Program [by the EPA 2005; §932(e)]
Value Chain: End Use
Status: Authorized from 2007 to 2009.
Incentive type: Grant
Description:
• $213 million for FY2007, $251 million FY2008, and $274 million for FY2009 authorized to carry out all Bioenergy Programs.
• This program establishes a demonstration program for electric generation facilities owned by institutions of higher education. It shall examine the feasibility of operating diesel electric power generators using biodiesel grades as high as B100.

Advanced Biofuel Technologies Program [by the EPA 2005; §1514]
Value Chain: Conversion
Status: Authorized from 2005 to 2009.
Incentive type: Grant
Description:
• $110 million per year from FY2005 through FY2009 authorized.
• This program is established to demonstrate advanced technologies for the production of alternative transportation fuels. Funding will be granted to programs that demonstrate 4 or more different conversion technologies for cellulosic biomass ethanol and to programs that demonstrate 5 or more technologies for co-producing value-added bioproducts resulting from the production of biodiesel.

Biobased Fuels and Products Outreach and Education Program [by the EPA 2005; §947]
Value Chain: Conversion
Status: Authorized from 2006 to 2010.
Incentive type: Grant
Description:
• $1 million per year from FY2006 through FY2010 authorized.
• This establishes a program to provide training and technical assistance for feedstock producers to promote producer ownership, investment, and participation in operating biobased processing facilities. It would also provide public education and outreach on biobased fuels and product for consumers.

Cellulosic Biofuel Production Incentives [by the EPA 2005; §942]
Value Chain: Conversion
Status: The first year when annual biofuel production is 1 billion gallons or when the EPA 2005 has been in effect for 10 years (whichever comes first).
Incentive type: Grant/Award
Description:
• This program serves as an incentive to accelerate annual cellulosic biofuels production to 1 million gallons by 2015 and to ensure that small feedstock producers and rural businesses are participants in the cellulosic biofuel industry;
• Awards a production incentive on a per gallon basis of cellulosic biofuels;

Cellulosic Biomass Ethanol and Municipal Solid Waste Loan Guarantee Program [by the EPA 2005; §1510]
Value Chain: Conversion
Status: Effective until 2015.
Incentive type: Federal Loan Program
Description:
• The program authorizes loan guarantees for up to 80% to private institutions for the cost of constructing facilities to process MSW and cellulosic biomass into fuel ethanol and other commercial byproducts;
• Private lending institutions must guarantee loans for biofuel plant construction and each project must have a 30 million gallon capacity;

DOE Loan Guarantee Program [by the EPA 2005, Title XVII]
Value Chain:
Status: Still Effective; Expires 09/30/2011
Incentive type: Federal Loan Program
Description:
• Energy Policy Act of 2005 (EPAct 2005) authorized DOE to issue loan guarantees for projects that "avoid, reduce or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." $10 billion originally authorized
• Three categories: (1) manufacturing projects, (2) stand-alone projects, and (3) large-scale integration projects that may combine multiple eligible renewable energy, energy efficiency and transmission technologies in accordance with a staged development scheme.
• The American Recovery and Reinvestment Act of 2009 (H.R. 1), enacted in February 2009, extended the authority of the DOE to issue loan guarantees and appropriated $6 billion for this program. Under this act, the DOE may enter into guarantees until September 30, 2011. The act amended EPAct 2005 by adding a new section defining eligible technologies for new loan guarantees. Eligible projects include renewable energy projects that generate electricity or thermal energy and facilities that manufacture related components, electric power transmission systems, and innovative biofuels projects. Funding for biofuels projects is limited to $500 million. Davis-Bacon wage requirements apply to any project receiving a loan guarantee.

Farm Bill 2008
Value Chain: Across
Status: Govern Federal farm programs for 2008-2012;
Incentive type: Federal Act (Collection of Grants, Loans, Taxes, Incentives)
Description:

- Forest Biomass for Energy: Authorizes appropriation of $15 million annually for FY 2009-12;
- Biofuels Infrastructure Study: Requires Secretaries of Agriculture, Energy, and Transportation and Administrator of Environmental Protection Agency to jointly conduct a comprehensive biofuels infrastructure study;
- Biomass Research and Development: Provides mandatory CCC funding of $118 million for FY 2009-12. Authorizes additional $35 million annually FY 2009-12;
- Biodiesel Fuel Education Program: Extends program, with CCC funding remaining at $1 million annually for FY 2008-12;
- Bioenergy Program for Advanced Biofuels: Mandates a total of $300 million in CCC funding for FY 2009-12. Authorizes appropriations of $25 million annually for FY 2009-12;
- Biorefinery Assistance: Mandates $75 million in funding for FY 2009 and $245 million in FY 2010 through CCC, for cost of loan guarantees, until expended. No mandatory funding specified for grant program. Authorizes appropriations of $150 million annually for FY 2009-12;
- Biorefinery Assistance: Authorizes competitive grants to assist development and construction of demonstration-scale biorefineries that convert renewable biomass to advanced biofuels. Grants may not exceed 30% of project cost. Authorizes loan guarantees to fund development, construction, and retrofitting of commercial-scale biorefineries. Loan guarantees of up to 90% of principal and interest may not exceed $250 million and are limited to 80% of project costs.
- Biobased Markets Program: Mandates total funding through CCC of $1 million for FY 2008 and $2 million annually for FY2009-12 for testing and labeling of biobased products. Authorizes appropriations of additional funding of $2 million annually for FY 2009-12.
- Biomass Crop Assistance Program: Establishes a program to support establishment and production of eligible crops for conversion to bioenergy, and to assist agricultural and forest landowners with collection, harvest, storage, and transportation of these crops to conversion facility. Assistance includes:
  - payments for up to 75% of cost of establishing an eligible crop;
  - annual payments to support production;
  - matching payments of up to $45/ton for 2 years for collection, harvest, storage, and transportation to a biomass conversion facility;
- Contract terms are up to 5 years for annual and perennial crops and up to 15 years for woody biomass.
- Repowering Assistance: Authorizes payments to encourage existing biorefineries to replace fossil fuels used to produce heat or power for operation of the biorefinery. Payments would be made for installation of new systems that use renewable biomass or for new production of energy from renewable biomass. Mandatory funding of $35 million through CCC for FY 2009, until expended. Authorizes appropriations of $15 million annually FY 2009-12.
- Bioenergy Research: Revises Sun Grant Research Initiative; Grant Information Analysis Center will support regional centers and produce annual report. Authorizes $75 million annually for FY 2008-12.
- Credit for Production of Cellulosic Biofuel: Provides temporary cellulosic biofuels production tax credit of up to $1.01/gallon through Dec 31, 2012.
- Modification of Alcohol Credit: Reduces tax credits to 45 cents/gallon in calendar year after annual production or importation of ethanol reaches 7.5 billion gallons.
Sun Grant Research Initiative Act of 2003  
Value Chain: Across  
Status: Effective until 2010;  
Incentive type: Research Grants  
Description:  
• Provision established by Sun Grant Research Initiative Act of 2003;  
• Established 5 regional sun grant research centers based at Land Grant universities;  
• Intent was to foster collaboration between USDA, Department of Energy, and Land Grant universities in developing and disseminating biobased energy technologies;  
• Authorized appropriations of $25 million in FY2005, $50 million in FY2006, and $75 million for each of FY2007-10;  

Rural Business Enterprise Grants (RBEG)  
Value Chain: Across  
Status: Still Effective;  
Incentive type: Federal Grant Program  
Description:  
• RBEG provides grants to finance and facilitate development of small and emerging private rural business enterprises. The grant is awarded to a third party to assist a business; grant funds do not go directly to the business.  
• Approximately $40 million in each of FY2005 through FY2007; $38.7 million for FY2008;  

U.S. Department of Treasury - Renewable Energy Grants  
Incentive Type: Federal Grant Program (H.R. 1: Div. B, Sec. 1104 & 1603 (The American Recovery and Reinvestment Act of 2009))  
Status: Effective 1/1/2009 – 01/01/2014 for biomass  
Description:  
• The grant is equal to 30% of the basis of the property for qualified facilities. Qualified facilities include wind energy facilities, closed-loop biomass facilities, open-loop biomass facilities, geothermal energy facilities, landfill gas facilities, trash facilities, qualified hydropower facilities, and marine and hydrokinetic renewable energy facilities.  
• Terms: Grant applications must be submitted by 10/1/2011. Payment of grant will be made within 60 days of the grant application date or the date property is placed in service, whichever is later.  

Renewable Energy Production Tax Credit  
Value Chain: Distribution; End Use  
Incentive Type: Tax Credit  
Description:  
• The federal renewable electricity production tax credit (PTC) is a per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year  
• The February 2009 legislation revised the credit by: (1) extending the in-service deadline for most eligible technologies by three years (two years for marine and hydrokinetic resources); and (2) allowing facilities that qualify for the PTC to opt instead to take the federal business energy investment credit (ITC) or an equivalent cash grant from the U.S.
Department of Treasury. The ITC or grant for PTC-eligible technologies is generally equal to 30% of eligible costs.

- Closed-loop biomass credit = $0.021/kwh
- Open-loop biomass credit = $0.01/kwh
- Open-loop biomass, geothermal, small irrigation hydro, landfill gas and municipal solid waste combustion facilities placed into service after October 22, 2004, and before enactment of the Energy Policy Act of 2005, on August 8, 2005, are only eligible for the credit for a five-year period.
- Open-loop biomass facilities placed in service before October 22, 2004, are eligible for a five-year period beginning January 1, 2005.

Business Energy Investment Tax Credit
Value Chain: Across
Incentive Type: Tax Credit
Status: Credit eligible for systems in service before 12/31/2016

Description:
- The American Recovery and Reinvestment Act of 2009 (H.R. 1) allows taxpayers eligible for the federal renewable electricity production tax credit (PTC) to take the federal business energy investment tax credit (ITC) or to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. The new law also allows taxpayers eligible for the business ITC to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations.
- Significantly, The American Recovery and Reinvestment Act of 2009 repealed a previous limitation on the use of the credit for eligible projects also supported by "subsidized energy financing." For projects placed in service after December 31, 2008, this limitation no longer applies. Businesses that receive other incentives are advised to consult with a tax professional regarding how to calculate this federal tax credit.

Qualified Energy Conservation Bonds
Status: H.R.1; Div.B; Sec.1112 (American Recovery and Reinvestment Act of 2009);
Effective Date: 04/07/2009
Incentive type: Federal Loan Program

Description:
- The Energy Improvement and Extension Act of 2008, enacted in October 2008, authorized the issuance of Qualified Energy Conservation Bonds (QECBs) that may be used by state, local and tribal governments to finance certain types of energy projects. QECBs are qualified tax credit bonds, and in this respect are similar to new Clean Renewable Energy Bonds or CREBs.
- Energy Improvement and Extension Act of 2008 and The American Recovery and Reinvestment Act of 2009, enacted in February 2009, expanded the allowable bond volume to $3.2 billion. In April 2009 the IRS issued Notice 2009-29 providing interim guidance on how the program will operate and how the bond volume will be allocated.
- The advantage of these bonds is that they are issued -- theoretically -- with a 0% interest rate. The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. The tax credit may be taken quarterly to offset the tax liability of the bondholder. The tax credit rate is set daily by the U.S. Treasury Department; however, energy conservation bondholders will receive only 70% of the full rate set by the Treasury Department under 26 USC § 54A. Credits exceeding a bondholder's tax liability may be carried forward to the succeeding tax year, but cannot be refunded. Energy conservation bonds differ from traditional tax-exempt
bonds in that the tax credits issued through the program are treated as taxable income for the bondholder.

• In contrast to CREBs, QECBs are not subject to a U.S. Department of Treasury application and approval process. Bond volume is instead allocated to each state based on the state's percentage of the U.S. population as of July 1, 2008. Each state is then required to allocate a portion of its allocation to "large local governments" within the state based on the local government's percentage of the state's population. Large local governments are defined as municipalities and counties with populations of 100,000 or more. Large local governments may reallocate their designated portion back to the state if they choose to do so. IRS Notice 2009-29 contains a list of the QECB allocations for each state and U.S. territory.

• The definition of "qualified energy conservation projects" is fairly broad and contains elements relating to energy efficiency capital expenditures in public buildings; renewable energy production; various research and development applications; mass commuting facilities that reduce energy consumption; several types of energy related demonstration projects; and public energy efficiency education campaigns (see H.R. 1424 for additional details). Renewable energy facilities that are eligible for CREBs are also eligible for QECBs.

Tribal Energy Program Grant

USDA - Rural Energy for America Program (REAP) Grants and Loans
Value Chain: Across
Incentive Type: Grant
Description:
• Updated by The Food, Conservation, and Energy Act of 2008 (H.R. 2419), enacted by Congress in May 2008.
• Promotes energy efficiency and renewable energy for agricultural producers and rural small businesses through the use of (1) grants and loan guarantees for energy efficiency improvements and renewable energy systems, and (2) grants for energy audits and renewable energy development assistance.
• Congress has allocated funding for the new program in the following amounts: $55 million for FY 2009, $60 million for FY 2010, $70 million for FY 2011, and $70 million for FY 2012.
• 96% of funding dedicated to grants and loan guarantees for energy efficiency improvements and renewable energy systems.
• Available to agricultural producers and rural small businesses to purchase renewable energy systems (including systems that may be used to produce and sell electricity), to make energy efficiency improvements, and to conduct relevant feasibility studies.
• Eligible renewable energy projects include wind, solar, biomass and geothermal; and hydrogen derived from biomass or water using wind, solar or geothermal energy sources.
• Grants are limited to 25% of a proposed project's cost, and a loan guarantee may not exceed $25 million. The combined amount of a grant and loan guarantee may not exceed 75% of the project’s cost.
• A minimum of 20% of the funds available for these incentives will be dedicated to grants of $20,000 or less.

Clean Renewable Energy Bonds (CREBs)
Value Chain: Across
Incentive type: Federal Loan Program

Description:

- The Energy Improvement and Extension Act of 2008 (Div. A, Sec. 107) allocated $800 million for new Clean Renewable Energy Bonds (CREBs). In February 2009, the American Recovery and Reinvestment Act of 2009 (Div. B, Sec. 1111) allocated an additional $1.6 billion for new CREBs, for a total new CREB allocation of $2.4 billion
- May be used by certain entities -- primarily in the public sector -- to finance renewable energy projects.
- Qualifying technologies is generally the same as that used for the federal renewable energy production tax credit (PTC).
- CREBs may be issued by electric cooperatives, government entities (states, cities, counties, territories, Indian tribal governments or any political subdivision thereof), and by certain lenders.
- CREBs are issued -- theoretically -- with a 0% interest rate.
- Public power providers, governmental bodies, and electric cooperatives are each reserved an equal share (33.3%) of the CREBs allocation.
- The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest.

Qualifying Advanced Energy Project Investment Tax Credit

Description:

- Tax credit to encourage the development of a U.S.-based renewable energy manufacturing sector. In any taxable year, the investment tax credit is equal to 30% of the qualified investment required for an advanced energy project that establishes, re-equip or expands a manufacturing facility that produces any of the following:
  - Equipment and/or technologies used to produced energy from the sun, wind, geothermal or "other" renewable resources
  - Fuel cells, microturbines or energy-storage systems for use with electric or hybrid-electric motor vehicles
  - Equipment used to refine or blend renewable fuels
  - Equipment and/or technologies to produce energy-conservation technologies (including energy-conserving lighting technologies and smart grid technologies)
- Qualified investments generally include personal tangible property that is depreciable and required for the production process. Other tangible property may be considered a qualified investment only if it is an essential part of the facility, excluding buildings and structural components.
- The U.S. Treasury Department will issue certifications for qualified investments eligible for credits to qualifying advanced energy project sponsors. In total, $2.3 billion worth of credits may be allocated under the program. After certification is granted, the taxpayer has one year to provide additional evidence that the requirements of the certification have been met and three years to put the project in service.
- In determining which projects to certify, the U.S. Treasury Department must consider those which most likely will be commercially viable, provide the greatest domestic job creation, provide the greatest net reduction of air pollution and/or greenhouse gases, have great potential for technological innovation and commercial deployment, have the lowest levelized cost of generated (or stored) energy or the lowest levelized cost of reduction in energy consumption or greenhouse gas emissions, and have the shortest project time. The U.S. Treasury Department, in consultation with the U.S. Department of Energy, must
create additional specific program guidelines and the application process by August 16, 2009.

- Any taxpayer receiving this credit may not also receive business energy investment tax credit.

Renewable Energy Production Incentive (REPI)

Description:
- Established by the federal Energy Policy Act of 1992, the federal Renewable Energy Production Incentive (REPI) provides incentive payments for electricity generated and sold by new qualifying renewable energy facilities. Qualifying systems are eligible for annual incentive payments of 1.5¢ per kilowatt-hour in 1993 dollars (indexed for inflation) for the first 10-year period of their operation, subject to the availability of annual appropriations in each federal fiscal year of operation. REPI was designed to complement the federal renewable energy production tax credit (PTC), which is available only to businesses that pay federal corporate taxes.

- Qualifying systems must generate electricity using solar, wind, geothermal (with certain restrictions), biomass (excluding municipal solid waste), landfill gas, livestock methane, or ocean resources (including tidal, wave, current and thermal). The production payment applies only to the electricity sold to another entity. Eligible electric production facilities include not-for-profit electrical cooperatives, public utilities, state governments and political subdivisions thereof, commonwealths, territories and possessions of the United States, the District of Columbia, Indian tribal governments or political subdivisions thereof, and Native Corporations.

- Payments may be made only for electricity generated from an eligible facility first used before October 1, 2016. Appropriations have been authorized for fiscal years 2006 through fiscal year 2026. If there are insufficient appropriations to make full payments for electricity production from all qualified systems for a federal fiscal year, 60% of the appropriated funds for the fiscal year will be assigned to facilities that use solar, wind, ocean, geothermal or closed-loop biomass technologies; and 40% of the appropriated funds for the fiscal year will be assigned to other eligible projects. Funds will be awarded on a pro rata basis, if necessary.
Appendix C:


Recovery Act - Demonstration of Integrated Biorefinery Operations
Funding: Estimated total of $787 million
Open Date: 05/06/2009
Close Date: 06/30/2009
Funding Organization: Biomass Program
Funding Number: DE-FOA-0000096

Description

- The intent of this Funding Opportunity Announcement (FOA) will be to select integrated biorefinery projects that have the necessary technical and economic performance data that validates their readiness for the next level of scale-up. In general, integrated biorefineries employ various combinations of feedstocks and conversion technologies to produce a variety of products, with the main focus on producing biofuels and bioproducts. Co- or by-products can include additional fuels, chemicals (or other materials), and heat and power. For the purpose of this FOA, the term integrated biorefinery is a facility that uses an acceptable feedstock (as defined in the FOA), to produce a biofuel or bioproduct as the primary product (as defined in the FOA) and may produce other products including additional fuels, chemicals (or other materials), and heat and power as co-products. These integrated biorefineries would produce, as their primary product, a liquid transportation fuel that supports, depending on topic area, meeting the advanced, renewable or advanced biofuels portion of the Energy Independence and Security Act of 2007 (EISA) Renewable Fuel Standards (RFS) or, depending on topic area, a bioproduct that substitutes for petroleum-based feedstocks and products.

- $480 Million Solicitation for Integrated Pilot- and Demonstration-Scale Biorefineries
  - Projects to validate integrated biorefinery technologies that produce advanced biofuels, bioproducts, and heat and power in an integrated system, thus enabling private financing of commercial-scale replications.
  - DOE anticipates making 10 to 20 awards for refineries at various scales and designs, all to be operational in the next three years. The DOE funding ceiling is $25 million for pilot-scale projects and $50 million for demonstration scale projects.

