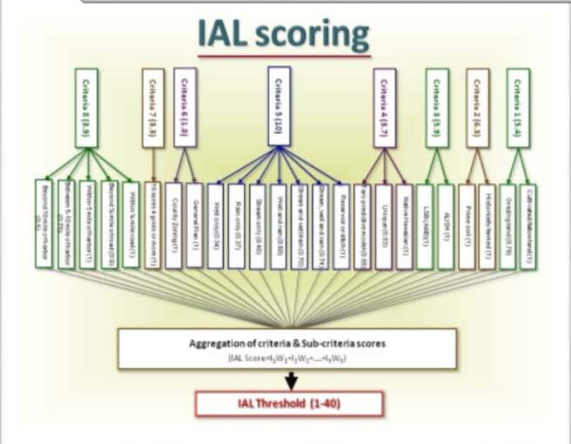


County of Kaua'i

Important

Agricultural

Lands Study



Final Study
August 2015



Project Consultants

University of Hawai'i
Department of Urban & Regional Planning (DURP)
and
The University of Hawai'i
Economic Research Organization (UHERO)



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In loving memory of our friend and mentor, Peter Nakamura who guided this critical study toward its final publication.

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I. Executive summary

A. Overview of Study Process

This Study documents the methodology and findings of the *Kaua'i IAL study*. From August 2009 to December 2011, the County of Kaua'i partnered with the University of Hawai'i Mānoa, Department of Urban and Regional Planning (DURP) and Economic Research Organization (UHERO) to operationalize the County-specific directives of Act 183 (SLH 2005) *Important Agricultural Lands* (IAL). Pursuant to Act 183, IAL are those lands:

- ♦ capable of producing sustained high yields when treated and managed according to accepted farming methods and technology;
- ♦ contribute to the State's economic base and produce agricultural commodities for export or local consumption; and
- ♦ are needed to promote the expansion of agricultural activities and income for the future, even if currently not in production.

The results of this study include:

- ♦ Documented methodology and tools for considering candidate IAL designations pursuant to Act 183 (SLH 2005).
- ♦ Maps, based on methodology and tools, showing agricultural lands that meet the criteria for IAL pursuant to Act 183 (SLH 2005).
- ♦ Recommendations for county-level program development for implementing the IAL designation process for the County of Kaua'i
- ♦ Discussion and recommendations relating to support of agriculture on Kaua'i.

Public participation was a key element in interpreting the eight (8) criteria for identifying IAL, pursuant to Act 183:

1. Land currently used for agricultural production;
2. Land with soil qualities and growing conditions that support agricultural production of food, fiber, or fuel and energy-producing crops;
3. Land identified under agricultural productivity rating systems, such as the agricultural lands of importance to the State of Hawaii (ALISH) system adopted by the board of agriculture on January 28, 1977;
4. Land types associated with traditional native Hawaiian agricultural uses, such as taro cultivation, or unique agricultural crops and uses, such as coffee, vineyards, aquaculture, and energy production;
5. Land with sufficient quantities of water to support viable agricultural production;
6. Land whose designation as important agricultural lands is consistent with general, development, and community plans of the county;
7. Land that contributes to maintaining a critical land mass important to agricultural operating activity; and
8. Land with or near support infrastructure conducive to agricultural productivity, such as transportation to markets, water, or power.¹

A twenty-one member stakeholder/technical advisory committee (STAC) met on a monthly basis for approximately twenty-four months to define the criteria, provide input into the methodology and mapping, and discuss issues relating to agriculture on Kaua'i and in Hawai'i. The STAC consisted of representatives from the farming industry, government, private landholdings, and community who provided diverse perspectives on agriculture and the future of this industry on Kaua'i. In addition to STAC meetings, the study team held seven (7) community meetings to share information about the IAL study with the larger community and to solicit input regarding the methodology, maps, and study process.

¹ Hawai'i Revised Statutes (HRS) §205-D (2005).

The study project includes a website which provides maps, agendas, meeting minutes, PowerPoint presentations and other materials relating to Act 183 and the Kaua'i study process.

<http://sites.google.com/site/kauaiial/>²

The initial phase of the study focused on defining the eight criteria provided by Act 183 (SLH 2005) and gathering information relating to each criterion, such as GIS data layers, hard copy maps, plans and studies, and other pertinent documents. During the first phase of the project, the criteria was analyzed and mapped through an ongoing feedback process with STAC members, experts in the field of agriculture and land use, as well as interested members of the public. Subsequently, each criterion was “ranked” or “scored” according to their relative importance by both the advisory committee and participants from the community.

It should be noted here that water (specifically access to sufficient water for agriculture) was consistently identified as the most important factor in determining the importance of [an] agricultural land. Issues relating to water access and infrastructure improvements for support of current and future agricultural success on Kaua'i were continually raised in all committee and public meetings.

B. Summary of outcomes

Through mapping, analyses and input, methodology and tools for identifying IAL were developed. As mentioned above, *sufficient water* consistently ranked as the most important criteria of an IAL. This was followed by *soil quality* and whether lands are classified as *prime agricultural lands* according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) maps. A discussion of criteria and sub-criteria ranking can be found in Part III Operationalizing the Directives of Act 183 (SLH 2005).

1. Threshold Scores and Maps

Scores were generated for every agricultural parcel on Kauaʻi on a scale of “0” (does not meet any IAL criteria) to “40” (meets all IAL criteria). Maps were created based on this scoring methodology at the thresholds listed in the table below. The *threshold scores* define or “describe” attributes of all agricultural lands on Kauaʻi according to how well they meet the legislative criteria³:

Summary of Threshold Scores

Threshold Score	Percentage of total agricultural lands that meet threshold score	Approximate acreage of agricultural lands at percentage
10	93.56%	128,093.18 acres
20	61.26%	83,865.28 acres
25	48.25%	66,051.15 acres
28 ^{4*}	39.11%	53,547 acres
30	34.87%	47,740.15 acres

*Lands with a threshold score of 28 or above meet all eight of the criteria at some level.

² Please contact the County of Kaua'i Planning Department at 808-241-4050 once site expires for the new location of project materials.

³ Note that these threshold scores include all lands that meet the legislative criteria at a certain percentage. None of the threshold scores or acreages in this table are meant to be targets for the County-led designation process. Refer Section VI Results of the Study Process and Recommendations.

⁴ Lands with a threshold score of 28 or above meet each of the eight criteria of Important Agricultural Lands at some percentage (such as 80% of the total parcel in Agriculture or Open would meet each of the eight criteria, such as water accessibility, currently in agricultural, etc., at a certain percent).

2. Overview Map of Agricultural Lands Meeting the Threshold for Designation

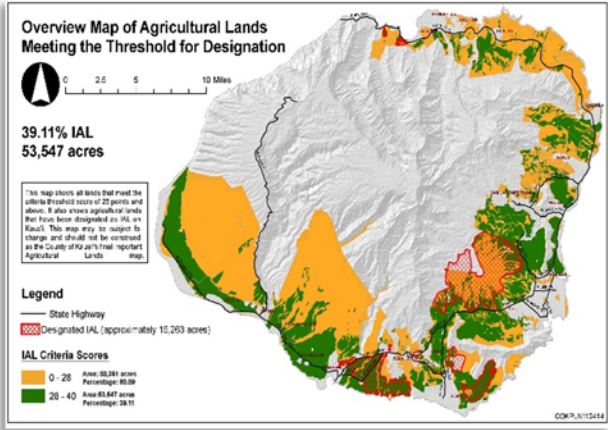
A map of agricultural lands meeting the threshold of “28” to be considered for County designation was developed based on the threshold analysis summarized above. The map does not include State-managed agricultural lands. The Department of Agriculture, in collaboration with the Department of Land and Natural Resources are responsible for the identification and designation of State-managed (“public”) agricultural lands.⁵

The overview map is to be used by the County to identify and prepare priority designations for adoption by County Council by resolution. The State Land Use Commission has the final decision-making authority regarding IAL designations.

**Refer to Appendix C for a larger copy of the overview map.*

3. Parcel-Scoring Calculator

A *parcel-scoring calculator* capable of returning scores for individual parcels was developed. This tool not only allows for a review of how an individual parcel meets each of the eight IAL criteria, but provides a method for testing the “truthfulness” of the scoring methodology. A variety of parcels were tested using the tool and then mapped to provide a visual tool for assessing scores (since topographic features such



Scoring Calculator v.2.3		
These calculations are preliminary findings and do not constitute final Important Agricultural Land. These calculations are a work in progress and are subject to change as the Stakeholder and Technical Advisory Committee continues identifying and mapping Important Agricultural Lands pursuant to Hawaii Revised Statutes Section 205-44.		
TMK (9 digits 400000000)	400000000	
Average IAL Score for selected TMK	31.46	
Total Acres	53.65	Percentage of Total 100.00
IAL score = 0	-	-
Score between 0 - 10	-	-
Score between 10 - 20	-	-
Score between 20 - 30	2.31	4.31
Score between 30 - 40	51.34	95.69
Agricultural Land	53.65	100.00
Conservation	-	-
Rural	-	-
Urban	-	-
Water	-	-
Criterion 1: Currently in agriculture		
Cultivated and fallow land	53.65	100.00
Grazing land	-	-
Otherwise	-	-
Criterion 2: Soil quality		
Historically farmed or prime	51.34	95.69
Otherwise	2.31	4.31
Criterion 3: Identified by ALISH or LSB		
ALISH (prime, unique or other) or LSB (class A or B)	53.65	100.00
Otherwise	-	-
Criterion 4: Native Hawaiian or unique crops		
Native Hawaiian crops	-	-
Historic taro lands	2.28	4.25
Unique crops	-	-
Otherwise	51.37	95.75
Criterion 5: Sufficient water		
Surface water from functioning reservoirs or ditches	-	-
No ditch but multiple sources	53.65	100.00
No ditch but single source	-	-
Otherwise	-	-

as streams, reservoirs, slopes, and evidence of agricultural use can be observed this way). Landowners or their representatives were asked to review parcel scores and maps to confirm how well the tool “ranked” attributes of their parcels according to the IAL criteria. The parcel-scoring tool has been used by the County to review agricultural parcels in order to determine their candidacy for IAL.

4. Food and Energy Sustainability Analysis

STAC members discussed the goals of *food self-sufficiency, energy self-sufficiency and support of an export economy* as a way to decide how much IAL should be considered for designation on Kaua’i. To facilitate discussions, tools were developed to determine the

amount of agricultural land needed to support food and energy demands now and into the future, for both local consumption and export. Ultimately, the committee requested data to determine the amount of land needed to feed the *current* population of 67,091, excluding other needs such as for energy or export. The final analysis presented in this study is based on a population of 70,000 people. **Using this estimation, approximately 21,158 acres of lands in food production would be required to feed a population of 70,000.**⁶

It is important to note that this acreage requirement is assumption-driven and can fluctuate depending on changes to the inputs (for example, changing the type of diet analyzed or adding beef production). However, the resulting data provides a good foundation for assessing the minimum amount of acreage to consider for designation.

⁵ HRS §205-44.5.

⁶ 21,158 acres is the result of several rounds of mapping, committee and community input.

5. Urban Growth Model

An Urban Growth Model (UGM) that was created through the study process analyzes the potential effect of IAL designations and other land use policies on growth scenarios for Kaua’i for a period of thirty years. Like other tools developed in this study process, the UGM is meant to assist with decision-making regarding how much IAL to consider for designation and where these designations should occur. The UGM is based on the assumption that growth first occurs in urban areas already being developed. Once density of an urban area becomes saturated, growth moves to more rural lands adjacent to the urban district, finally spreading into agricultural and open zone areas. Although this is not necessarily what occurs in real life, the model provides a broad picture of where growth could arise based on population increases and how rigidly growth management is applied. Three management scenarios were used within the model to predict location and intensity of growth:

- 1. *No urban containment* – no growth management strategy applied.
- 2. *Limited urban containment* – such as resulting from bordering IAL and some allowance of urban development in non-IAL agricultural areas.
- 3. *Strict urban containment* – increased density allowances such as increasing height requirements for buildings within urban areas and no allowance for urban development outside of current urban-zoned (residential, commercial, resort) areas.

The County can use the UGM to assess the implications of different growth management strategies for agricultural land preservation and urban growth on Kaua’i, such as for updates to the County General Plan.

C. Summary of Issues and Concerns

Issues and concerns discussed throughout the project process can be organized into two themes. First, those related to county directives provided in Act 183 (SLH 2005) and second, those related specifically to support of agriculture and the farming of food and resources. Note that the primary objectives of this study are to operationalize County directives of Act 183 (SLH 2005), to develop a methodology for identifying IAL, and then recommend processes and/or policies related to carrying-out and administering IAL designations at the County-level. However, in keeping with the purpose of Act 183, “to conserve and protect agricultural lands; promote diversified agriculture; increase agricultural self-sufficiency in Hawai’i; and assure the availability of agriculturally suitable lands pursuant to Article XI Section 3 of the Hawai’i Constitution,” it is also important to consider lateral issues/concerns related to support of farming and for moving toward food (and resources) self-sufficiency.

Key Issues and Concerns	
Relating to Act 183 (SLH 2005), Directives	Relating to Support of Agriculture, Farming of Food and Resources
<div>1. What are the County-level incentives (and criteria) for designation of both large and small agricultural parcels identified and/or designated as IAL?</div> <div>2. What are the County-level restrictions (immediate and possible future) for those lands identified and/or designated as IAL?</div> <div>3. What direct incentives/opportunities will there be for farmers who own or lease designated IAL?</div>	<div>1. Imminent need to increase access to water and water infrastructure improvement for agricultural irrigation.</div> <div>2. Imminent need to increase access to land (to lease or own) for farmers growing food and primary resources (timber, holistic medicines, etc).</div> <div>3. Imminent need to improve upon or to redevelop a system for local and export marketing of food and (primary) resources.</div>

Of principal concern to the STAC and members of the community relating to the designation of IAL and future policy is the question of “what are the pros and cons of the IAL designation process, both immediate and long term?” Although landowners throughout the State have voluntarily designated lands pursuant to Act 183, both State and County still need to develop administrative regulations.

Notwithstanding the primary objectives of this study, STAC and members of the community expressed concerns relating to direct support of agricultural activities. These concerns include (1) supporting the needs of farmers to farm; (2) to be able to make a living at farming, so that the community may benefit from the availability of local fresh foods; and (3) to identify and/or *redefine* export markets, locally and abroad.

Key issues and concerns are expanded upon within this study as it relates to the final recommendations.

D. Summary of Recommendations

The results of this study process are expressed as five recommendations. Recommendations #1 to #3 focus on establishing a County process for incentivizing and encouraging IAL designations. Recommendation #4 directs the County and encourages the State to use maps and tools developed during this study process when reviewing petitions for designation and when considering candidate lands for County or State-led petitions. Recommendation #5 acknowledges opportunities for reviewing, expanding, and integrating recommendations made in this study in the forthcoming General Plan update. Section V Results of Study Process and Recommendations starts on Page 51 of this study.

Recommendation #1 – Develop County-level incentives program for IAL designations, specifically to encourage food production to increase self-reliance

Recommendation #2 – Establish a minimum goal for the Designation of IAL

Recommendation #3 – Support landowner/farmer-initiated designations of agricultural lands that meet criterion #5 of Act I83 (SLH 2005), “land with sufficient quantities of water to support viable agricultural production.”

Recommendation #4 – Use IAL maps and tools when reviewing landowner/farmer-initiated petitions or for evaluating priority lands for designation by State or County.

Recommendation #5 – Evaluate and integrate findings and recommendations of IAL Study into the upcoming General Plan Update for the County of Kauaʻi

II. Act 183 (SLH 2005) Important Agricultural Lands

A. Preservation of Agricultural Lands in Hawai'i

Preservation of Hawai'i's important agricultural lands was set forth in Article XI, Section 3 of the Hawai'i State Constitution in 1978, which reads:

"The State shall conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands. The legislature shall provide standards and criteria to accomplish the foregoing.

Lands identified by the State as important agricultural lands needed to fulfill the purposes above shall not be reclassified by the State or rezoned by its political subdivisions without meeting the standards and criteria established by the legislature and approved by a two-thirds vote of the body responsible for the reclassification or rezoning action."

Between 1978 and 2005 a number of efforts were undertaken to develop criteria and legislation to identify which lands are most important to preserve for agricultural use, as well as to develop a process, including incentives, for the designation of these lands.

1. Land Study Bureau

Between 1965-1975 the Land Study Bureau (LSB) worked with the University of Hawai'i to develop productivity ratings based on soil characteristics and production capabilities in order to identify those lands capable of high agricultural yield. Lands were rated based on its overall productivity from A to E (A, being the highest producing and E being unsuitable for production). Lands were also characterized by its prospective for use for foraging, grazing, orchards, pineapple, sugar, vegetables, and timber lands.

2. Land Capability Classification

The Land Capability Classification (LCC) developed in 1972 used soil survey data from the US Department of Agriculture and the University of Hawai'i to assess the suitability of soils and climate conditions for a variety of field crops. Soils were mapped and classified across the state from I to VIII (lands classified I to III being the "best") and included subclasses. Lands classified IV to VIII are those identified as severely limited in choice of crops.

3. Agricultural Lands of Importance to the State of Hawai'i (ALISH)

In 1977-1978 the Hawai'i Department of Agriculture, US Department of Agriculture, and the University of Hawai'i identified ALISH as part of a larger effort by the US Department of Agriculture to inventory important farmlands. The ALISH classification system included a broader range of production factors than those developed through the LSB and LCC. Three classes of important agricultural lands were identified: *Prime*, *Unique*, and *Other*. *Prime* lands are those whose soils have the best physical, chemical, and climatic properties for mechanized field crops, and exclude urban lands and water bodies. *Unique* refers to lands that can be used for specific high-value crops produced in certain areas, such as coffee, taro, watercress, etc. Lands classified as *Other* is of state or local importance for production, but not prime or unique. Other lands may require irrigation or have characteristics like seasonal wetness or erodability that require further management for commercial production.⁷

4. Land Evaluation and Site Assessment (LESA)

During 1983-1986 the Land Evaluation and Site Assessment Commission developed a system for identifying and inventorying important agricultural lands. The LESA score is based on established agricultural production goals, the results of land evaluation (physical factors), and site assessment (or non-physical factors such as potential for profit and compatibility with existing land uses).

⁷ Agricultural Land Rating Systems Presentation, Hawai'i Department of Agriculture and State Office of Planning, February 5, 2000.

5. Pilot technical study to identify and map important agricultural lands

Following the passage of the Act 183 in 2005 the Kōloa-Po'ipū-Kalāheo region of Kaua'i was chosen for a pilot project by the Land Use Commission and their consultants, the University of Hawai'i Department of Urban and Regional Planning. During the study, consultants examined the enabling legislation, reviewed the procedures and data requirements necessary for the identification of important agricultural lands, developed a set of base maps and a database for the Kōloa-Po'ipū district, and investigated the feasibility of using the approach and methods described for other regions. The initial methodology developed during the pilot project provided the basis for the Kaua'i Important Agricultural Lands Study.

B. Act 183 (SLH 2005) Review

It was not until 2005 that legislation for identifying agricultural lands of importance and standards for establishing this process to meet the objectives of the constitutional amendment were passed.⁸

Act 183 (SLH 2005) implemented the 1978 constitutional amendment by:

- ♦ defining *important agricultural lands*;
- ♦ establishing eight (8) criteria in which to evaluate important agricultural lands;
- ♦ establishing a county-led and landowner-initiated process for designating important agricultural lands;
- ♦ specifying necessary policies for designating important agricultural lands and promoting agricultural production; and
- ♦ determining landowner incentives for the designation of IAL.

1. Defining IAL

Pursuant to Act 183 (SLH 2005) the objective for the identification of IAL is to identify and plan for the maintenance of a strategic agricultural lands resource base that can support a diversity of agricultural activities and opportunities, expand agricultural income and job opportunities, and increase agricultural self-sufficiency for current and future generations.⁹ The definitions of important agricultural lands are those that:

1. Are capable of producing sustained high agricultural yields when treated and managed according to accepted farming methods and technology;
2. Contribute to the State's economic base and produce agricultural commodities for export or local consumption; or
3. Are needed to promote the expansion of agricultural activities and income for the future, even if currently not in production.

2. IAL Criteria

The eight criteria established for identifying IAL are as follows:

1. Land currently used for agricultural production;
2. Land with soil qualities and growing conditions that support agricultural production of food, fiber, or fuel- and energy-producing crops;
3. Land identified under agricultural productivity rating systems, such as the agricultural lands of importance to the State of Hawaii (ALISH) system adopted by the Board of Agriculture on January 28, 1977;
4. Land types associated with traditional native Hawaiian agricultural uses, such as taro cultivation, or unique agricultural crops and uses, such as coffee, vineyards, aquaculture, and energy production;
5. Land with sufficient quantities of water to support viable agricultural production;
6. Land whose designation as important agricultural lands is consistent with general, development, and community plans of the county;

⁸ See case notes for Article XI, Section 3 available at: <http://hawaii.gov/lrb/constitution/CONT%200011-0003.html>.

⁹ Act 183, SLH 2005.

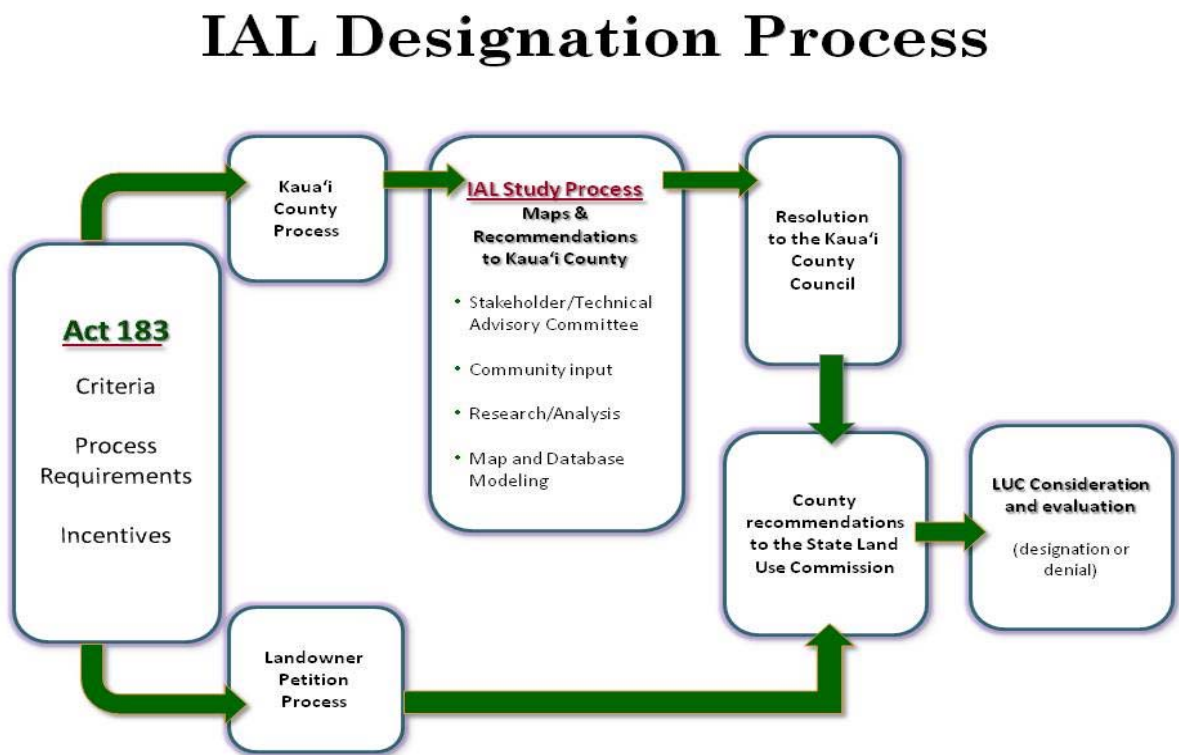
- 7. Land that contributes to maintaining a critical land mass important to agricultural operating productivity; and
- 8. Land with or near support infrastructure conducive to agricultural productivity, such as transportation to markets, water, or power.

According to HRS §205-D agricultural lands that meet *any of the eight criteria* will be given consideration provided that its designation meets the purposes of the State Constitution and objectives and policies for IAL in HRS §205-B and 205-C.

3. Landowner or farmer-Initiated and County-led designation processes

Act 183 established two processes in which important agricultural lands can be designated. As illustrated in Figure 1, a landowner or farmer has the opportunity to petition the State Land Use Commission directly to designate agricultural lands.¹⁰ As of February 2014, 16,073 acres of agricultural lands have been voluntarily designated by landowners on Kauaʻi.

Figure 1: IAL Designation Process for County of Kauaʻi



As of July 2011 the counties can recommend lands for designation to the Land Use Commission.¹¹ These lands exclude those already designated for urban use (either by state land use boundary, county zoning, or community or general plan designations). The process of identifying candidate lands required public involvement. As shown in Figure 1, the Kauaʻi process included stakeholder/technical advisory committee (STAC) and regional community meetings throughout the course of the study project. A total of fourteen committee meetings and seven regional community input meetings were held from September 2009 to December 2011. Extensive research, data collection, interviews with experts, landowners, farmers and members of the public were also conducted. All data and research were reviewed by the STAC and participating members of the public. Inputs into criteria scoring and mapping models are the direct result of the public review process. The transmission of this study, its recommendations, and map of candidate lands to the Kauaʻi County Council is part of the process toward the designation of important agricultural lands. The County Council shall decide on a strategy for prioritizing lands for designation (refer to page 45 of this study). Once a

¹⁰ Act 183, SLH 2005, §205-E, *Petition by Farmer or Landowner*.

¹¹ Act 183, SLH 2005, §205-I, *Designation of important agricultural lands; adoption of important agricultural lands maps*. This section basically establishes that counties may identify and recommend lands no sooner than three (3) years after the enactment of legislation establishing incentives and protections (Act 233, SLH 2008).

strategy is decided upon, designation maps will be prepared for adoption by the Council and then transmitted to the State Land Use Commission for further action.

4. County policy and incentives for designating important agricultural lands and promoting agricultural production

Act 183 directs the counties to ensure that “agricultural policies, tax policies, land use plans, ordinances, and rules shall promote the long-term viability of agricultural use of important agricultural lands,” and established eight broad guidelines applicable to county policies:

1. Promote the retention of IAL in blocks of contiguous, intact, and functional land units large enough to allow flexibility in agricultural production and management;
2. Discourage the fragmentation of IAL and the conversion of these lands to nonagricultural uses;
3. Direct nonagricultural uses and activities from IAL to other areas and ensure that uses on IAL are actual agricultural;
4. Limit physical improvements on IAL to maintain affordability of these lands for agricultural purposes;
5. Provide a basic level of infrastructure and services on IAL limited to the minimum necessary to support agricultural uses and activities;
6. Provide a basic level of infrastructure and services on IAL for future agricultural use through the use of incentives;
7. Facilitate the access of farmers to IAL for long-term viable agricultural use; and
8. Promote the maintenance of essential agricultural infrastructure systems.¹²

Recommendations relating to policy expansion or development made in this study are presented mindful of procedures required to amend rules, such as for the expansion of the County’s agricultural dedication program, and mindful of opportunities for developing new land use policies for agriculture, such as through the upcoming General Plan update for Kaua’i. County-level incentives are encouraged, but not required according to Act 183 (SLH 2005) and Act 233 (SLH 2008). Nonetheless, the recommendations in this study do focus on incentivizing designation of important agricultural lands, particularly for food production and resource materials, to increase self-sufficiency.