- $176.5 Million for Commercial-Scale Biorefinery Projects
  - $176.5 million will be used to increase the federal funding ceiling on two or more demonstration- or commercial-scale biorefinery projects that were selected and awarded within the last two years.
  - The goal of these efforts is to reduce the risk of the development and deployment of these first-of-a-kind operations. These funds are expected to expedite the construction phase of these projects and ultimately accelerate the timeline for start up and commissioning.

- $110 Million for Fundamental Research in Key Program Areas
  - Expand the resources available for sustainability research through the Office of Science Bioenergy Research Centers and establish a user-facility/small-scale integrated pilot plant ($25 million)
Create an advanced research consortium to develop technologies and facilitate subsequent demonstration of infrastructure-compatible biofuels through a competitive solicitation ($35 million).

Create an algal biofuels consortium to accelerate demonstration of algal biofuels through a competitive solicitation ($50 million).

This funding will help to develop cutting-edge conversion technologies, including generating more desirable catalysts, fuel-producing microbes, and feedstocks.

- $20 Million for Ethanol Research
  - The Biomass Program is planning to use $20 million of the Recovery Act funding in a competitive solicitation to achieve the following:
  - Optimize flex-fuel vehicles operating on high octane E85 fuel (85% ethanol, 15% gasoline blend)
  - Evaluate the impact of higher ethanol blends in conventional vehicles
  - Upgrade existing refueling infrastructure to be compatible with fuels up to E85.

Recovery Act Funding for Expansion of Infrastructure for Ethanol Blends

Value Chain:
Status: Expected to announce summer of 2009
Incentive Type: DOE Office of the Biomass Program to issue Funding Opportunity Announcements (FOA) related to intermediate ethanol blends.

Description:
- This special advance notice is intended to provide potential applicants the opportunity to develop partnerships and begin the process of gathering data to prepare their applications. No applications or questions will be accepted at this time.
- It will be open for 60 days.
- The purpose of this prospective FOA is to increase the availability and use of potential ethanol blends up to 85 percent ethanol.
- Two areas of interest have been identified to increase both the awareness and the use of ethanol blends for transportation.
  - Topic Area 1: Refueling Infrastructure for Ethanol Blends
    - DOE will be seeking cost-shared projects to expand the infrastructure at retail fueling locations to accommodate gasoline-ethanol blends. Expected projects may include modifications, upgrades or expansions of existing infrastructure at retail stations, or the installation of new equipment to accommodate blends of ethanol.
  - Topic Area 2: Education and Outreach for Ethanol Blends
    - DOE is seeking projects which will increase public awareness of the benefits, safety, and use requirements of ethanol blends. Projects are sought which will present accurate, unbiased, factual information on ethanol to targeted audiences. Proposed projects will be expected to include detailed plans with identified metrics for measuring the effectiveness of the education effort.

This Special Notice is intended to provide potential applicants advance notice of two upcoming Office of the Biomass Program Funding Opportunity Announcements. Prospective applicants should begin developing partnerships, formulating ideas, and gathering data in anticipation of the issuance of these FOAs. Please do not respond or submit questions in response to this Special Notice.

Recovery Act Funding of Development of Algal Biofuels and Advanced Fungible Biofuels

Value Chain:
Status: Expected to announce summer of 2009
Incentive Type:
Description:
  o DOE Office of the Biomass Program to issue Funding Opportunity Announcements (FOA) related to algal and advanced biofuels.
  o This special advance notice is intended to provide potential applicants the opportunity to develop partnerships and begin the process of gathering data to prepare their applications. No applications or questions will be accepted at this time.
  o Open for 90 days
  o The purpose of this prospective FOA is to address the interface between fundamental and applied research in these respective areas by utilizing consortiums with the necessary expertise to effectively and efficiently develop algal and advanced fungible biofuels technologies.
  o DOE will not be seeking to construct new facilities but leverage existing capabilities and resources to the maximum extent possible.
  o Expects to fund projects over multiple years.
  o Two topic areas will be included in the FOA.
  o Topic Area 1: Algal Biofuels Research and Development
    ▪ The primary objective of this topic area is to develop cost effective algae based biofuels that are competitive with their petroleum counterparts. The research and development will focus on the following five key barriers as identified in DOE’s National Algal Biofuels Roadmap:
      • Feedstock Supply: Strain development and cultivation;
      • Feedstock Logistics: Harvesting and extraction;
      • Conversion/Production: Accumulation of intermediate and synthesis of fuels and co-products;
      • Infrastructure: Fuel testing and standardization; and
      • Sustainable Practices: Life-cycle and economic analyses, siting, and resources management.
    ▪ Consortium Details:
      • DOE seeks the formation of partnerships in this area because a suite of technologies is required for algal biofuels commercialization and because cost sharing can maximize the leveraging of public funds. Consortiums may include leading scientists from an appropriate mix of academia, government and/or non-government laboratories, user facilities (e.g. the Joint Genome Institute), non-profit organizations, and private industry. Additionally, the consortiums should seek to utilize ‘best-in-class’ technologies, and engage end users and other field experts outside the traditional disciplines of science and engineering.
      • At a minimum, the partnerships should have the expertise to address the following aspects:
        • Fundamental strain biology as it relates to cultivation;
        • Process engineering and modeling;
        • Algae processing (harvesting and intermediates extraction) and resource management; and
        • Production of value added co-products.
      • The ideal partnerships will have existing facilities that enable technology demonstration and analytical measurements of the integrated process at larger than bench-scale. The development effort will support three years with the intent of accelerating technology development.
  o Topic Area 2: Advanced Fungible Biofuels
The primary objective of this topic area is to develop technology pathways leading to cost effective (compared to petroleum based fuels) conversion of biomass to advanced biofuels other than cellulosic ethanol with particular interest in bio-based hydrocarbon fuels, e.g. green gasoline and diesel. The technology pathways proposed can employ biological, thermochemical, and/or chemical conversion of cellulosic or non-food natural oil based feedstocks. This effort will focus on the development of cost competitive, infrastructure-compatible, advanced fungible biofuels, such as green gasoline and green diesel in an ‘accelerated-to-market’ timeframe. The areas of research could include the following:

- Chemical conversion of cellulosic sugars;
- Selective thermal processing technologies;
- Utilization of petroleum refining technology for conversion of biocrude;
- Catalyst specificity and lifetime;
- Engineering designs;
- Biomass processing catalyst development; and
- Biomass-to-liquids (fuels) catalyst development.

The development effort will support three years with the intent of accelerating the technology development. The resulting advanced fungible biofuel should be of a high energy density and compatible with existing hydrocarbon fuel distribution and end use systems.

Consortium Details:
- In order to efficiently and effectively develop and deploy advanced fungible biofuels, a consortium of partners is needed.
- Consortiums may include leading scientists from academia, government and/or non-government labs, non-profit organizations, and private industry that can bring a multidisciplinary, collaborative approach to solving the scientific barriers associated with making cost effective biomass-derived hydrocarbon compatible fuels.
- Because the research will lead to deployment of the technologies, it will be necessary to engage industry and other partners to cost share to maximize the leveraging of public funds.
- The consortiums will need to involve an organizational teaming effort where the teams bring unique capabilities that provide a synergy to the overall development effort.

This Special Notice is intended to provide potential applicants advance notice of two upcoming Office of the Biomass Program Funding Opportunity announcements. Prospective applicants should begin developing partnerships, formulating ideas, and gathering data in anticipation of the issuance of these FOAs. Please do not respond or submit questions in response to this Special Notice.

DIVISION A - Appropriations Provisions
- Rural Business Programs: $150 million for guaranteed business and industry loans and for rural business enterprise grants.
- National Science Foundation:
  - $2.5 billion for Research and Related Activities
  - $100 million for Education and Human Resources
  - $400 million for Major Research Equipment and Facilities Construction.
- Energy Efficiency and Renewable Energy: $16.8 billion in total, of which:
$3.2 billion for Energy Efficiency and Conservation Block Grants; of which $400 million shall be awarded on a competitive basis.

$3.1 billion for State Energy Program.

- Innovative Technology Loan Guarantee Program: $6 billion for loan guarantees for renewable technologies and transmission technologies.
- Small Business Loans: $636 million for the Business Loans Program of which $5 million is for microloans and $630 million to implement fee reductions and new loan guarantee authorities (up to 90%) for Section 7(a) loans. Loan guarantees may not be issued under this section after the date 12 months after the date of enactment of this Act.
- State and Tribal Assistance Grants:
  - Diesel Emissions Reduction: $300 million for Diesel Emissions Reduction Act competitive grants. The Agency may make awards for meritorious proposals submitted under competitions initiated within the last 18 months.
- Training and Employment Services: $3.95 billion for workforce programs. Of which $750 million for competitive grants for worker training in high growth and emerging industries. Of which $500 million is for projects to prepare workers for careers in energy efficiency and renewable energy.

DIVISION B - Tax, Unemployment, Health, State Fiscal Relief, and Other Provisions

- Long-term Extension and Modification of Renewable Energy Production Tax Credit: Extends the placed-in-service date closed-loop biomass; open-loop biomass; geothermal; small irrigation; hydropower; landfill gas; waste-to-energy; and marine renewable facilities for three years (through December 31, 2013).
- Temporary Election to Claim the Investment Tax Credit in Lieu of the Production Tax Credit: Facilities may elect to claim the investment tax credit instead of the production tax credit. Eligible facilities: Facilities that produce electricity from wind, closed-loop biomass, open-loop biomass, geothermal, small irrigation, hydropower, landfill gas, waste-to-energy, and marine renewable.
- Repeal Subsidized Energy Financing Limitation on the Investment Tax Credit: Repeals the subsidized energy financing limitation on the investment tax credit to allow businesses and individuals to qualify for the full amount of the investment tax credit even if such property is financed with industrial development bonds or through any other subsidized energy financing.
- Clean Renewable Energy Bonds (“CREBs”): Authorizes $1.6 billion of new clean renewable energy bonds to finance facilities that generate electricity from wind; closed-loop biomass; open-loop biomass; geothermal; small irrigation; hydropower; landfill gas; marine renewable; and trash combustion facilities.
- Qualified Energy Conservation Bonds: Authorizes $2.4 billion of qualified energy conservation bonds to finance State, municipal and tribal government programs and initiatives designed to reduce greenhouse gas emissions.
- Tax Credits for Alternative Refueling Property: For 2009 and 2010, the Act increases the 30% alternative refueling property credit for businesses (capped at $30,000) to 50% (capped at $50,000).
- Industrial Development Bonds (IDB): The proposal amends the definition of manufacturing facility eligible for tax exempt bond financing to any facility used in the manufacturing, creation, or production of tangible or intangible property.
- Advanced Energy Investment Credit: Establishes a new 30% investment tax credit for facilities engaged in the manufacture of advanced energy property through a competitive bidding process. The Secretary of may allocate up to $2.3 billion in credits. Advanced energy property includes technology for the production of renewable energy, energy...
storage, energy conservation, efficient transmission and distribution of electricity, and carbon capture and sequestration.

- Treasury Department Energy Grants in Lieu of Tax Credits: Taxpayers may receive a grant from the Treasury Department in lieu of the production tax credit or investment tax credit. This grant will operate like the current-law investment tax credit. The Treasury Department will issue a grant in an amount equal to 30% of the cost of the renewable energy facility within sixty days of the facility being placed in service or, if later, within sixty days of receiving an application for such grant.
Appendix D

Proposed State Legislation Promoting Biofuels:

2009 Regular Session; House Bills Introduced:

HB 211
- Report Title: Public Land Leases; Renewable Energy
- Relating to: Public Lands
- Description:
  - Allows DLNR to enter into leases of public lands for renewable energy projects and receive as all or partial consideration an equity participation in the renewable energy entity
- Summary:
  - Adding a new section: "§171- Renewable energy production; lease by negotiation; equity participation. (a) Anything to the contrary contained in this chapter notwithstanding, the board may lease public lands to a lessee for use in projects involving the generation of renewable energy: (1) Through negotiations; …"

HB 224
- Report Title: Renewable energy siting; preferential process
- Relating to: The Renewable Energy Facility Siting Process
- Description:
  - Creates a preferential and expediting permit plan application process for renewable energy producers of scale
- Summary:
  - The purpose of this Act is to create an expedited and preferential application process for renewable energy providers of scale, and to create a fixed deadline for permit approvals and an incentive to expedite them.
  - Adding a new section: "§201N- A Preference in siting assistance. (a) Permit plan applications for renewable energy facilities that: (1) cost $750,000,000 or more; …"

HB 245
- Report Title: Renewable Energy Facilities; Conservation and Agricultural Districts; Special Management Areas
- Relating to: Renewable Energy Facilities
- Description:
  - Allows the development of renewable energy facilities on conservation and agricultural districts and special management areas; provided that the facilities comply with all applicable regulatory laws. (SD1)
- Summary:
  - Adding a new section: "§201N- Conservation and agricultural districts; special management areas; allowed use. (a) Notwithstanding any law to the contrary, the siting, development, construction, and operation of a renewable energy facility may be allowed within a conservation or agricultural district or special management area…"

2 Last updated: April 22, 2009
HB 246
- Report Title: Renewable Energy; Biodiesel Feedstock; Appropriations
- Relating to: Biodiesel Feedstock
- Description:
  - Appropriation for Hawai‘i county economic opportunity council for operation of laboratory and research farm expansion for the Hawai‘i biotech tissue culture center to mass produce biodiesel feedstock
- Summary:
  - There is appropriated out of the general revenues of the State of Hawai‘i the sum of $3,000,000 for fiscal year 2009-2010, or so much thereof as may be necessary, as a grant and subsidy under chapter 42F, HRS, to the Hawai‘i county economic opportunity council, as follows:
    1. $1,800,000 for operational expenses for the Hawai‘i biotech tissue culture center to the end of the first cycle of mass propagation and point of sale to mass produce non-genetically-modified organism, superior, high yielding jatropha curassiod biodiesel feedstock; and
    2. $1,200,000 to expand the existing 8,500 square foot laboratory to 25,000 square feet to significantly raise production from an estimated 2.2 plantlets per year to 20,000,000 plantlets per year over a three year period.
- This Act shall take effect on July 1, 2009.

HB 277
- Report Title: alternative Energy Utilities in Schools; Grants; Appropriation
- Relating to: Alternative Energy
- Description:
  - Appropriates funds to make grants available to public schools for the purchase of alternative energy utilities for public school campuses in the state.
- Summary:
  - There is appropriated out of the general revenues of the State of Hawai‘i the sum of $_____ or so much thereof as may be necessary for fiscal year 2009-2010 to make available grants to public schools for the purchase of alternative energy utilities for public school campuses in the state.
- This Act shall take effect on July 1, 2009.

HB 279
- Report Title: Renewable Energy Branch; Appropriation
- Relating to: Energy
- Description:
  - Establishes the renewable energy branch in the department of business, economic development, and tourism to coordinate and promote renewable energy initiatives. Strengthens existing renewable energy and planning provisions. Provides for staffing, and, subject to federal funding, project managers to oversee energy projects funded by federal grants. Appropriates funds. (SD1)
- Summary:
  - The purpose of this Act is to support the renewable energy industry in Hawai‘i by:

This Act shall take effect on July 1, 2009.
1. Establishing a renewable energy branch in the department of business, economic development, and tourism to coordinate and promote renewable energy initiatives;

2. Strengthening laws supporting energy diversification, long-term provision of dependable energy services, and use of diverse energy technologies;

3. Providing adequate resources for the support of the renewable energy industry, and for comprehensive energy planning, in the department of business, economic development, and tourism.

- Adding a new section: "§201- Renewable energy branch; establishment. (a) There is established a renewable energy branch within the department. (b) Branch functions shall include but not be limited to: (1) Renewable energy resource assessments, technical analyses, and resource development functions, including design, management, and completion of systematic analysis of existing and proposed energy resource programs; …
- Amended to read as follows: "§196-4 Powers and duties … (12) Formulate a systematic process, including the development of requirements, to identify geographic areas that are rich with renewable energy resource potential that can be developed in a cost-effective and environmentally benign manner and designate these areas as renewable energy zones; (13) Develop and recommend incentives, plans, and programs to encourage the development of renewable energy resource projects within the renewable energy zones; (14) Assist public and private agencies in identifying utility transmission projects or infrastructure required to accommodate and facilitate the development of renewable energy resources; (15) Assist public and private agencies, in coordination with the department of budget and finance, in accessing the use of special purpose revenue bonds to finance the engineering, design, and construction of transmission projects and infrastructure that are deemed critical to the development of renewable energy resources; (16) Develop the criteria or requirements for identifying and qualifying specific transmission projects and infrastructure that are critical to the development of renewable energy resources, including providing assistance in accessing the use of special purpose revenue bonds to finance the projects or infrastructure; …"
- This Act shall take effect on July 1, 2009.

**HB 422**
- Report Title: Renewable Energy Technologies Income Tax Credit
- Relating to: Taxation
- Description:
  - Amends the renewable energy technologies income tax credit to make the credit refundable for certain taxpayers, prohibit special allocations of the credit by pass-through entities, and prevents passive activity losses from including a depreciation deduction
- Summary:
  - Amended by amending subsection (d) to read as follows: "(d) Section 704 of the Internal Revenue Code (with respect to a partner's distributive share) shall be operative for purposes of this chapter; except that section 704(b)(2) shall not apply to: … (5) Allocations of the renewable energy technologies income tax credit allowed under section 235-12.5."
  - This Act, upon its approval, shall apply to taxable years beginning after December 31, 2008.

**HB 487**
- Report Title: Hawai‘i Clean Energy Initiative (HCEI): Electric Generation and Delivery
o Relating to: Hawai‘i Clean Energy Initiative - Electric Generation and Delivery
o Description:
  – Establishes electric generation and delivery initiatives necessary for and contributing to the transition of Hawai‘i’s energy sector to 70% non-petroleum energy sources by 2030
o Summary:
  – The purpose of this Act is to provide a first step in aligning Hawai‘i’s energy policy laws with the State’s energy goals. For Hawai‘i to realize energy independence and economic stability, the transformation of its energy system must encompass changes to: (1) Hawai‘i’s policy or regulatory framework; (2) System-level technology development and integration; (3) Financing or capital investment; and (4) Institutional system planning.