5. State landowner/farmer incentives for the designation of important agricultural lands

Act 233 (SLH 2008) established a variety of incentives that meet the requirements of Act 183 as follows:

- ♦ Farm dwellings and employee housing
Landowners are allowed to develop farm dwellings and employee housing for their immediate family members and their employees. There is a limit of 5% of the total IAL designation or 50 acres, whichever is less. Plans for dwellings/houses must be supported by agricultural activities plans approved by the Hawai’i Department of Agriculture. Plans are submitted to county planning and permitting departments who would route plans for review to the Department of Agriculture. However, a standard process, including criteria for review of agricultural plans still need to be established.
- ♦ Refundable qualified agricultural cost tax credit
Qualified landowners of designated IAL were able to claim a cost tax credit for the fiscal year ending May 31, 2010. The Department of Agriculture was able to certify credits of up to \$7,500,000 (annually, to the date of expiration). Credit claimed were for costs relating to agricultural production, such as roads maintenance, utilities, processing facilities, water and water infrastructure systems development and maintenance, feasibility studies, accounting services, and equipment.
- ♦ Loan guaranty
The Chairperson of the Board of Agriculture may provide an 85% loan guaranty to commercial lenders, resulting in a lower interest rate for landowners of designated IAL. The maximum term for financing operating costs is ten years. To finance capital

¹² HRS §205-43.

improvement costs, the maximum term is twenty years. \$2.5 million dollars has been allocated for this loan program. The IAL loan guaranty is administered by the Department of Agriculture's Agricultural Loan Division.

- ♦ State Agricultural Water Use and Development plan

The incentive for landowners in regard to this plan is that it would be modified to include public and private water systems, and sources of water for current and future needs.

- ♦ Agricultural processing facilities, permits, priority.

The Department of Agriculture will work with the Department of Health to assist in expediting permits for development of agricultural processing facilities on designated important agricultural lands.

- ♦ Public lands

The Department of Agriculture's Agricultural Resources Management Division is tasked with incorporating agricultural lands now managed by the Department of Land and Natural Resources into either the Agricultural Park Program or Non-Agricultural Park Lands Program. Farmers could thus lease agricultural lands through the Department of Agriculture.

- ♦ Land Reclassification

Landowners may petition the Land Use Commission to reclassify up to 15% of their agricultural land holdings to a rural, urban, or conservation districts. This petition must be filed concurrently with the important agricultural lands designation petition. Landowners may receive a non-transferable "credit" for voluntarily waiving to reclassify lands. The Department of Agriculture will work with the State Land Use Commission to develop rules for the reclassification process.

In addition to the above incentives, another derivative of the legislation is that lands already designated as IAL may be subdivided without county processing or standards provided that:

- a. None of resulting lots be used solely for residential occupancy; and
- b. Leasehold lots shall return to the original lot of record upon expiration or termination of the lease.¹³

Rules and processes relating to these incentives are still to be developed by administering state agencies. Of utmost concern to members of the community on Kaua'i during the course of this study project was the land reclassification incentive.

Note that pursuant to Act 183 (SLH 2005) "designated IAL shall not be distinguished by land class or zoning class from other land parcels. Rather, IAL would receive a supplemental label distinct from its land class and zoning class."¹⁴ It remains unclear however whether counties are prohibited from creating new zoning classes for important agricultural lands.

6. Rules and restrictions relating to the designation of important agricultural lands

Pursuant to Article XI Section 3 of the Hawai'i Constitution, lands designated IAL cannot be reclassified by the state or rezoned by any political subdivisions without meeting the standards and criteria established by the legislature and approved by a two-thirds vote of the body responsible for the reclassification or rezoning action. In other words, pursuant to Hawaii Revised Statutes Section 205-50, a landowner would need a two-thirds vote of the Planning Commission and/or State Land Use Commission to remove voluntary petitions for IAL designation made or those designated by the county in the county-initiated designation process. Additionally, if a landowner seeks to remove the IAL designation made in conjunction with a petition for reclassification, a landowner would be required to get two-thirds prior approval from the legislature before action is taken by either the Planning Commission and/or State Land Use Commission. The enactment of Act 183 (SLH 2005) also resulted in

¹³ Refer to HRS §205-K. Since counties have not adopted ordinances to reduce infrastructure standards for IAL before the passage of Act 233, SLH 2008, this allowance stands in effect.

¹⁴ The only restriction is that lands in the State Land Use Urban District are not eligible. Refer to HRS §205-47(a). Although, for example, lands within the State Land Use Rural District which satisfy the IAL criteria but is not zoned agricultural by the county could be recommended for IAL designation.

administrative and oversight functions from the counties' purview to the State, such as review of all reclassifications and permit applications for projects involving lands designated IAL, to the State Department of Agriculture and the State Office of Planning (although the authority to approve or deny applications and variances still lie with the counties).

Prior to the enactment of Act 183, parcels smaller than 15 acres could be rezoned by approval from a county land use authority. Under the new provisions, the State Land Use Commission will approve of the rezoning of any parcel with an IAL designation by a two-thirds vote.

While Act 183 required that the county's identification and mapping of candidate IAL be completed before landowners could petition for designations, the passage of Act 233 (SLH 2008) allows the Land Use Commission to hear voluntary petitions from landowners and farmers seeking designations before the counties complete their mapping processes. Once a landowner has designated the majority of its qualified holdings as important agricultural lands, the counties cannot put forward for designation any other of its agriculturally-zoned landholdings.¹⁵

As aforementioned, under Act 233, farm dwellings and employee housing are only allowed for a landowner or farmer's immediate family members and their employees, and cannot occupy more than 5% of the total IAL or 50 acres, whichever is less.

¹⁵ Refer to HRS §205-I.

III. Operationalizing the Directives of Act 183 (SLH 2005)

A. Project Goals

Pursuant to HRS §205-37(c) “each county, through their planning department, shall develop an inclusive process for public involvement in the identification of potential lands and the development of maps of lands to be recommended as important agricultural lands.” To fulfill this requirement, in 2009 the County of Kauaʻi (through its Planning Department) contracted with the University of Hawaiʻi’s Department of Urban and Regional Planning (DURP) and Economic Research Organization (UHERO) to:

- ♦ Examine the important agricultural lands legislative criteria;
- ♦ Gather input and solicit review of methodologies from communities members of Kauaʻi;
- ♦ Refine methods developed through the pilot study;
- ♦ Identify and map candidate IAL;
- ♦ Develop recommendations of IAL to be designated; and
- ♦ Develop recommendations for policy to encourage designations and promote the continuance of agriculture on Kauaʻi.

B. Review of the Kōloa-Poʻipū Pilot Study

In the pilot study conducted by the State Land Use Commission through the University of Hawaiʻi of the Kōloa-Poʻipū area, all eight criteria of the IAL legislation were weighted equally as to their importance in identifying candidate lands. In other words, the importance of water to agriculture production was of equal importance to soil, critical mass, and so on. The University of Hawaiʻi worked the Kauaʻi Planning Department to produce a series of base maps describing the existing conditions of agricultural lands according to the eight criteria. From these inputs, a uniform grid-based map was created in which each grid cell equaled approximately 0.1 square mile (64 acres). Various data layers relating to land use, such as zoning, population, and other attributes, were georeferenced to the grid-based structure. The County’s Tax Map Key/parcel layer was *not* used during this pilot study, thus removing any connection to land ownership and providing a general picture of agricultural lands and their viability for production. A preliminary Urban Growth Model was created for assessing the impacts of proposals made for IAL designations on the future growth of the region.¹⁶ Six scenarios projected for the year 2030 resulted from the UGM. These scenarios analyze the impacts of moderate to high growth on the region with and without IAL designations, and policies for urban containment.

The results of the pilot study are recommendations for:

- ♦ Improving/expanding upon the data sources used, as some of the data, such as for water accessibility and infrastructure was old or missing. Building a comprehensive database of resources would also allow counties to inventory sources used/needed for review of designations.
- ♦ Refining the model, such as further defining the criteria for IAL and reviewing their relative importance for identifying candidates. For example determining whether “currently in agriculture” is more or less important than “critical mass” and so on. In addition, the effectiveness of the grid system developed during the pilot should be reviewed/refined.
- ♦ Involving participation by members of the community, stakeholders, and experts, in order to further define the criteria, refine preliminary models, and interpret results toward policy recommendations for Kauaʻi.
- ♦ Amending Act 183 to include expanded definitions of criteria and/or recommend/clarify incentives.
- ♦ Creating mapping tools (models) to automate review of proposed IAL designations and their possible impacts on land use and future growth.

Recommendations made in the pilot study formed the basis for the Kauaʻi IAL Study.

¹⁶ See section IV Tools for Evaluating Potential Important Agricultural Lands on page 22 for a description of the Urban Growth Model which was further refined during this study project.

C. Kauaʻi IAL Study: Public Process

Pursuant to Act 183, SLH 2005, and according to the recommendations made in the Kauaʻi Pilot Study, a process for involving Kauaʻi’s community in defining and identifying IAL was created.

The community process for the Kauaʻi IAL Study began in August 2009 with a community kick-off meeting. During this meeting the pilot study was reviewed, as well as the general timeline and objectives of the study process. The kick-off also served as a way of soliciting applicants for the stakeholder/technical advisory committee (STAC), who would represent farmers, experts in the field of agriculture and land use, landowners, and concerned community members island-wide. The resulting twenty-one member STAC convened fourteen public meetings between January 2010 and December 2011 to:

- ♦ review the directives and incentives relating to Act 183 SLH 2005;
- ♦ define, score, and weigh the IAL criteria;
- ♦ review preliminary maps;
- ♦ assist with the development of tools to review a threshold of agricultural lands to consider for designations; and
- ♦ discuss larger issues relating to agricultural viability.

In addition to the kick off and STAC meetings two rounds of regional community meetings (three meetings during each round for a total of six meetings) were held throughout the county to share preliminary findings of the study process and solicit feedback regarding the methodology and tools developed through the study process.

Other components of the Kauaʻi IAL Study Process

To facilitate the community process for the study, refine methodologies developed during the pilot, and develop policy-related recommendations for county evaluation, the study team was tasked to provide legal and technical review of Act 183 and related state and county policies. The methodology used to develop tools (maps, models) for identifying lands for consideration involved the following inputs:

- ♦ Requirements of Act 183 (Section 20-D);
- ♦ Impact of incentives established by Senate Bill 2636;
- ♦ Digital layers of all lands within the State Agricultural District, County Agricultural Zone, and General Plan Agricultural Designation;
- ♦ Agricultural properties contributing to critical land mass for agricultural productivity;
- ♦ Existing functional agricultural-related infrastructure (i.e., irrigation systems, roadways, etc); and
- ♦ Soil and climate conditions that provide for viability of production.

The study team also reviewed similar initiatives in other regions of the United States and their effectiveness in preserving agricultural lands for production. Legal and technical research,

Figure 2: Community Participation Process



gathering of maps and essential data relating to historic agriculture, and refining of models and maps continued through the course of the study process.

Figure 3: I-Clicker



Figure 4: Example of a Pairwise Comparison Survey Question

8. Which is more important?

1	2
Water is sufficient for agriculture	IAL designation is consistent with county plans

A. 1 is much more important than 2

B. 1 is slightly more important than 2

C. Both are equally important

D. 2 is slightly more important than 1

E. 2 is much more important than 1

Ranking of criteria through the pairwise comparison technique was conducted over the course of several meetings in order to remove any biases by respondents. The results of all pairwise exercises were entered into an Analytic Hierarchy Process (AHP) model¹⁸ used for organizing and analyzing compound datasets, such as the results of complex surveys. The result is a prioritization of these inputs.

2. Defining IAL Criteria

STAC members and participating members of the public worked in both small and large group settings to develop specific definitions for each criterion, considering both the legislative mandates and the value of these to agricultural productivity. Research and data relating to criteria (such as digital map layers for soil, streams, roads, zoning, etc; hardcopy maps showing water infrastructure of sugar plantation fields; and reports of historic agricultural areas, etc) were presented to the STAC to assist with their discussions. Definitions and maps were refined as the process ensued.

D. Criteria Interpretation

In order to operationalize the eight criteria for mapping, each criterion was interpreted by the STAC and then ranked based on their relative importance to agricultural production.

1. Initial Ranking of Criteria

The process of interpreting and ranking criteria began with the project kick-off meeting (August of 2009). *I-clicker devices* were used to determine the rank of each of the eight criteria. An i-clicker is an electronic multiple choice device that provides instant feedback in the form of a chart or graph

of respondents’ answers. The initial ranking that resulted from the meeting formed a point of reference for ranking exercises at future meetings. The study team utilized a *pairwise*¹⁷ comparison model in which criteria were paired one-to-one in order to determine their order of importance to agricultural production.

¹⁷ In a pairwise comparison, each criterion is matched one-to-one against the others. Criterion receive a point each time it is chosen over another criterion and half a point each time it ties with another.
¹⁸ An Analytic Hierarchy Process, or AHP, is a technique used for organizing and analyzing complex decisions. In particular the AHP is used in group decision-making processes.

Table 1 – Process of Defining Subcriteria

Criterion		Definition/ Subcriterion as of Meeting:		
		#3 – February 2010	#4 – April 2010	#5 – September 2010
1	Lands Currently used for agricultural production.	a) Lands in cultivation including gullies, rivers/streams, and steep slopes. b) Fallow rotational lands c) Lands planned for agricultural use in the future.	a) Lands in cultivation. b) Fallow rotational lands c) Grazing lands.	a) Lands in cultivation. b) Fallow rotational lands. a) Grazing lands.
2	Lands with soil qualities and growing conditions that support agricultural production of food, fiber, or fuel and energy crops.	a) Historically farmed areas. b) Oxisols. c) ALISH Classifications. d) Soils identified as prime in the Soil Survey maps.	a) Historically farmed areas. b) Oxisols/Mollisols. c) Soils identified as prime in the Soil Survey maps.	a) Historically farmed areas. b) Soils identified as prime in the Soil Survey maps.
3	Lands identified under agricultural productivity rating systems (ALISH, etc).	ALISH classifications.	ALISH classifications.	a) ALISH classifications. b) LSB ratings A and B.
4	Land types associated with traditional Hawaiian agricultural uses.	a) Culturally important: taro, fishponds/ aquaculture, coffee, pigs, cattle, chickens, and other farm animals, rice/ sugarcane, sweet potatoes b) Unique: vineyards, citrus crops, upland energy plants.	a) Native Hawaiian: taro, sweet potatoes, fishponds, and species. b) Unique: vineyards, citrus crops, coffee, corn, upland energy crops. c) Traditional: pigs, cattle, chickens, and other common farm animals.	a) Native Hawaiian: taro and traditional Hawaiian crops. b) Unique: Algae, aquaculture, apiaries, coffee, corn, livestock (poultry, cattle, pigs, etc), flowers, coconuts, timber, fruit and vegetables.

5	Lands with sufficient quantities of water to support viable agricultural production.	<ul style="list-style-type: none"> a) Water resources (quality/ quantity): rainfall, ground water. b) Natural systems (watersheds), traditionally farmed areas. c) Existing infrastructure (dams, reservoirs, wells, irrigation systems). 	<ul style="list-style-type: none"> a) Ditches. b) Reservoirs. c) Perennial streams. d) Wells. e) Rainfall (750 mm and above). 	<ul style="list-style-type: none"> a) Status of ditches. b) Status of reservoirs. c) Perennial streams. d) Wells. e) Rainfall (750 mm and above).
6	Lands whose designation as IAL is consistent with applicable County general plans or development plans.	Lands currently classified, zoned, and designated as agricultural by State and County.	<ul style="list-style-type: none"> a) State Land Use designation. b) County zoning. c) General Plan designation. 	<ul style="list-style-type: none"> a) State Land Use designation. b) County zoning. c) General Plan designation.
7	Lands that contributes to maintaining a critical land mass important to agricultural operating productivity.	<ul style="list-style-type: none"> a) Ownership. b) Agricultural land is contiguous within an ahupua'a. c) Contiguous area of production. 	Large and contiguous agricultural areas (based on "grid" cells of at least 64 acres.	Four (4) or more contiguous 16-acre "grid" cells.
8	Lands with or near supportive infrastructure conducive to agricultural productivity.	<ul style="list-style-type: none"> a) Water systems. b) Roads. c) Processing facilities. d) Utilities. e) Wastewater facilities. 	Roads.	<ul style="list-style-type: none"> a) Roads. b) Harbor – Nāwiliwili (export port).

3. Ranking of IAL Criteria

Results of all exercises, discussions, and analysis are captured in the following table, which ranks “water sufficient for agriculture” as the most important criterion in determining an agricultural parcel’s candidacy for IAL designation.

Table 2 – Ranking of IAL Criteria

Criteria Rank 1: most important Rank 8: least important	Kick-off meeting Sept 2009	STAC meeting July 2010	Lihue regional meeting Nov 2010	Kilauea regional meeting Nov 2010	Waimea regional meeting Nov 2010
Water is sufficient for agriculture	2	1	1	1	1
Soil quality	1	2	5	2	2
Identified by ALISH or other rating systems	7	3	4	7	7
Currently in agriculture	4	4	2	3	6
Near supporting infrastructure	6	5	7	5	5
Agricultural use is native Hawaiian or unique	3	6	3	4	4
Contributes to critical landmass	5	7	8	6	3
IAL designation consistent with County Plans	8	8	6	8	8

4. Indexing IAL Sub-Criteria

Final weights are expressed in points from 1 to 10 (10 being *of highest importance*). Sub-criteria are the results of the exercises focused on defining the eight main criteria. These sub-criteria were also ranked and indexed. In this way, research, data, and priorities were captured in the mapping model to identify candidate IAL. Please refer to Appendix E *Criteria Worksheet and Maps* for a summary of sub-criteria definitions as well as criteria maps.

Table 3 – Ranking of IAL Criteria and Sub-Criteria

#Rank and weight	Criteria	Sub-criteria index
#1 10.0	Sufficient water	
	Surface water from reservoirs or ditches (x1 if functioning x0 if not)	1.0
	No ditch, but multiple sources	0.6 to 0.74
	No ditch but single source	0.34 to 0.4
	Otherwise	0.0
#2 6.3	Soil quality	
	Historically farmed or prime	1.0
	Otherwise	0.0
#3 5.9	Identified by ALISH or other rating system	
	ALISH prime, unique, or other	1.0
	LSB class A or B	1.0
	Otherwise	0.0
#4 5.4	Currently in agriculture	
	Cultivated and fallow land	1.0
	Grazing land	0.78
	Otherwise	0.0

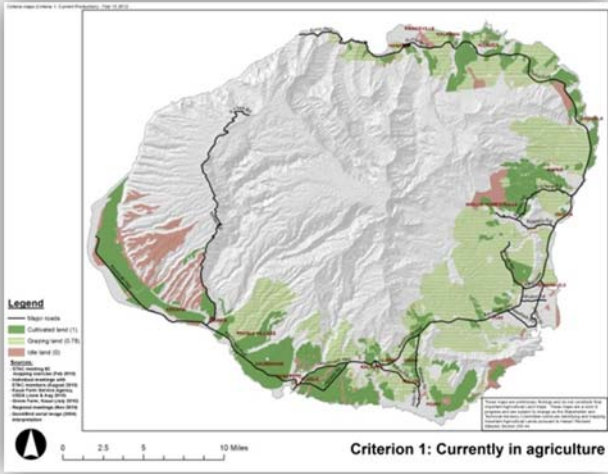
#5 3.9	Access to infrastructure and markets¹⁹ (overall index=road weight x harbor weight)	
	Parcel within ¼ mile of a road	1.0
	Parcel more than ¼ mile from a road	0.9
	Parcel within 5 miles of Nāwiliwili Harbor	1.0
	Parcel 5 to 10 miles from Nāwiliwili Harbor	0.75
	Parcel more than 10 miles from Nāwiliwili Harbor	0.50
#6 3.7	Agricultural use is native Hawaiian or unique	
	Traditional Hawaiian crops	1.0
	Historic taro lands	0.55
	Unique crops	0.53
	Otherwise	0.0
#7 3.3	Contributes to critical mass	
	4 or more contiguous 16-acre agricultural land “cells”	1.0
	3 or less contiguous 16-acre agricultural land “cells”	0.0
#8 1.8	IAL designation is consistent with county general plans	
	Lands designated “agricultural” or “open” under State Land Use District, County Zoning Ordinance, or General Plan.	1.0
	Lands designated for other uses under State and County plans.	0.0

5. Criteria Map Development

Each of the criteria maps shown below is a composite of data and input gathered through the course of the study project. The following layers serve as base layers for all the criteria maps:

- ♦ Tax Map Key Parcel Layer (County of Kauaʻi Real Property Office, 2009)
- ♦ State Land Use District Boundaries (State of Hawaiʻi Land Use Commission, 2006)
- ♦ County of Kauaʻi Zoning (County of Kauaʻi Planning Department, 2009)
- ♦ Satellite Imagery (QuickBird 2005)
- ♦ Current Agricultural Production (developed through this study process, February 2010)

**Refer to Appendix E for larger maps*

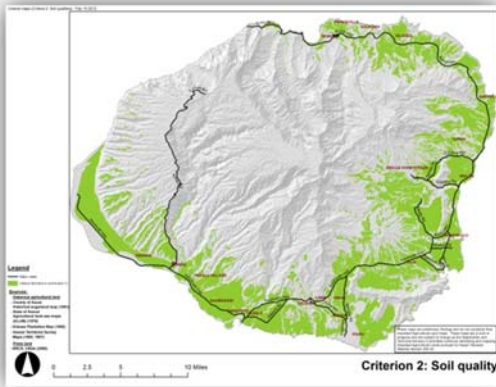


Criteria 1 – Land currently used for agricultural production

To map lands *currently in production*, data from more than twenty categories, including “crop production,” “hybrid corn,” “agricultural condominiums,” “nurseries,” “orchards,” “taro fields,” etc., were combined. To map *ranching and grazing lands*, data for “pasture,” “livestock” (separate from cattle), “grazing,” and “cattle,” were aggregated. To map *fallow and idle* lands, data regarding the location of

these lands from meetings and interviews (STAC and public meetings as well as meetings with the Kauaʻi Farm Service, US Department of Agriculture, and land owners) were combined, reviewed, and further refined. The final map includes twenty-seven categories of production-related data organized in three different categories: 1) cultivated or fallow; (2) grazing land; and (3) idle land.

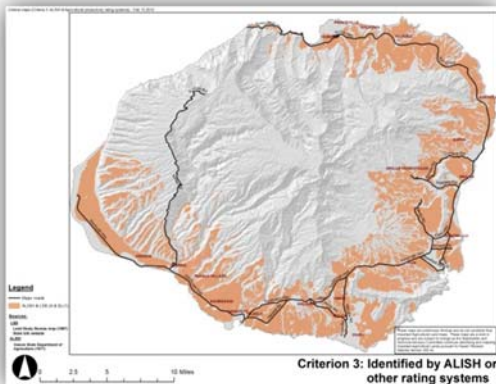
¹⁹ Refer to Appendix E *Criteria Worksheet and Maps* for a summary of discussions resulting in sub-criteria definitions.



Criteria 2 – Land with soil qualities and growing conditions that support agricultural production of food, fiber, or fuel and energy-producing crops

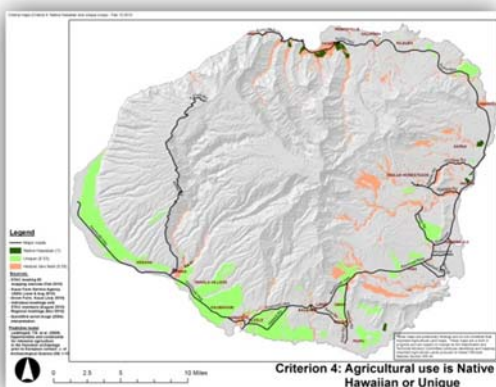
To map lands meeting this criteria, hardcopy maps of Kīlauea Plantation (1952), Hawai‘i Territorial Survey (1905 and 1907) were scanned and digitized and then added to the existing “Historic Agricultural Lands” layer. This layer was overlaid with the Prime Soil layer. A predictive model for identifying historic agricultural systems developed by Thegn Ladefoged, Marc

McCoy, Cedric Puleston, Peter Vitousek, Oliver Chadwick, Greg Asner, and Patrick Kirch (hereafter referred to as the *Ladefoged model*) was used to map the soil around streams. The Ladefoged model inputs include data on water sources, elevation, slope, soil, and gravitational flow. The Sugarland layer (showing areas previously in sugar production), ALUM, and layer developed from the digitized territorial survey maps were then combined to create the Historic Farmland Layer.



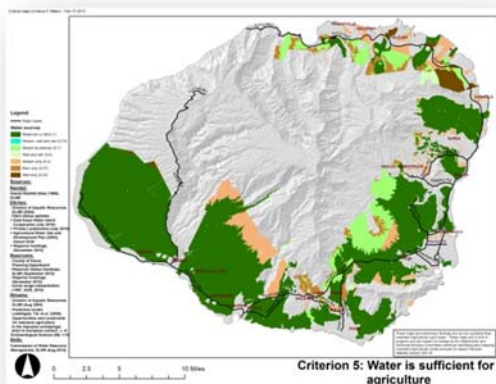
Criteria 3 – Land identified under agricultural productivity rating systems, such as the agricultural lands of importance to the State of Hawai‘i (ALISH) system (1977)

To create this map, lands rated A and B by the Land Study Bureau (LSB) were clipped and combined with the ALISH layer.



Criteria 4 – Land types associated with traditional native Hawaiian agricultural uses, such as taro cultivation or unique agricultural crops and uses, such as coffee, vineyards, aquaculture, and energy production

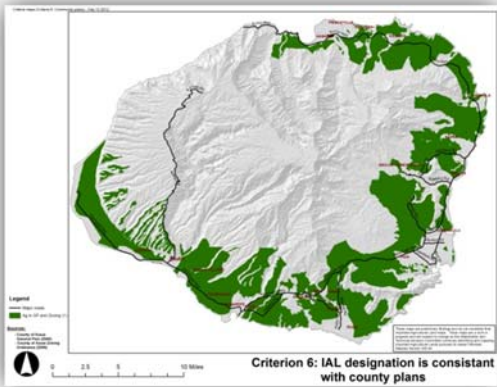
The STAC and participating members of the public worked together to identify crops considered native Hawaiian and unique. Data on these crops were extracted from the “currently in production” layer and combined with the results of Ladefoged model (used to predict the location of historic taro fields) to map this criterion.



Criteria 5 – Land with sufficient quantities of water to support viable agricultural production

In order to create this map the following data and results of mapping analysis were combined: (1) functional ditches and wells were identified using satellite/aerial maps, other GIS layers, hardcopy maps, and input from STAC members, agencies, experts, and participating members of the public; (2) areas with rainfall over 78 inches per year were

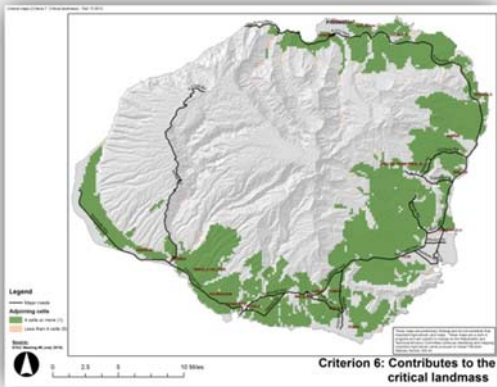
mapped; (3) streams were mapped based on GIS data and the Ladefoged model; and (4) the service area of ditches and streams for all parcels were identified based on gravitational flow.



Criterion 6 – Land whose designation as Important Agricultural Lands is consistent with general development and community plans of the county

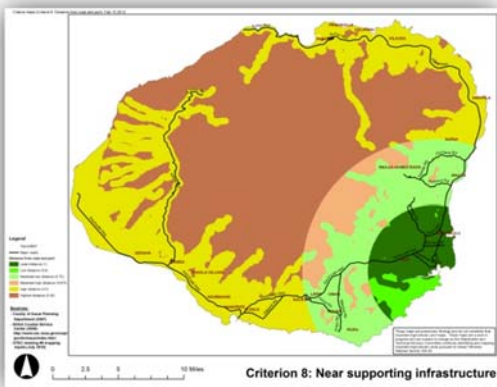
Land use designations for the various development plan regions on Kaua’i are captured in the 2000 General Plan map. This map layer was combined with the zoning layer. An area was identified as meeting this criterion if:

- ✓ it is designated agricultural in the 2000 General Plan and zoned agriculture;
- ✓ it is designated agricultural in the 2000 General Plan and zoned open;
- ✓ it is designated agricultural in the 2000 General Plan and not zoned by the County²⁰; or
- ✓ it is zoned agriculture and designated as open in the 2000 General Plan.



Criterion 7 – Land that contributes to maintaining a critical land mass important to agricultural operating productivity

The results of the models used to develop maps for criterion 1 (current production) and criterion 4 (traditional and unique crops) were used as data inputs for the development of the criterion 7 map. Feedback from STAC members and others on the grid model used in the Kōloa-Po’ipū pilot study helped to determine what “large and contiguous” land mass means for IAL on Kaua’i. A 16-acre cell grid was overlaid with data from criterion 1 and 4. Assessed calculation “to critical mass” was greatest if at least 4 grid cells²¹ were adjoining (in square, linear, “T” or “L” shape). “Small contribution to critical mass” was identified for areas with fewer than 4 adjoining grid cells. The resulting analysis identified all areas as 4+ adjoining cells (large), 3, 2, and solitary cells.



Criteria 8 – Land with or near supporting infrastructure conducive to agricultural productivity as transportation to markets, water, or power

County roads layer (COK 2007), NOAA Impervious Surface Analysis Tool or I-SAT (NOAA-CSC 2005)²², and location of Nāwiliwili Harbor were used to develop the map for this criterion. The I-SAT tool was employed because it captures all impervious surface areas, in

particular roadways through agricultural parcels that are not included in the roads layer.

Initially, water systems, roads, processing facilities, power/electricity, and wastewater treatment plants were included as input to the analysis. However, this list was refined

²⁰ Parcels designated agricultural that are not included in the County Zoning maps are within the State Land Use Agricultural Districts.

²² The NOAA I-SAT is a precursor to the NPECT which has been updated and is available for free at: <http://www.csc.noaa.gov/digitalcoast/tools/opennspect>

through meeting discussions. STAC members pointed out that “supporting infrastructure,” such as for wastewater and processing of agricultural products can be accessed from State or County roadways. Therefore, an agricultural parcel’s proximity to county or state roads would verify its ability to access “supporting infrastructure.” During meeting #6 (7/20/10) STAC members agreed that the proximity a parcel to Nāwiliwili Harbor, the only seaport now used for shipping goods, would improve its ability to more cost-effectively export products from Kaua’i.

D. Composite Maps

Once all criteria were defined and assigned weights, a mapping model was created to synthesize all maps and score all agricultural parcels on a scale from 1.76 to 40, where 1.76 means a polygon of agriculturally-zoned land that only met one criterion, to 40 which means an agricultural polygon met all eight IAL criteria at 100%.

For some criteria, associated subcriteria were not mutually-exclusive. For example, in relation to Criterion 5 (sufficient water), a parcel could be irrigated by multiple sources, such as both a ditch and a well. In this case, the primary source of irrigation was assigned a higher weight.

The next section of the study will provide more detail about the composite maps, which were presented at different “threshold” scales for prioritizing lands to consider for designation.

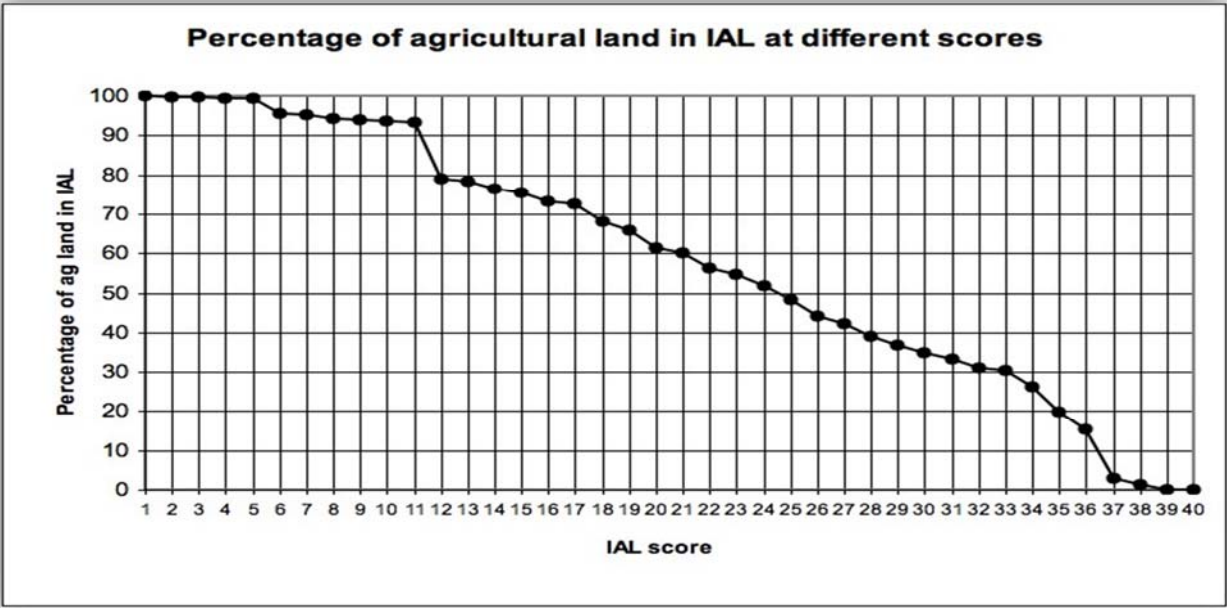
IV. Tools for Evaluating Important Agricultural Lands

Once definitions were assigned and criteria scored and weighted, a variety of tools were developed for considering “how much” and “where” County-led designations could be recommended, as well as for use when reviewing landowner/farmer-led designations. Tools developed were the result of discussions by the STAC and participating members of the public.

A. Threshold Scores and Maps

A *threshold graph* was created to show how all agricultural lands on Kauaʻi meet the eight IAL criteria. Scores range from 0 (does not meet any criteria) to 40 (meets all criteria at 100%). Note that all 136,908²³ acres of agricultural land scored at least 1.76. None of the agricultural lands scored 40.

Figure 5: Chart showing percentage of agricultural land at each score level (0-40)



The range of scores above was then broken into various point-intervals, in order to identify a threshold/goal for lands to be considered.

Table 4 – Summary of threshold scores at selected intervals²⁴

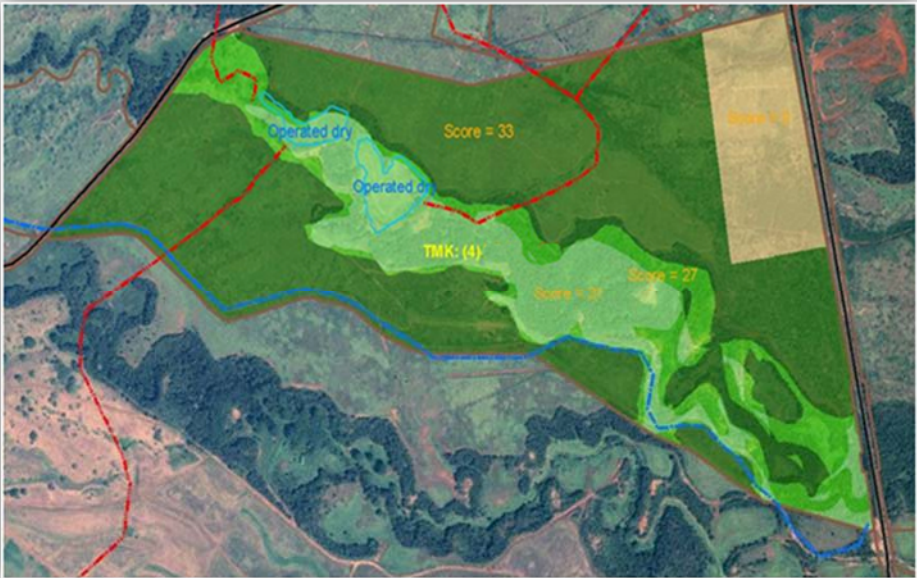
Threshold Score	Percentage of total agricultural lands that meet threshold score	Approximate acreage of agricultural lands at percentage
10 – In general, meets Criterion #5, “sufficient water”	93.56%	128,093.18 acres
20 – Midpoint score	61.26%	83,865.28 acres
25 – STAC request for threshold analysis at this score. Midpoint between 20 and 30, where committee members were polarized.	48.25%	66,051.15 acres
28 – Parcels meet all criteria at some level	39.11%	53,547 acres
30+ - Parcels of “highest importance”	34.87%	47,740.15 acres

²³ 136,908 acres was the calculated amount of lands in the State Land Use Agricultural District (on Kauaʻi) during the Kauaʻi IAL Study process in 2009-2010. In March 2014, the State Land Use Commission reported 144,300 acres of lands in the Agricultural District on Kauaʻi. Note that the difference in acreage is not due to an increase of lands within the Agricultural District but most likely a difference in calculation of acreage between models used by the State and those used in this study process. For the purpose of this study, the difference in the amount of calculated acres shall not change the recommendations provided.

²⁴ The acreages described in this table include all lands that meet threshold, regardless of ownership or project status.

In addition to the graph and the threshold intervals score, an animated “slider” map tool was developed to show all agricultural lands on Kauaʻi at thresholds from 1.76 to 40. Consultants also prepared sample maps showing the breakdown of threshold scores for parcels. An example is shown in the image on the right.

Map 1 - Example of various threshold scores for one (1) parcel of land, based on the eight IAL criteria



B. Parcel Scoring Calculator

Figure 6: Example of score-return for a parcel of an average threshold score of 28

A parcel-scoring tool capable of returning scores (from 0 to 40) for any parcel on Kauaʻi was developed. This tool returns an *average score* for an individual parcels according to how it meets each of the eight IAL criteria. The parcel-scoring tool also provides a method for testing the “truthfulness” of the scoring methodology. A variety of parcels were tested using the tool and then mapped to provide a visual for assessing scores (since topographic features such as streams, reservoirs, slopes, and evidence of agricultural use can be observed this way). Landowners or their representatives were asked to review parcel scores and maps to confirm how well the tool “ranked” attributes of their parcels according to the IAL criteria.

Scoring Calculator v.2.3		
These calculations are preliminary findings and do not constitute final Important Agricultural Land. These calculations are a work in progress and are subject to change as the Stakeholder and Technical Advisory Committee continues identifying and mapping Important Agricultural Lands pursuant to Hawaii's Revised Statutes Section 205-66		
TMK (9 digits 4XXXXXXX)	4XXXXXXX	
Average IAL Score for selected TMK	28.08	
Total Acres	764.35	Percentage of Total 100.00
IAL score - 0	27.43	3.59
Score between 0 - 10	9.26	1.21
Score between 10 - 20	5.44	0.71
Score between 20 - 30	338.22	44.25
Score between 30 - 40	384.00	50.24
Agricultural Land	736.93	96.41
Conservation	27.43	3.59
Rural	-	-
Urban	-	-
Water	-	-
Criteria 1: Currently in agriculture		
Cultivated and fallow land	-	-
Grazing land	751.60	98.33
Other/irrig.	12.75	1.67
Criteria 2: Soil quality		
Historically farmed or prime	394.95	51.67
Other/irrig.	369.40	48.33
Criteria 3: Identified by ALISH or LSB		
ALISH (prime, unique or other) or LSB (class A or B)	619.66	81.07
Other/irrig.	144.69	18.93
Criteria 4: Native Hawaiian or unique crops		
Native Hawaiian crops	-	-
Historic taro lands	-	-
Unique crops	-	-
Other/irrig.	764.35	100.00
Criteria 5: Sufficient water		
Surface water from functioning reservoir or ditch	720.97	94.32
No ditch but multiple sources	-	-
No ditch but single source	43.38	5.68
Other/irrig.	-	-
Criteria 6: Consistent with county plans		
Consistent with County plans	763.12	99.84
Other/irrig.	1.23	0.16
Criteria 7: Contributor to critical land mass		
4 or more contiguous 16-acre cells of land currently in agriculture	739.18	96.71
Less than 4 contiguous 16-acre cells or other/irrig.	25.18	3.29
Criteria 8: Access to infrastructure and markets		
Parcel within 1/4 mile of a road and within 5 mi. from a harbor	-	-
Parcel more than 1/4 mile from a road and within 5 mi. from a harbor	-	-
Parcel within 1/4 mile of a road and 5 to 10 mi. from a harbor	-	-
Parcel more than 1/4 mile from a road and 5 to 10 mi. from a harbor	-	-
Parcel within 1/4 mile of a road and more than 10 mi. from harbor	642.44	84.05
Parcel more than 1/4 mile from a road and more than 10 mi. from harbor	121.91	15.95
Other/irrig.	-	-
* Acres as shown is calculated area on the map and not based on the taxed area		

The tool helps assess how well a parcel meets the eight criteria. *In general*, it also provides a useful overview of how well a parcel meets criterion #5, “sufficient water.” It is important to take into account the sub-scores for each criterion, especially criterion #5, when reviewing landowner/farmer-led petitions for designation or when prioritizing candidate lands for county-led designations. For example, a parcel that is being actively farmed but fed by a single-source [perennial] stream may be an excellent candidate for an owner-led designation, even if the parcel score is below 10. Additional evidence and where possible, ground-truthing, should be included in proposals for County support of landowner/farmer-led petitions of agricultural lands that may score less than a threshold of 10.

The threshold graph and interval chart, slider tool, and parcel scoring calculator were presented at the STAC meetings and community regional meetings between October 2010 and January 2011. Feedback that was collected and analyzed assisted in the study team’s ability to improve the data inputs and tools.

Results of Threshold-Related Tools Discussion

Although the threshold-related tools helped STAC members to consider the location and extent of prime agricultural lands, it did not provide larger, elemental-based criteria for making a decision about *how much land to recommend* for immediate and long term designation. Prevalent among criteria discussions was the subject of increasing Kaua’i’s ability to first, feed itself and secondly, to export locally-grown/made products to O’ahu, other counties, and other priority destinations. It was suggested that the team consider current and future energy needs for the island as well. As a result of these conversations, the study team developed scenarios/tools to assist with decisions regarding Food and Energy Self-Sufficiency.

C. Food and Energy Self-Sufficiency Scenarios

Increased food security and energy self-sufficiency for Kaua’i were suggested by STAC and members of the public as a way of deciding on a goal for designations (whether County-led or landowner/farmer-led). In response, the study team conducted research and generated models to estimate acreage of agricultural lands to meet these goals. Data and assumptions of initial models were modified through discussions according to feedback from STAC members and experts in various fields of food and energy crop production.

The resulting scenarios for food security and energy self-sufficiency provide tools for considering the selected threshold intervals described in the previous sections (Sections IV.A and B). The result of research and analysis of food and energy self-sufficiency data and models was the development of three hypothetical scenarios (for local consumption, as requested by STAC members):

- 1. Prioritize need for food self-sufficiency over energy production
- 2. Equally weigh food self-sufficiency with energy production
- 3. Prioritize energy production over food self-sufficiency

There was discussion by the STAC and members of the community about setting an IAL designation goal to reflect a goal of *total* food and energy self-sufficiency. However in the end, STAC members agreed that even if a large percentage of agricultural land were to be designated toward this goal, a significant amount of residents would need to be directly engaged in farming and agriculture in order to actively produce enough for food *and* energy to support the current population. There was also some disagreement regarding the use of IAL for energy production, although Act 183 (SLH 2005) includes energy crops as part of criteria #4.

The idea of a goal of total self-sufficiency was not abandoned by the committee. They suggested deferring the discussion concerning total self-sufficiency and re-evaluating allowed agricultural uses on IAL to the County’s upcoming General Plan Update.

In the end, the STAC members requested data for acreage to support food and energy needs for the current population of approximately 67,000 residents, as reported in estimations from the State Department of Business and Economic Development (DBEDT) during the time of the exercise. The Planning Department amended this request for analysis of acreage to support food security/reliance for a population of 70,000 people.

1. Food Security/ Increased Food Self-Sufficiency Scenarios

The study team presented several types of diets, such as a diet based on research by the American Cancer Association and the Waianae Diet. Diet and caloric intake information were then revised based on feedback from STAC members, participants from the community and local experts on nutrition. The resulting [sample] diet includes a large percentage of starch, specifically rice, as well as some meat. Based on current agricultural practices, Kaua’i would require approximately 119,342 acres of land in food production, *including beef production*, to support a diet like the one described in the table below for a population of approximately 70,000 people, based on an average caloric intake of 2,500 a day.

Table 5 – Food Crop Type and Required Land for Food Self-Sufficiency²⁵

Crops	Per person annual food requirement (lbs/person/year)	Average yield (lbs/acre/year)	Amount of food for 70,000 people (lbs/year)	Required acres/year
FRUITS (citrus, banana, papaya, pineapple)	365	10,000	25,550,000	2,555
VEGGIES	365	60,000	25,550,000	425.83
STARCH				
Potato/taro	100	25,000	7,000,000	280
Rice/grain	200	2,500	14,000,000	5,600
MEAT	365			
Beef	64.1	45.7	4,487,000	98,183.81
Fish	91.25	25,000	6,387,500	255.50
Chicken	83.9	1,129	5,873,000	5,201.95
Pig	48.9	852	3,423,000	4,017.61
DAIRY (Milk)	182.5	6000	12,775,000	2,129.17
EGGS (number of eggs)	170.4	17,221	11,928,000	692.64
Total land, including beef production				119,342
Total land, w/o beef production				21,158

As reflected in the table above, beef production requires more than 80% of 119,342 acres estimated to meet the demand for food for approximately 70,000 people. Starch production requires the second highest amount of land. Vegetables require the lowest amount of land (only 426 acres). Based on this estimate, a person needs 1.70 acres per year on average to be food self-sufficient in Kauai. If (in general) beef is imported, such as from another county, the amount of land needed per person for self-sufficiency is only 0.302 acres. This analysis is based on the assumption of importing beef and producing all other foods locally.

According to the analysis, if beef is imported, then 21,158 acres will be required to be in active production for foods described in the table. Based on research and guidance from experts in the field, beef production to support the current diet of residents would require approximately 91,553.6 acres of land.²⁶ However, estimates in this scenario can be changed as new data or priorities are identified. Analysis on beef production are not meant to discourage beef production on the island, rather, assists the County in weighing priorities for its IAL designations and developing strategies for *at least increasing* its ability to become more self-sufficient.

It is also important to note that lands for support of beef production does not require the best soils or topography (of “highest importance”). Thus, the *county should still consider supporting landowner/farmer-led petitions for designation of lands for beef production, especially if*

²⁵ Refer to Appendix H Food and Energy Production Scenarios for Kaua’i for data sources relating to table.

²⁶ There were diverging opinions among STAC members regarding the number of acreage and inputs needed for beef production. In the end 91,553.6 acres was settled upon pending updates to data and improvements to model used in analysis. Thus, **acreage can and should be updated if better data and models are available.**

sufficient water and necessary acreage are met to support the amount of cattle to be managed. At this time the goal for *County-led petitions* should be for those lands whose attributes (soil, water, etc) meet the criteria for the “highest importance” for the farming of food plants. In other words, the County- should prioritize its designations on agricultural lands for the farming of essential food crops, which require the highest quality of land, pursuant to the criteria of Act 183. However, this should not preclude the County’s support of landowner/farmer designations of agricultural lands that are being used for beef production.

2. Energy Production

Two types of alternative energy production were analyzed: (1) electricity gained from solar photovoltaic (PV) panels; and (2) biofuels from energy crops. Criterion #4 of Act 183 considers, “land types associated with traditional native Hawaiian agricultural uses, such as taro cultivation, or unique agricultural crops and uses, such as coffee, vineyards, aquaculture, and energy production.” During the criteria definition and weighting discussions, the STAC members decided that although lands for energy production should be considered in the IAL designation process, it is not a primary component, and that research beyond the scope of this project would be needed to assess the needs, appropriate locations, and intensity of energy production, especially on agricultural lands. For the purpose of this study, the study team presented information on solar energy and biofuels to provide another context in which to determine a threshold for IAL designations.

It should also be noted here that in regard to solar farming, soil conditions, water, and other environmental characteristics associated with growing successful food crops are not required. Although the County of Kaua'i has recently adopted provisions allowing solar farming on agriculturally-zoned lands (LSB B lands and below), solar farming could also be successfully achieved on roof tops, in seldom used parking lots, and other non-agriculturally-zoned areas with a slope of 5% or less. Location and exposure to the sun, and retention of energy are important factors, not land type. In addition, new solar energy-related technology, such as solar windows/shingles, and other new advances may quickly outdate current solar farming requirements for land/space.

a. Solar PV Energy Production

According to analysis by the Hawai'i Statewide GIS Program (Office of Planning, DBEDT), one square meter of solar PV is able to generate 3.49 to 5.82 kilowatt hours (kWh) of electricity per day. Average generation rate is 4.65 kWh per square meters per day. In 2008²⁷, Kaua'i generated 438 million kWh of electricity from petroleum. Thus the average generation of electricity was about 1.2 million kWh per day.

Table 6 – Peak electricity generation on Kauaʻi

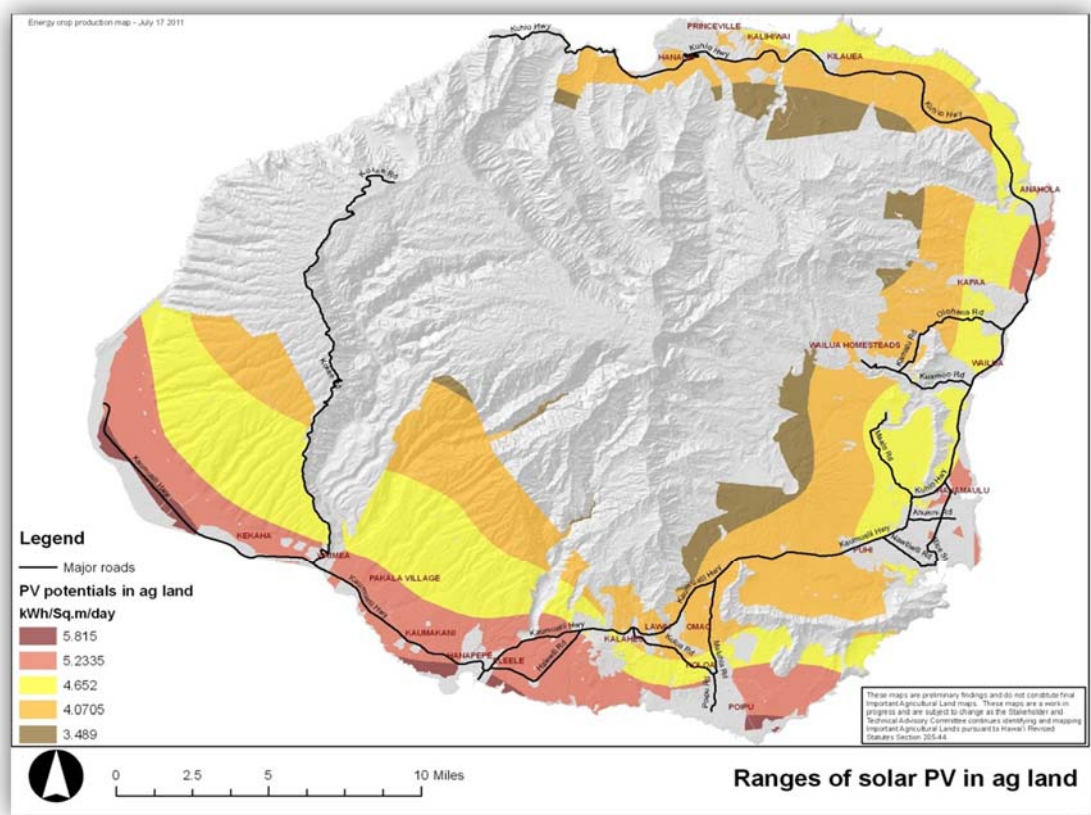
Description	Amounts	Units
Daily average electricity generation rate from photovoltaic	4.65	kWh/sq.m/day
Electricity production from petroleum in 2008 ²⁸	438,000,000	kWh/year
Electricity generation from other sources 2008 ²⁹ (PV, hydroelectric and biomass)	51,200,000	kWh/year
Daily electricity production from petroleum in 2008	1,200,000	kWh/day
Area of photovoltaic to meet daily kWh demand	100	Acres

²⁷ Hawai'i State Data Book, 2008.

²⁸ Hawaii State Data Book 2009.

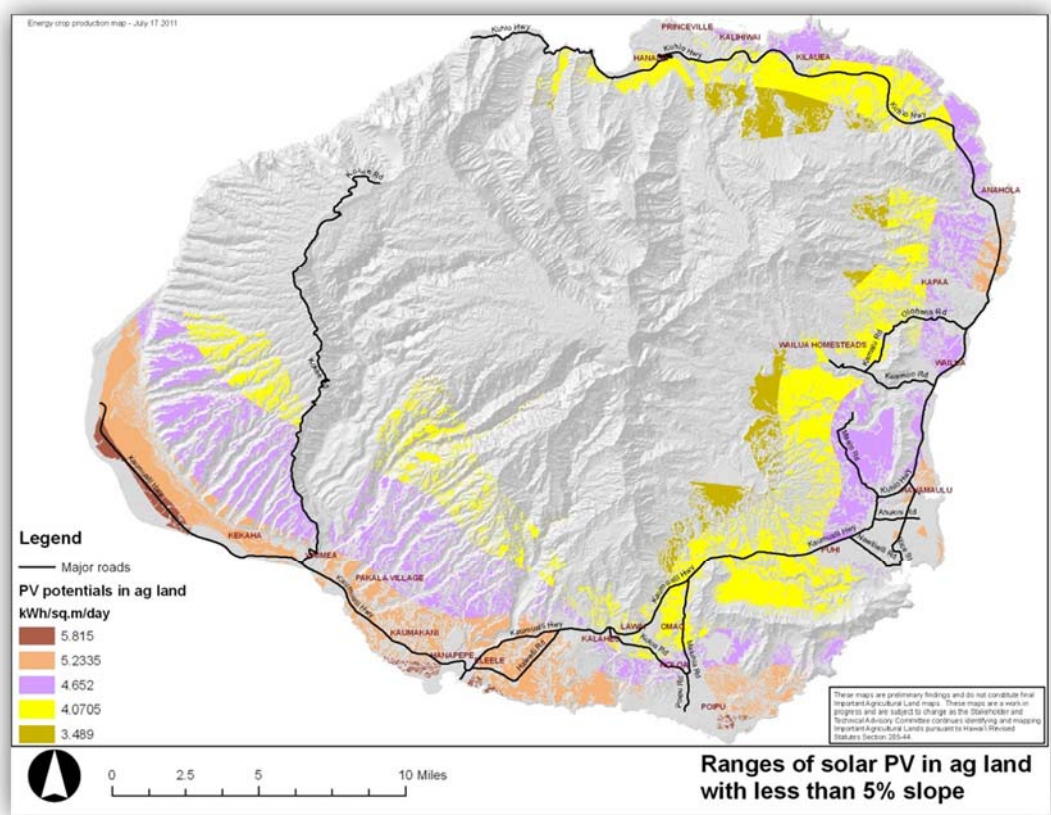
²⁹ *Ibid* Note 4.

Map 2 – Ranges of solar photovoltaic potential on agricultural lands



Using these figures, Kaua’i would need approximately 64 acres (257,954 square meters) of land for solar farming to generate an equal amount of output to match electricity generation recorded in peak year of 2008. The study team recommends allocating at least 100 acres of land, in priority locations around the island, if increasing solar production on agricultural lands on Kaua’i. This is because the concentration of solar radiation per day is location and seasonably is variable. Lands identified for solar farming, where PV panels will be placed on the ground, should have a slope of less than 5%.³⁰

Map 3 – Ranges of solar photovoltaic potential on agricultural lands with less than 5% slope



³⁰ <http://www.nrel.gov/docs/fy10osti/47956.pdf>

b. Biofuel

In 2009, the highway fuel consumption on Kaua'i was estimated to be 51.58 million gallons/year.³¹ Average fuel consumption rate per vehicle was 685 gallons per year. Due to the lower rate of efficiency of biofuels, 30% more biofuel was factored into calculations of need based on the peak consumption in 2009. Based on this, Kaua'i would need an annual production of approximately 67.04 million gallons of biofuel or about 890.5 gallons of biofuel per vehicle.

c. Energy Crops

The energy crops analyzed for this study process were selected based on their suitability to Kaua'i climate.