HB 488
o Report Title: Hawai‘i Clean Energy Initiative (HCEI) - Energy Efficiency
o Relating to: Hawai‘i Clean Energy Initiative - Energy Efficiency
o Description:
  – Establishes energy efficiency initiatives necessary for and contributing to the transition of Hawai‘i’s energy sector to 70% non-petroleum energy sources by 2030
o Summary:
  – Adding a new section to HRS: "§A-A Energy efficiency portfolio standard. The State shall set an energy efficiency portfolio standard with the goal of off-setting forecasted load growth in the electricity sector from 2009 to 2030. The statewide target shall be 4300 gigawatt-hours of electricity savings by 2030. …"
  – Adding a new section to HRS: "§A-A Energy efficiency studies and planning. The public benefits fee administrator shall appropriate $500,000 from the public utilities commission special fund to conduct energy efficiency assessments to identify current energy use patterns in this State and areas of greatest potential for energy efficiency savings. The assessments shall include end use research regarding Hawai‘i’s homes, businesses, and other utility customers. The energy potential assessments shall identify and recommend energy efficiency programs to target. The assessments shall be forwarded to the legislature, the public utilities commission, the energy resources coordinator, and the utilities. The assessments shall be completed by December 31, 2010. …"
  – Adding a new section to HRS: "§A-A On-bill financing for energy efficiency and renewable energy. (a) By December 31, 2009, the public utilities commission shall institute a rule governing the on-bill financing program, to be administered by the public benefits fee administrator, and shall adopt rules pursuant to chapter 91 to effect the program’s goals of changing out inefficient refrigerators, installing solar water heaters, and installing photovoltaic systems."
  – Adding a new section to HRS: "§A-A Consumer Information. The public benefits fee administrator shall develop programs and information to educate financial institutions, realtors, mortgage brokers, and consumers on the economics of energy efficient properties, including savings over the life-cycle of such properties."
  – Adding a new section: "§235-A Tax credit for a net zero energy building. (a) There shall be allowed to each taxpayer who owns a net zero energy building fixed to real property located in the state an income tax credit which shall be deductible from the taxpayer’s net income tax liability, if any, imposed by this chapter only for the first taxable year in which the building meets the definition of net zero energy building. (b) The amount of the credit shall be: (1) For a building that is up to 1000 square feet, the tax credit shall be $9.00 per square foot; (2) For a building that is more than 1000 square feet but less than 4,000 square feet, the tax credit shall be $6.00 per square foot; (3) For a building that is more than 4,000 square feet, the tax credit shall be $3.00 per square foot for a maximum
credit of $50,000. … (g) This section shall apply to taxable years beginning after December 31, 2009, and shall not apply to taxable years beginning after December 31, 2019. …"

HB 489
- Report Title: Hawai‘i Clean Energy Initiative In Transportation Energy
- Relating to: Hawai‘i Clean Energy Initiative In Transportation Energy
- Description:
  - Establishes transportation energy initiatives necessary for the transition of Hawai‘i’s transportation energy sector from almost completely dependent on petroleum towards the use of efficient, stable, secure, renewable, non-petroleum energy sources by 2030
- Summary:
  - Adding a new section: "§235-A Electric vehicle charging; income tax credit. (a) There shall be allowed to each taxpayer subject to the taxes imposed by this chapter a tax credit for code compliant electric vehicle charging infrastructure installed and placed in service in the State that shall be deductible from the taxpayer's net income tax liability. The tax credit may be claimed for the taxable year in which the code compliant electric vehicle charging system is placed in service in the State. (b) The amount of the credit shall be seventy per cent of the cost of the electric vehicle charging system or $500 per electric vehicle charge point of the system, whichever is less. … (i) This tax credit applies to electric vehicle charging systems placed in service after July 1, 2009 and before January 1, 2016."  
  - Adding a new section: "§235-B Alternative fuel refueling; income tax credit. (a) There shall be allowed to each taxpayer subject to the taxes imposed by this chapter a tax credit for any alternative fuel refueling infrastructure installed and placed in service in the State that shall be deductible from the taxpayer's net income tax liability. The tax credit may be claimed for the taxable year in which the alternative fuel refueling infrastructure is placed in service. (b) The amount of the credit shall be thirty per cent of the cost of the alternative fuel refueling infrastructure or $10,000, whichever is less. … (j) This tax credit applies to alternative fuel refueling infrastructure placed in service after July 1, 2009 and before January 1, 2016."  
  - Adding a new section to HRS: "§A-A Designation of parking spaces for electric vehicles. … Such spaces shall be designated, clearly marked, and enforced by December 31, 2010"
  - Adding a new section: "§291-A Parking spaces reserved for electric vehicles; penalties. (a) Beginning January 1, 2011, any person who parks a non-electric vehicle in a space designated and marked as reserved for electric vehicles shall receive a warning. (b) Beginning July 1, 2011,… shall be fined not less than $50 nor more than $100 and pay any costs incurred by the court related to assessing the fine. …"
  - Adding a new section to HRS: "§A-A Requirement for electric vehicle charging capability. Electric vehicle charging capability shall be required on all new single family housing units constructed after January 1, 2015…"
  - Adding a new section: "§237-A Exemption of sale or lease of certain vehicles. (a) Beginning January 1, 2010, and expiring December 31, 2015, there shall be exempted from the measure of the taxes imposed by this chapter all of the gross proceeds arising from the sale or lease of new or used light duty motor vehicles classified as alternative fuel vehicles and fuel economy leader vehicles. …"
  - Adding a new section to HRS: "§A-A Transportation energy transformation grant fund. (a) There is established a special fund to be designated as the transportation energy transformation grant fund… (e) Subject to the availability of funds and the standards in this chapter, grants for approved electric vehicles shall be provided to purchasers of
electric vehicles intended to be integrated intelligently with the electrical grid and licensed for use on Hawai‘i’s highways, as follows: (1) Beginning January 1, 2010, and expiring December 31, 2010: up to $4000 per vehicle; limited to the first 500 vehicles. (2) Beginning January 1, 2011, and expiring December 31, 2011: up to $3500 per vehicle; limited to the first 1000 vehicles. (3) Beginning January 1, 2012, and expiring December 31, 2013: up to $2500 per vehicle; limited to the first 2000 vehicles per year. (4) Beginning January 1, 2014, and expiring December 31, 2015: up to $2000 per vehicle; limited to the first 2500 vehicles per year. (5) Beginning January 1, 2016, and expiring December 31, 2021: up to $500 per vehicle; limited to the first 10000 vehicles per year. …"

− Amended to read as follows: [Ethanol is substituted with Biofuel] "§235-110.3 Biofuel facility tax credit. (a) … (b) As used in this section: "Biofuel" means ethanol, biodiesel, diesel, jet fuel, or other liquid fuel meeting…"

− Amended to read as follows: "§251-2 Rental motor vehicle and tour vehicle surcharge tax. … c) For the period of January 1, 2010, through December 31, 2015, up to two hundred alternative fueled light duty motor vehicles per rental car fleet shall be exempt from the rental motor vehicle surcharge tax…."

− Amended to read as follows: "§103D-1012 Biofuel preference. … (g) Beginning January 1, 2012, all state-owned diesel vehicles and equipment are required to be fueled with blends of biomass-based diesel, subject to the availability of the fuel, and so long as the price is no greater than twenty per cent more per gallon than the price of conventional diesel"

− Adding a new section: "§196-A Alternative fuel vehicle requirement for private fleets. (a) Beginning January 1, 2012, each fleet operator controlling more than fifty light duty motor vehicles in the state shall, when replacing its light duty motor vehicles or expanding its fleet, acquire increasing percentages of vehicles capable of operating on non-petroleum energy sources, including electric vehicles, flexible fuel vehicles, or other alternative fuel vehicles. (b) At least four per cent of all new light duty motor vehicles acquired by a fleet operator in the state during calendar year 2012 shall be alternative fuel vehicles. This percentage shall increase by four per cent per year, reaching seventy-six per cent in the calendar year 2030…"

− Adding a new section: "§196-A Alternative fuel light duty motor vehicle sales requirement. (a) Beginning January 1, 2015, each motor vehicle dealer with sales of more than fifty light duty motor vehicles per year in Hawai‘i shall increase the percentages of new and used light duty motor vehicle sales represented by vehicles capable of operating on non-petroleum energy sources, including electric vehicles, flexible fuel vehicles, or other alternative fuel vehicles, as follows: (1) Ten per cent of its annual light duty motor vehicle sales for each calendar year between January 1, 2015 and December 31, 2019; (2) Twenty per cent of its annual light duty motor vehicle sales for each calendar year between January 1, 2020 and December 31, 2024; (3) Fifty per cent of its annual light duty motor vehicle sales for each calendar year between January 1, 2025 and December 31, 2029; and (4) Seventy-five per cent of its annual light duty motor vehicle sales for each calendar year after January 1, 2030…"

HB 490

− Report Title: Energy
− Relating to: Tax incentives for renewable energy
− Description:
  − Increases incentives for renewable energy; repeals prohibition on taking solar tax credit for developers.
Summary:
− Section 235-12.5 HRS, is amended: "Renewable energy technologies; income tax credit. … This credit shall be available for systems installed and placed in service in the State after June 30, 2003. …"
− This bill increases the tax credit from 35 percent to 50 percent (of the actual cost or a fixed value based on the property type, whichever is less) for solar thermal energy systems and photovoltaic energy systems and from 20 percent to 35 percent (of the actual cost or a fixed value based on the property type, whichever is less) for wind-powered energy systems. It also introduces a new tax credit, equal to 50 percent of the actual cost or $750,000, whichever is less, for the wave energy systems in commercial properties.
− This Act shall take effect upon its approval and shall apply to taxable years beginning after December 31, 2008.

HB 546
− Report Title: Net Energy Metering; Renewable Energy; Electricity; Public Utilities Commission
− Relating to: renewable energy
− Description:
  − Removes the capacity limit for net energy metering and increases eligible customer-generator capacity to one megawatt. Permits existing net metered customers to remain with net metering program once alternative credits or compensation mechanisms are created. Allows an eligible customer-generator to generate up to one hundred kilowatts before the eligible customer-generator must gain public utilities commission approval of safety and performance standards.
− Summary:
  − Amending section 269-101, to read: "… 'Eligible customer-generator' means a metered residential or commercial customer, including a government entity, of an electric utility who owns and operates, leases, or purchases electricity from a solar, wind turbine, biomass, or hydroelectric energy generating facility, or a hybrid system consisting of two or more of these facilities" …

HB 589 (Act 173; Enacted in 07/07/2009)
− Report Title: Renewable Energy Project; Subdivisions
− Relating to: renewable energy facilities
− Description:
  − Exempts leases and easements for renewable energy projects from subdivision requirements; defines "subdivision requirements"; requires agencies to accept instruments for recording and filing. Sunsets 6/30/2013. (SD2)
− Summary:
  − Adding a new section: "§201N- Exemption from subdivision requirements. (a)… (1) Lands within the agricultural or conservation state land use district may be leased; and (2) Easements may be created and granted over lands within the agricultural or conservation state land use district, for the purpose of developing and financing a renewable energy project or access to a renewable energy project that is a permitted use in the district, even if the leased land or easement area has not been subdivided as a separate subdivided lot or easement… (b)… (4) Mortgages and other security interests may be granted with respect to any lease or easement created pursuant to this section, and the holders of such mortgages or other security interests may foreclose upon the lease or easement covered and otherwise enforce the terms of the mortgage and security documents, subject to
compliance with applicable laws other than subdivision requirements… (d) The exemption from subdivision requirements authorized by this section shall only apply to leases and easements that meet the following requirements and shall be subject to the following limitations:… (2) The lease shall have an initial term of at least twenty years;…”

– This Act shall take effect upon its approval; provided that section 4 of this Act shall take effect on July 1, 2013; provided further that sections 2 and 3 of this Act shall be repealed on June 30, 2013.

HB 591 (Act 185; Enacted in 07/15/2009)
– Report Title: Renewable Energy; Agricultural Activities; Preferential Rates
– Relating to: Public Utilities
– Description:
  – Authorizes preferential rates for the purchase of renewable energy produced in conjunction with agricultural activities. (SD2)
– Summary:
  – Adding a new section: "§269 Preferential renewable energy rates; agricultural activities. It is the policy of the State to promote the long-term viability of agriculture by establishing mechanisms that provide for preferential rates for the purchase of renewable energy produced in conjunction with agricultural activities. The public utilities commission shall have the authority to establish preferential rates for the purchase of renewable energy produced in conjunction with agricultural activities…”

HB 619
– Report Title: Public Utilities; Renewable Energy Zones
– Relating to: Public Utilities
– Description:
  – Directs the public utilities commission to prepare a study on the creation of renewable energy zones and report its findings to the legislature.
– Summary:
  – The public utilities commission shall prepare a study on the feasibility of establishing renewable energy zones that are free from regulation by the public utilities commission.
  – "Renewable energy zone" means a designated area or facility in which energy may be generated from renewable resources in privately-owned generation facilities and distributed to users by way of transmission infrastructure that is separate from power transmission infrastructure owned or operated by a public utility.
  – The public utilities commission shall include procedures and qualifications for designating an area or a facility as a renewable energy zone, and it shall make recommendations for areas and facilities that should be designated as renewable energy zones.
  – The public utilities commission shall report its findings and recommendations to the legislature no later than twenty days prior to the convening of the regular session of 2010.

HB 738
– Report Title: Tax exemptions; Direct generation of electricity using fuel cells, hydrogen, biomass, wind, the sun, the ocean, geothermal energy, waste heat, hydroelectric power, or landfill gas
– Relating to: Tax exemptions
– Description:
Exempts from the general excise tax and use tax all equipment used directly in the generation of electricity using fuel cells, hydrogen, biomass, wind, the sun, the ocean, geothermal energy, waste heat, hydroelectric power, or landfill gas.

Summary:
- Adding a new section: "§237 - Exemption for certain machinery and equipment used directly in the generation of electricity. (a) The tax imposed under this chapter shall not apply to sales of machinery and equipment used directly in the generation of electricity using fuel cells, hydrogen, biomass, wind, the sun, the ocean, geothermal energy, waste heat, hydroelectric power, or landfill gas as the principal source of power, or to sales of or charges made for labor and services rendered with respect to the installation of such machinery and equipment; provided that the purchaser develops with such machinery, equipment, and labor a facility capable of generating not less than two hundred watts per day of electricity and provides the seller with an exemption certificate in a form and manner prescribed by the department."
- Adding a new section: "§238 - Exemption for certain machinery and equipment used directly in the generation of electricity. ...(Same as chapter 237).
- This Act shall take effect on January 1, 2010; provided that it shall be repealed on December 31, 2014.

HB 816
- Report Title: Renewable Energy
- Relating to: Energy
- Description:
  - Prohibits the permitting after 12/31/12 of any new electrical generation facility that uses fossil fuels to generate electricity. Requires all electrical generation facilities to produce electricity from renewable energy by 1/1/25.
- Summary:
  - Adding a new section: "§196 - Electrical generation facilities; fossil fuels; prohibition. (a) After December 31, 2012, no permit shall be issued for the construction or operation of an electrical generation facility that produces electrical energy primarily from the combustion of any type of fossil fuel. (b) No later than January 1, 2025, all electrical generation facilities in the State shall generate electrical energy primarily from renewable energy."
  - Amended to read as follows: "§269-7.5 Certificates of public convenience and necessity… (f) After December 31, 2012, no certificate shall be issued to any applicant for the operation of a new electrical generation facility that produces electrical energy primarily from the combustion of any type of fossil fuel. (g) After January 1, 2025, the commission shall revoke any certificate that was previously issued to a public utility for the operation of an electrical generation facility that produces electrical energy primarily from the combustion of any type of fossil fuel if that facility has not been converted or retrofitted to generate electrical energy primarily from renewable energy."

HB 820
- Report Title: Department of Planning and Sustainability; Establishment
- Relating to: Sustainability
- Description:
  - Creates a department of planning and sustainability by combining the office of planning, commission on water resource management, energy resources coordinator responsibilities, agribusiness development corporation, land use
commission, office of environmental quality control, and Hawaii community development authority.

Summary:
- Chapter 26, HRS, is amended by adding a new section: "§26- Department of planning and sustainability. (a) The department of planning and sustainability shall be headed by a single executive to be known as the director of planning and sustainability. The department shall:
  1. Undertake statewide long-range planning and sustainability activities;
  2. Undertake energy development and management;
  3. Provide sustainability research and analysis; and
  4. Encourage, develop, and implement plans for Hawaii's agriculture and food supply, land use, community development and housing, economy, environment, energy, natural resources, lifestyle, and culture through programs established by law.
(b) The following are placed in the department of planning and sustainability for administrative purposes as defined by section 26-35: the agribusiness development corporation, commission on water resource management, duties and responsibilities of the energy resources coordinator, Hawaii community development authority, land use commission, office of environmental quality control, office of planning, and any other boards and commissions as provided by law."
- This Act shall take effect on July 1, 2011; provided that section 12 shall take effect on July 1, 2009.

HB 1052
- Report Title: Hawaii Clean Energy Initiative; Electric Generation and Delivery.
- Relating to: Hawaii’s Clean Energy Initiative in Electric Generation and Delivery
- Description:
  - Establishes electric generation and delivery initiatives necessary for and contributing to the transition of Hawaii's energy sector to 70 percent non-petroleum energy sources by 2030.
- Summary:
  RENEWABLE PORTFOLIO STANDARDS
  - Section 269-92 HRS, is amended by amending subsections (a) and (b) to read as follow: "a) Each electric utility company that sells electricity for consumption in the State shall establish a renewable portfolio standard of:
    1. Ten per cent of its net electricity sales by December 31, 2010;
    2. Fifteen per cent of its net electricity sales by December 31, 2015;
    3. Twenty-five per cent of its net electricity sales by December 31, 2020; and
    4. Forty per cent of its net electricity sales by December 31, 2030.
    b) … (4) The public utilities commission shall not approve applications to build new additional fossil-based electric generation units with rated capacity greater than two megawatts."
  ENERGY RESOURCES COORDINATOR
  - Section 196-4 HRS, is amended to read as follows: "Powers and duties. Subject to the approval of the governor, the coordinator shall: …
    12. Formulate a systematic process including the development of requirements, to identify geographic areas that are rich with renewable energy resource potential which can be developed in a cost-effective and environmentally benign manner, and designate such areas as renewable energy zones;"
(13) Develop and recommend incentives plans and programs to encourage the development of renewable energy resource projects within the renewable energy zones;
(14) Assist public and private agencies in identifying the utility transmission projects or infrastructure that are required to accommodate and facilitate the development of renewable energy resources;
(15) Assist public and private agencies in coordination with the department of budget and finance in accessing use of special purpose revenue bonds to finance the engineering, design, and construction of transmission projects and infrastructure that are deemed critical to the development of renewable energy resources;
(16) Develop the criteria or requirements for identifying and qualifying specific transmission projects or infrastructure that are critical to the development of renewable energy resources, and which the energy resources coordinator will assist in accessing the use of special purpose revenue bonds to finance such projects or infrastructure; …"

RENEWABLE ENERGY PERMITTING

– Section 201N-1 HRS, is amended by amending the definition of "renewable energy facility" to read as follows: "Renewable energy facility" or "facility" means a new facility located in the State with the capacity to produce from renewable energy at least two hundred megawatts of electricity; provided that biofuel production facilities of at least one million gallons per year and electricity production facilities with capacities between five and two hundred megawatts may apply to the coordinator for designation as renewable energy facilities, with such designation to be at the sole discretion of the coordinator. …"

HB 1053

o Report Title: Hawaii Clean Energy Initiative; Energy Efficiency.
 o Relating to: Hawaii’s Clean Energy Initiative in Energy Efficiency
 o Description:
   – Establishes energy efficiency initiatives necessary for and contributing to the transition of Hawaii’s energy sector to 70 percent non-petroleum energy sources by 2030.
 o Summary:
   ENERGY EFFICIENCY
   – The HRS is amended by adding a new section: "§ Energy efficiency portfolio standard. The State shall set an energy efficiency portfolio standard with the goal of off-setting forecasted load growth in the electricity sector from 2009 to 2030. The statewide target shall be 4,300 gigawatt-hours of electricity savings by 2030. The interim targets, and any island by island targets, shall be set by the public utilities commission. The public utilities commission shall identify the parties who are responsible for each element of the standard and set incentives and penalties based on performance by each entity. Renewable substitution, including but not limited to solar water heating and sea water air conditioning, shall count toward this standard."