Sugar Cane



Banagrass



Oil Palm



Eucalyptus



Jatropha



Leucaena

Sugar cane and eucalyptus have both been grown on plantations around Hawai'i since the late 19th century.

Oil palm and jatropha are relatively new crops in Hawai'i, currently being studied as potential biofuel crops.

Of all the crops reviewed, banagrass, a hybrid species of the African Napier grass, commonly referred to in Hawai'i as "buffalo grass" or "cow cane," has been found to be the most productive for ethanol production. It grows rapidly, taking over areas where sugar cane was formally produced. Banagrass is invasive and management is needed of this crop. However, proponents of banagrass as a source for ethanol maintain that it is already proliferating in areas abandoned by plantations, and that its use and management/containment would not only increase energy self-sufficiency but help to mitigate seasonal brush fires in the drier areas of the island. In addition, it has been used to feed cattle and other livestock, although it cannot be used as an exclusive feed due to risk of nitrate poisoning.^{32, 33}

Leucaena, a species of Mimosa referred locally as "haole koa," was brought to the islands in the early 1900's. It has been found to be significantly less productive as a biofuel crop as banagrass, but more productive than sugar cane. As with banagrass, Leucaena is a prolific weed, to which management/containment is needed.

The data on crops and estimations on land necessary for energy self-sufficiency from biofuel crops were derived from data from the Hawai'i Natural Energy Institute and Hawai'i Agricultural Research Center and from interviews with staff of the College of Tropical Agricultural and

³¹ Hawai'i State Data Book, 2009.

³² www.tropicalforages.info

³³ "Evaluation of Forages for Smallholder Milk Production in Zimbabwe, Final Technical Report," Smith, T. et/al, Ministry of Lands Agriculture, Zimbabwe, 1996.

Human Resources. The following chart was presented to the STAC members to determine its usefulness as a tool for assessing a threshold for IAL designations.

Table 7 – Biofuel productivity of selected energy crops

Crops	Rainfall	Status in Hawaii	Harvesting period	Ethanol yield (gal/ac/yr) ³⁴
Sugarcane	>70 inches/year	Commercially grown	14-18 months	464.1
Banagrass	>70 inches/year	Research and Experiment phase	8 months	1440.5
Eucalyptus	>45 inches/year	Commercially grown	7-8 years of plantation	507
Leucaena	Drought tolerant	Research and Experiment phase	3-4 months	572
Jatropha	Drought tolerant	Research and Experiment phase	3-4 months	102.6
Oil Palm	>70 inches/year	Research and Experiment phase	3-4 years	203.4

In order to analyze suitable areas for bioenergy production (along with food self-sufficiency) on Kaua’i, irrigation sources/accessibility were considered along with soil, topography, and other conditions needed for crops to grow.

3. Self-Sufficiency Scenarios

Objectives of the three scenarios are:

- ♦ to assess the level of food self-sufficiency under different IAL threshold levels.
- ♦ to analyze productivity of biofuel and electricity under different IAL thresholds levels

Each scenario analyzes food and energy production under four IAL thresholds (10, 20, 25, and 30).

In the first scenario, the priority is food production. First, land is set aside to meet estimated food requirements for Kauai. The additional lands, if any, are assigned to bioenergy and solar photovoltaic installation. If demand for food increases, the land from bioenergy and solar photovoltaic production is focused toward food production in order to meet new demand.

The second scenario places equal priority on food and energy production. Available land in each threshold is divided equally between food and energy production.

The third scenario gives top priority to solar electricity/biofuel production. Land is set aside for biofuel and solar production first, the balance of land focused on food production. If demand for solar PV and biofuel increases, the land from food production is transferred to energy production to meet the new demand.

An assumption made in all three scenarios is that land with the high IAL scores are prioritized for food production. This is because the quality and success of food crops depend upon the quality of the land, soil, water and other characteristics generally measured by higher IAL threshold scores.

Regarding biofuel production, each scenario substitutes fuel consumption from the transportation sector with biofuel if the scenario results in land available for energy crops. It does not consider non-highway fuel use. The replacement level is calculated based on per vehicle average fuel consumption. In the case of solar energy, scenarios try to replace the petroleum-generated electricity with photovoltaic electricity. These scenarios were designed to help STAC members evaluate the consequences of different IAL thresholds on food production and energy.

³⁴ Nghia Tran, Prabodh Illukpitiya, John F. Yanagida, Richard Ogoshi (2011). Optimizing biofuel production: An economic analysis for selected biofuel feedstock production in Hawaii, Biomass and Bioenergy xxx (2011) 1-9, ScienceDirect.

Scenario 1

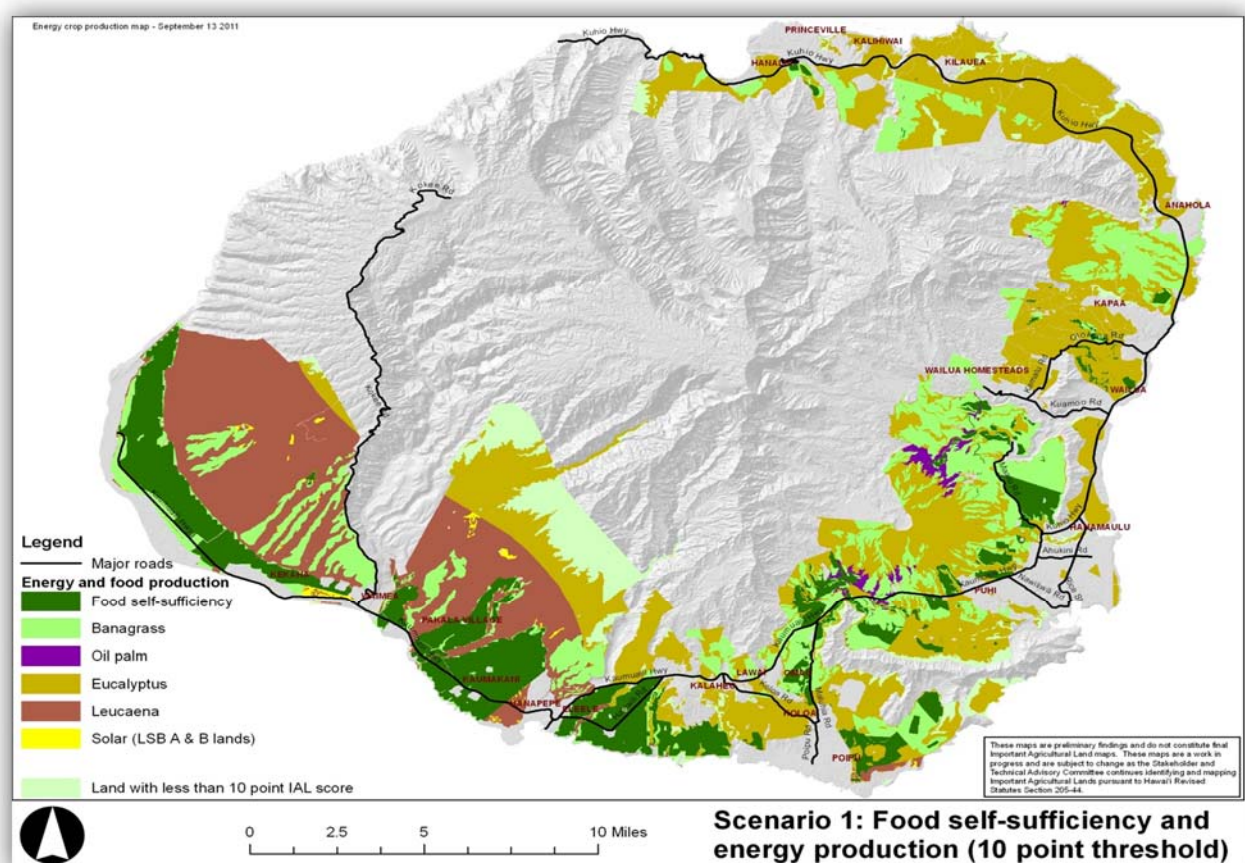
According to data and analysis developed for this study, Kaua'i would need 21,158 acres of land to feed 70,000 people. This is based on a 2,500 calorie daily intake assumption and does not include beef production.

Referring to table 8, out of 128,093 acres in the 10 point threshold, 21,158 acres are set aside for food production leaving 106,935 acres left for energy production. Of this, 100 acres of land (LSB B & C lands) with less than 5% slope could be set aside for solar photovoltaic energy production to replace electricity gained from petroleum. In the 20 point threshold, the total available agricultural land is 83,865 acres. 62,707 acres of land would then be available for energy production after setting aside 21,158 acres for food production. In the 25 and 30 point thresholds, 44,893 and 26,582 acres of land are available for energy after setting aside land for food production.

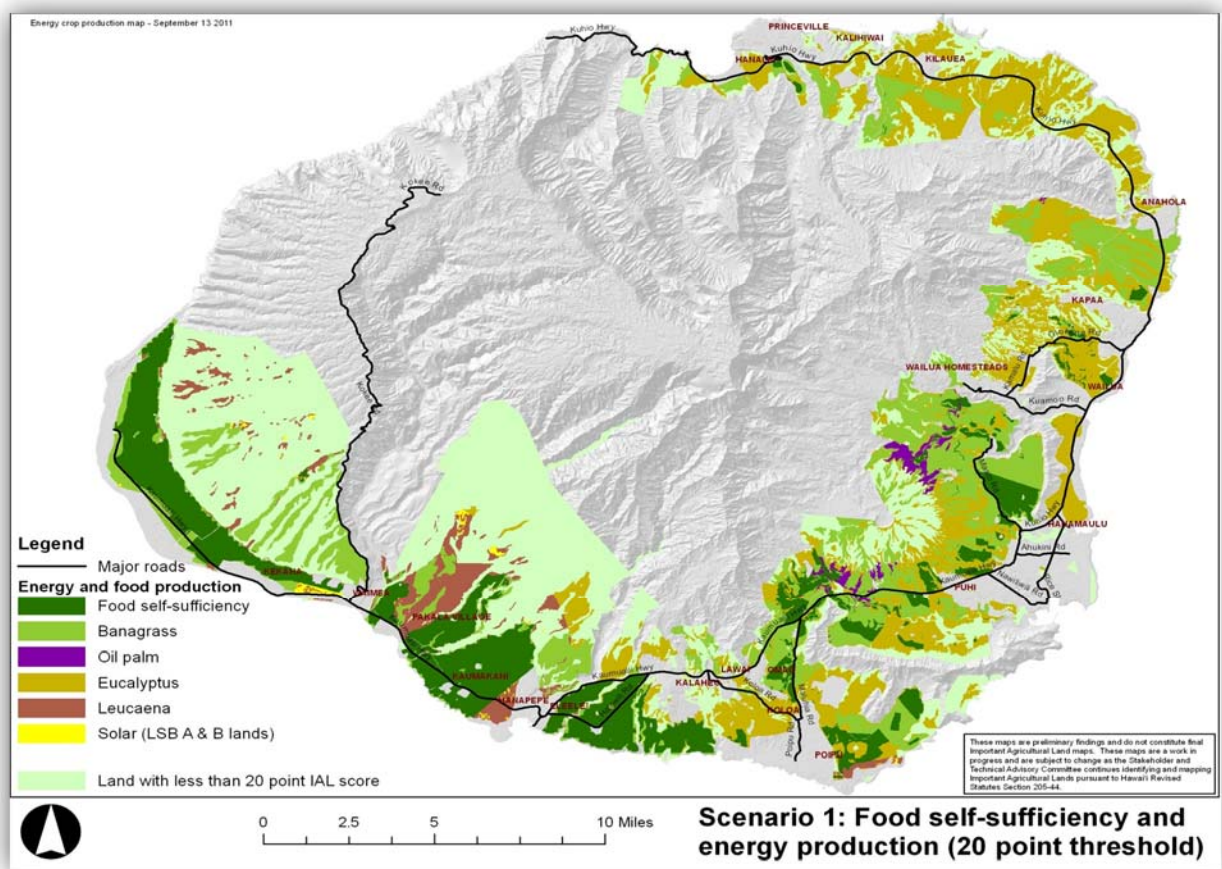
Table 8 – Agricultural land for food and energy production (Scenario 1)

Description	10 point threshold	20 point threshold	25 point threshold	30 point threshold
Total agricultural land (Acres)	128,093	83,865	66,051	47,740
Land for food production (Acres)	21,158	21,158	21,158	21,158
- Target population	70,000	70,000	70,000	70,000
Land for solar energy generation (Acres)	100	100	100	100
- Solar electricity production (in LSB B or C land, MWh/day)	1,883	1,883	1,883	1,883
Land for ethanol production (Acres)	106,835	62,607	44,793	26,482
- Ethanol production (million gallons/year)	80.61	56.02	45.03	29.64

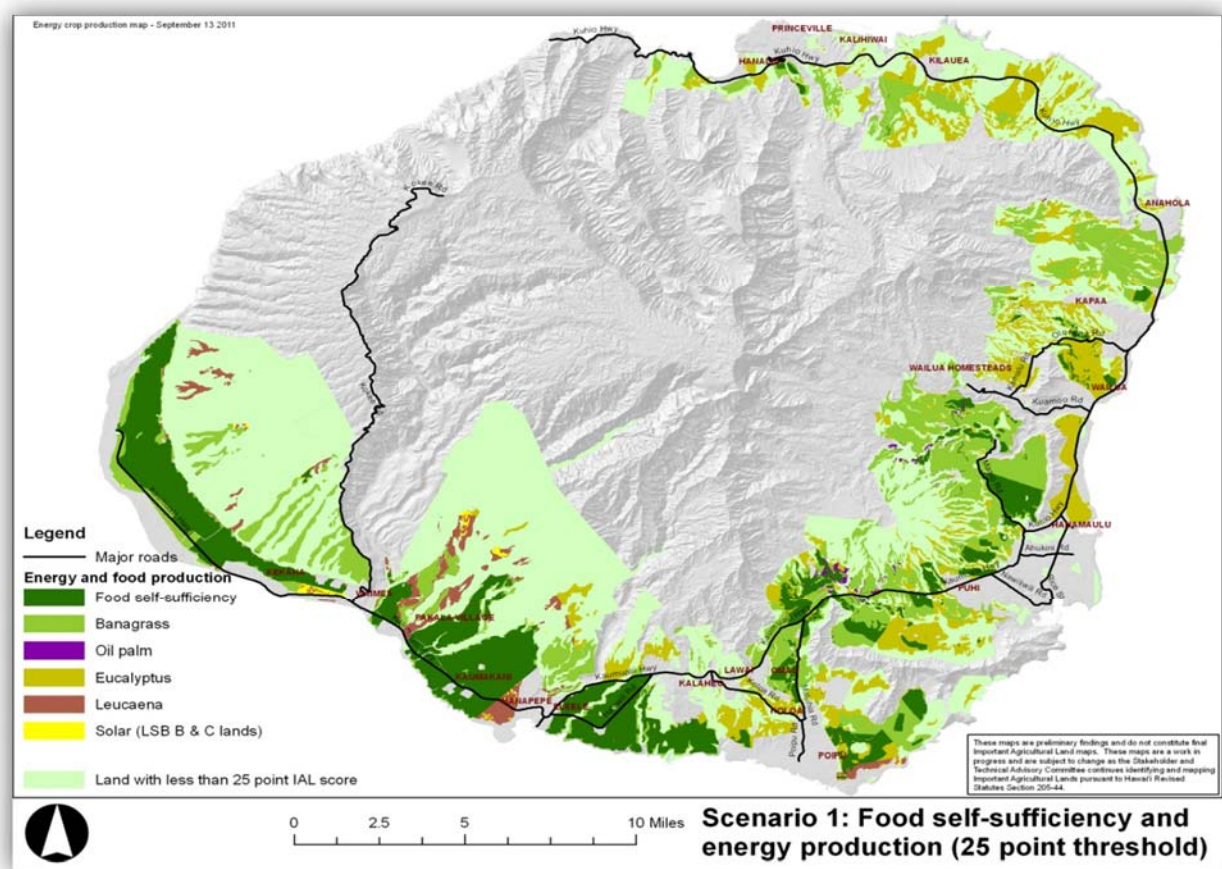
Map 4 – Scenario 1: food self-sufficiency and energy production at 10-point threshold



Map 5 – Scenario 1: food self-sufficiency and energy production at 20-point threshold



Map 6 – Scenario 1: food self-sufficiency and energy production at 25-point threshold



Map 7 – Scenario 1: food self-sufficiency and energy production at 30-point threshold

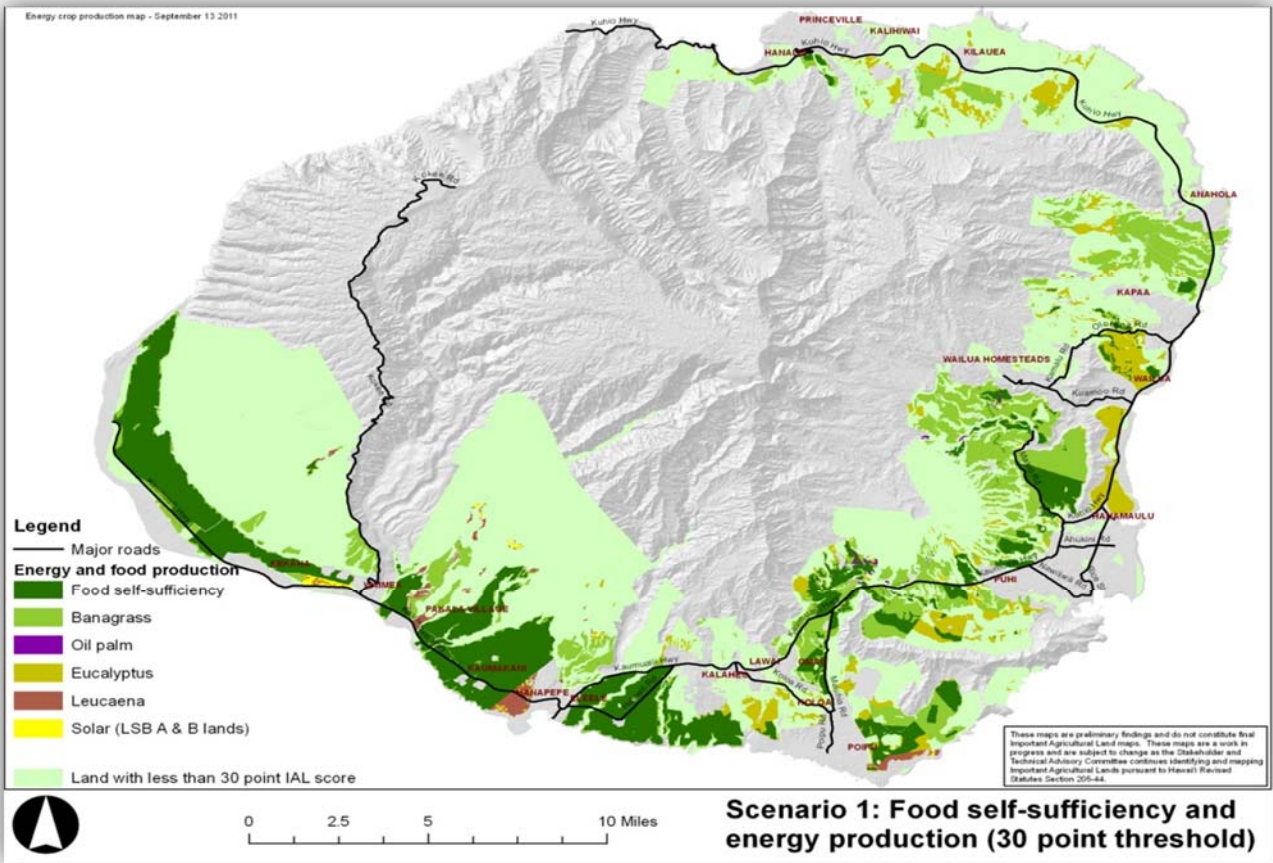


Table 9 – Land available for energy crops under selected thresholds (Scenario 1)

Energy crops	10 point threshold	20 point threshold	25 point threshold	30 point threshold
Banagrass	26,805.59	25,994.4	23,794.22	17,324.92
Eucalyptus	52,200.08	30,536.82	17,587.78	7,733.99
Leucaena	26,798.5	5,048.51	3,113.9	1,283.35
Oil palm	1,030.33	1,026.88	297.55	140.20

Under the assumptions of thresholds 10, 20, 25 and 30 there is adequate agricultural land to meet food self-sufficiency (again, not including beef production). This is calculated based on a 0.302-acres-per-person land requirement. If beef is included in food self-sufficiency scenarios, land is available only at the 10 point-threshold to (based on a population of 70,000 people).

100 acres of photovoltaic energy production is available at the four threshold levels, with a potential of 1.88 million kWh electricity per day with a generation rate of 4.65 kWh per square meter per day. This would theoretically be enough to replace electricity production from petroleum in Kaua’i (although electricity from photovoltaic has some issues of storage and night time use).

Regarding thresholds 10, 20, 25, and 30; 80.61, 56.02, 45.03 and 29.64 million gallons of ethanol could be produced respectively. Ethanol production under the 10 point threshold would theoretically be sufficient to power 90,530 vehicles based on a per vehicle 890.5 gallons ethanol consumption rate³⁵. Ethanol production under the 20, 25 and 30 thresholds would be sufficient for 62,913; 50,572; and 33,285 vehicles respectively.

Scenario 2 Prioritizing both food and energy production

In this scenario, the agricultural land of each threshold (10, 20, 25 and 30) is equally divided between food and energy production. Land with higher IAL scores were assigned to food production and land with lower IAL scores were assigned to energy production. For example, lands with IAL score from 10 to 25.61 were assigned to energy production under the 10 point

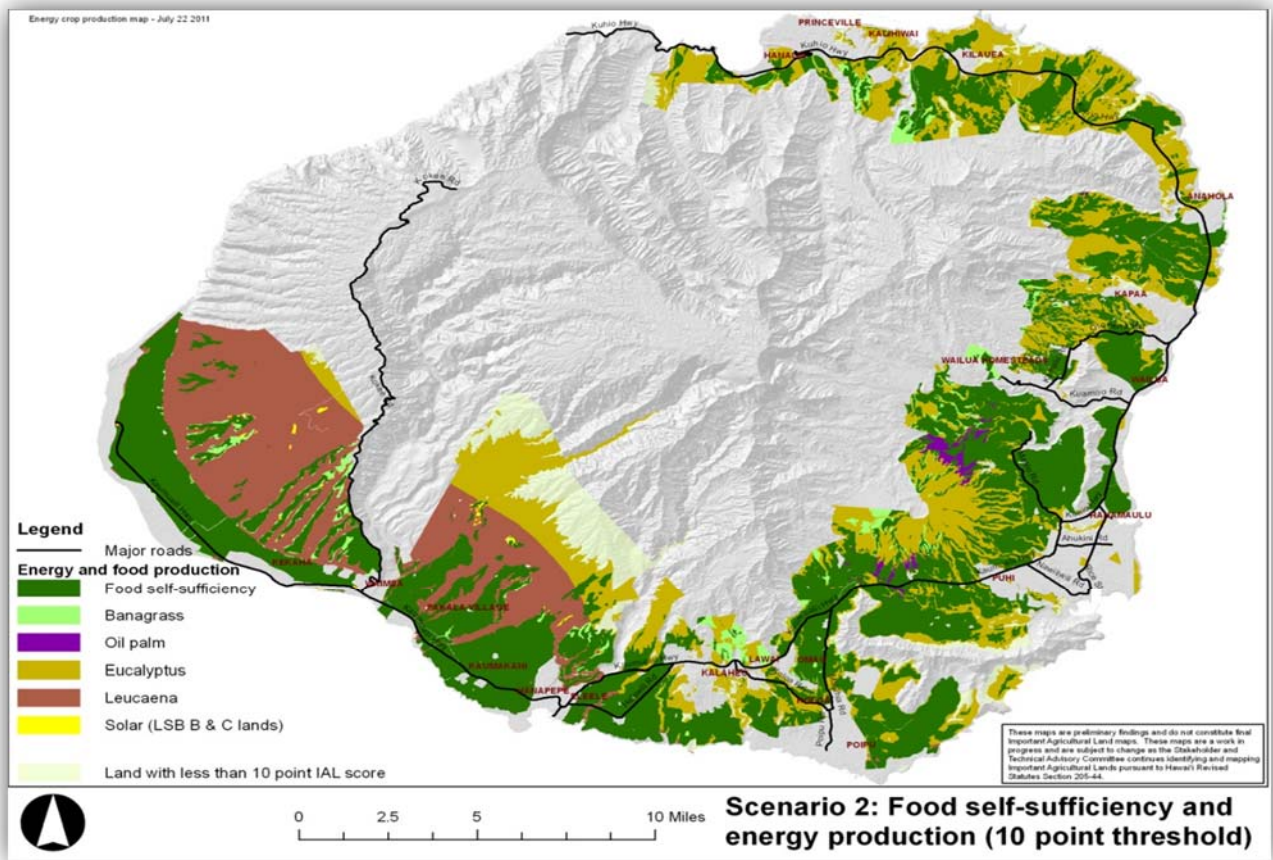
³⁵ According to Hawaii State Data Book 2009, per vehicle fuel consumption is 685 gallons/year in Kauai. Publications say that around 30% extra ethanol is necessary to replace same amount of gasoline. Converting 685 gallons gasoline into ethanol will be 890.5 gallons.

threshold and land with an IAL score higher than 25.61 was assigned to food production. The same approach was applied to the 20, 25, and 30 thresholds as well.