HB 1054

o Report Title: Hawaii Clean Energy Initiative; Transportation.
 o Relating to: Hawaii’s Clean Energy Initiative in Transportation Energy
 o Description:
   – Establishes transportation energy initiatives necessary for the transition of Hawaii’s transportation energy sector from almost completely dependent on
petroleum towards the use of efficient, stable, secure, renewable, non-petroleum energy sources by 2030.

- **Summary:**
  - **TRANSPORTATION ENERGY INFRASTRUCTURE**
    - Chapter 235 HRS, is amended by adding a new section: "§235-__ Electric vehicle charging; income tax credit. … (b) The amount of the credit shall be 70 per cent of the cost of the electric vehicle charging system or $500 per electric vehicle charge point of the system, whichever is less. …"
    - Chapter 235 HRS, is amended by adding a new section: "§235-__ Alternative fuel refueling; income tax credit. … b) The amount of the credit shall be 30 per cent of the cost of the alternative fuel refueling infrastructure or $10,000, whichever is less. …"
  - **TRANSPORTATION ENERGY INCENTIVES**
    - The HRS is amended by adding a new section: "§___-__ Transportation energy transformation grant fund. (a) There is established a special fund to be designated as the transportation energy transformation grant fund. …"
    - Section 235-110.3 HRS, is amended to read as follows: "§235-110.3 Biofuel facility tax credit. (a) … For each qualified biofuel production facility, the annual dollar amount of the biofuel facility tax credit during the 8-year period shall be equal to 30 percent of its nameplate capacity if the nameplate capacity is greater than 500,000 gallons. A taxpayer may claim this credit for the first 15 million gallons of capacity of each qualifying biofuel facility; provided that…. (b) … "Biofuel" means ethanol, biodiesel, diesel, jet fuel, or other liquid fuel meeting the relevant fuel specifications of ASTM International (formerly ASTM, the American Society for Testing and Materials). …"
  - **TRANSPORTATION ENERGY REQUIREMENTS**
    - Section 103D-1012 HRS, is amended to read as follows: "Biofuel preference. (a) … Contracts for the purchase of diesel fuel or boiler fuel shall be awarded to the lowest responsible and responsive bidders, with preference given to bids for biofuels or blends of biofuel and petroleum fuel. (b) When purchasing fuel for use in diesel engines, the preference shall be 20 per cent per gallon of 100 per cent biomass-based diesel. For blends containing both biomass-based diesel and petroleum-based diesel, the preference shall be applied only to the biomass-based diesel portion of the blend. (c) When purchasing fuel for use in boilers, the preference shall be 20 per cent per gallon of 100 per cent biofuel. For blends containing both biofuel and petroleum-based boiler fuel, the preference shall be applied only to the biofuel portion of the blend. … (g) Beginning January 1, 2012, all state-owned diesel vehicles and equipment are required to be fueled with blends of biomass-based diesel, subject to the availability of the fuel, and so long as the price is no greater than twenty per cent more per gallon than the price of conventional diesel."

**HB 1197**
- Report Title: Alcohol Fuels; Renewable Fuel Standard
- Relating to: ALCOHOL FUELS
- Description:
  - Improve Hawai‘i’s economic and energy security position by establishing a preference for locally produced alcohol fuels.
- Summary:
Amended to read as follows: "§237-27.1 Exemption of sale of alcohol fuels. … The exemption shall apply to alcohol fuels utilized to meet the State’s renewable fuel standard and shall be administered based on the local alcohol fuel production capacity for that tax year, as determined by the department of business, economic development, and tourism"

Act 209 Session Laws of Hawai‘i, 2007 is amended by amending section 6 to read as follows: "SECTION 6. This Act shall take effect on July 1, 2007; provided that section 2 of this Act shall be repealed on June 30, 2015" (It was 2009 before).

**HB 1271**

- Report Title: Food and Energy Security
- Relating to: Government
- Description:
  - Makes various amendments, establishes various initiatives, and appropriates funds to promote economic development for local food and energy businesses, ensure Hawaii is energy and food self-sufficient and sustainable to the maximum extent feasible, and help Hawaii’s natural resources and humankind adapt and be resilient to the inevitable challenges brought on by climate change. (HB1271 CD1)

- Summary:
  - The purpose of this Act is to:
    1. Promote economic development for local food and energy businesses by establishing necessary funding, guidance, and infrastructure;
    2. Ensure Hawaii is energy and food self-sufficient and sustainable to the maximum extent feasible; and
    3. Plan for and implement measures to help Hawaii’s natural resources and humankind adapt and be resilient to the inevitable challenges brought on by climate change caused by carbon dioxide and other greenhouse gas emissions from burning fossil fuels.

- Section 201-12.8 HRS, is amended: "Energy security special fund; uses. (a) There is created within the state treasury an energy security special fund, which shall consist of:
  1. The portion of the environmental response, energy, and food security tax specified under section 243-3.5; (2) … (b) … moneys from the fund may be used for no other purposes except for …:
     1. To support the Hawaii clean energy initiative program, including its energy division and projects that ensure dependable, efficient, and economical energy, promote energy self-sufficiency, and provide greater energy security for the State;
     2. To fund the renewable energy facilitator pursuant to section 201-12.5 and any other positions necessary for the purposes of paragraph (1) as determined by the legislature; and
     3. To fund, to the extent possible, the greenhouse gas emissions reduction task force, climate change task force, grants-in-aid to the economic development boards of each county, and grants-in-aid to economic development agencies of each county to meet the stated objectives of the Hawaii clean energy initiative program."

- Section 243-3.5 HRS is amended by amending its title and subsection (a) to read:
  "Environmental response, energy, and food security tax; uses. (a) … there is hereby imposed a state environmental response, energy, and food security tax of $1.05 on each barrel or fractional part of a barrel of petroleum product sold by a distributor to any retail dealer or end user, other than a refiner, of petroleum product; provided that:
  1. 5 cents of the tax on each barrel shall be deposited into the environmental response revolving fund …;"
(2) 55 cents of the tax on each barrel shall be deposited into the energy security special fund …;
(3) 10 cents of the tax on each barrel shall be deposited into the energy systems development special fund …; and
(4) 35 cents of the tax on each barrel shall be deposited into the agricultural development and food security special fund ….

The tax imposed by this subsection shall be paid by the distributor of the petroleum product."

− Chapter 141 HRS is amended by adding a new section: "§141- Agricultural development and food security special fund; …
(c) … moneys in the special fund may be expended for the following purposes:
(1) The awarding of grants to farmers for agricultural production or processing activity;
(2) The acquisition of real property for agricultural production or processing activity;
(3) The improvement of real property, irrigation systems, and transportation networks necessary to promote agricultural production or processing activity;
(4) The purchase of equipment necessary for agricultural production or processing activity;
(5) The conduct of research on and testing of agricultural products and markets;
(6) The promotion and marketing of agricultural products grown or raised in the state;
(7) Any other activity intended to increase agricultural production or processing that may lead to reduced importation of food, fodder, or feed from outside the state."

**HB 1277**

○ Report Title: DLNR; Renewable Energy Producer; Public Notice; Public Lands; Lease
○ Relating to: Renewable Energy Producers
○ Description:
  − Requires that the board of land and natural resources conduct public hearings prior to awarding a lease of public land to a renewable energy producer.
○ Summary:
  − Section 171-95 HRS is amended to read as follows: "Disposition to governments, governmental agencies, public utilities, and renewable energy producers. (a) Notwithstanding any limitations to the contrary, except as provided in subsection (d) with regard to leases for renewable energy producers, the board of land and natural resources without public auction, may:
    (1) Sell public lands at a price and on other terms and conditions…;
    (2) Lease to the governments, agencies, public utilities, and renewable energy producers public lands for terms up to, but not in excess of, 65 years at rental…;
    (3) Grant licenses and easements…;
    (4) Exchange public lands with the governments and agencies; (5, 6) … (b) …
  (c) For the purposes of this section, "renewable energy producer" means:
    (1) Any producer of electrical or thermal energy produced by wind, solar energy, hydropower, landfill gas, waste-to-energy, ocean thermal energy conversion, cold seawater, wave energy, biomass, including municipal solid waste, biofuels or fuels derived from organic sources, hydrogen fuels derived primarily from renewable energy, or fuel cells where the fuel is derived primarily from renewable sources… or
    (2) Any grower or producer of plant or animal materials used primarily for the production of biofuels or other fuels; provided that….
(d) The board may lease or renew a lease of public lands to renewable energy producers under subsection (a)(2) only pursuant to a public process that includes public notice under section 1-28.5 providing other interested renewable energy producers opportunity to participate in the process; provided that the renewable energy producer shall be required to submit as part of the proposal for the board's evaluation, as assisted by the DBEDT, the following: … (some other documents)"

HB 1305
- Report Title: Taxation
- Relating to: Taxation
- Description:
  - Establishes a non-refundable tax credit for the manufacture of renewable energy technology devices.
- Summary:
  - Adding a new section: "§235-A Renewable energy technology manufacturer; income tax credit. (a)… The amount of the credit shall be _____ per cent of qualified production costs…”
  - This Act shall take effect upon its approval and shall apply to taxable years beginning after December 31, 2008.

HB 1368
- Report Title: Renewable Energy; Biomass; Appropriation
- Relating to: Renewable Energy
- Description:
  - Makes an appropriation for the relocation and establishment of a pilot plant for the conversion of biomass into liquid transportation fuel and electricity.
- Summary:
  - The Hawai‘i Economic Opportunity Council requires seed funding in the amount of $580,000 for the purchase of the pilot plant and the relocation and reassembly of the plant on the island of Hawai‘i. With successful field testing, the pilot project can be expanded into a commercial venture for private investors.
  - There is appropriated out of the general revenues of the State of Hawai‘i the sum of $580,000 or so much thereof as may be necessary for fiscal year 2009-2010 for establishment of a pilot biomass conversion plant on the island of Hawai‘i to convert biomass and methane gases in landfills into liquid transportation fuel and electricity.
  - This Act shall take effect on July 1, 2009.

HB 1458
- Report Title: Renewable Energy Technology Systems Loans
- Relating to: Renewable Energy
- Description:
  - Establishes the Renewable Energy Technology Systems Loan Program to provide loans to homeowners to purchase and install renewable energy technology systems, that shall be secured by the property upon which the system is installed, and repaid using the savings realized from use of the renewable energy technology system.
- Summary:
  - Adding a new part to Chapter 196: "PART . RENEWABLE ENERGY TECHNOLOGY SYSTEMS LOAN PROGRAM
§196-A Definitions ...

§196-B Renewable energy technology systems loan program. (a) ... The purpose of the loan program is to enable the department to make direct loans to eligible homeowners, as determined by the department, who seek to purchase and install renewable energy technology systems on their property. ...

§196-C Renewable energy technology systems loan revolving fund ..."

"There is appropriated out of the general revenues of the State of Hawai‘i the sum of $ or so much thereof as may be necessary for fiscal year 2009-2010 to be deposited into the renewable energy technology systems loan revolving fund created in section 196-C, Hawai‘i Revised Statutes."

This Act shall take effect on July 1, 2009.

HB 1464 (Act 155; Enacted in 06/25/2009)
- Report Title: Renewable Energy; Energy Efficiency
- Relating to: Energy Resources
- Description:
  - Provides for and encourages renewable energy use and development, and energy efficiency. Prohibits electric utilities from increasing generating capacity using fossil fuels. Increases requirements for renewable energy portfolio standard. Expands duties of energy resources coordinator. Allows businesses that produce electricity using certain renewable energy resources to qualify for enterprise zone benefits. Effective date is 7/1/2046. (SD2)
- Summary:
  - Adding a new section: "§342B- Fossil fuel electricity generating facilities. (a) Effective July 1, 2009, no new covered source that is owned or operated by an electricity-generating public utility with a rated capacity of more than two megawatts shall be permitted to generate electricity from fossil fuel sources; provided that electric utility cooperative associations shall be exempt from the requirements of this subsection until July 1, 2015. (b) Effective July 1, 2009, no covered source that is owned or operated by an electricity-generating public utility with a rated capacity of more than two megawatts and existing on July 1, 2009, except for an electric utility cooperative association, shall be modified in any manner that allows it to use more fossil fuel as a source of electricity generation than is allowed under its permit as of July 1, 2009. No covered source that is owned or operated by an electric utility cooperative association with a rated capacity of more than two megawatts and existing on July 1, 2009 shall be modified in any manner that allows it to use more fossil fuel as a source of electricity generation than is allowed under its permit as of July 1, 2015."
  - Section 269-92 HRS, is Amended: "(a) Each electric utility company ... shall establish a renewable portfolio standard of:
    (1) 10% of its net electricity sales by December 31, 2010;
    (2) 15% of its net electricity sales by December 31, 2015;
    (3) 25% of its net electricity sales by December 31, 2020; and
    (4) 40% of its net electricity sales by December 31, 2030.
    (b) The public utilities commission may establish standards for each utility that prescribe what portion of the renewable portfolio standards shall be met by specific types of renewable energy resources; provided that:
      (1) Prior to January 1, 2015, at least 50% of the renewable portfolio standards shall be met by electrical energy generated using renewable energy as the source, and after December 31, 2014, the entire renewable portfolio standard shall be met by electrical generation from renewable energy sources;"
(2) Beginning January 1, 2015, electrical energy savings shall not count toward renewable energy portfolio standards;
(3) Where electrical energy is generated or displaced by a combination of renewable and nonrenewable means, the proportion attributable to the renewable means shall be credited as renewable energy;
(4) Where fossil and renewable fuels are co-fired in the same generating unit, the unit shall be considered to generate renewable electrical energy (electricity) in direct proportion to the percentage of the total heat value represented by the heat input value of the renewable fuels; and
(5) Effective July 1, 2009, the public utilities commission shall not approve any application by a public utility to build a new generation facility … that uses fossil fuel as the source of electricity generation; provided that, between July 1, 2009 and July 1, 2015, the public utilities commission may approve an application when the application is submitted by an electric utility cooperative association…"

Section 201-12.5 HRS is amended: "… (b) The renewable energy facilitator shall have the following duties:
(1) Facilitate the efficient permitting of renewable energy projects, including:
   (A) The land parcel on which the facility is situated;
   (B) Any renewable energy production structure or equipment;
   (C) Any energy transmission line from the facility to a public utility's electricity system;
   (D) Any on-site infrastructure necessary for the production of electricity or biofuel from the renewable energy site; …"

Section 201N-1 HRS is amended by: "Renewable energy facility" or "facility" means a new facility located in the state with the capacity to produce from renewable energy at least 200 megawatts of electricity; provided that an electricity production facility with a capability between 5 megawatts and 199 megawatts of electricity and a biofuel production facility with a capacity to produce 1 million gallons or more annually may apply to the coordinator for designation as a renewable energy facility."

The HRS is amended by adding the following new section: "§ Energy-efficiency portfolio standards. (a) The public utilities commission shall establish energy-efficiency portfolio standards that will maximize cost-effective energy-efficiency programs and technologies. (b) The energy-efficiency portfolio standards shall be designed to achieve 4300 gigawatt-hours of electricity use reductions statewide by 2030; … (c) Beginning in 2015, electric energy savings brought about by the use of renewable displacement or offset technologies, including solar water heating and seawater air conditioning district cooling systems, shall count toward this standard."

Chapter 235 HRS is amended by adding two new sections: "§235-A Electric vehicle charging infrastructure; income tax credit. … " (As explained in HB 489, HB 1054, SB 1202) and "§235-B Alternative fuel refueling infrastructure; income tax credit. … " (As explained in HB 489, HB 1054, SB 1202)

Section 103D-412 HRS is amended to read as follows: "Light-duty vehicle requirements. … (b) Beginning January 1, 2010, all state and county entities, when purchasing new vehicles, shall seek vehicles with reduced dependence on petroleum-based fuels that meet the needs of the agency. Priority for selecting vehicles shall be as follows:
   (1) Electric or plug-in hybrid electric vehicles;
   (2) Hydrogen or fuel cell vehicles;
   (3) Flexible fuel vehicles;
   (4) Hybrid electric vehicles; or
(5) Vehicles that are identified by the USEPA … as being among the top performers for fuel economy in their class."

− This Act shall take effect on July 1, 2009.

HB 1468
o Report Title: Renewable Energy
o Relating to: Renewable Energy
o Description:
  − Establishes comprehensive measures for increasing the production and use of renewable energy in the State.

o Summary:
  − This bill asks for some slight modifications on Renewable Portfolio Standards, Net Energy Metering, Energy Resources Coordinator, Renewable Energy Resources, Renewable Energy Facilitator and Renewable Energy Permitting in almost the same way which is already explained in HB1052.

HB 1650
o Report Title: Electric-Powered Motor Vehicles
o Relating to: Energy
o Description:
  − Requires 25 per cent of all consumer motor vehicles to be electric-powered by January 1, 2020. Requires the Hawaii Energy Policy Forum to develop a regulatory scheme to implement this policy.

o Summary:
  − The purpose of this Act is to: "(1) Require 25% of all consumer motor vehicles to be electric-powered by January 1, 2020; the state enterprise zones program was established to promote private sector business growth, and to facilitate the revitalization of certain communities within the state through various measures such as regulatory flexibility and tax incentives. …"
  − "There is appropriated out of the general revenues of the State of Hawaii the sum of $ or so much thereof as may be necessary for fiscal year 2009-2010 for the Hawaii energy policy forum to develop a regulatory scheme to implement the policy requiring that 25% of all consumer motor vehicles be electric-powered by January 1, 2020."
  − This Act shall take effect on July 1, 2009.

HB 1682
o Report Title: Enterprise Zone (EZ) Program
o Relating to: State Enterprise Zones
o Description:
  − Allows LLCs and renewable energy producers to qualify for EZ benefits; extends EZ tax benefits for manufacturing and agricultural businesses, for an additional seven years; allows receipts, sales, and employees of a business's establishments in all EZs within one county to count towards EZ qualifications; exempts payments for construction for a business approved for enrollment in the EZ Program from the general excise tax.
  (HB1682 HD1)

o Summary:
  − The state enterprise zones program was established to promote private sector business growth, and to facilitate the revitalization of certain communities within the state through various measures such as regulatory flexibility and tax incentives.
The purpose of this Act is to improve the state enterprise zone program by, among other things:

1. Allowing limited liability companies to be included under the definitions of "qualified businesses" and "service businesses";
2. Extending the enterprise zone tax credits and exemptions, for businesses engaged in manufacturing tangible personal property or in producing or processing agricultural products, for an additional seven years;
3. Allowing the receipts, sales, and employees of a business's establishments in all enterprise zones located within the same county to count toward qualification requirements.

This Act shall take effect on July 1, 2112.