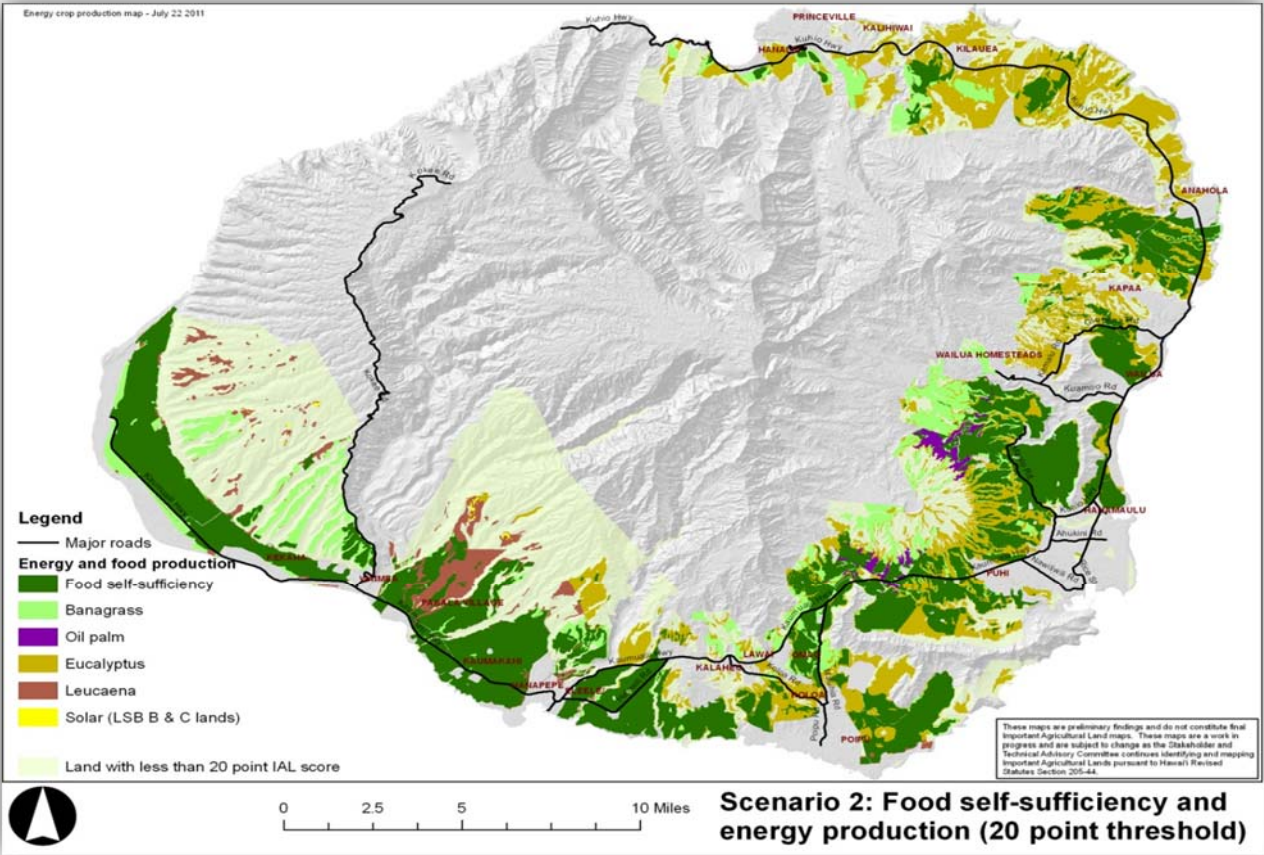
Table 10 – Agricultural land for food and energy production (Scenario 2)

Description	10 point threshold	20 point threshold	25 point threshold	30 point threshold
Total agricultural land (Acres)	128,093	83,865	66,051	47,740
Land for food production (Acres)	64,046.5	41,932.5	33,025.5	23,870
- Potential population	212,075	138,849	109,356	79,040
Land for solar energy generation (Acres)	100	100	100	100
- Solar electricity production (in LSB B or C land, MWh/day)	1,883	1,883	1,883	1,883
Land for ethanol production (Acres)	63,946.5	41,832.5	32,925.5	23,770
- Ethanol production (million gallons/year)	37.30	32.52	32.65	27.72

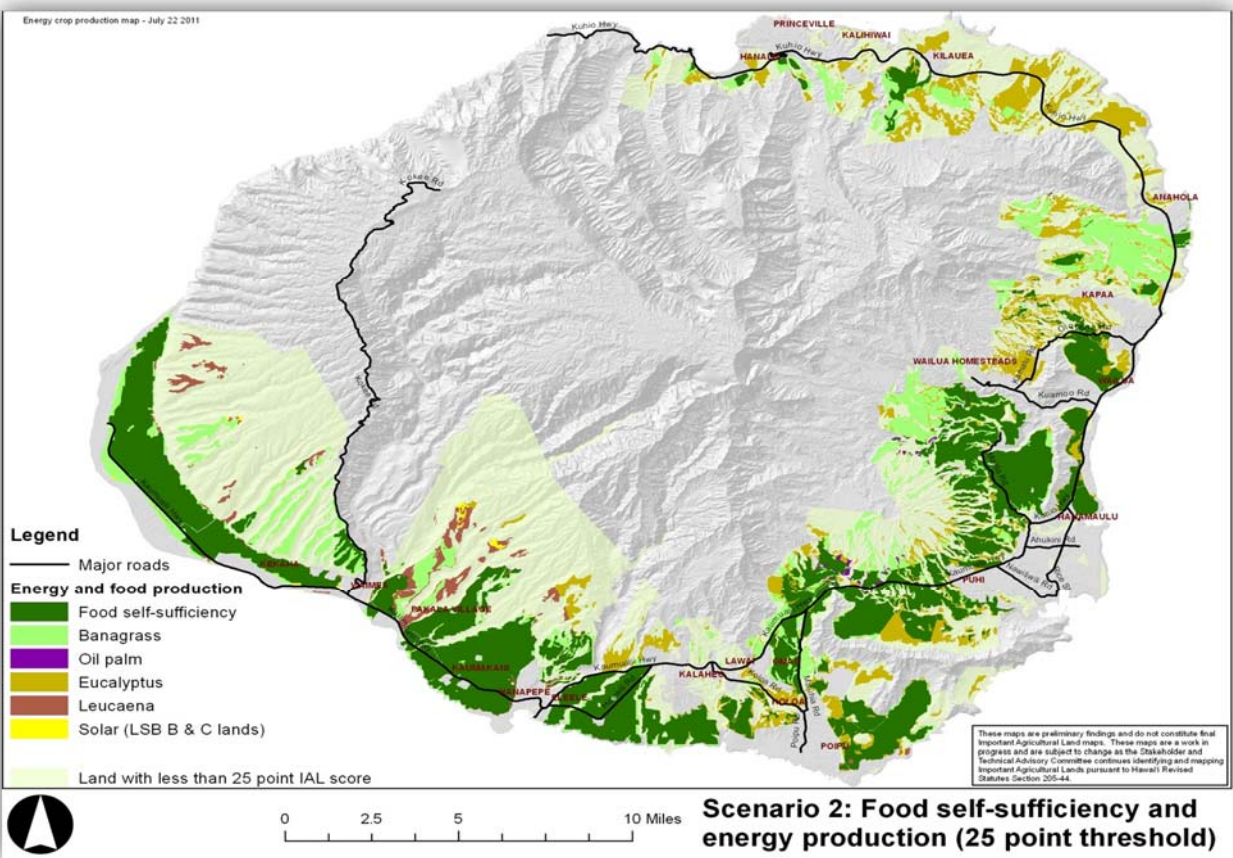
Map 8 – Scenario 2: food self-sufficiency and energy production at 10-point threshold



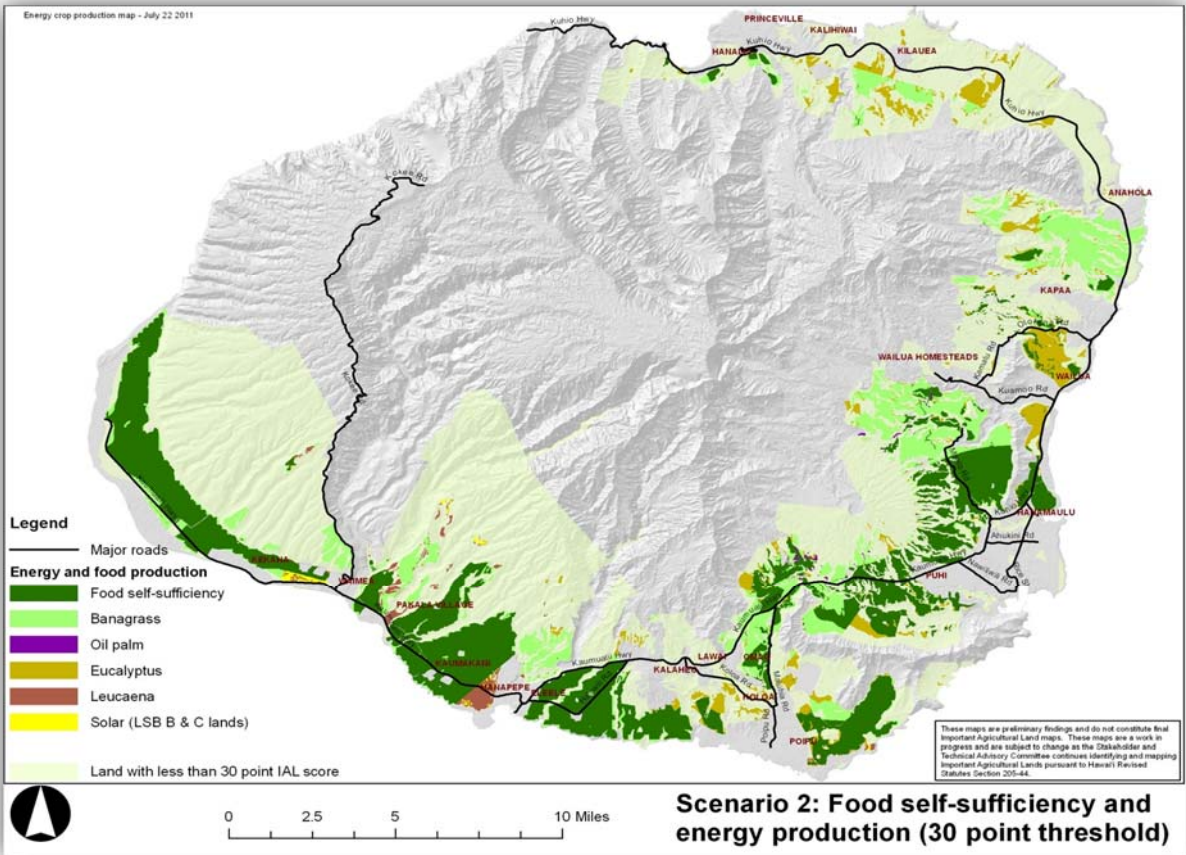
Map 9 – Scenario 2: food self-sufficiency and energy production at 20-point threshold



Map 10 – Scenario 2: food and energy production at 25-point threshold



Map 11 – Scenario 2: food self-sufficiency and energy production at 30-point threshold



According to analysis, at the 10-point threshold, food for 212,075 people could theoretically be produced. With an increase of threshold, to 30 points, the land available could provide food to feed 79,040 persons. In other words, Kauai can produce enough to meet the basic diet of 70,000 people in all four thresholds under this scenario.

From lands identified for energy production, 100 acres were set aside for solar photovoltaic energy production. The remaining land was assigned among the four bioenergy crops discussed in the previous section. The amount of land available to produce the four energy crops under different thresholds is shown in Table 11.

Table 11 – Land available for energy crops under different thresholds (Scenario 2)

Energy crops	10 point threshold	20 point threshold	25 point threshold	30 point threshold
Banagrass	3,791.71	12,140.86	17,005.40	16,753.19
Eucalyptus	35,438.55	24,854.95	13,433.01	5,755.27
Leucaena	23,982.78	3,913.97	2,267.92	1,121.46
Oil palm	733.05	922.37	219.24	140.20

Under the 10 and 20 thresholds, eucalyptus would require more land than the other energy crops. Among the 25 and 30 threshold, banagrass requires more land. With the 30% less efficiency rate of ethanol than gasoline³⁶, Kauai would need more than 67 million gallons of ethanol to replace highway fuel consumption (equal to the peak in 2009). In the 10 point-threshold range, more than 50% of highway fuel consumption could be substituted by ethanol. In other words, if these amount of bioenergy crops were in production and available locally, it could conceivably reduce consumption of petroleum by 50%. The biofuel production scenario relating to the 10-point threshold range, could possibly be sufficient to support 41,883 vehicles throughout the year. In 2009 the total number of registered vehicles in Kauai was 73,847³⁷. The ethanol production in threshold 20 could adequately supply fuel for 36,600 vehicles of Kauai. In regard to electricity production from solar photovoltaic farming, dedicating 100 acres of land to solar farming could potentially replace petroleum-generated electricity in Kauaʻi: 1.2 million

³⁶ <http://www.fueleconomy.gov/feg/ethanol.shtml>

³⁷ Hawaii State Data Book 2009.

kWh per day. Land that is set aside for energy production can also be used for beef production. Details of beef production potential are presented in Appendix H *Food and Energy Scenarios for Kauaʻi*.

Scenario 3 Achieving energy self-sufficiency in transportation and electricity, allocating balance of agricultural land toward food production

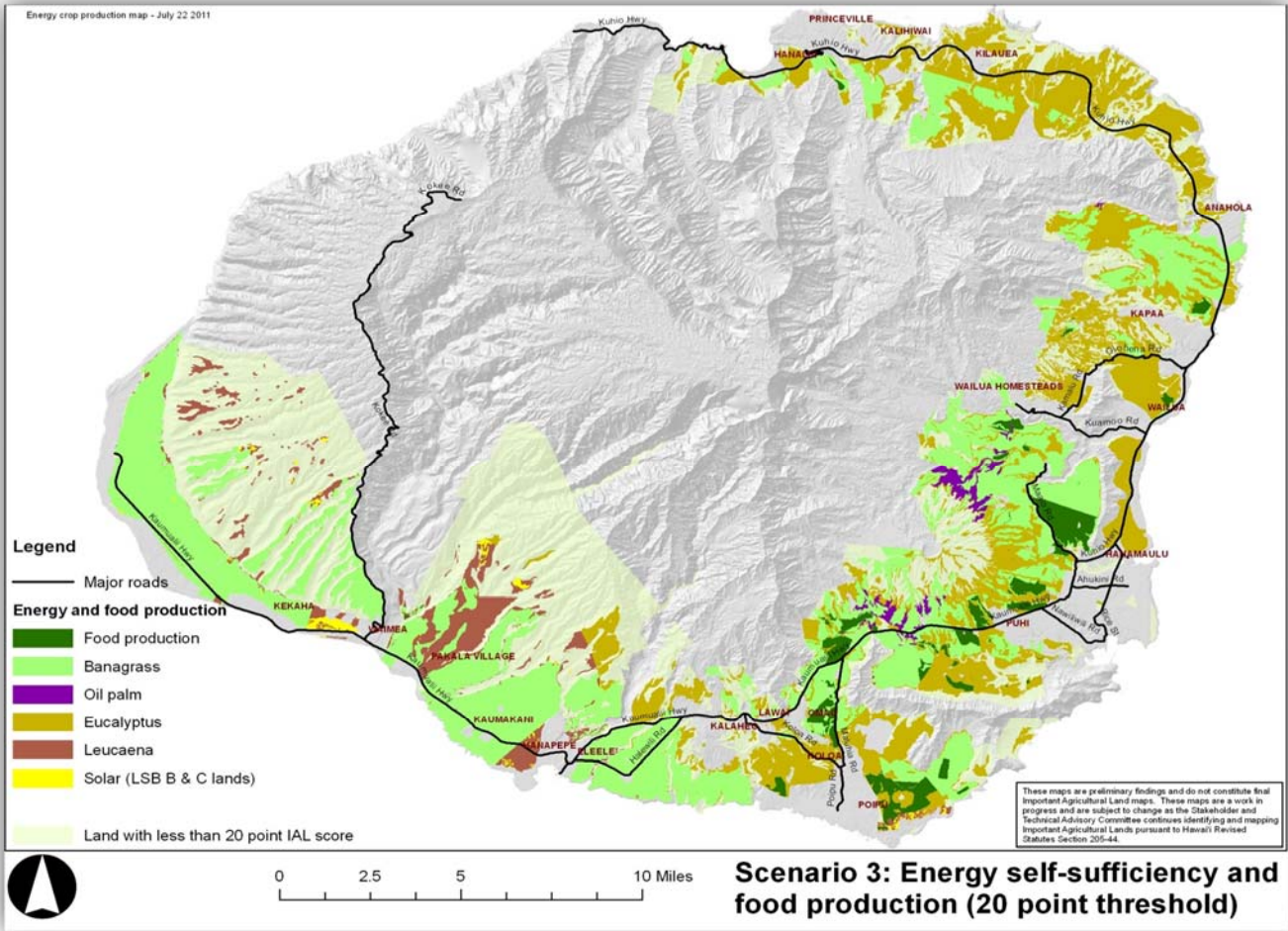
Under this scenario, the priority is to produce biofuel to replace highway fuel consumption and to generate enough solar electricity to replace the electricity from petroleum. If the available agricultural land at a threshold is more than needed for energy production (ethanol and photovoltaic electricity), the balance is assigned to food production. Again, lands with higher threshold points will be focused food production. With these assumptions, agricultural lands for energy generation and food production under four IAL thresholds are shown in the following table.

Table 12 – Agricultural land for energy and food production (Scenario 3)

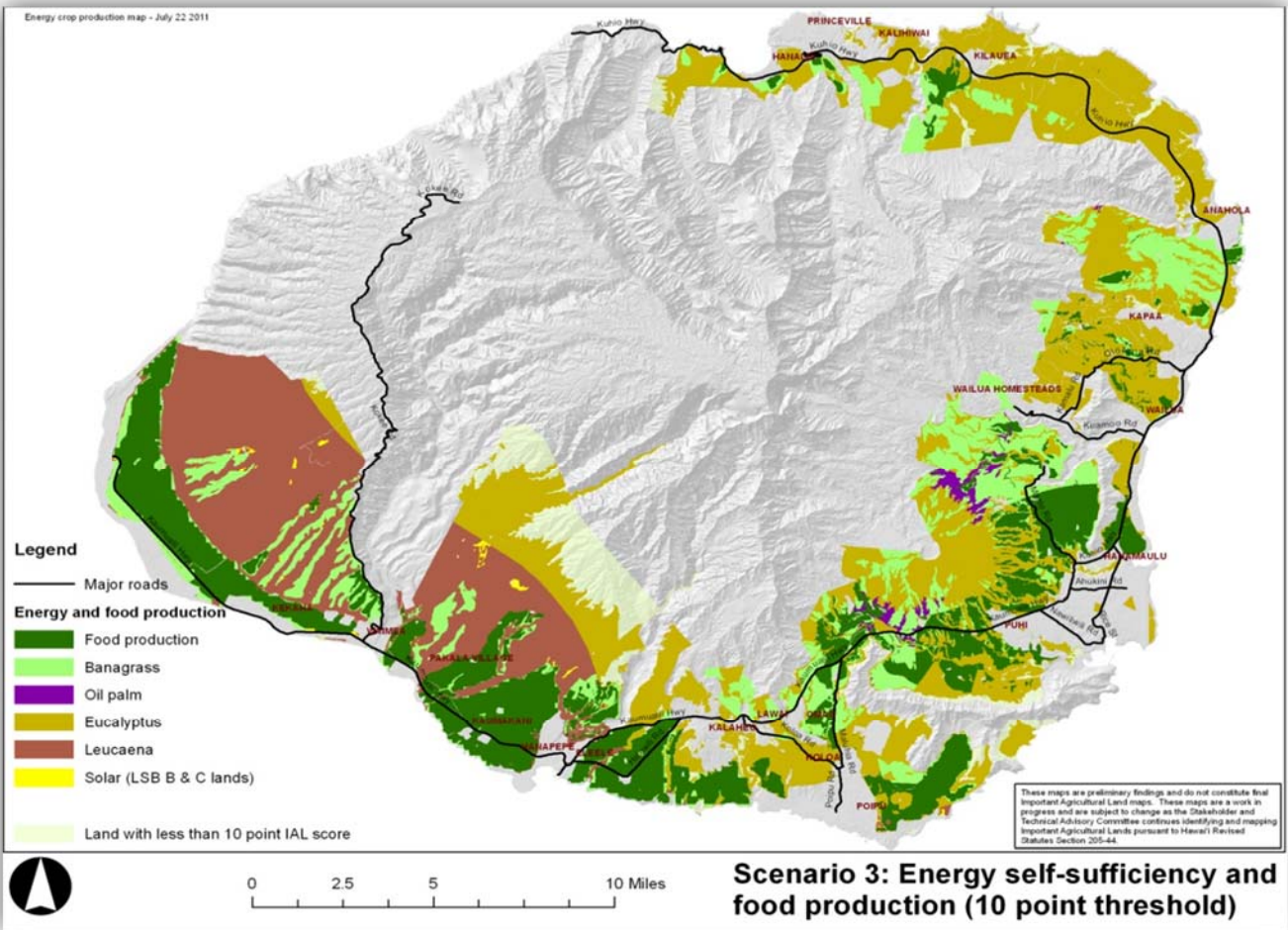
Description	10 point threshold	20 point threshold	25 point threshold	30 point threshold
Total agricultural land (Acres)	128,093	83,865	66,051	47,740
Land for solar energy generation (Acres)	100	100	100	100
- Solar electricity production (in LSB B or C land, MWh/day)	1,883	1,883	1,883	1,883
Land for ethanol production (Acres)	95,410	70,603	60,419	47,640
- Ethanol production (million gallons/year)	67.05	67.05	67.05	58.62
Land for food production (Acres)	32,583	13,162	5,532	-
- Potential population	107,891	43,583	18,317	-

At a 10-point threshold, 95,510 acres of land is sufficient to generate enough biofuel and photovoltaic electricity to replace highway fuel consumption and petroleum generated electricity in Kauai. The remaining 32,583 acres of land would then be allocated to food production. In this case, land with a 10 to 34.5 IAL score were assigned to energy crops and solar photovoltaic installation, and land with higher than 34.5 IAL score was assigned to food production.

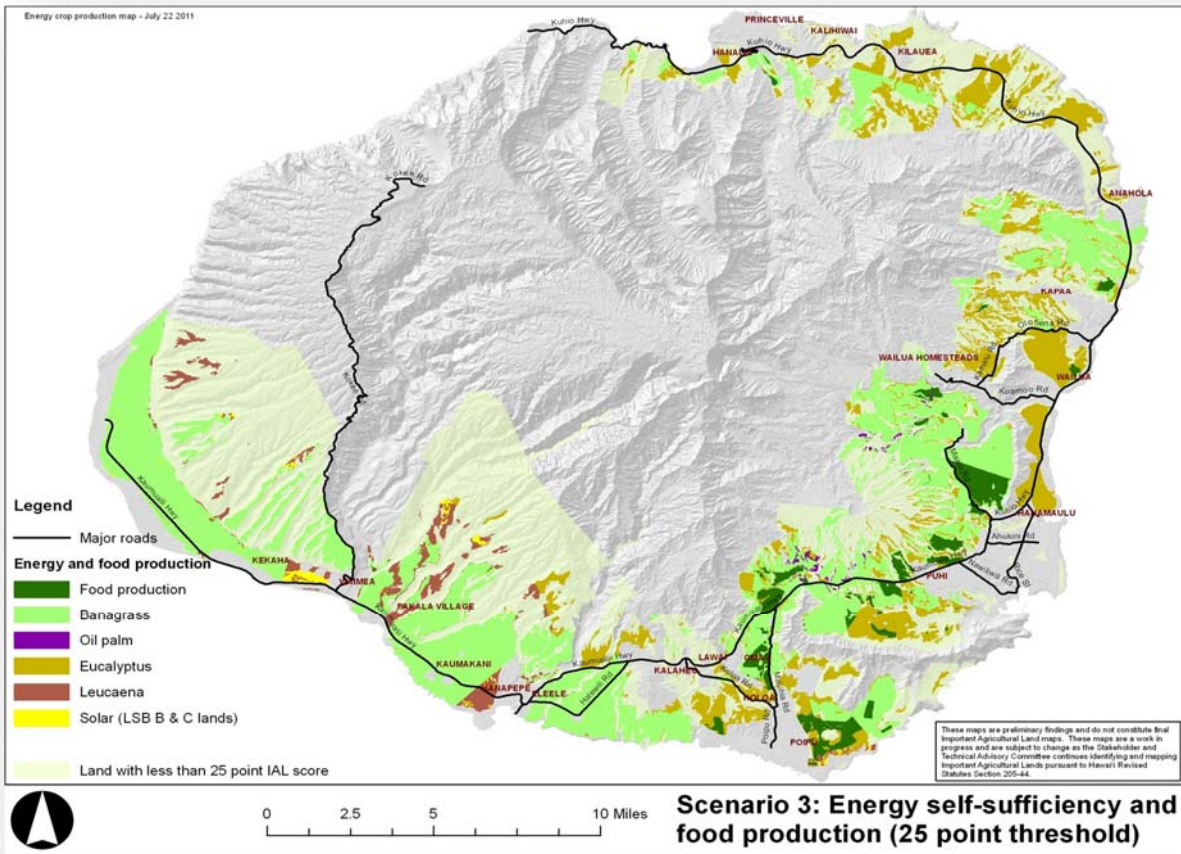
Map 12 – Scenario 3: food self-sufficiency and energy production at 10-point threshold



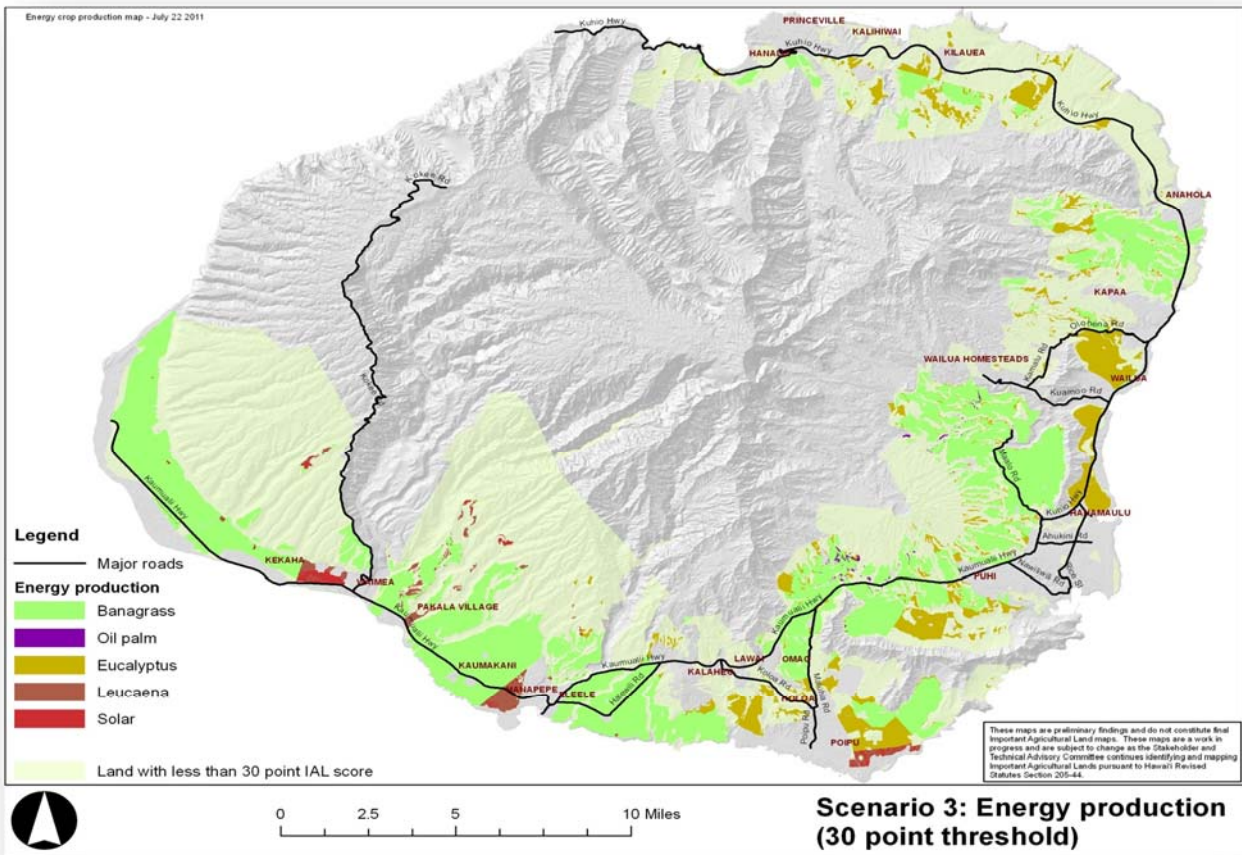
Map 13 – Scenario 3: food self-sufficiency and energy production at 20-point threshold



Map 14 – Scenario 3: food self-sufficiency and energy production at 25-point threshold



Map 15 – Scenario 3: food self-sufficiency and energy production at 30-point threshold



Regarding the 20-point threshold scenario, 70,702 acres of land could produce enough biofuel and electricity to service Kaua’i’s energy needs. The amount of land for biofuel production in the 20-point threshold is *less* than in 10 point threshold because lands with higher threshold scores have a higher rate of productivity (higher yield of crop, particularly for Banagrass). In case of the 30-point threshold scenario, the balance of land is not sufficient to replace highway fuel consumption. Therefore land was not allocated toward food production at this threshold.

Under this *scenario*, if the demand of energy increases, then the land for food production will be assigned to energy production. In other words, if producing energy is a bigger priority that

producing food, or if producing energy is incentivized/ subsidized over production of food, food crops will need to be imported at the same rate it is currently imported or more.

The land suitable for different energy crops was assigned based on assumptions of energy crop farming. Breakdown of total available land for energy crops is shown in the next table.

Table 13 – Land available for energy crops under selected thresholds (Scenario 3)

Energy crops	10 point threshold	20 point threshold	25 point threshold	30 point threshold
Banagrass	18,528.32	33,444.85	38,874.60	36,857.40
Eucalyptus	49,896.56	30,820.92	17,871.88	9,021.59
Leucaena	25,969.41	5,310.06	3,375.46	1,620.96
Oil palm	1,015.45	1,026.88	297.55	140.20

The amount of land available for banagrass has increases in this scenario because banagrass needs more productive land (water, soil, etc) to grow than other energy crops. The higher the threshold, the less land should be allocated for other energy crops. In order to compensate that reduction, lands required for food production would to be assigned to banagrass.