HB 1704
- Report Title: Energy Independence; Government-Industry Consortium
- Relating to: Economic Development
- Description:
- Summary:
  - SECTION 1. … The purpose of this Act is to create an energy initiative that will:
    (1) Lead the development and demonstration of transformational new energy technologies, including both space and terrestrial solar energy solutions;
    (2) Demonstrate that Hawaii is a leader in renewable energy development;
    (3) Implement a portfolio of visionary short-term and long-term energy solutions;
    (4) Create profitable high-quality new business opportunities for innovative technology-based start-up firms in Hawaii;
    (5) Establish Hawaii as a world-class leader in sustainable energy education, research, development, demonstrations, manufacturing, and operations; and
    (6) Enable Hawaii to achieve energy self-sufficiency within a generation, setting an example for the rest of the world.
  - SECTION 2. (a) The energy resources coordinator shall establish a government-industry consortium which shall:
    (1) Establish Sustainable Energy Innovation, LLC, …;
    (2) Seek federal and private industry funding for renewable energy technology research;
    (3) Develop and demonstrate advanced energy technology projects and testing in Hawaii…;
    (4) Provide funding for qualified small business ventures to work on projects in partnership with the UH and other universities, corporations, and the international community to rapidly establish renewable energy technologies and businesses; and
    (5) Assist the UH to develop new curricula for advanced sustainable energy economics and systems and to lead the education of the next generation of researchers, engineers, and technicians.
  - There is appropriated out of the general revenues of the State of Hawaii the sum of $1,000,000 or so much thereof as may be necessary for fiscal year 2009-2010 and $2,000,000 or so much thereof as may be necessary for fiscal year 2010-2011 for the organization and operations of the government-industry consortium pursuant to section 2 of this Act.
  - This Act shall take effect on July 1, 2009.
HB 1810
○ Report Title: Energy Efficiency
○ Relating to: Energy Efficiency
○ Description:
  – Directs the public utilities commission to establish energy efficiency portfolio standards. Directs the public benefits fee administrator to review energy use patterns and develop an energy efficiency plan. Directs the energy resources coordinator to review energy efficiency in building construction and recommend amendments to county building codes and the state building code. Requires the state building code to contain provisions of the International Energy Conservation Code and directs counties to adopt those provisions. Allows for the review of energy efficiency in existing state buildings and directs the energy resources coordinator to establish energy efficiency guidelines for retro-commissioning and retrofits. Requires existing state buildings to be retro-commissioned no less than every five years. Requires the energy resources coordinator to publish an annual energy efficiency report. Requires energy performance contracts for retro-commissioning to meet energy efficiency standards. Expands the pay as you save pilot program to include photovoltaic energy systems and refrigerator exchanges. Directs the public benefits fee administrator to develop and implement a program to encourage residential retail electricity customers to replace inefficient household appliances with ENERGY STAR appliances. Provides a net zero energy building tax credit to builders of residential or commercial buildings that produce enough energy that is equal to or greater than the energy consumed by the occupants of the building. Directs the public utilities commission to establish a consumer information program on energy efficient properties. Allows a taxpayer who claims the low-income household renter's tax credit to transfer the credit to the taxpayer's landlord.

HB 1811
○ Report Title: Transportation Energy
○ Relating to: Transportation Energy
○ Description:
  – Establishes a comprehensive approach to increasing the use of alternative fuel vehicles in the State, including state procurement of alternative fuel vehicles, tax incentives, and infrastructure requirements.
○ Summary:
  – Adding a new section: "§196-B  Transportation energy transformation grant fund. (a) There is established in the state treasury a special fund to be designated as the transportation energy transformation grant fund into which shall be deposited appropriations made by the legislature to the fund… (e) Subject to the availability of funds and the standards in this section, grants for approved electric vehicles shall be provided to purchasers of electric vehicles intended to be integrated intelligently with the electrical grid and licensed for use on highways in the State, as follows: (1) Beginning January 1, 2010, and expiring December 31, 2010: up to $4,000 per vehicle limited to the first five hundred vehicles that are approved; (2) Beginning January 1, 2011, and expiring December 31, 2011: up to $3,500 per vehicle limited to the first one thousand vehicles that are approved; (3) Beginning January 1, 2012, and expiring December 31, 2013: up to $2,500 per vehicle limited to the first two thousand vehicles per year that are approved; (4) Beginning January 1, 2014, and expiring December 31, 2015: up to $2,000 per vehicle limited to the first two thousand five hundred vehicles that are approved per
HB 1843

- **Report Title:** Renewable Energy
- **Relating to:** Renewable Energy
- **Description:**
  - Establishes comprehensive measures for increasing the production and use of renewable energy in the State. Effective 1/1/2020. (HB1843 HD2)
- **Summary:**
  **PART I (RENEWABLE PORTFOLIO STANDARDS)**
  - Adding a new section: "§196- New electrical generation facility; permit prohibition. No state or county agency shall issue a permit to any applicant for the construction or operation of a new electrical generation facility that produces electrical energy solely from the combustion of any type of fossil fuel; provided that, under extraordinary circumstances, as determined by the commission, a certificate may be issued."
  - Section 269-7.5 HRS, is Amended: "Certificates of public convenience and necessity. … (f) No certificate shall be issued to any applicant for the construction or operation of a new electrical generation facility that produces electrical energy solely from the combustion of any type of fossil fuel; provided that, under extraordinary circumstances, as determined by the commission, a certificate may be issued."

**PART II (ENERGY RESOURCES COORDINATOR)**

- Section 196-4 HRS, is amended: "Powers and duties. Subject to the approval of the governor, the coordinator shall: …
  (12) Formulate a systematic process, including the development of requirements, to identify geographic areas that contain renewable energy resource potential that may be developed in a cost-effective and environmentally benign manner and designate these areas as renewable energy zones;
  (13) Develop and recommend incentive plans and programs to encourage the development of renewable energy resource projects within the renewable energy zones;
  (14) Assist public and private agencies in identifying the utility transmission projects or infrastructure that are required to accommodate and facilitate the development of renewable energy resources;
  (15) Assist public and private agencies in coordination with the department of budget and finance in accessing use of special purpose revenue bonds to finance the engineering, design, and construction of transmission projects and infrastructure that are deemed critical to the development of renewable energy resources;
  (16) Develop the criteria or requirements for identifying and qualifying specific transmission projects or infrastructure that are critical to the development of renewable energy resources and for which the energy resources coordinator shall assist in accessing the use of special purpose revenue bonds to finance; and…"

**PART III (RENEWABLE ENERGY RESOURCES)**

- Section 209E-2 HRS, is amended: "Qualified business" means any corporation, partnership, or sole proprietorship authorized to do business in the state that is … and is
engaged in … (D) Biogas, including landfill and sewage-based digester gas; … (G) Biomass, including biomass crops, agriculture and animal residues and wastes, and solid waste; (H) Biofuels; ...

PART IV (RENEWABLE ENERGY FACILITATOR)
− Section 201-12.5 HRS, is amended: "(b) The renewable energy facilitator shall have the following duties: (1) Facilitate the efficient permitting of renewable energy projects[;], including: (A) The land parcel on which the facility is situated; (B) Any renewable energy production structure or equipment; (C) Any energy transmission line from the facility to a public utility’s electricity system; and (D) Any on-site infrastructure necessary for the production of electricity or biofuel from the renewable energy site;…"

PART V (RENEWABLE ENERGY PERMITTING)
− Section 201N-1 HRS, is amended: ""Renewable energy facility" or "facility" means a new facility located in the state with the capacity to produce from renewable energy between five megawatts and two hundred megawatts of electricity or a biofuel production facility with a capacity to produce one million gallons annually…”

This Act shall take effect on January 1, 2020; provided that section 11 shall take effect on July 1, 2020.

2009 Regular Session; Senate Bills Introduced:

SB 50 (Act 19, Special Session 1)
− Report Title: DLNR; Renewable Energy Producer; Public Notice; Public Lands; Lease
− Relating to: Renewable Energy Producers
− Description:
  − Sets terms and conditions for leases of public lands to renewable energy producers, including requiring a public hearing, project completion, design, and financing documentation, and limitations on terminating or altering existing leases of public lands affected. (CD1)
− Summary:
  − Chapter 171 HRS is amended by adding a new section: "§171- Renewable energy producers; lease of public lands without public auction. (a) The board may lease or renew a lease of public lands to renewable energy producers, as defined in section 171-95, without public auction only pursuant to a public process that includes public notice under section 1-28.5 providing other interested renewable energy producers opportunity to participate in the process; … provided further that the renewable energy producer shall be required to submit as part of the proposal for the board's evaluation, as assisted by the DBEDT, the following:
    (1) A timeline for completion of the project;
    (2) A description of a financial plan for project financing;
    (3) A description of the conceptual design of the project;
    (4) A description of the business concept for the project; and
    (5) A description of landscape and acreage requirements including public and private lands. "

SB 69
− Report Title: Renewable Energy; Biodiesel Feedstock; Appropriations
− Relating to: Biodiesel feedstock
− Description:
Appropriation for Hawai‘i county economic opportunity council for operation of laboratory and research farm expansion for the Hawai‘i biotech tissue culture center to mass produce biodiesel feedstock.

Summary:
There is appropriated out of the general revenues of the State of Hawai‘i the sum of $3,000,000 for fiscal year 2009-2010, or so much thereof as may be necessary, as a grant and subsidy under chapter 42F, HRS, to the Hawai‘i county economic opportunity council, as follows: (1) $1,800,000 for operational expenses for the Hawai‘i biotech tissue culture center to the end of the first cycle of mass propagation and point of sale to mass produce non-genetically-modified organism, superior, high yielding jatropha curas biodiesel feedstock;

SB 199
_report Title: Sunset; Repeal Tax Credits
_relate to: Taxation
_description:
_Sunsets and repeals all tax credits for taxable years beginning after 12/31/10. (SD1)

_summary:
§235 HRS, is amended by adding two new sections to be appropriately designated and to read as follows:
- §235- Tax credits; repeal; carryover unaffected. The ability to claim a tax credit that has not been exhausted in subsequent taxable years shall not be affected by the repeal date of that tax credit. The exhaustion of tax credits in subsequent taxable years shall be governed by the specific provisions of each tax credit.
- §235- Tax credits; legislature; two-thirds vote. Effective July 1, 2009, the enactment of legislation establishing any tax credit shall require a two-thirds vote of the members to which each house of the legislature is entitled.

§235-12.5 (Renewable energy technologies; income tax credit), Hawai‘i Revised Statutes, is repealed. … §235-110.3 (Ethanol facility tax credit), Hawai‘i Revised Statutes, is repealed. …

SB 464 (Act 154, Enacted in 06/25/2009)
_report Title: Renewable Energy Technologies Income Tax Credit
_relate to: Taxation
_description:
_Amends the renewable energy technologies income tax credit to encourage use of solar and wind energy systems and to permit a portion of the excess of the credit over payments due to be refunded to the taxpayer in certain circumstances. Reduces the tax credit for certain energy systems used to meet substitute renewable energy technology requirements for single-family residential properties. (SB464 CD2)

_summary:
Section 235-12.5 HRS is amended: "Renewable energy technologies; income tax credit. (a) … The tax credit may be claimed as follows:
(1) For each solar energy system: 35% of the actual cost or the cap amount determined in subsection (b), whichever is less; or
(2) For each wind-powered energy system: 20% of the actual cost or the cap amount determined in subsection (b), whichever is less; …
(k) This section shall apply to eligible renewable energy technology systems that are installed and placed in service on or after July 1, 2009."
This Act shall take effect on July 1, 2009, and shall apply to taxable years beginning after December 31, 2008.

SB 467
○ Report Title: Renewable Energy; DBEDT Division
○ Relating to: Renewable Energy
○ Description:
- Establishes a renewable energy branch in the department of business, economic development, and tourism to coordinate and promote renewable energy initiatives. (SD1)
○ Summary:
- The purpose of this Act is to support the renewable energy industry in Hawaii by:
  1. Establishing a renewable energy branch in the department of business, economic development, and tourism to coordinate and promote renewable energy initiatives;
  2. Strengthening statutes supporting energy diversification, a longer term view of what is reasonable in energy planning, and utilization of energy technologies; and
  3. Providing adequate resources for the support of the renewable energy industry, and for comprehensive energy planning, in the department of business, economic development, and tourism.
- Chapter 201 HRS is amended by adding new section: "§201- Renewable energy branch; established. (a) … (b) Branch functions shall include, but not be limited to:

  (1) Renewable energy resource assessments, technical analyses, and resource development functions, including design, management, and completion of systematic analysis of existing and proposed energy resource programs; evaluation of analyses conducted by government agencies and other organizations; formulation of plans for the optimum development of Hawaii's renewable energy resources; and the development and management of programs to encourage private and public exploration, research, and commercial development of renewable energy resources;
  (2) Project facilitation functions, including the development and implementation of programs to facilitate the efficient permitting of renewable energy projects;
  (3) Renewable energy partnership and outreach functions, including participation in renewable and sustainable energy evaluation and demonstration projects, outreach, and other activities to promote technically, economically, and environmentally feasible technologies and projects;
  (4) Renewable energy resource, technology, and project viability consultant functions, including serving as a consultant to the governor, public agencies, and private industry on matters related to the utilization of Hawaii's renewable energy resources; and
  (5) Research, reporting, implementation, and support of renewable and transportation energy related statutes, laws, acts, rules, regulations, and initiatives."
- This Act shall take effect on July 1, 2009.

SB 489
○ Report Title: Providers of Electricity; Agricultural Producers; Alternative Energy
○ Relating to: Energy
○ Description:
- Authorizes PUC to establish a preferential rate structure for electricity provided by agricultural producers from renewable energy sources. Also authorizes the establishment of a renewable energy credits trading program and credits for environmental services.
○ Summary:
The purpose of this Act is to establish new policies relating to the purchase of electricity produced by agricultural producers.

Section 269-94 HRS is amended: "Waivers, extensions, and incentives: … (b) The public utilities commission may provide incentives to encourage electric utility companies to exceed their renewable portfolio standards, to meet their renewable portfolio standards ahead of time, or both, including but not limited to:

(1) Preferential rates for producers associated with agricultural activities in accordance with subsection (c);

(2) Renewable energy credits trading programs which establish a value for all of the attributes associated with renewable energy production; and

(3) Credit for environmental restoration activities such as improving air and water quality, flood control, wildlife habitat restoration and preservation, and carbon sequestration."

This Act shall take effect on July 1, 2009.

**SB 511**
- Report Title: Biodiesel; Market Stimulation
- Relating to: Biodiesel
- Description:
  - Provides various market stimulation incentives for the development of biodiesel, including making state agricultural lands available for biodiesel fuel crops.
- Summary:
  - §171- Lease of agricultural lands for crops used in the production of biodiesel fuel.
  - §103D-1012, HRS, is amended by amending subsections (a), (b), and (c) to read as follows: … (Biodiesel preference)
  - §235-7, HRS, is amended by amending subsection (a) to read as follows: (a) There shall be excluded from gross income, adjusted gross income, and taxable income: … (14) One hundred per cent of income derived from the operation of an oil seed crushing facility that processes oil seed produced or grown in the State for biodiesel production in the State.
  - This Act shall take effect on January 1, 2010; provided that the amendments made to section 235-7(a), HRS, by section 3 of this Act, shall not be repealed when that section is repealed and reenacted on January 1, 2013, pursuant to section 3 of Act 166, Session Laws of Hawai‘i 2007.

**SB 512**
- Report Title: Biofuels Facility; Nameplate Capacity; Gallons Produced
- Relating to: Taxation
- Description:
  - Amends the definition of nameplate capacity for biofuels facilities and revises the allowable tax credit to be equal to 40 cents per gallon of biofuel produced. (SD1)
- Summary:
  - §235-110.3 Biofuel facility tax credit: For each qualified biofuel production facility, the annual dollar amount of the biofuel facility tax credit during the eight-year period shall be equal to 40 cents per gallon produced if the nameplate capacity of the qualified biofuel production facility is greater than five hundred thousand gallons but less than fifteen million gallons.

**SB 558**
SB 870

- Report Title: Hawai‘i Clean Energy Initiative; Electric Generation and Delivery
- Relating to: Hawai‘i’s Clean Energy Initiative in Electric Generation and Delivery
- Description:
  - Establishes electric generation and delivery initiatives necessary for and contributing to the transition of Hawai‘i’s energy sector to 70 percent non-petroleum energy sources by 2030.
- Summary:
  - §269-92, HRS, is amended to read as follows: … [(a)3,4 and (b)1 have increased the renewable portfolio standards of electricity generation]
  - §196-4, HRS, is amended to read as follows: … (13) Develop and recommend incentives plans and programs to encourage the development of renewable energy resource projects within the renewable energy zones; … (15) Assist public and private agencies … in accessing use of special purpose revenue bonds to finance the engineering, design, and construction of transmission projects and infrastructure that are deemed critical to the development of renewable energy resources;
  - §209E-2, HRS, is amended by amending the definition of "qualified business" to read as follows: "Qualified business“ means any corporation … (4) Engaged in development or production of fuels or thermal energy or electrical energy from renewable resources, including: Wind; The sun; Falling water; Biogas, including landfill and sewage-based digester gas; Geothermal; Ocean water, currents and waves; Biomass, including biomass crops, agriculture and animal residues and wastes, and solid waste; Biofuels; and Hydrogen produced from renewable energy sources.

SB 871

- Report Title: Hawai‘i Clean Energy Initiative; Energy Efficiency
- Relating to: Hawai‘i’s Clean Energy Initiative in Energy Efficiency
- Description:
  - Establishes energy efficiency initiatives necessary for and contributing to the transition of Hawai‘i’s energy sector to 70 percent non-petroleum energy sources by 2030.
- Summary:
§ Energy efficiency portfolio standard. … The statewide target shall be 4,300 gigawatt-hours of electricity savings by 2030. … The administrator will submit annual reports to the public utilities commission by March 1 of each year, beginning March 1, 2010, reporting energy efficiency savings achieved during the previous calendar year.

§ Energy efficiency studies and planning. The public benefits fee administrator shall expend $500,000 from the public benefit fee to conduct energy efficiency assessments to identify current energy use patterns in this State and areas of greatest potential for energy efficiency savings. … The assessments shall be completed by December 31, 2010.

§ 235-_____ Tax credit for a net zero energy building. (a) … (b) The amount of the credit shall be:
(1) For a building that is up to 1000 square feet, the tax credit shall be $9.00 per square foot;
(2) For a building that is more than 1000 square feet but less than 4,000 square feet, the tax credit shall be $6.00 per square foot;
(3) For a building that is more than 4,000 square feet, the tax credit shall be $3.00 per square foot for a maximum credit of $50,000.

SB 872
- Report Title: Hawai‘i Clean Energy Initiative; Transportation
- Relating to: Hawai‘i’s Clean Energy Initiative in Transportation Energy
- Description:
  - Establishes transportation energy initiatives necessary for the transition of Hawai‘i’s transportation energy sector from almost completely dependent on petroleum towards the use of efficient, stable, secure, renewable, non-petroleum energy sources by 2030.
- Summary:
  - §237- Exemption of sale or lease of certain vehicles (Beginning January 1, 2010, and expiring December 31, 2015)
  - §___-__ Transportation energy transformation grant fund.
  - §235-110.3 HRS, is amended to read as follows: Biofuel facility tax credit.
  - §251-2 Rental motor vehicle and tour vehicle surcharge tax: … (c) For the period of January 1, 2010, through December 31, 2015, up to two hundred alternative fueled light duty motor vehicles per rental car fleet shall be exempt from the rental motor vehicle surcharge tax.
  - §103D-412 Light duty motor vehicle requirements: (a) The procurement policy for all agencies purchasing or leasing light duty motor vehicles shall be to reduce dependence on petroleum for transportation energy. Beginning January 1, 2010, all state and county entities shall, when purchasing new vehicles, seek vehicles with reduced dependence on petroleum-based fuels.
  - §103D-1012 Biofuel preference: … (g) Beginning January 1, 2012, all state-owned diesel vehicles and equipment are required to be fueled with blends of biomass-based diesel, subject to the availability of the fuel, and so long as the price is no greater than twenty per cent more per gallon than the price of conventional diesel.
  - §196- Alternative fuel vehicle requirement for private fleets. (a) Beginning January 1, 2015, each fleet operator controlling more than fifty light duty motor vehicles in the State shall, when replacing its light duty motor vehicles or expanding its fleet, acquire increasing percentages of vehicles capable of operating on non-petroleum energy sources, including electric vehicles, flexible fuel vehicles, or other alternative fuel vehicles. (b) At least four per cent of all new light duty motor vehicles acquired by a fleet operator in the State during calendar year 2015 shall be alternative fuel vehicles. This percentage shall
increase by four per cent per year, reaching sixty-four per cent in the calendar year 2030.

SB 1037
- Report Title: Electric Vehicles; Energy Efficient Industry Development
- Relating to: Transportation energy initiatives
- Description:
  - Develops a suitable infrastructure to develop the electric vehicle industry in Hawai‘i.
- Summary:
  - §235- Alternative fuel refueling infrastructure; income tax credit. (a) Each individual or corporate taxpayer that files a corporate net income tax return for a taxable year may claim a tax credit under this section against the Hawai‘i state corporate net income tax. The tax credit may be claimed for alternative fuel refueling infrastructure installed and placed in service during the taxable year. The tax credit may be claimed as follows: For taxable years ending before January 1, 2016, an income tax credit will be allowed for the purchase and installation of alternative fuel refueling infrastructure. The allowable credit shall be up to thirty per cent of the installed cost of the alternative fuel refueling infrastructure or $25,000, whichever is less.
  - §103D-412 Light-duty vehicle requirements. (a) The procurement policy for all agencies purchasing or leasing light duty vehicles shall be to reduce dependence on petroleum for transportation energy. Beginning January 1, 2010, when purchasing new vehicles, all State and county agencies shall seek vehicles with reduced dependence on petroleum-based fuels.

SB 1186
- Report Title: Renewable Energy Opportunity Zones
- Relating to: Renewable energy opportunity zones
- Description:
  - Requires the director of business, economic development, and tourism, in consultation with the renewable energy opportunity zone advisory committee to: designate renewable energy opportunity zones, determine the types of energy generation for such zones, determine the number of zones and the period of zones, perform required environmental impact statements for zones, and expedite issuance of county permits.
- Summary:
  - The intent of the Legislature is to have the groundwork prepared in anticipation of the entry of qualified businesses that are willing and able to invest in the State to develop renewable energy resources by having certain areas in the respective counties designated as renewable energy opportunity zones, approved for certain types of renewable energy generation, with all the necessary environmental impact statements performed and in place, and by expediting the issuance of necessary county permits, in consultation with the respective counties through their active participation in an advisory committee.
  - The HRS is amended by adding a new chapter (Renewable Energy Opportunity Zones).
    - § -1 The purpose of this chapter is to reduce the State's dependence on imported oil and increase the State's energy self-sufficiency by providing for the establishment of renewable energy opportunity zones. …
    - § -9 State business tax credit.
    - § -10 State general excise and use tax exemptions.
    - § -11 Local incentives.
SB 1202 (Act 156; Enacted 06/25/2009)
- Report Title: Transportation; Energy Efficient Vehicles
- Relating to: Transportation energy initiatives
- Description:
  - Establishes the development of non-fossil fuel transportation as a state policy goal. Provides tax credits for the purchase and installation of electric vehicle charging infrastructure and alternative fuel refueling infrastructure. Requires the designation of parking spaces for electric vehicles. Requires state and county agencies to follow a priority list when purchasing energy-efficient vehicles, including electric vehicles. Requires the director of transportation to furnish information to the energy resources coordinator on the use of electric vehicles in the State. Requires the department of transportation to develop a plan for electric vehicle infrastructure. (SD1)
- Summary:
  - Chapter 235 HRS, is amended by adding two new sections: … §235-B Alternative fuel refueling infrastructure; income tax credit. (a) Each individual or corporate taxpayer that files an individual or corporate net income tax return for a taxable year may claim a tax credit under this section against the Hawai‘i state individual or corporate net income tax. … (shall apply to taxable years beginning after December 31, 2008).
  - §103D-412 HRS, is amended to read as follows: Light-duty vehicle requirements. (a) The procurement policy for all agencies purchasing or leasing light-duty vehicles shall be to reduce dependence on petroleum for transportation energy. (b) Beginning January 1, 2010, all state and county entities, when purchasing new vehicles, shall seek vehicles with reduced dependence on petroleum-based fuels that meet the needs of the agency.

SB 1231
- Report Title: Renewable Energy; Biomass; Appropriation
- Relating to: Renewable Energy
- Description:
  - Makes an appropriation for the relocation and establishment of a pilot plant for the conversion of biomass into liquid transportation fuel and electricity.
- Summary:
  - The Hawai‘i County Economic Opportunity Council has an agreement with Aggregate Energy, LLC of Idaho for the development of a pilot project on the island of Hawai‘i to convert biomass and methane gases found in landfills into synthetic liquid transportation fuel and electricity.
  - The Hawai‘i Economic Opportunity Council requires seed funding in the amount of $580,000 for the purchase of the pilot plant and the relocation and reassembly of the plant on the island of Hawai‘i. With successful field testing, the pilot project can be expanded into a commercial venture for private investors.
  - This Act shall take effect on July 1, 2009.

SB 1234
- Report Title: Food and Energy Security
- Relating to: Government
- Description:
  - Establishes the Hawaii energy and food security authority to plan, coordinate, and address Hawaii’s energy and food security needs. Repeals the state program for energy planning and conservation. Imposes the environmental response and energy and food security tax. Makes the executive director of the authority the energy resources
coordinator. Repeals the energy resources coordinator duties. Abolishes the agribusiness
development corporation on 7/1/2011.

- Summary:
  - The HRS is amended by adding a new chapter: "HAWAII ENERGY AND FOOD
SECURITY AUTHORITY

§-2 Establishment of the Hawaii energy and food security authority; purpose. … (b)
The purpose of the Hawaii energy and food security authority shall be to promote and
achieve energy independence and food security in Hawaii. Its duties shall include but not
be limited to:
  1. Developing, implementing, and monitoring long-range plans to achieve energy
     independence and food security in Hawaii;
  2. Promoting and accelerating renewable energy, energy efficiency, and energy self-
     sufficiency initiatives to lead towards energy independence for Hawaii;
  3. Developing and promoting local agricultural markets, to achieve food self-
     sufficiency and security for Hawaii;
  4. Administering the Hawaii energy and food security fund, established in section 9;
  5. Coordinating energy and food security activities and programs, including
     competitive grant programs, targeted tax credits, infrastructure development and
     other incentive programs; and
  6. Engaging in workforce development, and marketing and business development
     activities that promote energy and food self-sufficiency, to facilitate public-private
     partnerships with other public agencies, the private sector and non-governmental
     organizations.

§-9 Energy and food security fund. (a) There is established the energy and food
security fund, into which shall be deposited: (1) A portion of the revenues from the
environmental response and energy and food security tax, as provided by section 243-
3.5; (2) … "

- Section 243-3.5 HRS is amended: "§243-3.5 Environmental response and energy and
food security tax; uses. (a) In addition to any other taxes provided by law, subject to the
exemptions set forth in section 243-7, there is hereby imposed a state environmental
response and energy and food security tax of $1 on each barrel or fractional part of a
barrel of petroleum product sold by a distributor to any retail dealer or end user, other
than a refiner, of petroleum product; provided that:
  1. 5 cents of the tax on each barrel shall be used pursuant to section 128D-2 to
     address concerns relating to drinking water;
  2. 47.5 cents of the tax on each barrel shall be used pursuant to section 9 to address
     energy and food security issues; and
  3. 47.5 cents of the tax on each barrel shall be used pursuant to section 163D-17 to
     address food security issues.

The tax imposed by this subsection shall be paid by the distributor of the petroleum
product."

SB 1247
- Report Title: Tax Credits; Tax Exemptions; Evaluation; Report
- Relating to: The economy
- Description:
  - Requires the department of taxation, with the assistance of the department of business,
    economic development, and tourism, to evaluate certain tax credits and tax exemptions
    and report to the legislature. Requires the department of taxation to give
recommendations prior to the mandate for those tax credits and tax exemptions to sunset.
(SD2)

Summary:
- The purposes of this Act are to institute an ongoing program of evaluation of those tax credits and tax exemptions that have no sunset dates, require the department of taxation and department of business, economic development, and tourism to compile the necessary information to enable the legislature to evaluate tax credits and exemptions with consistent standards, and to sunset those credits and exemptions that the department of taxation and legislature do not believe should be extended. Over time, as economic conditions change, different combinations of tax credits and tax exemptions serve as the State's key tools to promote or discourage particular behavior among residents and businesses. For existing tax credits and tax exemptions that have a sunset date, the purpose of this Act is to require the department of taxation, with the assistance of the department of business, economic development, and tourism, to compile accurate information on their usage and whether they are fulfilling the purposes for which they were adopted, as well as providing solid returns on public investment.

SB 1258
- Report Title: Renewable Energy
- Relating to: Renewable Energy
- Description:
  - Establishes electric generation and delivery initiatives necessary for and contributing to the transition of Hawai‘i’s energy sector to seventy per cent non-petroleum energy sources by 2030. (SD1)
- Summary:
  - The purpose of this Act is to provide a first step in aligning Hawai‘i’s energy policy laws with the State's energy goals. For Hawai‘i to realize energy independence and economic stability, the transformation of its energy system must encompass changes to: (1) Hawai‘i’s policy or regulatory framework; (2) System-level technology development and integration; (3) Financing or capital investment; and (4) Institutional system planning.

SB 1303
- Report Title: Energy Independence; Government-Industry Consortium
- Relating to: Energy Independence
- Description:
  - Directs the energy resources coordinator to establish a government-industry consortium for funding, research, and development of renewable energy resources. (SD1)
- Summary:
  - The legislature finds that a focused new initiative is needed to establish Hawai‘i as one of the principal leaders in research, commercialization, and application of new ground-based and space-based energy technologies. The purpose of this Act is to create such energy initiative.
  - The energy resources coordinator shall establish a government-industry consortium which shall: … (2) Seek federal and private industry funding for renewable energy technology research; …

SB 1307
- Report Title: Transportation Energy
- Relating to: Alcohol Fuels
o Description:
  – Improve Hawai‘i’s economic and energy security position by establishing a preference for locally produced alcohol fuels.

o Summary:
  – §237-27.1 HRS, is amended to read as follows: Exemption of sale of alcohol fuels. (a) … The exemption shall apply to alcohol fuels utilized to meet the State's renewable fuel standard and shall be administered based on the local alcohol fuel production capacity for that tax year, as determined by the department of business, economic development, and tourism. …

SB 1612
o Report Title: Transportation Energy
o Relating to: Transportation Energy
o Description:
  – Establishes Land Transportation Modernization Special Fund if fees and tax increases are triggered. (SD1)

o Summary:
  – Chapter 248 HRS is amended by adding a new section: "§248 Land transportation modernization special fund. …" The expenditure purposes are not specifically determined and listed yet.

SB 1634
o Report Title: Transportation; Planning; Energy Efficiency; Tax Credit
o Relating to: Transportation
o Description:
  – Includes in the State's potential growth policy research and development of non-fossil fuel and energy efficient modes of transportation; provides tax credits for the installation of electric vehicle charging infrastructures and alternative fuel refueling infrastructures; establishes penalties for parking in electric vehicle parking spaces; requires agencies purchasing light-duty vehicles to consider electric, hybrid, then hydrogen options.

o Summary:
  – Section 226-10 HRS, is amended to read as follows: … (b) To achieve the potential growth activity objective, it shall be the policy of this State to: … (12) Foster the research and development of non-fossil fuel and energy efficient modes of transportation.
  – Chapter 235, Hawai‘i Revised Statutes, is amended by adding two new sections:
    • §235-A Electric vehicle charging infrastructure; income tax credit. (a) … The tax credit may be claimed for code compliant electric vehicle charging infrastructure installed and placed in service in the State after January 1, 2010, and prior to the close of the taxable year. The tax credit may be claimed as for taxable years ending before January 1, 2012, for the purchase and installation of electric vehicle charging infrastructure. The credit shall be seventy per cent of the installed cost of the electric vehicle charging system or $1,000 per electric vehicle charge point of the system, whichever is less.
    • §235-B Alternative fuel refueling infrastructure; income tax credit. (a) … The tax credit may be claimed for alternative fuel refueling infrastructure installed and placed in service during the taxable year. The tax credit may be claimed for taxable years ending before January 1, 2016, for the purchase and installation of alternative fuel refueling infrastructure. The credit shall be thirty per cent of the installed cost of the alternative fuel refueling infrastructure or $25,000, whichever is less.
Appendix E

Selected programs from other states: Biofuel Related Tasks/Projects/Programs/Incentives.3

Alaska
- Alaska Energy Authority
  - Mission: Reduce the cost of energy in Alaska
  - Programs:
    1. Alternative Energy (Biomass Energy; …)
    2. Loan Programs (Bulk Fuel Revolving Loan Fund, …)
    3. Renewable Energy Grant Program (Renewable Energy Fund, …)
    4. …
- Barged in diesel runs power to a range of $0.21-0.80/kWh
- Alaska Energy Inventory 2007 Funding - $500,000
- Development of Renewable Energy Atlas and Inventory (with major biomass component)
- Development of Alaska roadmaps (e.g. Alaska Rural Energy Plan, Railbelt Energy Plan)
- Alaska Wood Energy Development Task Group
- “Fish Oil Biodiesel” development project

Idaho
- Idaho Office of Energy Resources
  - Biodiesel Activities and Efforts
    - Funding: The Idaho Legislature appropriated $690,000 for fiscal year FY2008 and anticipates an additional $1.6 million for FY2009 through 2012, for a total of $2.3 million over the 5-year period. The legislation directed the Office of Energy Resources to administer the funds.
- A long biodiesel history
- Fueling station grants - $690,000 – for E-85 and biodiesel
- Pacific Ethanol - $380,000 infrastructure grant for 50 MGY plant
- National Biodiesel Education Program – At University of Idaho (since 1979)

Montana
- Montana Department of Environmental Quality
  - Montana Biomass Energy Program
- Ethanol mandate with 40 MGY trigger & Renewable Electricity Std.
- Tax incentives
- Strong biofuels program (ethanol & biodiesel) – State working group

- BioPower and BioHeat/CHP – Fuels for Schools ($450,000) & Woody Biomass Work Group
- Roadmap: Climate Change Action Plan – Biomass/biofuels prominent
- Fuel testing lab at Havre, MT - $250,000 for equipment

Oregon
- Oregon Departments of Energy, Agriculture & Forestry
  - Oregon’s Business Energy Tax Credit (BETC): provides a 50% credit for the capital costs of biofuels and bioenergy projects
  - Per-Unit Biomass Credits: are available for several types of biofuel and bioenergy feedstocks. The credits rates for biomass are
    - $.05 per pound for oilseed crops
    - $.90 per bushel for grain crops (corn is excluded, and wheat is eligible only after January 1, 2009)
    - $.10 per gallon for virgin oil or alcohol delivered for production in Oregon from Oregon-based feedstock
    - $.10 per gallon for used cooking oil or waste grease
    - $10.00 per wet ton for wastewater biosolids
    - $10.00 per green ton for woody biomass collected from nursery, orchard, agricultural, forest, or rangeland property in Oregon, including but not limited to prunings, thinning, plantation rotations, log landing or slash resulting from harvest or forest health stewardship
    - $10.00 per green ton for grass, wheat straw, or other vegetative biomass from agricultural crops
    - $5.00 per wet ton for yard debris and municipally generated food waste
    - $5.00 per wet ton for animal manure and rendering offal
  - Energy Trust of Oregon's Biopower Program: provides financial incentives to help support development of biopower projects that use organic waste to generate electricity.
  - Producing Biodiesel or Ethanol in Oregon: A Guide to Permits, Licenses, Incentives and Resources
  - Utah Biodiesel Supply Tutorial
- Renewable Portfolio Standard (RPS)/ Renewable Fuels Standard (RFS) - 2007
- “Biomass Inventory” Development (with routine updates)

Washington
- Washington State Bioenergy Project
  - A multi-agency work group staffed from Washington Departments of CTED, Ag, Ecology & Washington State University Extension Energy Program
- Washington State Biofuel Laws and Incentives:
  - Production
    - Tax Incentives
      - Reduced B&O rate provided for manufacture of wood biomass, alcohol or biodiesel fuels, or biodiesel feedstocks
- Anaerobic digester construction and operation are exempt from retail sales and use taxes.
- Equipment, labor and associated services for power production greater than 200w from various renewable energy sources are exempt from retail sales and use taxes.
- Land, buildings and equipment used for anaerobic digestion, manufacturing alcohol, biodiesel and wood biomass fuels, or biodiesel feedstock are exempt from property and leasehold taxes for six years following the date the facility becomes operational.

**Financial Assistance**
- The Energy Freedom Program is established to provide financial support for projects converting farm products, wastes, cellulose, or biogas directly into electricity or biofuel or other coproducts. Expires June 30, 2016.

**Distribution & Use**

**Tax Incentives**
- Sales to and use of non-highway biodiesel and biodiesel blends by farm fuel users are exempt from retail sales and use tax.
- Sales and use of equipment used for retail sale of E85 and biodiesel blends of B20 or higher are exempt from retail sales and use tax. Sales of fuel delivery vehicles are exempt if at least 75% of the fuel is E85 or biodiesel blend of B20 or higher. Expires July 1, 2015.
- Sales of equipment used for retail sale or use of wood biomass fuel blends containing at least 20% wood biomass fuel are exempt from retail sales tax. Sales of fuel delivery vehicles are exempt if at least 75% of the fuel is wood biomass fuel blends containing at least 20% wood biomass fuel. Expires July 1, 2009.

**Financial Assistance**
- The Green Energy Incentive Account is established within the Energy Freedom Program to provide financial support for projects supporting development of a biofuels refueling network along the interstate corridors. Expires June 30, 2016.

- Renewable Portfolio Standard (RPS)/ Renewable Fuels Standard (RFS) - 2006
- Biomass Inventory 12/2005
- Feedstock Characterization 07/2007
- Energy Freedom Program: grants for bioenergy capital projects
- Biennial operating bioenergy budget
- Washington roadmap (Nine legislative studies underway)
- Center for Bioproducts & Bioenergy (WSU & PNNL)
- Beyond Waste Program (Organic waste to resources)
Appendix F

Selected promotions/financial incentives for biofuels in other countries

England
- Green Fuels Challenge
  - In the run up to Budget 2001, the Government will invite British industry to develop proposals for practical alternative fuels.
- Non-Fossil Fuel Obligation
  - Before the introduction of the Renewables Obligation, the Non-Fossil Fuel Obligation (NFFO) was the Government’s major instrument for encouraging growth within the renewable energy industry. The NFFO applied in England and Wales. In Scotland and Northern Ireland, the Renewables Obligation (Scotland) (ROS) or the Northern Ireland NFFO (NI-NFFO) applied. The NFFO assisted the industry by providing premium payments for renewables-generated electricity over a fixed period, with contracts being awarded to individual generators.
- Renewables Obligation
  - The Renewables Obligation (RO) is the Government's main mechanism for supporting generation of renewable electricity.
  - The Renewables Obligation requires licensed electricity suppliers to source a specific and annually increasing percentage of the electricity they supply from renewable sources. The current level is 9.1% for 2008/09 rising to 15.4% by 2015/16.
  - The Obligation requires suppliers to source an annually increasing percentage of their sales from renewables. For each megawatt hour of renewable energy generated, a tradable certificate called a Renewables Obligation Certificate (ROC) is issued.
  - Suppliers can meet their obligation by:
    1. acquiring ROCs
    2. paying a buy-out price equivalent to £35.76/megawatt hour in 2008/09 and rising each year with retail price index; or
    3. a combination of ROCs and paying a buy-out price.
    When a supplier chooses to pay the buy-out price, the money they pay is put into the buy-out fund. Following the end of an Obligation period, the buy-out fund is recycled to electricity suppliers presenting ROCS.
- Emissions Trading Scheme for GHG
  - The European Emissions Trading Scheme (EU ETS) has been introduced across Europe to encourage businesses to reduce greenhouse gas emissions. Defra has appointed the Environment Agency to regulate the scheme in England and Wales and we therefore raise charges to recover the costs of doing this work.