In thresholds 10, 20 and 25, energy crops can produce more than 67.05 million gallons of ethanol annually. This is sufficient to replace highway fuel consumption. On top of this, 107,891; 43,583 and 18,317 persons will be food self-sufficient in these thresholds respectively without including beef. On the basis of per vehicle annual average fuel consumption, 67.05 million gallons of ethanol will be sufficient for all vehicles of Kauai. Under these thresholds, Kauai can also replace electricity from petroleum with solar photovoltaic. An IAL score of 30 is the only threshold in which the island cannot replace the total highway fuel consumption. Under this threshold, it can replace around 86% of total highway fuel consumption.

4. Potential of Beef Production

Under scenarios 1 and 2 shown in the table below, land allocated for energy production could be focused on beef. According to data on local beef production, an acre of agricultural land can produce an average of 45.7 lbs of *ready beef*³⁸ per year on Kaua’i. Based on this rate, Kaua’i could produce 4.88 million lbs of beef on 106,935 acres of land in the 10 point threshold (scenario 1). This would theoretically be enough to feed 76,239 people. At the 20-point threshold, 2.86 million lbs of beef could be produced annually to feed 44,707 people every year. Under the 25 and 30 point threshold shown in scenario 1, 2.05 million lbs and 1.21 million lbs of beef could be produced per year, respectively. This could feed approximately 32,007 and 18,952 people per year. The sufficiency rate is based on 64.1 lbs of beef consumption per person per year. The details of beef production are presented in the following table.

As aforementioned, it is not the intention of this study to discourage beef production on Kaua’i *but to develop a method of prioritizing the highest yielding agricultural lands for County-led designations*. The County is presently involved in efforts to support the development of meat processing facilities (slaughterhouses, etc), cold storage facilities, and other support facilities (hubs, etc) to increase the island’s ability to process and provide itself with beef, pork, poultry, and other meat products. Landowners with agricultural holdings are already able to petition for IAL designations on their own.

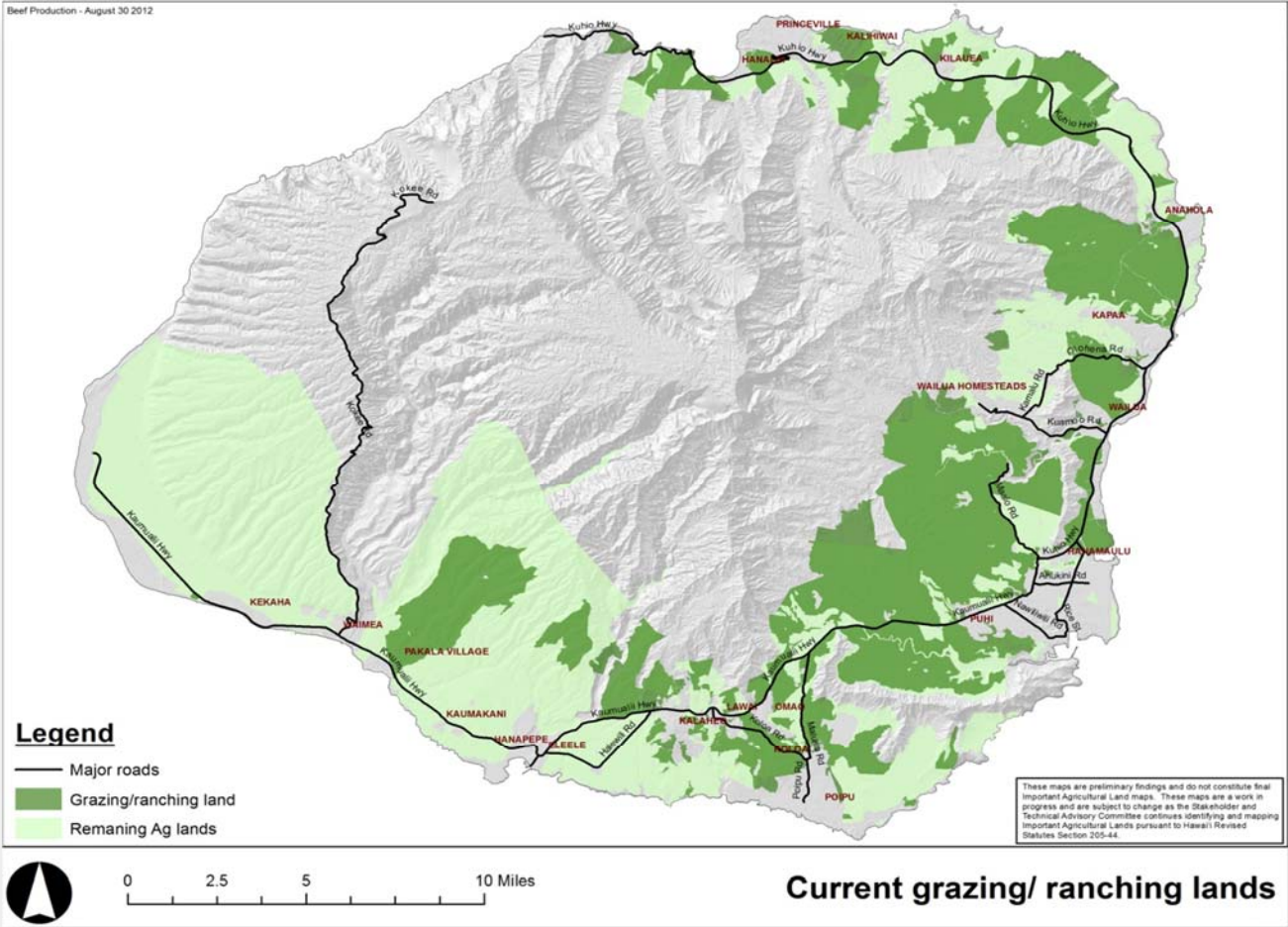
³⁸ Beef that is ready to be consumed. The development of any agricultural industry on Kaua’i should take into consideration processing and packaging. Agriculture is also dependent on access to industrial-use in order to be successful.

Table 14 – Potential of beef production under scenarios 1 & 2

	10 point threshold	20 point threshold	25 point threshold	30 point threshold
Scenario 1				
Available land for beef farming (Acres)	106,934.50	62,706.60	44,893.45	26,582.46
Beef Production (Lbs.)	4,886,906.54	2,865,691.56	2,051,630.58	1,214,818.29
Target population	76,239	44,707	32,007	18,952
Scenario 2				
Available land for beef farming (Acres)	64,046.59	41,932.64	33,025.57	23,870.08
Beef Production (Lbs.)	2,926,929.16	1,916,321.65	1,509,268.66	1,090,862.52
Target population	45,662	29,896	23,546	17,018

Approximately 59,651 acres of agricultural land is used for grazing and ranching on Kauai at present. As such, there is potential to produce 2,726,050.7 lbs of beef on island. Based on the assumed 64.1 pound per person per year beef consumption rate, Kaua’i could produce enough beef for 42,528 people. See map below.

Map 16 – Current Grazing/Ranching Lands

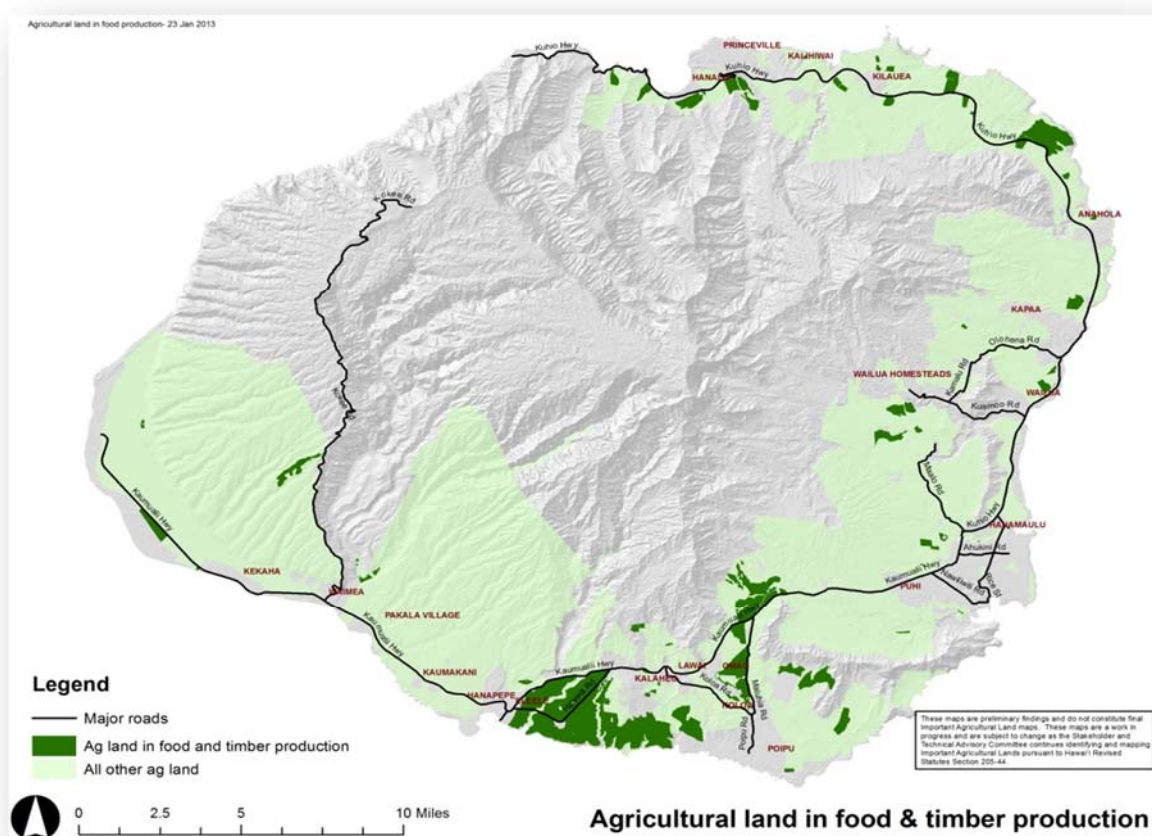


District) in the Kauaʻi Comprehensive Zoning Ordinance, as well as those uses specified in HRS §205 can continue until new rules are adopted. Therefore, the decision to prioritize designations based on “lands to meet food self-sufficiency” and supporting landowner-led petitions based on parcels meeting “sufficient water” criterion are only the first steps, essentially the *land use* component of actuating self-sufficiency goals for the island. Beyond the Kauaʻi IAL study goal of *identifying and prioritizing or designating those lands of highest importance for agricultural production and viability*, the County’s goal of increasing food self-sufficiency in addition to peripheral goals for supporting the viability of Kauaʻi’s agricultural industry, must be furthered through other efforts such as those recommended in this study.

1. Food and resources production on Kaua'i

Only approximately 9,400 acres of land on Kauaʻi is dedicated to growing food and timber.³⁹ Refer to the map below which shows areas of food and timber production on Kauaʻi. Of these acreages of land, the majority “food” product grown on Kauaʻi is coffee in the ‘Eleʻele area. In addition, the timber being produced is not for building materials but for alternative energy use. Note that the analysis on food and timber used to create the map did not include land used for grazing/ranching, seed corn, flower/ornamental nurseries, non-intensive farming (such as agricultural lots with a home and garden, no farming as a business)⁴⁰, algae production, fallow lands, and agricultural condos (agricultural lots similar to that of “non-intensive farming”). Considering the current state of agriculture on the island, although the County is now able to propose a criteria and strategy for the designation of IAL, there remains a serious need to coordinate efforts and increase incentives (either through taxes or services) to encourage the production of food toward self-sufficiency. To reiterate, at this time, there is no statute requirement for IAL lands to be used for the production of food (and primary resources).

Map 17: Agricultural Land in Food and Timber Production



In 2012 the State Office of Planning and the Hawai'i Department of Agriculture jointly published the, "Increased Food Security and Food Self-Sufficiency Strategy" which sets forth objectives, policies and actions to increase the amount of locally grown food consumed by Hawai'i residents. The purpose of this project is to implement the 2010 Comprehensive Economic

³⁹ This is based on research, input, and analyses conducted during the course of this study process by the University of Hawai'i Department of Urban and Regional Planning and Economic Research Organization (January 2013).

⁴⁰ “Non-intensive farming” as defined by R. Ishikawa of the Kauaʻi Farm Agency. Essentially these are agricultural lots that may have gardens or orchards and are not involved in farming-for-sale/profit.

Development Strategy or *CEDS*, which recommended an increase in food and energy self-sufficiency.⁴¹ The report states, within its Executive Summary that:

“The economic impact of food import replacement is significant. Replacing just 10% of the food we currently import would amount to approximately \$313 million. Assuming a 30% farm share, \$94 million would be realized at the farm-gate which would generate an economy-wide impact of an additional \$188 million in sales, \$47 million in earning; \$6 million in state tax revenues, and more than 2,300 jobs.

An investment in programs and projects which support greater food self-sufficiency will result in economic, social and environmental benefits to the State of Hawai‘i.”⁴²

◆ Increase demand
◆ Raise production
◆ Policy
◆ Partnerships

The summary goes on to list strategies in three key areas:

Demand

- ◆ Expand the “buy local/It Matters marketing campaign as to promote the benefits of buying local foods.
- ◆ Expand and improve branding and labeling programs and provide consumer education programs to help consumers identify local products at the time of purchase.
- ◆ Encourage public institutions to purchase locally grown foods. Establish a pilot program in the charter schools.
- ◆ Address food safety issues, increase the farm food safety coaching program and farm food safety certifiers.

Production

- ◆ Increase production of locally grown foods, improve agricultural infrastructure including agricultural parks, irrigation systems and distribution systems/facilities
- ◆ Support the Agricultural Park Program which provides public lands at reasonable cost and long-term tenure to farmers and complete the transfer of agricultural lands from the Department of Land and Natural Resources to the Department of Agriculture.
- ◆ Support Capital Improvement Project (CIP) funding to repair and maintain State irrigation systems since these systems provide water at low cost to farmers.
- ◆ Encourage a variety of distribution systems to move foods to the market place. Nationally, direct consumer sales, farmers’ markets, community supported agriculture organizations and farm-to-school programs have all increased.
- ◆ Support multi-functional food hub facilities or food incubator facilities to handle aggregation, processing, treatment and distribution.
- ◆ Build the agricultural workforce, continue the “Green Jobs Initiative” which provides workforce development services for the agricultural, energy, natural resources and related industries.

Policy and Organizational Support

- ◆ Restore the Market Analysis and News Branch of the Department of Agriculture to track progress toward food self-sufficiency.
- ◆ Adopt legislation to establish an Agricultural Development and Food Security Program.
- ◆ Pest prevention and control, research and extension services, and policy and organizational support. The proposed Agricultural Development and Food Security Program will help to coordinate ate and direct efforts to address food self-sufficiency.
- ◆ Build partnerships with the increasing number of organizations involved in food self-sufficiency/food security.⁴³

⁴¹ See <http://hawaii.gov/hdoa/planning/increased-food-security-and-food-self-sufficiency-strategy>

⁴² Ibid.

⁴³ “Increased Food Security and Food Self-Sufficiency Strategy,” prepared by the State of Hawai‘i Office of Planning, Department of Business, Economic Development and Tourism, October 2012.

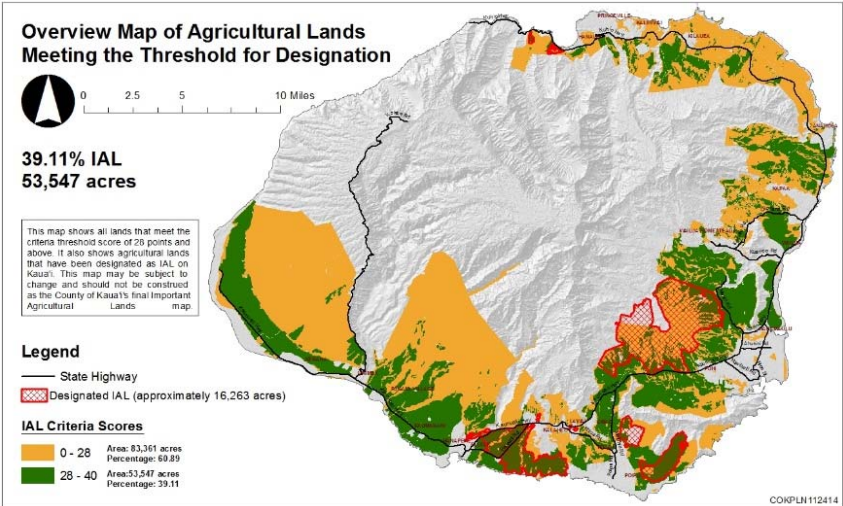
Table 15 – Needs Analysis for Demand, Production, and Supply of Locally Produced Products

NEEDS ANALYSIS		
DEMAND On-island and statewide	PRODUCTION Technology and services gaps	SUPPLY Incentivize and support the growing, processing, and marketing of -
Restaurants, schools, stores/ specialty retailers, hotels/ visitor accommodations, farmers markets, delis, lunch wagons, hospitals, niche export products.	Processing and packaging facilities available to small producers/ co-ops (such as cold storage facilities near inter-island transport facilities, slaughterhouses, etc); training/ education for agricultural and ag-support industries (business, marketing, policy, safety, etc); research and use of technologies for efficient yields that do not compromise community health and safety; coordination of on-island distribution of products (such as through a government program or co-op); encouraging specialty food shops/hubs, especially within town cores and sub-cores through government or grant-funded programs; [organic] soil remediation technologies (see recommendations from EPA and examples used worldwide).	Traditional foods and resources such as taro, coconut, and sustainable building materials (bamboo); fruits and vegetables, flowers/ ornamentals, specialty products (such as for crafting or other niche market), dairy, meat, coffee; secondary and tertiary products and services; organic soil/environmental remediation technology businesses. Agricultural education and expansion of industry, including farming, business development and management, engineering, water systems, food systems, development of secondary and tertiary products and distribution.

D. Prioritizing Lands for Designation – Using the “Overview Map of Agricultural Lands Meeting the Threshold for County Designation”

**Refer to Appendix C for “Overview Map of Agricultural Lands Meeting the Threshold for County Designation”*

In consideration of broad-based discussions, recommendations, research and analysis conducted in regard to the identification and designation of IAL on Kaua’i, in particular toward the increase of food and primary resources, the following criteria for *County-led designations* are recommended:



Map 18: Overview Map of Agricultural lands Meeting the Threshold for Designations

1. Review the potential for IAL on a variety of lands island wide, refer to “Overview Map of Agricultural Lands Meeting the Threshold for County Designation”;
2. Prioritize those lands of fifteen (15) acres or more;⁴⁴
3. Prioritize those lands that meet a threshold of 28 or more first⁴⁵; followed by those lands that at least meet the criteria for water availability (through parcel score and

⁴⁴ The “Overview Map of Agricultural Lands Meeting the Threshold for County Designation” shows contiguous lands of a minimum of 15 acres.

⁴⁵ The “Overview Map of Agricultural Lands Meeting the Threshold for County Designation” shows lands that meet a threshold of 28 points and above.

evidence);

4. Prioritize lands already in production of food first, or if not, currently being farmed.
5. Work with landowners and other stakeholders to further develop a County-Level IAL Incentives/Support Program.

The above recommendation is not intended to discourage landowners and farmers from petitioning for designations of their own agricultural lands, as long as they meet the criteria of Act 183. The proposed criteria for County-led designations provides a strategy for the *County* to use in order to prepare its designation maps to the Kaua'i County Council (for adoption by resolution) and to the State Land Use Commission for the designation of lands.

1. Strategy for County-Led Designation of Important Agricultural Lands

The question of “how much land should the County designate,” has been an extensive discussion among the community and stakeholders from the onset of the study process.

A - Does the County put forward all lands identified on the *Threshold for County Designation* map?

An immediate designation of all lands that meet a threshold of 28 and above before the General Plan update process, in particular without a County-Level Incentives Program in place, will remove the County's ability to assess its communities' land use needs into the future. In other words, immediate designation of all candidate lands may conflict with areas identified in the General Plan update process for urban expansion or even for open space preservation. In addition, and as mentioned, an IAL designation does not guarantee that agricultural land will be farmed for food and primary resources.

B - Does the County designate none of the lands identified as candidates until State and County incentives are developed and a County-level incentives program is in place?

Consequently, waiting to designate agricultural lands until a County-level Incentives Program is in place may impede the opportunity to support agricultural projects that increase food and self-sufficiency right now. For instance, an IAL designation may provide a farmer or landowner the opportunity to use State-Level incentives to improve his/her water infrastructure and production. Improvement of water-related infrastructure was identified as a highly desired incentive by landowners and farmers. Furthermore, at this time there is no guarantee that Recommendation #1, “Develop a County-Level Incentives Program” will be accepted or funded.

C - Does the County phase designations (by both leading designations and supporting landowner-initiated designations), based on the data and findings provided in the study while a County-level incentives program is being developed?

This study recommends strategy C – using a phased 5 to 10 year strategy to not only meet IAL designation targets through *both* County and landowner-led initiatives, but to develop its Incentives Program to encourage the farming of food (and primary resources) and fortify its role in supporting agriculture production on the island. This strategy is discussed as Recommendation #2 in Section VI of this study.

The Kaua'i IAL Study and maps shall not be considered formal maps for adoption by resolution by the County Council. This study fulfills the requirements of HRS 205-47 (a)(b)(c). Once the County Council has communicated a designation strategy to the Administration, the Administration will spatially identify candidate lands and formulate maps for adoption pursuant to HRS 205-47(d).

V. Summary of Policy and Incentives Relating to Important Agricultural Lands

A. State-Level IAL Incentives

Act 233 (SLH 2008) established incentives to encourage public and private landowners to apply for IAL designation. The purpose of these incentives is to:

1. Establish and sustain viable agricultural operations on important agricultural lands;
2. Provide for the designation of important agricultural lands on public lands; and
3. Provide for the combined designation of important agricultural land and reclassification to other land use districts by declaratory order of the land use commission.

Although not the primary goal of STAC meetings, discussions regarding the incentives and their impacts ensued. The following is a summary of State incentives and concerns relating to land use management that arose from those discussions.

1. Farm dwellings and employee housing

This incentive allows landowners to develop farm dwellings and employee housing for their immediate family members and their employees. The dwellings may occupy up to 5% of total IAL or 50 acres, whichever is less. Plans for dwellings and employee housing shall be supported by agricultural plans approved by the State Department of Agriculture. The DOA currently has a process in place to review agricultural development plans submitted for review by county planning and permitting departments.

Concerns

- ♦ HRS §205-45.5 (4) requires that, “farm dwellings and employee housing units shall meet all applicable building code requirements.” It does not require that farm housing units meet county zoning codes, which regulate uses.
- ♦ Ordinance 903 (CZO amendment 2010) limits three (3) farm worker housing structures to be built on “subject property.” In total, floor area of all structures combined cannot exceed 1,800 square feet, and no structure (itself) may exceed 1,200 square feet.
- ♦ The Department of Agriculture currently provides that the Chair of the Hawai‘i Board of Agriculture will determine if housing and agricultural plans are in consonance and in standard format without the adoption of administrative rules.
- ♦ Until State policies are adopted and harmonized with County policies is there opportunity for the County to develop a Memorandum of Agreement with the Department of Agriculture concerning the process for approval of farm dwellings?

2. Refundable qualified agricultural cost tax credit

This credit is deducted from a taxpayer’s net income tax liability and provided to qualified costs for agricultural expenditures (such as equipment). It may be claimed in taxable years after May 31, 2009. Earliest available taxable year that credit can be claimed would be fiscal year ending May 31, 2010. The Department of Agriculture is to certify credits up to \$7,500,000 annually. Credit can be claimed for costs such as roads or utilities, agricultural processing facilities, water wells, reservoirs, dams, pipelines, agricultural housing, feasibility studies, legal and accounting services, and equipment.

3. Loan guaranty

The Chairperson of the Board of Agriculture may provide an 85% loan guaranty to commercial lenders, which should result in a lower interest rate for agricultural borrowers on IAL. The interest rate on guaranteed loans will be 1% below a lender’s prime rate. The IAL loan guaranty is administered within DOA’s Agricultural Loan Division. Loan guaranty conditions are that, to finance operating costs, the maximum term is 10 years; and that, to finance capital improvement cost, the maximum term is 20 years. The total principal amount of guaranteed portion of all loans is \$ 2.5 million.

4. State Agricultural Water Use and Development plan

To promote the viability of agriculture, Act 233 calls for modification of the State Agricultural Water Use and Development Plan to include public and private systems, sources of water and current and future need for water for lands designated as IAL. The Department of Agriculture's Agricultural Resources Management (ARM) Division is responsible for development of the plan contingent upon funding for the expanded scope. The development of the master irrigation inventory plan includes: inventory of public and private irrigation systems, identification of rehabilitation needed of systems, identification of sources of water for IAL, identification of current and future water needs for agricultural operations on IAL, subsidy of cost of repair and maintenance of systems, criteria to prioritize the rehabilitation of the systems, five year program to repair the systems, and a long range plan to manage systems. The County water use and development plan includes status of water and related land development with inventory of existing water use, future land use and related water needs, and a regional plan for water development.

5. Agricultural processing facilities, permits, priority

There is a requirement to establish and implement a procedure for priority processing of permit applications and renewals at no additional cost to the applicant for agricultural processing facilities that process crops or livestock from agribusiness. The majority of land of that agribusiness should be IAL. DOA will work with the Department of Health (DOH) to develop a referral system and to assist in expediting the permits by making information available to potential permit applicants. This measure provides an incentive for IAL designation by giving landowners who voluntarily designate IAL priority for in the processing of permits for agricultural processing facilities.

Concern

At this time, pursuant to the Kaua'i County Zoning Ordinance, a Use Permit is required for the development of a processing facility on agricultural lands. Incentive #5 does not automatically negate the requirement to acquire a county-level Use Permit.

6. Public lands

The Department of Agriculture and the Department of Land and Natural Resources are collaborating to identify public lands that should be designated important agricultural lands. Management authority of those public lands that are designated important agricultural lands is then transferred to the Department of Agriculture. The ARM division intends to incorporate the transferred lands from the DLNR either into its Agricultural Park Program or its Non-Agricultural Park Lands Program. ARM recommends that Act 233 be amended to specify that public lands designated as IAL and transferred to the Department of Agriculture be subject to the existing administrative rules governing its Agricultural Park or Non-Agricultural Park Lands programs. These rules are more stringent in order to ensure that actual farming takes place.

Concern

The County of Kaua'i, through this study process, has identified State agricultural lands of priority for designation. How much will Kaua'i's priorities weigh in decisions regarding designation of public lands?

7. Land reclassification

Landowners can reclassify up to 15% of the IAL area into a rural, urban, or conservation district. Landowners may receive a non-transferable "credit" for not seeking reclassification of up to 15% of lands to rural, urban, or conservation during the initial petition. The landowner has 10 years to apply to use the credit. DOA is working with the State Land Use Commission as they develop administrative rules for the reclassification process. Land jointly designated as important agricultural land and (up to 15%) reclassified land in the agricultural district to the rural, urban, or conservation district, "shall be re-designated only with the prior authorization of the legislature. The authorization shall be expressed by the adoption of a concurrent resolution approved by a two-thirds vote of each house of the legislature voting separately." (Act 233, Section 19).

Concerns

- ♦ There is no time limit established for reclassification credit.
- ♦ HRS §205-45 (h) declares that a petitioner may use reclassification credit on any of [his/her] landholdings within the same county until the credit is exhausted.
- ♦ Will the Counties be allowed to specify where within an IAL designation a boundary amendment (whether urban, rural or conservation) may be suitable?
- ♦ How will this incentive be managed to dissuade landowners from “banking” agricultural lands along with reclassification credit?