Italy
- Biomass Implementation Programme
- Fiscal incentives at biodiesel for transport
- Tax exemption of Biodiesel for heating purposes
Netherlands
- Fiscal instruments and green funds and agreements in various sectors of the bioenergy chain
- Demand and willingness to pay for green electricity
Appendix G

Final Report in Response to House Concurrent Resolution 195
Prepared by
The Hawai‘i Energy Policy Forum
April 9, 2007

This document is the final report by the Hawai‘i Energy Policy Forum (Forum) in response to House Concurrent Resolution 195 (HCR 195) adopted by the 2006 Legislature: “Encouraging Hawai‘i’s landowners, investors, county governments, and regulated electric utilities to pursue development and conversion of fuel crops for electricity generation, and requesting the Hawai‘i Energy Policy Forum to make recommendations.”

HCR 195 required the Forum to issue recommendations on:

1. Financial incentives that may be necessary to stimulate development of fuel crops and the conversion of fuel crops to generate electricity, including incentives to reduce the risk of falling oil prices for investors;

2. The most suitable locations for undertaking biomass projects independent from, or in conjunction with, municipal solid waste-to-energy programs;

3. Options for leasing state land for fuel crop development;

4. Opportunities for state and county governments and private investors to secure federal grants to support the development of fuel crops and the conversion of fuel crops to generate electricity; and

5. The feasibility of setting up a revolving fund as a mechanism to provide incentives necessary to stimulate investment in fuel crops and the conversion of fuel crops to generate electricity.

In support of the objective of diversifying Hawai‘i’s energy system, two events were held in 2006: Governor Lingle convened the Biofuels Summit; and a stakeholder group including state, federal, private sector, and academia representatives organized the Hawai‘i Agriculture Bioenergy Workshop to explore the potential for a domestic bioenergy and biofuels future. Both events were held with the recognition that initiating a bioenergy industry in Hawai‘i must first address a diverse and very complex set of issues that involves many public and private stakeholders.

These two activities also demonstrated the effectiveness of facilitated collaboration and pointed to the value of coordination in the development of supply, production capability,
and infrastructure - each requiring long independent lead times - which enables greater understanding and support by both public and private stakeholders.

In addition to the summit and workshop, the Forum gratefully acknowledges the assistance of the Department of Business, Economic Development and Tourism (DBEDT). DBEDT agreed to assist the Forum with its report to the Legislature. DBEDT engaged the Rocky Mountain Institute (RMI) to produce a report, Biomass – and Biofuels – to – Power to provide recommendations for the Forum to consider in preparation of its response to the Legislature. We thank DBEDT for its financial support to this effort.

The Forum developed its recommendations and report based on the above data and submitted it for vetting by the entire Forum membership. The recommendations herein are thus based in part on recommendations made in the RMI report and also on comments received from DBEDT, other Forum members and other interested parties, as well as a review of the outcomes from the Governor’s Biofuels Summit and the Bioenergy Workshop.

Based on its analysis of these inputs, the Forum is pleased to make the following recommendations:

Forum Recommendations

1. Develop a State of Hawai‘i Bioenergy Master Plan

While HCR 195 did not request an evaluation of the need for a Hawai‘i Bioenergy Master Plan (HBMP), the Forum determined that such a Plan was both the logical outcome of the other recommendations that follow, and the Forum’s proposed vehicle for addressing the issues that have been raised during the course of its evaluation.

- Objective: Given the complexity, diverse stakeholder groups, capital investment requirements, land-use and water supply issues, and supporting infrastructure requirements, the Forum recommends that a comprehensive Bioenergy Master Plan be developed with the objective of establishing a new bioenergy industry in Hawai‘i.

- Responsibility: The Director of DBEDT, as the State Energy Resources Coordinator, should take the lead in developing the plan. (Reference: Chapter 196, Hawai‘i Revised Statutes)

- Schedule: Because of the complexity and diverse interests involved, development of the plan should include the various stakeholder representatives and with sufficient resources and time (2 years) to prepare and vet the plan, including any supporting studies required to provide required data. A progress report should be delivered to the legislature at the start of the 2008 session. The final plan should be submitted to the 2009 Legislature.
• Scope: The plan should be action-oriented and should address (but not be limited to) the following issues:
  - Setting specific objectives, milestones, and timelines such that progress can be measured against clear metrics;
  - Water resources;
  - Land resources;
  - Distribution infrastructure for both marine and land;
  - Labor resources;
  - Technology to develop bioenergy feedstock and biofuels;
  - Permitting issues;
  - Financial incentives and barriers, and other funding issues;
  - Business partnering;
  - Policy requirements necessary for implementation of the master plan; and
  - Identification and analysis of the impacts of transitioning to a bioenergy economy.

• Resources: - Sufficient personnel and financial resources must be allocated to prepare the plan. Funding should be available to conduct the necessary studies, using both internal and external DBEDT resources, and to gather necessary data (example: survey of irrigation systems). While the Forum defers to the administering agency, it recommends adequate funding at the level of $1,000,000 over two years. However, both the detailed scope of work and the budget should be determined as the initial task of the HBMP. An updated budget should then be provided as part of the interim report at the end of the first year.

• Consultation: The plan should be developed with input from all interested stakeholders through the use of workshops, working groups, other means of coordination and communication, and, if appropriate, outside consultant services.

2. HCR 195 Requirement #1 – Financial Incentives

HCR 195 requested recommendations on financial incentives that may be necessary to stimulate development of fuel crops and the conversion of fuel crops to generate electricity, including incentives to reduce the risk of falling oil prices for investors.

• Recommendation: The Forum recommends that a system of financial incentives be developed. This should be an outcome of the Bioenergy Master Plan.

• Options development & analysis: Develop a variety of options, identify the advantages and disadvantages of each option, and attempt to quantify the impact through the development of financial models and conducting in-depth analysis.

• Gaming: To avoid unintended consequences, conduct “gaming” analysis to see how the incentive packages could be manipulated.

• Control and Feedback: Develop protocols for data requirements and models to determine the effectiveness of the incentives.
- Flexibility: Incentives must be designed so that they have the flexibility to be throttled back or ramped up to match market forces and the situation.

- Initial Options: The HEPF recommends that the Departments of Business, Economic Development & Tourism (DBEDT) coordinate with the following government departments and agencies to conduct in-depth analyses of the merits of the incentive package options listed below: Agriculture, Taxation, the Public Utilities Commission, and the Division of Consumer Advocacy. This analysis should be part of the Bioenergy Master Plan development work.

* Incentive #1: Two-pronged sliding scale production tax credit, consisting of:
  - Component #1: Links the current State de-taxation of biofuels to in-state feedstock production and quantity of biofuel in the blended product. The purpose of this incentive is to provide protection for Hawai‘i’s farmers given the market risks for investing in growing biofuel feedstocks and to focus Hawai‘i taxpayer incentives on support for Hawai‘i-based business; and
  - Component #2: Creates a state-level sliding-scale subsidy that goes to zero when oil prices are high, and increases when oil prices are low, effectively creating a hedge for consumers and a price floor for producers.

* Incentive #2: Agriculture Infrastructure tax credit & Master Plan.
  Investment tax credit focused on building Hawai‘i’s irrigation systems. This is modeled on a similar credit being designed through the Department of Agriculture’s Important Agricultural Lands’ incentive program. A general fund appropriation should be considered.

* Incentive #3: Distribution Infrastructure Investment Tax Credit & Master Plan.
  Investment tax credit focused on building Hawai‘i’s a bioenergy distribution network in cooperation with stakeholders. This includes bioenergy storage, pipelines, marine and land transport, and terminal infrastructure. The overall scope and the implementation of the infrastructure required to support a biofuels industry would be an outcome of the overall Hawai‘i Bioenergy Master Plan. The level of investment tax credit required to support implementation would be an outcome of the Bioenergy Master Plan. A general fund appropriation should be considered.

* Incentive #4: Research & Development Funding.
  Significant Hawai‘i-specific research and development is needed to investigate potential biodiesel crop cultivars and micro-algae, improved varieties of sugar cane, new harvesting techniques, appropriate energy crops, and enhanced product utilization. Such an effort should be subsidized by the state through a grant fund that can be accessed by either public or private sector entities (HB 1003 HD3 and
SB 1943 SD1). The focus of the R&D effort should be defined in the Bioenergy Master Plan.

*Incentive #5: Biodiesel Producer’s Credit.*

The Hawai‘i Bioenergy Master Plan should include an evaluation of a state producer’s credit for biodiesel that mirrors the state ethanol producer’s credit.

3. HCR 195 Requirement #2 – Coordination of biomass projects and municipal solid waste-to-energy programs

HCR 195 requested recommendations on the most suitable locations for undertaking biomass projects independent from, or in conjunction with municipal solid waste-to-energy programs. The factors that should be considered in determining the location of biomass operations, specifically:

* Distance from biomass feedstocks;
* Distance from electric load centers;
* Interconnection issues; and
* Locations of landfills/transfer stations.

*County MSW programs*

The actual siting of projects will require in-depth analysis and should be included in the Hawai‘i Bioenergy Master Plan effort, with adequate resources for assessing the various factors in location determination. It will likely require the assistance of outside consultants to execute properly and in the detail required to formulate concrete action items. The plan will also require close coordination with the counties which actually control the MSW.

4. HCR 195 Requirement #3 – Options for Leasing State Land for Fuel Crop Development

HRS §171-95 allows the Department of Lands and Natural Resources (DLNR) to lease public land to renewable energy producers for up to 65 years without public auction. There is ambiguity as to whether a person growing a fuel crop is a renewable energy producer.

☐ Recommendation #1: To enable feedstock producers to lease lands, HRS 171-95 should be amended to explicitly include feedstock producers in the definition of “renewable energy producer.”

☐ Recommendation #2: Amend HRS §171-95 to offer preferential rent prices for start-up biofuel crop growers.

☐ Recommendation #3: Provide an expedited review of permits for leasing state lands for growing biofuel crops.
5. HCR 195 Requirement #4 – Opportunities for state and county governments and private investors to secure federal grants to support the development of fuel crops and the conversion of fuel crops to generate electricity.

To facilitate and support the development of this industry, information on currently available grants and other opportunities should be easily accessible to interested investors and producers. It is therefore recommended that DBEDT maintain a comprehensive inventory of federal, state, and other opportunities and post the information on a suitable website. Additionally, it might also maintain a data base of contact addresses and send out email notifications as changes in funding opportunities occur.

6. HCR 195 Requirement #5 – Feasibility of setting up a revolving fund to provide incentives to stimulate investment in fuel crops and the conversion of fuel crops to generate electricity.

Based on examples of successful revolving loan funds described in the RMI report, a revolving loan fund is feasible; and the Forum thus recommends the establishment of a Hawai‘i Bioenergy Revolving Fund (“HBRF”) (Reference HB 1003 HD3). The HBRF would allow Hawai‘i entrepreneurs to transcend barriers associated with financing innovative projects and should target two (2) areas:

- Credit-worthiness: Lack of credit-worthiness particularly characterizes small and/or new entrepreneurs. Given the capital-intensity of the conversion and the storage/distribution segments of the biofuels/biomass value chain, small and/or new entrepreneurs would mostly be present in the agricultural segment of the biofuels value chain.

- Small-scale farming & biodiesel: Whereas crops grown to produce ethanol generally require large tracts of land and industrial-scale agriculture, biodiesel can often be grown at a small scale. Because of the smaller scale, these producers might struggle to find the necessary financing, and are therefore an ideal target for a revolving loan fund.

7. Additional Forum Recommendation – Assistance to Potential Local Growers

DBEDT should include in support of the HBMP, investigations and analyses of:

- The total cost per ton to grow and deliver alternative energy crops to bioenergy converters; and
- The need for local cooperatives for sharing of information, equipment, facilities, etc.
Appendix H:

HNEI April 2, 2009 Stakeholder Meeting Notes
Financial Incentives and Economic Impacts

1. What are the primary financial barriers that inhibit the economic feasibility and competitiveness of locally grown biofuels? *Participants were asked to brainstorm their ideas.*

**Costs**
- Price of oil
- High cost of capital structure for bio-refineries
- High cost of land, labor, energy, feedstock
- Price at the pump is affected by taxes or the lack thereof
- Cost of labor – is it a barrier or benefit? For example, agriculture wages are lower on the chart. The whole process of end-product might be a challenge against the Third World Market
- Some operations have unionized labor and they do have living wages
- There is an assumption about the work ethic of Hawai‘i is that that we don’t work very hard. People may presume they have to double labor costs
- Cost to get the product to the end-user where it will be used. Cost of distribution
- Cost of resources: politically, water, fertilizer
- Critical mass – it’s hard to make a large economic plant for a small population

**Tax Credits/Incentives**
- Tax incentives – inconsistent funding. It is difficult to get funders to invest without an assurance of incentives, future, etc.
- There aren’t consistent tax credits across all types of biofuel crops. That is a Federal and State issue
- Some rules have changed on tax credits
- We should look at the breakdowns project by project to figure out maximum tax breaks. What works elsewhere won’t necessarily work in Hawai‘i
- Tax structure – pyramiding, off-set by tax incentives for biofuel growth

**Large Landowners**
- The availability of land to grow crops is limited to some large landowners. If they want to make money, they’ll diversify to other investments
- Lack of commitment by large landowners
- Looking for “silver bullet” vs. smaller scale production here that would fully benefit the state. “Large” doesn’t have to be “economically viable”

**Getting Buy-In/Investment**
- Is this a risk people are willing to put money into?
Size – large $ are easier to get than small $

There’s an extremely widely held perception by institutions that it’s difficult to do business in Hawai‘i, from a regulatory standpoint. They don’t want to invest here

Inexpensive Alternatives
- Cheap alternatives
- Cheap imports – competition (e.g., ethanol – already has existing infrastructure)

Recession
- The recession affects ability to raise funds
- The recession caused competition to get large amount of funds out there. People are more willing to invest in different areas at this time because of the market

Determining Which Crops to Invest In
- Some crops involve more labor than others. We need to examine this to determine which crops to invest in
- We lack a sense of direction regarding which crops we’re going to be growing – it’s hard to get investment if we don’t know

Other Comments
- Fragmented distribution of available land
- Time is money – permitting process is time consuming
- Three-fifths of all biofuels went to Europe – totally changed dynamic in U.S.

2. In the next 2-3 years, what financial incentives will create economic feasibility and encourage the competitiveness of locally grown biofuels? Participants were asked to brainstorm their ideas.

Tax Incentives
- Monetize tax incentives; direct check at completion of project vs. tax credit
- Create tax credit incentives for growers and large landowners
- Need tax support for biofuels – but mandating is problematic

Other State Incentives
- Hope Hawai‘i projects attract Stimulus Funding – deadline is May 29. Grants.gov is a resource. It is helpful if the State commits funding – matching funds are needed for the Federal funds
- Look at requiring vehicles that come here be able to use these fuels; educate consumers to make these changes
• Mechanism for fast-tracking permitting and new facilities might create better financial environment

Incentives for Co-Use/Co-Products
• Incentives across co-products need parity to make whole operation financially feasible
• There is a bill in the Legislature now looking at food and biofuels at same time and creating incentives for both rather than as competitors against each other

Financing Options/Incentives
• It is a 15-20 year financial commitment. If the State could guarantee a bridge (2 years) between balloon and re-financing and support corrections that needed to be made in operations over balloon time. This will allow for better chance of refinancing
• Hawai‘i Clean Energy Initiative restructures debt on the balance sheet

Investor Incentives
• The State bundles projects into a size appealing to investors
• We need a clear definition on how the State handles these things, i.e., what will PUC do? Pay attention to everything the investment community is looking for – we need to shore up the process

Preference for Locally-Grown Biofuels
• A clearly stated and quantified preference for locally-grown biofuels – especially the State of Hawai‘i using them in vehicles and facilities. This helps to calculate price advantage.
• Look at State procurement code for preference for buying local

Wheeling
• Bio-energy side, not just for biofuels. Also transportation. Feed-in tariff/wheeling
• Wheeling for biofuel-produced electricity instead of selling power to HECO for 50% of what they sell it for, can sell at 80%

Other Comments
• Some kind of incentive to landowners to put land in biofuel production vs. other kinds of development
• Act 221 – keep it alive and meaningful. 100% payback over 5 years

3. In the next 2-3 years, what policy changes will create economic feasibility and encourage the competitiveness of locally grown biofuels?
Participants were asked to brainstorm their ideas.

Hybrid Model
• The Hybrid Model is not totally tied to the price of oil, but somewhat tied; that could decrease over time. Using liquid fuels and electricity
• Integrated refineries producing both liquid and electricity. What role can public State and County play? What contribution can State make (lands, subsidies) to decrease the footprint required?

Tax Issues
• Carbon content of different biofuels. Local biofuels might have an advantage. Create premium for carbon advantaged biofuel. Create a carbon tax at State and national levels.
• Policy changes towards taxation of local fuels e.g., road tax. Price matters. State can shift their priorities by taxation policies. (That’s how we can fund the bridge.)

Create Effective Storage System
• State should go after stimulus money to enable a decent battery (could be thermal, etc.) or environmentally sound storage system (e.g., Maui system is not able to store energy for use at another time). Need energy storage system for electricity especially.
• On storage – non-storability hasn’t been resolved internationally. Value of biofuel: can offset the intermittent nature of solar and wind.

Education/Shifting Perspectives
• Shift idea of change – change is good, should not be resisted. Doing things, not just talking.
• Separate bad from good biofuels, attributes would go a long way towards community acceptance.

Other Comments
• Structuring stand-by Purchase of Power Agreements to accommodate night or low-end times, when solar or wind are not being used. Create the ability to bring power online or offline as needed. May help to incentivize.
• Mandate use of biofuel for State vehicle fleets – would stimulate demand.
• Note: electric vehicles are good, but if they plug into grid the it is a problem because the grid is powered by fossil fuels.
• Bioenergy Master Plan is a great first step. Let’s look at what the appropriate role of biofuels is in our energy future. Develop a roadmap where technology developments are expected. This helps at the policy level and decreases infighting.
• Transparency at all levels of Road Map/Plan.
• There is a bill in the Legislature now – looking at food and biofuels at same time – incentives for both rather than as competitors against each other.
• Everyone is looking at their portfolio needs. If investors are assured they’ll realize their investment, it’ll increase investment. Shows State and County commitment to create loaning scenario without worry.
• Policy changes within the university – Research and Development areas to enhance economic viability

4. **Original Question:** The Biofuel industry is often seen as a way to revitalize rural communities. Please share examples you know of that demonstrate the impact of the biofuel industry on rural communities. *Participants asked the Task Leader for clarification on this question.*

• There are positives and negatives: Community support, opposition. This question targets change in the sense of “revitalizing” communities. This doesn’t always happen. Is it more useful to ask about *any* impact?