B. Development of County-Level Incentives

Act 183 (SLH 2005) requires a “process to develop proposals for state and county incentives.”⁴⁶ As mentioned in the Executive Summary of this report, County level incentives are included *as desirable but not legally required*. In “Final Report on the Incentives for Important Agricultural Lands” (January, 2007) the Department of Agriculture pointed out that incentives provided by the counties were “noticeably absent,”⁴⁷ as all incentive programs tied to IAL designation are State level programs originating in SLH 2008 Act 233. If counties implement an incentive, it must review its effectiveness once every 5 years. However, HRS §205-46(d) does not designate an authority to receive the 5-year reviews.

HRS §205-46(b) directs state and county level incentive programs to “provide preference to important agricultural lands and agricultural businesses on important agricultural lands.” The Legislature intends for the State and counties to design incentives for both owners and users of IAL designated parcels. It is not clear, however, if this subsection applies only to new initiatives, in other words, making only IAL owners and users eligible or if all State or County programs that “enable and promote the economic sustainability of agriculture”⁴⁸ (such as the County of Kaua’i Office of Economic Development’s Agriculture Support programs) should give priority to IAL owners and users.

There are no other specific requirements for the counties to implement incentives, report on incentives, review new programs, or evaluate modifications to existing rules and policies. But, this may change over time. The non-exhaustive list of suggested incentive measures in §205-46(c) included in the 2005 legislation foreshadows what state law could require of counties in the future. For example, in 2005, §205-46(c)(3) proposed the idea of offering IAL owners and users “reduced infrastructure requirements and facilitated building permit processes for dedicated agricultural structures.” These exact incentives were subsequently enacted as requirements under state law in Act 233 three years later and are now HRS §205-51 and HRS §205-46.5, respectively.

HRS §205-46 (c) provides eleven (11) mechanisms that incentive and protection programs should include at minimum, in order to “provide a mutually supporting framework of programs and measures that enhance agricultural viability on IAL.”

- (1) Grant assistance;
- (2) Real property tax systems that support the needs of agriculture, including property tax assessments based on agricultural use valuation;
- (3) Reduced infrastructure requirements and facilitated *building permit processes* for dedicated agricultural structures;
- (4) Tax incentives to offset operational costs, promote agricultural business viability, and promote the long-term protection of IAL;
- (5) Agricultural business planning;
- (6) Tax incentives and programs for equity investments and financing for agricultural operations, including agricultural irrigation systems;

⁴⁶ SLH 2005 Act 183, Section 1. The process at the state level specified in Section 9 of Act 183 is what produced the HDOA report issued in 2007.

⁴⁷ HDOA, “Final Report on the Incentives for Important Agricultural Lands,” p.17 *available at* <http://hawaii.gov/hdoa/Info/ial/IAL%20Final%20Report.pdf>

⁴⁸ HRS §205-46(a) invokes county policies across a very broad range with a very broad objective. This makes a large body of policy the subject of section 205-46.

- (7) Other programs and mechanisms that promote investment in agricultural businesses or agricultural land protection, such as the purchase of development rights;
- (8) State funding mechanisms to fund business viability and land protection programs;
- (9) Water regulations and policies that provide farmers of IAL access to adequate and cost-effective sources of water;
- (10) Other measures that would ensure that state capital investments, projects, programs, and rules are consistent with this part; and
- (11) Agricultural education and training for new farmers; upgrading the skills of existing farmers and other agriculture-related employees through the use of mentoring, business incubators, and public or private scholarships; and increasing the returns of farming by adding value to food processing and other tools and methods.

Act 233 (SLH 2008) describes the roles of the State Department of Agriculture, State Land Use Commission, Department of Land and Natural Resources, and *county building code* authorities in implementing mechanisms 3, 4, 6, 9, and 10 above.⁴⁹ Mechanisms 8 and 10 are State government specific. Mechanisms 1, 5, and 11 are partially covered by the County Office of Economic Development’s Agricultural Support programs.⁵⁰ The Transfer of Development Rights and Purchase of Development Rights (TDR/PDR) mentioned in mechanism 7 were specifically highlighted by the Department of Agriculture in their “Final Report on the Incentives for Important Agricultural Lands,” (January 2007, p. 18-19) as “recommended for future consideration as IAL incentives, subject to county support.”⁵¹ The County of Kaua’i submitted comments to the forum that it “did not think PDR and TDR programs would work because of the problems in identifying the receiving areas.”⁵² The General Plan update for Kaua’i and development plan updates would be an appropriate processes in which potential TDR/PDR areas could be identified. Until then, each petition would need to be considered on a case-by-case basis.

The mechanisms remaining that pertain to county-level policies and programs are the following:

- (1) Grant assistance;
- (2) Real property tax systems that support the needs of agriculture, including property tax assessments based on agricultural use valuation;
- (5) Agricultural business planning, marketing, and implementation grants;
- (7) Other programs and mechanisms that promote investment in agricultural businesses or agricultural land protection, such as the purchase of development rights;
- (11) Agricultural education and training for new farmers; upgrading the skills of existing farmers and other agriculture-related employees through the use of mentoring, business incubators, and public or private scholarships; and increasing the returns of farming by adding value to food processing and other tools and methods.

Implementation of mechanism #2 would require that the Department of Finance’s Real Property Tax Assessment Office develop a new type of exception to the “highest and best use” rule. Normally, real property tax classifications for parcels are assigned by the Real Property Tax Office based on the highest and best use of the parcel; the tax rate applied to the property is governed by the county property class it is in. Mechanism #2 does not suggest changing property class or tax rate applied, but the actual assessed value of an IAL based on its specific use. This could pose complications, since there is no requirement for an IAL to be in active farming or even zoned for agriculture (it may be zoned Open).⁵³ The Department of Agriculture

⁴⁹ On Kaua’i, the Department of Public Works Building Division would be responsible for “building code” related mechanisms.

⁵⁰ This is another reason to believe they may be subject to modification in favor of IAL owners and users.

⁵¹ HDOA, “Final Report on the Incentives for Important Agricultural Lands,” p. 18-19

⁵² HDOA, “Final Report on the Incentives for Important Agricultural Lands,” p. 27

⁵³ For example, a rural R-2 parcel with low density residential structures could be situated on IAL designated land. Despite actually serving as residential housing, its tax assessment would be based on its value for farming, which would presumably be much lower for the land component while leaving the structure component unchanged. The

reported in January 2007 that modification of property taxes in favor of IAL holders was supported by farmers, although given a low priority score by counties. This may be due to the need to review or overhaul the current tax classification system relating to agricultural and open zones.

Another possible incentive could come as a result of an IAL that includes agricultural easement(s).⁵⁴ An agricultural easement is a specific type of conservation easement designed to protect land from development and insure that the use of the land will remain conducive to agriculture in the future. They may include provisions for limited development for buildings such as barns, and housing for family who wish to stay on the farm. They may exclude certain sections of the farm from the easement entirely. As with other types of conservation easements, agricultural easements basically limit or prohibit the land from being developed for residential or industrial purposes regardless of who owns the land in the future.⁵⁵ In this way, the County could encourage the growing of food crops and primary resources and limit or prevent development on an IAL.

Mechanisms #5 and #11, relating to agricultural education and support of business, has been raised by businesses, landowners, and community members as a key component in redeveloping our food and agricultural production system. Farming, engineering, business and marketing, including incentivizing agricultural business plan education are targets for potential incentives.⁵⁶ Members of the business community, such as buyers/merchandisers for restaurants and grocery stores have mentioned the need for more distributors that can help small farmers or farming co-ops price and distribute their products more efficiently.

solution used in the case of homestead residential would not work because that changes the tax class and the related tax rates, but not the tax assessments of the relevant parcels.

⁵⁴ For more information, see reports published by the American Farmland Trust under “A National View of Agricultural Easement Programs” <http://www.farmland.org/resources/national-view/default.asp>

⁵⁵ Taken from the *Ohio State University Extension Fact Sheet* http://www.agri.ohio.gov/divs/farmland/farm_aepp.aspx.

⁵⁶ See Recommendation #1 starting on page 51.

VI. Results of Study Process and Recommendations

Review of the study results and additional research by the study team and Planning Department after the last STAC meeting in December 2011 resulted in five recommendations. Recommendations 1-3 focus on establishing a County process for incentivizing and encouraging IAL designations. Recommendation 4 directs the County and encourages the State to use maps and tools developed during this study process when reviewing petitions for designations and while considering the priority of candidate lands during County or State-led petitions. Recommendation 5 acknowledges opportunities for reviewing, expanding, and integrating recommendations made in this study in the forthcoming General Plan update.



Recommendation #1 – Develop County-level incentives program for IAL designations, specifically to encourage food production to *increase* self-reliance

Pursuant to Act 183 (SLH 2005) counties are directed to both reduce infrastructure requirements on agricultural lands and develop incentives to promote the designation of IAL.

To this end, the following are recommended:

- 1. Define the County’s role in supporting and incentivizing active/viable agriculture, to include (1) establishing a lead agency for implementation efforts; and (2) updating the County’s Agricultural (1983) Agricultural Plan.**

Within the County of Kaua’i, the Planning Department, Department of Finance Real Property Tax Office, Department of Public Works Buildings Division and Solid Waste Division, Department of Water, and the Office of Economic Development have requirements and responsibilities relating to agriculture – whether regulating use, taxes, development, waste stream or supporting agribusiness. In order to develop a County-level program for IAL designations, it will be advantageous to define the roles of each agency and to establish a lead agency for implementation. Staffing is also needed, in particular at the Office of Economic Development, as this agency manages or coordinates agricultural-support grants and committees.

- 2. Amend the County Agricultural Dedication Program (Section 5A-9.1, Kaua’i County Code), which provides tax benefits to landowners who dedicate their agriculturally-zoned lands; in order to expand benefits for landowners of designated IAL. This could include but not be limited to:**
 - a. Automatic enrollment into Agricultural Dedication program or specific a IAL program
 - b. Developing a separate tax bracket for IAL designated lands
 - c. Removal of penalty for removing lands from dedication program (since lands will still be dedicated to agricultural use)
 - d. Development of specific rules for IAL designated lands, pursuant to Act 183, relating to use.
 - e. Explore increased tax incentives for those IAL that become or include agricultural easements.

Upon establishment of a County-Level IAL Incentives Program, participating agencies would discuss appropriate measures for incentivizing food production, rule changes to harmonize definitions and authorities, and redefining appropriate land use for different “categories” of agricultural lands. This effort could also be considered in the scope of the Agricultural Plan update.

- 3. Work to develop and/or strengthen partnerships with agricultural-related groups on Kaua’i to create incentives and opportunities for housing, labor/jobs, education, marketing, reduced cost of processing and transport of goods, and other functional/business-supporting components for landowners and farmers with IAL designations.**

There is significant opportunity to partner or coordinate with organizations on Kaua’i to support farmers and agribusiness. During the Kaua’i Agricultural Forum held in April of 2012, priority goals relating to land, labor, crops/commodities, marketing, distribution, pests/disease/invasive species, waste/resource stream, research and education,

legislation, and community/home gardening were formulated.⁵⁷ Once a County-Level IAL Incentives Program is established, it would be valuable for participating agencies to review the goals developed during the agricultural forum. First, goals already being implemented through the County's authority could be identified. As aforementioned, the Office of Economic Development manages/participates in a variety of programs and committees that support agriculture. These include but are not limited to:

- The Kaua'i Grown Program
- The Comprehensive Economic Development Strategies (CEDS) Program, Food and Agricultural Committee
 - Capacity Building
 - Commercial Kitchen
 - Agricultural Business Plan Competition
 - Island-wide Agricultural Park System
 - Slaughter house facilities
- Sunshine Markets
- Agricultural Production Food and Sustainability

Next, opportunities for further support of agriculture through partnering could be established. For example, helping to reduce the cost of on-island transport or products; establishing centralized processing facilities; partnering to expand marketing opportunities through the agriculture dedication program; establishing training and reporting mechanisms for permitting of agricultural tourism or other agricultural-commercial endeavors, which encourage appropriate use and management of agricultural lands while expediting permitting processes.

In addition to the Office of Economic Development, County staff within the Planning Department and other departments are already involved in the Access to Healthy Foods Task Force (ATHFTF), a sub-group of Get Fit Kaua'i, which is funded through the Healthy Hawai'i Initiative. The Access to Healthy Foods Task Force is currently focusing on the following goals similar to that of the State Office of Planning and Department of Agriculture. In particular:

- ◆ Expand the EBT program at Farmers Markets
- ◆ *Increase preschools access and utilization of healthy foods in their snack programs*
- ◆ *Develop a plan for a sustainable Food Policy Coalition on Kaua'i*

It is recommended that the County further support/participate the work of the ATHFTF, which could help to coordinate greater sector participation toward the development of incentives and policies toward increased food self-sufficiency.

Another role for the County to explore in its development of a *comprehensive* IAL Program is that of a government facilitated "farm-to-table" program. There are many models currently used in the United States (such as in Virginia and Minnesota) in which local government or non-profits assist with the facilitation of supply and demand of product, usually for smaller farmers. On Kaua'i, community or other non-government organizations on the North Shore and in West-Kaua'i have begun efforts to establish farm-to-table programs. A criterion for participation and direct County support/incentives could be farms whose lands have been designated as IAL.

- 4. Work with the State Department of Agriculture and State Land Use Commission to clarify rules and authorities relating to permitting of farm dwellings, accessory structures, agricultural processing facilities, and approval of farm plans and farm worker/employee housing.**

⁵⁷ Mahalo to Island Breath for summarizing and posting the results of the Kaua'i Industry Forum at: <http://islandbreath.blogspot.com/2009/04/kauai-agricultural-goals.html>.

It is recommended that requirements for farm dwellings and employee housing be harmonized and authorities clarified, in order to reconcile inconsistencies between State and County regulations.

During legal review and discussions with stakeholder, technical advisors, and affected agencies, the following were suggested:

- a. Harmonize definition of “farmer” on state and county levels.
- b. Harmonize definitions for “farm worker housing” and “farm dwelling unit” within HRS §205-45.5 and County CZO Section 8-7.9(2).
- c. Synchronize and/ or clarify authority relating to HRS §205-45.5 which allows “farm dwelling units” and “employee dwelling units” to occupy no more than 5% of the total IAL or fifty (50) acres at the maximum, with CZO Section 8-7.9(2).

CZO Section 8-7.9(2) limits three (3) farm worker housing structures to be built on “subject property.” In total, floor area of all structures combined cannot exceed 1,800 square feet, and no structure (itself) may exceed 1,200 square feet. A landowner or farmer permitted by the Department of Agriculture to develop dwellings/employee housing over this density allowance would result in a violation from the County.

- d. The State (Department of Agriculture) may consider specifying or, at a minimum, reinforcing during review of agricultural plans for IAL, County requirements pursuant to Section 8-7 as follows:
 - (i) Tenants of employee housing units must work least 19 hours per week;
 - (ii) [Commercial] farm income must be or exceed \$35,000 per year;
 - (iii) Owners or lessee of the property shall not charge their workers or their immediate family members for rent or electricity;
 - (iv) An annual certification to the Director of Planning is required;
 - (v) Landowners may not sell farm worker housing structures for use outside the property for which permit for use was acquired.
- e. Harmonize HRS §205-51(b) with CZO Section 8-7.4, relating to subdivision of parcels in the agricultural districts.

Per HRS §205-51(b), “For counties without ordinances adopted [pursuant to subsection (a)], important agricultural lands designated pursuant to this part may be subdivided without county processing or standards provided that: 1) none of the resulting lots shall be used solely for residential occupancy; and 2) the leasehold lots shall return to the original lot of record upon expiration or termination of the lease.” This provision currently conflicts with Kauai CZO Section 8-7.4, which allows for a one-time subdivision of parcels in the agricultural district.

5. Work with the Department of Agriculture and State Land Use Commission to clarify land reclassification incentive.

It is recommended that the established County-Level IAL Incentives Program or the Planning Department work with the Department of Agriculture and State Land Use Commission to clarify criteria relating to Incentive #7, Land Reclassification. Specifically:

- ◆ What process will be used to determine appropriateness of reclassification?
- ◆ Will county general plan and development plans be used to determine appropriate location and scope of reclassifications?
- ◆ Will the county be able to specify, or at minimum, recommend appropriate size and location of reclassifications (in order avoid reclassification of prime agricultural areas and to be consistent with general and development plans)?
- ◆ If reclassification is not sought concurrently with IAL designation petition (if it is waived), how will this be managed, and how will counties weigh in on appropriate use of credits?

6. Amend the CZO to allow for clustering and to include density bonuses, with criteria, for landowners of designated IAL.

Rules relating to subdivision of agricultural lands should protect farming lands and promote clustering. HRS §205-51b establishes that “for counties without ordinances adopted [pursuant to subsection a] important agricultural lands designated to this part may be subdivided without county processing or standards provided that: 1) none of the resulting lots⁵⁸ shall be used solely for residential occupancy; and 2) the leasehold lots shall return to the original lot of record upon expiration of the lease.”

Although Act 183 requires the County to adopt ordinances reducing subdivision standards, in order to reduce the cost of land for farmers and to avoid “gentleman estates,” this provision essentially circumvents the current CZO which allows only a *one-time subdivision* of contiguous agricultural lands. In addition, there are no specifications the legislation on how “leasehold lots” will “return to the original lot or record” neither is it clear how this process will be monitored.

It is recommended that the CZO be amended to allow for clustering of dwellings on IAL. Density requirements, criteria for siting of clusters, and monitoring, should be considered in amendment.

7. Explore reduced water rates for landowners and/or lessees of IAL who are actively farming.

Reduced water rates are currently available for parcels engaged in farming, although these rates have recently been increased. The county-level IAL program, through participation by the Water Department and coordination with the Department of Land and Natural Resources and the Commission on Water Resources Management could explore creative solutions for infrastructure improvement and access, development of grey water systems, and other ways to decrease cost and increase land productivity.

8. Create a bond float to fund improvements for water infrastructure for irrigation in priority areas, to benefit lands designated as IAL.

The County could explore bond floats for water infrastructure improvements in key areas.

9. Support legislation and other initiatives that seek to:

- a. improve water access and infrastructure for agricultural purposes;
- b. promote and/or establish food securities program relating to prioritizing and sustaining agriculture;
 - i. promote agricultural industry for local consumption and export; and
 - ii. allocate monies for the development of agricultural and water use plan for the State.

10. Consider amendments or clarifications to Act 183 relating to Criterion #7, *Lands that contributes to maintaining a critical land mass important to agricultural operating productivity.*

A discussion that ensued through the project process was in regard to the opportunities and challenges of stemming from agricultural lands of critical mass that are under the holding of one landowner/land manager. Competition for leases of agricultural land and access to water with GMO and GE foods (also referred to as “seed crop”), solar farms, and biomass cultivation is of great concern to many small farmers, ranchers, and supporters of small agricultural enterprises. Note that the concerns are not regarding the agricultural land designation itself, but the ability to provide incentives to facilitate the increase of smaller farming enterprise, either through tax credits, training, or other support mechanisms that could allow for alternative cooperation between large landowners of agricultural lands and small farms or farming enterprise. It is the intent of this study to encourage a continued dialogue for solutions/ opportunities for increased support of local farming endeavors.

⁵⁸ “Lots” are not defined in this section.

A particular concern to members of the community is the need for soil renourishment (or alternatives to currently used methods) in areas of the island that have been used or is currently being used for mono-crop or “plantation-style” agriculture. Subsequent studies or projects relating to increasing the productivity of agricultural lands could explore opportunities for soil remediation, such as those being examined by the US Environmental Protection Agency. Additionally, there may be opportunities to explore appropriate soil remediation technologies through partnership with large agribusiness enterprises operating on the island as well as through the community college.

Further discussion regarding “scale of enterprise” is recommended as a way to more succinctly define agriculture [for Kauaʻi]. It has been suggested that agriculture “type” and “intensity” are defined by or are most dependent on its *scale*. Land, resources, infrastructure needs (including processing facilities), and other requirements for cultivation (soil amendment, herbicides, pesticides, if at all) of small-scale enterprises differ greatly from that of large-scale monocrop enterprises, which require large inputs for successful production.



Recommendation #2 – Establish a minimum goal for County-led designations

Decide on a strategy to meet designation goals.

Move to designate and/or support the designation of a minimum of 21,158 acres to meet the requirements for cultivation of food crops to feed a population of approximately 70,000 people.⁵⁹

The “Strategy for County-led Designation of Important Agricultural Lands” on page 45 of this study provides three options for moving forward with designations. This study recommends strategy C, a phased approach to designations.

As discussed on page 45 of this study, the following criteria for prioritizing lands for County-led designation are being recommended:

1. Review the potential for IAL on a variety of lands island wide, refer to “Overview Map of Agricultural Lands Meeting the Threshold for County Designation”;
2. Prioritize those lands of fifteen (15) acres or more;
3. Prioritize those lands that meet a threshold of 28 or more first; followed by those lands that at least meet the criteria for water availability (through parcel score and evidence);
4. Prioritize lands already in production of food first, or if not, currently being farmed.
5. Work with landowners and other stakeholders to further develop a County-Level IAL Incentives/Support Program.

Approximately 53,547 acres of agricultural land meet or exceed a threshold score of 28 points. *Agricultural lands with a threshold score of 28 points and above sufficiently meet all criteria of the IAL legislation.* Excluding State managed lands, lands already designated on Kauaʻi (approximately 16,263 acres), and those lands slated for public projects, the sum of lands that meet the criteria above is approximately 20,125 acres.

⁵⁹ This recommendation does not imply that meat, timber, energy crops, or plants grown for medicine should not be considered on agricultural lands. Recommendation #2 provides criteria for the County when considering size and location of County-led designations.

Table 16 - Recommendation for Designations (County-Led or Landowner Initiated Petitions)⁶⁰

	Acres
Agricultural Lands on Kauaʻi	136,908
Total Lands meeting proposed criteria for recommendation #2	53,547
Total lands already designated (by private landowners)	16,263
Approximate acres of land in food crop production needed to feed current population of approximately 70,000 people	21,158
Total Lands meeting criteria above minus State managed lands, lands already designated, and those slated for County projects	20,125
Phase I - designation goal, immediate to 5 years (21,158 minus 16,263)	4,895
Phase II designation goal, 5 to 10 years (20,4895 minus 4,895)	+15,230

Designation of an additional 4,895 acres of agricultural lands in an initial designation phase would bring the total IAL designations to 21,158 acres. Designation of these lands alone will not *guarantee that they will be used for food* or primary resources production. There are no provisions for such requirement in our current laws. Until amendments to the CZO or other county or state rules specifying allowable uses on IAL are adopted by ordinance, those activities currently allowed under the CZO that do not conflict with Chapter 205 can continue. Direct incentives to landowner or farmers for using IAL for the cultivation of food or raw resources material could be partially met through the development of a County-Level IAL Incentives Program as discussed in Recommendation #1.

Although this study discusses the priorities of the community in regard to the future of agriculture on Kauaʻi, it does not distinguish between “good” or “bad” agricultural use. Rather, it suggests (1) an imminent need for increasing the cultivation of food and raw materials in order to increase community access to fresh, healthy, affordable food and materials; and (2) the need to coordinate and revitalize Kauaʻi’s processing of and distribution [system] of food and materials in-state and Pacific-wide.

To date, all designations have been landowner-initiated. The majority of these designated agricultural lands are (currently) not in food production.⁶¹ Although the County would reach its *designation goal* by adding another 4,895 acres to its IAL repository, this alone will not further the *community’s goal* of increasing food self-sufficiency for the current population. Bearing this point in mind, stronger emphasis could be placed on sub-criteria (4) above, “prioritize lands already in production for food first, or if not, currently being farmed.” The County should review those lands in crop production or with high *potential for production* (food or perhaps crops for building materials, textiles, or medicine) among the agricultural lands that meet the prioritization criteria first, followed by those lands in crop production or with high potential that may benefit from an IAL designation in order to increase (for instance) access to water, processing facilities, or other incentives necessary for production. Designation of lands in addition to incentives, partnerships, and support from business and community shall expand opportunities to meet and exceed the community’s goals.

The County could initially petition the State Land Use Commission to designate a *minimum* of 4,895 acres of agricultural lands in strategic locations to meet its immediate designation goal. As the IAL Incentives Program (recommendation #1) is developed, the County could designate additional acreage of IAL with incentives focused on food production.⁶² Discussion of additional

⁶⁰ Updated February 2014.
⁶¹ Food crop meaning fruits, vegetables and starches.
⁶² Pursuant to HRS §205-52: “The maps delineating important agricultural lands shall be reviewed in conjunction with the county general plan and community and development plan revision process, or at least once every ten years following the adoption of the maps by the land use commission; provided that the maps shall not be reviewed more than once every five years.”

acreage in the mid- and long term priorities should be integrated into the upcoming General Plan Update process for the County of Kauaʻi.

The County should reserve the authority to consider agricultural lands with threshold scores lower than 28, if the opportunity arises for a beneficial public/private project. For example, the County's seventy-five acre Agricultural Park could benefit from an IAL designation in order to foster the development of a non-potable water system and other infrastructure needs. The threshold target of 28 provides a method for at least prioritizing its designation recommendations.

Once the County Council has communicated a designation strategy to the Administration, the Administration will spatially identify candidate lands and formulate maps for adoption pursuant to HRS 205-47(d).



Recommendation #3 – Support landowner/farmer-initiated designations of agricultural lands that at least meet criterion #5 of Act 183 (SLH 2005), “land with sufficient quantities of water to support viable agricultural production.”

Since water availability was found to be the most important factor in determining agricultural viability on a parcel of land, it is recommended that the County support landowner-initiated designations of *actively-farmed* lands that are shown to have *sufficient water*. Approximately 92,513.9 acres of agricultural lands on Kauaʻi theoretically meet this criterion. *In general*, agricultural parcels of an average threshold of 10 and above meet criterion #5, “sufficient water.” However in order to determine whether a parcel is a good candidate for designation, the water criterion score generated by the parcel calculator tool should be reviewed in conjunction with evidence from a landowner and/or farmer and if necessary, ground-truthing.



Recommendation #4 – Use IAL maps and tools when reviewing landowner/farmer-initiated petitions or for evaluating priority lands for designation by State or County.

State and county agencies mandated to review petitions for IAL designation should use maps and tools developed through this study process to evaluate landowner-initiated petitions. In addition, maps and tools should be used by the Land Use Commission, Department of Land and Natural Resources, and the Department of Agriculture when prioritizing State-owned or other lands for designation. The maps and tools should be updated/reviewed at least every five years.



Recommendation #5 – Evaluate and integrate findings and recommendations of IAL Study into the General Plan Update for the County of Kauaʻi

Amendments to the County Zoning Ordinance relating to use on IAL designated lands should be evaluated within the larger land use context. Smart or sustainable code development as an overlay or amendment to county zoning (in the form of *transects*⁶³) will be a focus of discussion during the upcoming General Plan update for the County. This provides an opportunity for findings and recommendations of the IAL study to be evaluated as to how it balances the overall land use needs for Kauaʻi. It also provides the opportunity to consider amendments to the County Zoning Ordinance, to clarify policies relating to agricultural use in order to minimize rural sprawl while increasing the County's agricultural viability. The Urban Growth Model developed during the IAL Study process is a useful tool that can be expanded upon during the General Plan Update process. As mentioned in Recommendation #2, discussion on or additional designations should also be integrated into the General Plan Update process.

⁶³ A *transect* in land use terms is a cross-section of the environment showing a range of different habitats. The rural-urban transect of the human environment used in the smart code template is divided into six zones. These zones describe the physical form and character of a place, according to the density and intensity of its land use and urbanism.

The Threshold maps should also be evaluated as part of the General Plan update process, in order to determine where/how potential areas of growth overlap potential candidate lands for IAL Designation. The Community Progress during the General Plan update is a valuable tool for determining support for potential expansion of Urban Centers in order to accommodate growth; while considering lands that should be designated as IAL.