*As a result, the Task Leader and group agreed to an amended question:*

**Revised Question:** The Biofuel industry is often seen as a way to change communities dependent on agricultural land or that have some connection to the land. Please share examples you know of that demonstrate the impact of the biofuel industry on these communities. *Participants were asked to brainstorm their ideas.*

• If not for Kamehameha Schools buying Hamakua Sugar, that land would have been gentrified
• Growing back to large scale agriculture, tens of thousands of acres. Need major placeholder for agricultural lands
• Many rural communities – plantation model – huge community camps. The centralization happened when ag opportunities decreased. The job opportunities that were once there when they were plantation communities diminished. Biofuel is one way to incorporate the ag industry back into communities.
• Impact on food security, i.e., if local biofuels are available, they can fuel equipment that can produce food locally (create available power)
• Create more employment, increase local jobs, but trying to site a facility is not easy – it can be controversial
• Level out income – more diversity of income, spread out over year, increase stability
• Ability to keep family together in farming and related enterprises. Looking to train talent here – mechanical, fabricators, operators, increase opportunities for job skills learning. Not just jobs, but what they represent
• Spin off industries from a large core ag operation, e.g., rum – trash goes to cattle farmers
• Tourism associated with biofuel start to finish. People interested in ag tours and there is not much of that here now. Could be adjunct to biofuels
• If we have a healthy ag industry tied together with biofuels it can contribute to critical mass. Irrigation systems, knowledge, training, fertilizers made from biofuels. *Reframe Food vs. Fuel to Plants vs. Pavement*
• Absent of viable ag enterprises, we can’t preserve ag nature of any plant – turns into payment
• Compatible land use that supports energy and agriculture
• This would create an increase in the use of roads, particularly by large vehicles. An advantage is that we could convert half of traffic to transportation of non-explosive ag products and we’d be better off. In other words, increase vehicles, decrease "bombs"
• Energy independence for communities – possibility? Depends on economies of scale
• Amount of pesticides/herbicides being used on biofuel crops could be high or low, depending on what used

5. What best practices would you recommend to assure a win/win experience for biofuel industries and rural/agricultural regions of Hawai‘i? (How can we minimize negative impacts and optimize positive impacts?) Participants were asked to brainstorm their ideas.

Water Management

• Water delivery infrastructure – purchase water to support community, e.g., Kula (like “wheeling”)  
• The issue about water tables is that our state doesn’t have a sophisticated water table system throughout all islands.
• Cleaning of water with nutrients – if irrigating to clean water, can possibly grow something (“Phytoremediation,” e.g., plant in Pearl Harbor), ways to re-use water  
• Hawai‘ian Electric is re-using water through “RO” – reverse osmosis  
• We need to work more aggressively to stop water runoff, minimizing runoff to ocean, and reefs, replenish water tables in aquifers, perhaps produce power, use dams to capture water and minimize loss and runoff  
• Hamakua Coast – is there a way to use runoff water (stop it?). This is a policy issue  
• Plant biofuel crops in areas that could contain or border some of water runoff. Manage plantings to minimize runoff

Co-Use

• Look at Food and Biofuels at the same time – incentives for both rather than compete (Bill in Legislature now)  
• Food/Fuel working together. Specific example – 2 industries come together and share irrigation costs and integrate operations. Ecosystem benefits  
• There may be increased opportunity for biomass to solve some problems on agricultural land and produce a product, e.g., like salvaging bush (the devil’s in the details on this)

Community Engagement

• Engage the community – first and foremost. Crucial, especially if public lands. Must have the support, endorsement and desire of community
• A model that includes all pieces would allow decision analysis capabilities within State to see how pieces fit together. Take system to community to increase understanding and get input, help them see where important connection points are, and how it can benefit or interfere. Allows for increased discussion.
• Development of leadership and communities – rely on transparency

Other Comments
• Educate legislators and policy makers – make sure they understand details we’re discussing today. Can’t assume policy-makers understand
• Land stewardship policies – what the impact of different planting will be – harvest methodologies. Major potential negative impact
• Fully integrated system – feed, fuel, lumber products – everything put together – social aspect, keep community viable, e.g., byproducts from one becomes feedstock for another
• Ensure this industry can generate enough revenue to support a critical mass. Otherwise, we will lose young people who move away from the State. Real jobs for people. Must support other economies in State. Can’t just benefit a small group of people or large landowners
• Align selves with State’s initiative toward sustainability, degrees in sustainability at college level
• Biofuels from feedstock to production – resources for Best Practices:
  o International: Roundtable on Sustainable Biofuels
  o National: Sustainable Biodiesel Alliance
• A philosophical question – what else can we bring here? Issue of diverse solutions
• Can stabilize the price fluctuations of electricity
• Can stop money from flying out the door to BP and Shell (related to transportation)
Appendix I:

Obstacles were grouped into seven primary categories: 1) Costs, 2) Tax credits/incentives, 3) Large landowners, 4) Getting buy-in investment, 5) Inexpensive alternatives, 6) Recession, 7) Crop selection. The barriers were then matched to existing and proposed State and Federal incentives.

### Barriers: TAX / FINANCIAL INCENTIVES

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<th>FINANCIAL BARRIERS</th>
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Perceived barriers not addressed by current or proposed incentives:
- Inconsistencies in financial incentives across different crops
- Inconsistent funding
- Inconsistencies over supply chain
- Tax structure
## Changing tax credits

**Barrier: Cost**

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<tr>
<td>State Business Tax Credit / Enterprise Zones</td>
<td>Tax Credit</td>
<td>Cellulosic Biomass Ethanol and MSW Loan Guarantee Program</td>
<td>Federal Loan Program</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Farm and Aquaculture Sustainable Projects Loan</td>
<td>State Loan Program</td>
<td>Renewable Energy; Biodiesel Feedstock; Appropriations</td>
<td>Grant and Subsidy</td>
<td>Biomass Commercial Use Grant Program</td>
<td>Grant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biodiesel; Market Stimulation</td>
<td>Market stimulation incentives</td>
<td>Cellulosic Biofuel Production Incentives</td>
<td>Awards</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public Land Leases; Renewable Energy</td>
<td>Land availability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol Fuels Excise Tax Exemption</td>
<td>Tax Exemption</td>
<td>Biodiesel Income Tax Credit</td>
<td>Tax Credit</td>
<td></td>
<td></td>
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<tr>
<td>Reduced Tax Rates for Alternative Fuels</td>
<td>Favorable Rates of Taxation</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Transporting product to end-user</td>
<td>Electric Vehicles; Energy Efficient Industry Development</td>
<td>Tax credit</td>
<td>Alternative Fuel Infrastructure Tax Credit</td>
<td>Tax Credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transportation; Energy Efficient Vehicles</td>
<td>Tax credit</td>
<td>Credit for Installation of Alternative Fueling Stations</td>
<td>Credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hawai‘i Clean Energy Initiative In Transportation Energy (HB 489)</td>
<td>Tax credit</td>
<td></td>
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</tr>
</tbody>
</table>

Perceived barriers not addressed by current or proposed incentives:
- Price of oil
- Cost of labor/ unionized labor/ non-livable wages
- Cost of resources
- Critical mass

**Barrier: LARGE LAND OWNERS**

<table>
<thead>
<tr>
<th>FINANCIAL BARRIERS</th>
<th>STATE-EXISTING</th>
<th>TYPE</th>
<th>STATE-PROPOSED</th>
<th>TYPE</th>
<th>NATIONAL-EXISTING</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of commitment by large landowners</td>
<td></td>
<td></td>
<td>Public Land Leases; Renewable Energy</td>
<td>Land availability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Renewable Energy Facilities; Conservation and Agricultural Districts; Special Management Areas</td>
<td>Land availability</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Perceived barriers not addressed by current or proposed incentives:
- Availability of land is limited to some large landowners
- Large vs. smaller scale production

**Barrier: GETTING BUY-IN/ INVESTMENT**

<table>
<thead>
<tr>
<th>FINANCIAL BARRIERS</th>
<th>STATE-EXISTING</th>
<th>TYPE</th>
<th>STATE-PROPOSED</th>
<th>TYPE</th>
<th>NATIONAL-EXISTING</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risks</td>
<td></td>
<td></td>
<td>Renewable Energy Opportunity Zones</td>
<td>Investment Encouragement</td>
<td>Business and Industry (B&amp;I) Guaranteed Loans</td>
<td>Federal Loan Program</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Enterprise Zone (EZ) Program</td>
<td>Promote private sector business growth</td>
<td></td>
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</tr>
</tbody>
</table>

Perceived barriers not addressed by current or proposed incentives:
- Large money is easier to get than small money
- Time is money permitting process

**Barrier: INEXPENSIVE ALTERNATIVES**

<table>
<thead>
<tr>
<th>FINANCIAL BARRIERS</th>
<th>STATE-EXISTING</th>
<th>TYPE</th>
<th>STATE-PROPOSED</th>
<th>TYPE</th>
<th>NATIONAL-EXISTING</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheap alternatives</td>
<td></td>
<td></td>
<td>Hawaiʻi Clean Energy Initiative; Transportation Energy</td>
<td>Mandatory rules promoting Alter. Fuels</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Hawaiʻi Clean Energy Initiative In Transportation Energy</td>
<td>Mandatory rules promoting Alter. Fuels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cheap imports | Energy Resources; Alternate Energy | Promote the use of local energy sources

### Barrier: RESEARCH

<table>
<thead>
<tr>
<th>FINANCIAL BARRIERS</th>
<th>STATE-EXISTING</th>
<th>TYPE</th>
<th>STATE-PROPOSED</th>
<th>TYPE</th>
<th>NATIONAL-EXISTING</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of General knowledge about bioenergy</td>
<td>Hawai‘i Clean Energy Initiative (HCEI) - Energy Efficiency (HB 488)</td>
<td>Special Funds for Research and Public Awareness Programs</td>
<td>Biodiesel Engine Testing Program (by the EPA 2005)</td>
<td>Grants</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Biomass Commercial Use Grant Program</td>
<td>Grant</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Bioenergy Program – University Biodiesel Program</td>
<td>Grant</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Advanced Biofuel Technologies Program</td>
<td>Grant</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>Farm Bill 2008</td>
<td>Federal Grant Program/Tax Credit</td>
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<td></td>
<td></td>
<td></td>
<td>Biobased Fuels and Products Outreach and Education Program</td>
<td>Grant</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Sun Grant Research Initiative Act of 2003</td>
<td>Research Grants</td>
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</tbody>
</table>

### Barrier: CROP SELECTION

<table>
<thead>
<tr>
<th>FINANCIAL BARRIERS</th>
<th>STATE-EXISTING</th>
<th>TYPE</th>
<th>STATE-PROPOSED</th>
<th>TYPE</th>
<th>NATIONAL-EXISTING</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack sense of direction in crop selection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biomass Research and Development Initiative</td>
<td>Grants</td>
</tr>
</tbody>
</table>

Perceived barriers not addressed by current or proposed incentives:
- Variation in labor requirement, crop by crop basis
The two categories with the highest number of accompanying incentives were “Cost” and “Tax Credits/Incentives.” For barriers, stakeholders cited the high cost of capital structure for bio-refineries, high cost of land, energy and feedstock, price at the pump is affected by taxes or the lack thereof, and transporting product to end-user. These barriers are seemingly addressed by the Ethanol Tax Credit, State General Excise Exemptions/Enterprise Zones, Farm and Aquaculture Sustainable Projects Loan, Alcohol Fuels Tax Exemption and the Reduced Tax Rates for Alternative Fuels.

Regarding “Tax/Financial Incentives,” stakeholders found that they could not rely on the tax incentives and also that the funding incentives were inconsistent across different crops. It appears that, with regard to the tax incentives in place (High Tech Business Investment Tax Credit; Tax Credit for Research Activities, Ethanol Facility Tax Credit, State General Excise Exemptions/Enterprise Zones; State Business Tax Credit/Enterprise Zones; Reduced Tax Rates for Alternative Fuels), the experience of the stakeholders suggests that, despite the large number of incentives, they are insufficient for development and/or growth of a biofuels business.

There were several barriers within these two categories that were not addressed by any existing or proposed incentives. These include the price of oil; cost of labor/unionized labor/non-livable wages; cost of resources (assumed to be feedstock); critical mass; inconsistencies in financial incentives across different crops; inconsistent funding; inconsistencies over supply chain; tax structure; and changing tax credits.

There were far fewer incentives for barriers within the categories Large Land Owners, Getting Buy-In/Investment, and Inexpensive Alternatives.

The category “research” and its barrier- lack of general knowledge about bioenergy- was addressed by several existing Federal incentives, but by only one proposed State incentive and no existing State incentives.

The category “crop selection” and its barrier- lack of sense of direction in crop selection- was aligned with one existing Federal incentive. The barrier- variation in labor requirement, crop-by-crop basis- was not addressed.

Incentives are heavy in the conversion and distribution phases of the supply chain and limited in the feedstock production phase.
Appendix J

Sample Survey

<table>
<thead>
<tr>
<th>Feedstock Production</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Risks</strong></td>
</tr>
<tr>
<td>Labor availability</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
<tr>
<td>Real estate market price pressure</td>
</tr>
<tr>
<td>Production: imported feedstock spread vs. fixed cost</td>
</tr>
<tr>
<td>Water costs</td>
</tr>
<tr>
<td><strong>Contract Risks</strong></td>
</tr>
<tr>
<td>Lead time for feedstock vs. market demand (security of demand)</td>
</tr>
<tr>
<td>Climate change/seasonality vs. demand</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Biofuel Production</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Risks</strong></td>
</tr>
<tr>
<td>Feedstock-product spreads vs. fixed costs</td>
</tr>
<tr>
<td>Duration of federal tax credits</td>
</tr>
<tr>
<td>By product market</td>
</tr>
<tr>
<td>Size and pricing</td>
</tr>
<tr>
<td><strong>Contract Risks</strong></td>
</tr>
<tr>
<td>Term of off-take contract vs. debt</td>
</tr>
<tr>
<td>Security of feedstock supply/availability/liquidity</td>
</tr>
<tr>
<td>Credit-worthy off-takers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distribution and Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Risks</strong></td>
</tr>
<tr>
<td>Product spread vs. fixed cost</td>
</tr>
<tr>
<td>Duration of federal tax credits</td>
</tr>
<tr>
<td><strong>Contract Risks</strong></td>
</tr>
<tr>
<td>Investment recovery of biofuels infrastructure (terminals/stations)</td>
</tr>
<tr>
<td>Credit-worthy suppliers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Risks</strong></td>
</tr>
<tr>
<td>Biofuel price vs. petroleum fuel</td>
</tr>
<tr>
<td>Duration of federal tax credits</td>
</tr>
<tr>
<td><strong>Contract Risks</strong></td>
</tr>
<tr>
<td>Credit-worthy suppliers</td>
</tr>
</tbody>
</table>
Appendix K

U.S. DEPARTMENT OF AGRICULTURE DEPARTMENTAL REGULATION
Number: 5600-003
SUBJECT: USDA Roles in Market-Based Environmental Stewardship
DATE: December 20, 2006
OPI: Natural Resources Conservation Service

PURPOSE This regulation sets forth the policy of the United States Department of Agriculture (USDA) with regard to actions that enable the application of scientifically sound market based environmental stewardship approaches to improve environmental quality at a lower cost to society and to establish a departmental coordination council to facilitate activities necessary to implement this policy.

SPECIAL INSTRUCTIONS/CANCELLATIONS This Departmental Regulation will be in effect until superseded.

BACKGROUND Market-based environmental stewardship approaches provide market participants flexibility to undertake actions that have the lowest cost. Many market-based approaches have been shown to result in more cost-effective achievement of natural resource conservation and environmental goals compared to traditional regulatory approaches and to accelerate the rate of environmental improvements. Market-based approaches and voluntary reporting registries may include many environmental factors including greenhouse gases, water, air, wetlands, and wildlife habitat.* *Mechanisms may include credit trading, insurance, mitigation banking, competitive offer-based auctioning, and eco-labeling.

POLICY The U.S. Department of Agriculture (USDA) seeks to broaden the use of private sector markets for environmental goods and services through emerging voluntary market mechanisms such as environmental credit trading and voluntary reporting registries. USDA believes market-based environmental stewardship can encourage competition, spur innovation, and achieve environmental benefits, while helping USDA constituents comply with environmental regulations. Effective private sector markets require consistent, well-defined, and quantifiable environmental goods and services. USDA actions should help to enable the application of scientifically sound market-based environmental stewardship approaches to improve environmental quality at a lower cost to society. This includes developing and evaluating tools and methods to encourage participation. Given this, USDA managers are encouraged to employ flexibility when addressing specific goals and objectives that can facilitate USDA constituents’ participation in private sector environmental market initiatives. Accordingly, it is the policy of USDA to:
A) Cooperate with other Federal departments, as well as Tribal, State, and Local government and nongovernmental organizations in:
   (1) Establishing a role for agriculture and forestry in providing environmental offsets and enhancements; and
(2) Developing accounting practices and procedures for quantifying environmental goods and services.

B) Facilitate consistent, efficient, and effective agency level policies, programs, and activities to enable USDA constituents and partners to take advantage and promote awareness of environmental stewardship markets.

C) Promote use of environmental credit trading and voluntary reporting registries, as well as other environmental market-based stewardship approaches, to help fulfill USDA natural resource conservation missions and improve environmental quality within the scope of agency authorities.

D) Develop, test, and evaluate innovative tools and methods, including those for identifying and quantifying environmental impacts, which support market-based environmental stewardship.

E) Encourage and conduct research and technology development to assess and improve the understanding and management of natural resources and conservation practices, and systems, and to ensure that policy and programs have a firm scientific basis.

F) Conduct outreach, education, technology transfer, and partnership building activities with USDA constituents and others, using long established and proven institutional arrangements, as well as establishing new innovative partnerships to enlist the involvement of interested USDA constituents and others in market-based environmental stewardship.

G) Foster knowledge within USDA agencies of environmental stewardship markets. This policy does not create any right or benefit, or trust responsibility, substantive or procedural, enforceable by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

This policy does not alter or amend any requirement under statute, regulation, or Executive Order. This policy applies only to USDA agencies and programs and does not affect State, Local or Tribal laws, procedures, or regulations.

USDA MARKET-BASED ENVIRONMENTAL STEWARDSHIP COORDINATION COUNCIL

This policy hereby establishes the USDA Market-Based Environmental Stewardship Coordination Council. The Council will be chaired by the Under Secretary for Natural Resources and Environment. Membership will be comprised of the Under Secretary for Research, Education, and Economics; Under Secretary for Farm and Foreign Agricultural Services; Under Secretary for Rural Development; the Chief Economist; the General Counsel; and other officers as may be deemed appropriate by the Council. The Council will facilitate Departmental activities necessary to implement the Department Policy as established by this memorandum. Council members may identify executive level designees.
To carry out the activities identified and approved by the Council, the Council will establish a work group comprised of appropriate agencies and offices that they determine have roles in implementing this policy. The work group may include, but not be limited to, representatives from the following agencies and offices: Agricultural Research Service; Cooperative State Research, Education, and Extension Service; Economic Research Service; Forest Service; Farm Service Agency; Natural Resources Conservation Service; Office of the Chief Economist; and, Office of General Counsel. The work group will report to leadership within these agencies and offices respectively, as identified by the Council, and this leadership group will report to the Council.

The member Mission Areas, Offices, and Agencies of the Council are to contribute personnel, administrative, and programmatic resources as needed, and determined by them consistent with their delegated authorities and appropriations, to carry out these duties.