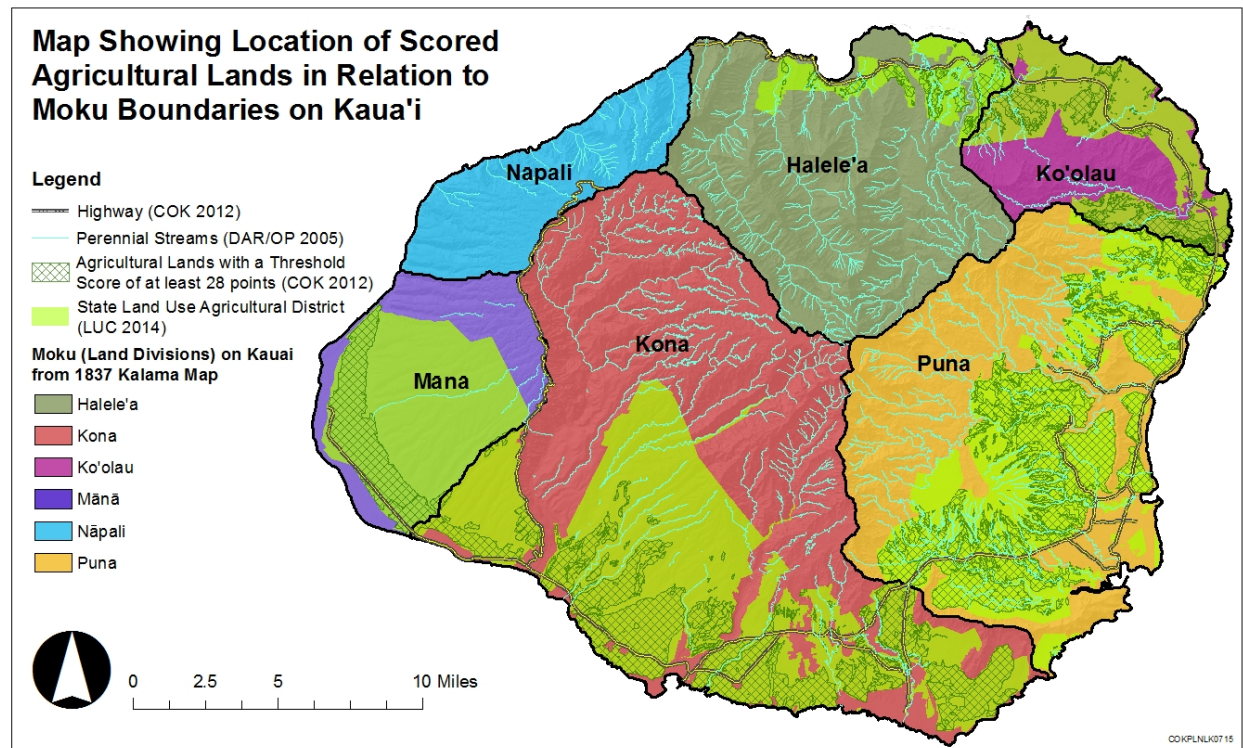
VII. Historic and Emerging Trends

During the course of the project, STAC and members of the community raised topics or concerns not initially identified through the project scope, which helped to refine the inputs and methodology used in the project. This section outlines the results of these discussions.

A. Traditional Trends

Agriculture is the history and lifeline of these Hawaiian Islands. *Mālama ‘āina* or caring for the land is ingrained within the fabric and language of the culture. Maka‘ainānā, loosely translated as “the common people” truly means “those who watch that which feeds” (“that which feeds” being the land). To be occupied with the growing of food and resources for one’s ‘ohana and community is to be occupied with ensuring the health of the land, water, air, and natural systems which provides our food and resources. A system of land management, based primarily on agricultural production, persisted for thousands of years throughout Polynesia and the Pacific; principles and methods which are still accessible through our *native culture and language*. This is important to mention, since many of the agricultural-related infrastructure or agricultural patterns used by people today are inherited from the people of old. These include the foundation of modern taro fields, water ways and transport systems. Understanding more about our history of land management can help to determine the appropriateness and location of new agricultural fields and uses (such as crop type, crop siting, seasonal patterns, impacts to adjacent lands, irrigation methods, etc) and transport systems for products. It is also important to emphasize that traditional agricultural products are still in high demand locally as well as abroad and are synonymous with both healthy living and regional identity. Taro, coconut and breadfruit, all indigenous, all consumed locally, and all producing a variety of products a-piece (in addition to being directly consumed) are notably candidates for growing/processing incentives.

Map 19: Map Showing Location of Scored Agricultural Lands in Relation to Moku Boundaries of Kaua‘i



B. Current Trends

Current trends are those shared during STAC meetings, usually relating to the use of agricultural lands by the sugar, pineapple, or other plantations.

1. Water access and infrastructure improvement

“Water sufficient for agriculture” (Criterion 5) was the most complex IAL criterion in terms of data management and one that stimulated much discussion in the STAC and regional meetings. Concerns were raised about the existence and maintenance of reservoirs, new dam safety rules and the need for a comprehensive update to the water inventory and management plan.

i. Reservoirs

Concerns were raised about the need for “groundtruthing” to verify the existence of reservoirs identified through aerial imagery as well as State and County data. The committee also discussed the potential “decommissioning” of reservoirs by the DLNR. In January 2011, a member of the STAC committee advised against use of the term “decommission” when discussing the closure of reservoirs, since it is a specific technical procedure, and only one reservoir on Kaua’i is actually scheduled for decommissioning.

ii. New Dam Safety Rules

The dam safety revisions are required under the Hawaii Dam and Reservoir Safety Act of 2007, HRS §179D. They are intended to provide guidance on new construction of dams, alterations or removals of existing dams, clarify certificate to impound application requirements, set the amount for fees, establish minimum operational and physical requirements, clarify definitions, and implement other related requirements pursuant to HRS §179D.

Dam Permit Application fees are for construction, repair, alteration or removal of dams, and constitute 2% of the estimated cost of the total construction, repair, alteration or removal of dams, including engineering costs. Another new requirement is to have a Certificate of Approval to Impound, a \$400 application fee due once every 5 years (reduced from original \$12,000). In order to obtain a certificate to impound, a landowner must prove deficiencies to structural or safety operation integrity of a facility. Owners are allowed to impound water during the application process for initial certificate to impound unless a dam poses threat to health and safety of surrounding residents/community. Owners must also pay annual fees of \$500 *plus* \$110 per foot of height.

STAC members expressed concern that the annual fee will serve as a disincentive for dam maintenance, and that the pro-rated credit system initially proposed would be unfair to dam owners who have already completed repairs. Since these rule amendments will affect the county’s vital agriculture industry, it is recommended that the State continue to fund the dam safety program, instead of levying fees on farmers and landowners.

2. Local and Export Markets

The cost of producing and transporting food on island as well as off has increased tremendously due to the cost of labor and fuel. The County’s draft Multimodal Land Transportation Plan (2012) acknowledges that after 1995, “Kaua’i entered a third phase where agriculture lands lay fallow and unused” which led to the establishment of Corn seed businesses mostly on the west-side of the island and the rise of small-scale farms, particularly on the North Shore. The draft plan maintains that “if Kaua’i is to grow its agriculture into a significant source of employment and income, it must be able to ship produce to O’ahu, to [other] neighbor islands, and to other global markets.”⁶⁴ Accordingly, this will require improved intermodal connections and a centralized storage and processing facilities, ideally in Nāwiliwili.⁶⁵ The plan recommends that the County focus its agricultural transportation efforts in the following areas:

- ♦ Reducing the cost of transporting and processing locally-grown farm products;
- ♦ Protecting against disruption of on-island transportation networks during storms and other emergencies;
- ♦ Improving access by residents and visitors to healthy foods, including locally-grown and raised fruits, vegetables, grass-fed beef, sea foods, and dairy products; and
- ♦ Ensuring agriculture workers have affordable and reliable access to their jobs.⁶⁶

The draft plan provides the following components, even those specific to IAL, to be considered in order for an agricultural industry to flourish. The components have been amended or modified for this study:

⁶⁴ Draft Kaua’i Multimodal Land Transportation Plan, July 2012, page 6-40.

⁶⁵ Ibid, page 6-41.

⁶⁶ Ibid, page 6-39.

Figure 8: Components of agricultural viability related to transportation

<u>Access to IAL</u> <ul style="list-style-type: none">◆ Identify missing links in local public road networks◆ Evaluate County subdivision regulations, State CPR laws, County accessory dwelling unit provisions and related County ordinances and policies to avoid unintended consequences of improved farm-to-market road system	<u>Intermodal Storage, Processing and Transfer Site</u> <ul style="list-style-type: none">◆ Confirm priority needs and determine how a facility should be funded and operated◆ Site location and design study◆ Take the lead in implementing facilities. Look for partnerships in the private sector.⁶⁷
<u>Commute Access to Agricultural Employment</u> <ul style="list-style-type: none">◆ Improve bicycle and transit access to agricultural jobs	<u>Farm-to-Market Cooperative Systems</u> <ul style="list-style-type: none">◆ Sponsor a feasibility study of agricultural cooperatives on Kauaʻi for the purposes of providing or coordinating local distribution of products for small farms and ranches on Kauaʻi.◆ Encourage new businesses that help with coordinating and conducting distribution, in order to lessen cost of transport for farmers and relieve additional traffic on the roadways.⁶⁸◆ Encourage new buyer/merchandizing operations that assist with/coordinate sale, delivery and account management of small farming operations.⁶⁹

C. Emerging Issues

1. Biofuels, Genetically Modified Organisms (GMO), and Genetically Engineered (GE) Crops

In November 2010, Al Gore publically announced that ethanol from corn is counterproductive as a “green energy source,” and that its subsidized uptake has caused price increases and Third World food shortages. Diverting corn – which is a standard ingredient for a wide variety of food products — from feeding livestock and producing food, to manufacturing ethanol has been reported to cause a trickle-down effect throughout supermarkets. USDA research shows corn prices this year are 71% higher than in 2005, versus a 55% increase in crude oil. Subsidizing the "market" for ethanol cost U.S. taxpayers more than \$7 billion in 2009 alone, and Reuters reports that this year 41% of American corn, or 15% of the global crop, will be converted to ethanol.

With the recent expansion of GMO and GE production in the State of Hawaii and on Kauaʻi, there is concern about the extent to which the production is for the purpose of ethanol production. Because GMO corn production affects nitrogen content in the soil and in the air, concerns have been raised about the effects this may have on non-GMO agricultural activities, the natural pollination process by honeybees, soil conditions and atmospheric condition. The extensive application of herbicides and/or pesticides on crops planted near residential neighborhoods and in close proximity to schools, hospitals, beaches, and other community gathering places has been raised by both residents and visitors as a concern.

Various members of the community have requested that if these agricultural practices are allowed to continue, documentation and verification of chemical derivatives the communities are being exposed and their impacts (both locally and globally) be made available. Safety and health of both people and important agricultural lands should be considered when reviewing large-scale industrial-type agricultural Initiatives.

Relating to the discussion of the impact of plantation agriculture/large-scale mono-crop type farming practices which employ the use of chemicals or other toxins, new technologies have recently emerged to address the need for soil and water (or site-) remediation. The US

⁶⁷ Amended.
⁶⁸ Amended.
⁶⁹ Amended

Environmental Protection agency has developed a variety of white papers and pamphlets discussing organic (or other) bioremediation techniques.⁷⁰

2. Property values

Act 183 does not consider the impact that IAL designations may have on property values. This was of concern to the majority of the STAC and community members, not just large landowners. It can be assumed that if IAL will significantly lower property values, this will benefit farmers, for who the legislation intended to advantage.

3. Condominium Property Regime (CPR)

Subsequent to STAC meetings, there has been much interest from landowners and farmers on agricultural CPRs to designate their units/lots. However, since CPR's tend to be small and typically less than fifteen acres, designations may lead to the proliferation of dwellings, structures, and processing facilities on small agricultural plots, which would violate current county zoning codes. Clustering of farm dwellings, structures, and facilities, on the parcel level, versus the CPR level would help to minimize unintended sprawl and abuse of IAL (for non-agricultural purposes).

4. IAL and Sustainable Code Development

Land use planning is moving away from the Euclidean model, which segregates uses (commercial in one area, residential in another, etc) and does not allow for flexibility in design according to the needs of individual communities that make up a region. Sustainable or "Smart" codes are being used increasing across the United States as critical pathways to sustainability, whether for community health, safety and access; for environmental conservation; or creation of improved multi-modal transportation networks. The County of Kaua'i has already begun to integrate sustainable codes into its land use management regime with the adoption of its Complete Streets Resolution (2011). The County Zoning Ordinance, General Plan, and development plan updates will all include sustainable code development into its process.

The graphic below shows the typical smart code transect. It identifies the scale and features of urban areas (T6) to natural zones (T1) and those transects that fall between. The principals of transects are adaptable to areas, and can be designed for specific community areas, according to their vision and priorities (for example, to remain rural but still have some commercial amenities).

Figure 9: Illustration of transect-based/ Smart Code (2003 by Duany Platerzyberk & Company)



Andres Duany, noted as one of the forefathers of "new urbanism" has also written several books and articles on *Agricultural Urbanism*. Ag urbanism, says Duany, creates a walkable urban form surrounded by large-scale food production. This is different from the better-known

⁷⁰ http://www.epa.sa.gov.au/xstd_files/Site%20contamination/Guideline/guide_soil.pdf
<http://greenbizness.com/blog/wiki/epa-bioremediation-guide/>

“Urban Agriculture” which cuts out various spots throughout an urban center (like empty parking lots) for community gardens and temporary farmers markets. Duany explains that “in a rural setting, ag urbanism means clustering buildings together” allowing farmers to be able to work large tracts of land and still pool resources and interact with other farmers and members of the community.⁷¹ The idea of ag urbanism works along-side smart code transects, providing for integrated, continuous agricultural in different scales in varieties.

The possible impact this would have on agriculture on Kauaʻi could be tremendously positive, if designed well and supported by the community. IAL and Open zones could serve as the larger, contiguous agricultural (and natural) zones which buffers and connects transects/communities. Agricultural corridors could run throughout a community or region, whether on IAL, agriculturally-zoned lands, or other land uses (where appropriate) to increase access, maintain the rural character of communities, provide green and blue belts (and therefore, accessible pedestrian/bike corridors), etc.

The role of agriculture as land use, economic, and community health/well-being tools could be explored during the upcoming General Plan Update process.

⁷¹ “Agricultural Urbanism: Transects and Food Production,” November 3, 2009, Houston Tomorrow.

VIII. Conclusion

This study process involved two foci. First, and primarily, to define, operationalize, and map lands which meet the criteria of Act 183, Important Agricultural Lands. As part of this focus, lands were prioritized in importance for the County to consider when pursuing designations (how much land, where, and by what rationale). A variety of thresholds were suggested for determining how many acres of IAL should be pursued within the next ten years.

- ♦ In order to meet the goal of designating “the most important agricultural lands” to meet the target of agricultural lands for food self-sufficiency, the study recommends an initial designation goal of a minimum of 21,158 acres. *Recommendation #2* is made with the understanding that agricultural uses other than for food production are still allowed to occur on designated IAL. It is hoped that the our “most important” agricultural lands, having the best access to water, productive soils, advantageous topography, and other attributes, will be used for the growing of food and other resources that will directly benefit the health and sustainability of our community. It is also recommended that the County prioritize and designate a maximum of 20,125 acres of additional lands within five to ten years.

A total of 16,263 acres of agricultural lands have already been designated on Kauaʻi.⁷² If Option C⁷³ is decided upon as a designation strategy, the Planning Department will move to prepare area-specific maps for designation. These maps will be transmitted to the Council for adoption and then submitted to the Land Use Commission for its decision.

- ♦ In order to increase the farming of food and primary resources on designated IAL this study strongly recommends a County-Level Incentives program (*Recommendation #1*). In addition to developing County incentives and supporting State and Federal incentives for landowners/lessees of designated agricultural lands, the incentives program should focus on necessary amendments to State and/or County rules to address inconsistencies relating to authority concerning IAL. The incentives program would involve, such as by a task force, the County’s Planning Department, the Department of Finance, Real Property Tax Office, Department of Water, Department of Public Works Building Division, and Office of Economic Development, which have responsibilities relating to development of agricultural lands, taxes, or economic development. This group would work with the Department of Agriculture; State Land Use Commission; Department of Land and Natural Resources; State Office of Planning; Department of Business, Economic Development and Tourism; Department of Health; and other agencies as needed, to build a successful Kauaʻi IAL program. *A lead agency for implementation efforts is imminent.* Staff will also be needed to administer the program for the lead agency. This study also discusses the County’s continued support and involvement in the Get Fit Kauaʻi’s Access to Healthy Foods Task Force as a means of facilitating and coordinating work relating to increased food self-sufficiency.

The second focus of this study was to provide a legal review of Act 183 and related policies on both the State and County level, to identify gaps and inconsistencies in implementing directives of the legislation, and to suggest changes to or new policies to harmonize these.

In addition to the two primary foci, this study provides an overview of historic and emerging trends for the County to be mindful of as it plans land use and IAL designations for the community. Agriculture is essential for feeding and providing necessary resources for the population, both directly (local consumption) and indirectly (by export).

Although the land use or “IAL” aspect of agriculture is important for ensuring that prime lands are protected for future generations, the system of agriculture comprises many other components, such as ensuring access and availability of water; designing communities around agricultural activities; creating and maintaining a labor force (including education and housing); integrating sustainable scientific and technological innovations to improve productivity and safety; creating and expanding ancillary businesses to support operations and commerce;

⁷² As of January 2014.

⁷³ Refer to page 45 of this study to review designation strategy options A-C.

improving transport of goods on and off island; and coordinating government agencies responsible for the various aspects of agriculture and agribusiness to minimize gaps and inconsistencies in regulations. At minimum, it is hoped that this study has organized opportunities and challenges relating to Important Agricultural Lands and agriculture, to encourage continued dialogue and work toward solutions for our islands' communities.



Appendix A— Acronyms and Glossary of Terms

Appendix A-1. Acronyms

AHP	Analytic Hierarchy Process
ALISH	Agricultural Lands of Importance to the State of Hawai'i
ALUM	Agricultural Land Use Maps
ARM	Agricultural Park Program (State of Hawai'i)
CZO	Comprehensive Zoning Ordinance
DBEDT	Department of Business, Economic Development, and Tourism (State of Hawai'i)
DLNR	Department of Land and Natural Resources (State of Hawai'i)
DOH	Department of Health (State of Hawaii)
DURP	Department of Urban and Regional Planning (University of Hawai'i)
EFU	Exclusive Farm Use (State of Oregon)
FSZ	Farmland Security Zone (State of California)
GIS	Geographic Information System
GP	General Plan (County of Kaua'i)
HDOA	Hawai'i Department of Agriculture
HRS	Hawai'i Revised Statutes
IAL	Important Agricultural Lands
LCC	Land Capability Classification
LESA	Land Evaluation and Site Assessment
LSB	Land Study Bureau
LUC	Land Use Commission (State of Hawai'i)
MALT	Marin Agricultural Land Trust
MLRA	Major Land Resource Areas
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
PACE	Purchase of Agricultural Conservation Easement
PDR	Purchase of Development Rights
RPAD	Real Property Assessment Division
SLH	Session Laws of Hawai'i
SLUD	State Land Use Districts

STAC	Stakeholder and Technical Advisory Committee
TDR	Transfer of Development Rights
TMK	Tax Map Key
UH	University of Hawai'i
UHERO	University of Hawai'i Economic Research Organization
USDA	United States Department of Agriculture

Appendix A-2. Glossary of Terms

Agricultural Lands of Importance to the State of Hawaii (ALISH)

An agricultural productivity rating system conducted as part of a national USDA inventory of important farmlands in 1977-78. The ratings are based on soil, climate, moisture supply, input use, and generalized production factors, ALISH created three classes of important agricultural lands: prime, unique, and other. “Prime” land has soils with the best physical, chemical, and climatic properties for mechanized field crops, and excludes urban land and water bodies. “Unique” refers to non-prime land that can be used for specific high-value crops produced in certain areas, such as coffee, taro, watercress, etc. Land classified as “other” is of state or local importance for production, but not prime or unique. It requires irrigation or has characteristics like seasonal wetness or erodability that require further management for commercial production¹. The ALISH GIS layer is available at: <http://hawaii.gov/dbedt/gis/alish.htm>

Agricultural Land Use Maps (ALUM)

Detailed land use maps of crop type, digitized based on information from State DOA Planning and Development Section and the US Soil Conservation Service 1978-1980. Commodities mapped include animal husbandry (grazing, dairy, hog, poultry), field crops (vegetables/melons, flowers, foliage/nursery, and forage/grain) and orchards (banana, papaya, macadamia nuts, avocado, coffee, guava). GIS data is available at: <http://www.state.hi.us/dbedt/gis/alum.htm>

Ahupua’a

The concept of *ahupua’a* is the foundation of traditional Hawaiian land and resource management. An *ahupua’a* is a "land division usually extending from the uplands to the sea" that allowed an *ali’i* (chief) and his people to live off of resources gathered from each distinct ecological zone. *Ahupua’a* management is similar to watershed management in that *ahupua’a* land divisions based on natural features such as mountain ridges and streams, much like watersheds (Wai’anae Ecological Characterization, 2010). See *Watershed Management*.

Critical land mass for agriculture

Agricultural land should be protected and preserved in large contiguous blocks in order to maintain a "critical mass" of farms and agricultural land (American Planning Association, 1999). This is to help promote farming as a viable industry by reducing conflict with neighboring incompatible land uses, helping create economies of scale, and reducing “impermanence syndrome” that occurs when farmers succumb to development pressures because they don’t believe the land around them will remain in agriculture.

Fallow land

Fallow land is temporarily out of production with plans to return to production on a scheduled basis. Active land may be fallowed as part of crop management. E.g., seed corn is fallowed for thrips control (STAC mtg. 5, 2010)

Grazing/pasture land

Land used for domestic livestock to convert grass and other forage into meat, milk and other products (Wikipedia, 2010). See *Pasture land*.

Idle land

Inactive land that was previously cultivated with no plans to return to active production. e.g., former sugar land that is not in cultivation with no plans to return to active production (STAC mtg. 5, 2010)

Important Agricultural Lands (IAL)

¹ Agricultural Land Rating Systems Presentation, HDOA & Office of Planning. February 5, 2000.

For the purpose of Act 183, passed by the Hawaii State Legislature in 2005 to conserve and protect valuable agricultural lands, IAL are: those lands that are capable of producing sustained high agricultural yields when treated and managed according to accepted farming methods and technology; contribute to the state's economic base and produce agricultural commodities for export or local consumption; and are needed to promote the expansion of agricultural activities and income for the future, even if not currently in production (Hawaii Department of Agriculture, 2010).

Land Study Bureau (LSB) productivity ratings

Overall productivity rating from "A" very good to "E" not suitable; based on soil properties, topography, climate, technology, crop type were developed by LSB and UH concurrent with USDA soil survey 1965-1972. GIS data are available on State GIS website:

<http://www.state.hi.us/dbedt/gis/lsb.htm>

Rotational land

Crop rotation is practiced to avoid the build-up of pathogens and pests that often occurs when one species is continuously cropped and to balance the fertility demands of various crops to avoid excessive depletion of soil nutrients (Wikipedia, 2010). Rotation may include fallowing land on a scheduled basis (STAC mtg. 5, 2010).

Traditional Hawaiian crops

The principal Hawaiian crops were taro, sweet potato, breadfruit, yams, sugarcane, bananas, coconuts, paper mulberry, gourds, *ti*, *'awa*, arrowroot, turmeric, and bamboo. Domesticated pigs, dogs and chickens were also raised (Clark 1986). Rice and sugarcane are historically important but mostly out of production now. Fishponds/aquaculture: o'opu, opai, a'ama crab, Samoan crab (STAC mtg. 3, 2010).

Unique Crops

Coffee, vineyards, citrus, upland energy (widely defined or current woods, kukui, niu, biomass), corn, other unique crops (watercress, papaya).

Watershed Management

Watershed management recognizes the interconnectedness of ecological components, such as the relationship between deforestation, soil erosion, and poor water quality. As part of its holistic approach, watershed management encourages the input of stakeholders and the public, with the recognition that natural resource management plans cannot succeed without acceptance and commitment from community members (Wai'anae Ecological Characterization, 2010).



Appendix B— Hawai‘i Revised Statute Chapter 205 Part III Important Agricultural Lands

*Formally Act 183 (SLH 2005) and Act 233 (SLH 2008)

[PART III.] IMPORTANT AGRICULTURAL LANDS

Note

Acquisition of important agricultural lands owned by the Galbraith Estate; department of land and natural resources powers, etc. L 2008, c 234, §§8 to 10.

Cross References

Acquisition of important agricultural lands, see §§163D-31 to 163D-33.

Acquisition of resource value lands, see chapter 173A.

Legacy land conservation commission, see §§173A-2.4 to 173A-2.6.

Law Journals and Reviews

Avoiding the Next Hokuli'a: The Debate over Hawai'i's Agricultural Subdivisions. 27 UH L. Rev. 441 (2005).

[\$205-41] Declaration of policy. It is declared that the people of Hawaii have a substantial interest in the health and sustainability of agriculture as an industry in the State. There is a compelling state interest in conserving the State's agricultural land resource base and assuring the long-term availability of agricultural lands for agricultural use to achieve the purposes of:

- (1) Conserving and protecting agricultural lands;
- (2) Promoting diversified agriculture;
- (3) Increasing agricultural self-sufficiency; and
- (4) Assuring the availability of agriculturally suitable lands, pursuant to article XI, section 3, of the Hawaii State Constitution. [L 2005, c 183, pt of §2]

Note

L 2005, c 183, §§9 and 10 provide:

"SECTION 9. (a) It is the intent of this Act [enacting sections 205-41 to 205-52 and amending sections 205-3.1, 205-4, 205-6, and 205-17, Hawaii Revised Statutes]:

- (1) That agricultural incentive programs to promote agricultural viability, sustained growth of the agricultural industry, and the long-term use and protection of important agricultural lands for agricultural use shall be developed concurrently with the process of identifying important agricultural lands as required under section 2 of this Act [sections 205-41 to 205-52]; and
- (2) That the designation of important agricultural lands and adoption of maps by the land use commission pursuant to section 2 of this Act [sections 205-41 to 205-52] shall take effect only upon the enactment of legislation establishing incentives and protections for important agricultural lands contemplated by section [205-46] and shall be satisfied by:
 - (A) Providing a declaration of satisfaction within the Act that establishes incentives for important agricultural lands; or
 - (B) Having the legislature adopt a concurrent resolution declaring the satisfaction of implementing incentives for important agricultural lands by identifying the specific measures or Acts that establish incentives for important agricultural lands.

(b) Pursuant to section [205-46], Hawaii Revised Statutes, the department of agriculture, with the assistance of the department of taxation, shall contract appropriate meeting facilitation and cost-benefit analysis services to develop and recommend a package of proposals for agricultural incentives and other measures that promote agricultural viability, sustained growth of the agricultural industry, and the long-term use and protection of important agricultural lands.

The department of agriculture, in consultation with the department of taxation, shall use consultants to promote a

facilitated meeting process and deliberation and seek the assistance and input from the Hawaii Farm Bureau Federation, landowners, affected state and county agencies, other stakeholders, and persons with relevant expertise that are necessary to develop and implement a comprehensive and integrated framework of incentives and programs that will promote agricultural viability, sustained growth of the agricultural industry, and the long-term use and protection of important agricultural lands for agricultural use in Hawaii, including tax policy, agricultural business development and financing, marketing, and agricultural land use techniques. The meeting facilitators shall ensure that stakeholder discussions are inclusive and use a consistent voting procedure. The department of agriculture shall report stakeholder findings and recommendations, including proposed legislation and a recommended minimum criteria for determining when the "enactment of legislation establishing incentives and protection" has occurred for the purposes of this Act, to the legislature no later than twenty days before the convening of the regular session of 2007. The report shall include an analysis of the impacts and benefits of its recommendations, a record of the stakeholder group's process and deliberations, and shall provide the supporting rationale for the incentives being proposed.

(c) Incentives and other programs to promote agricultural viability, sustained growth of the agricultural industry, and the long-term use and protection of important agricultural lands for agricultural use in Hawaii by farmers and landowners to be considered by the department of agriculture shall include but not be limited to the following:

- (1) Assistance in identifying federal, state, and private grant and loan resources for agricultural business planning and operations, assistance with grant and loan application processes, and the processing of grants and loans;
- (2) Real property tax systems that support the needs of agriculture, including property tax assessment of land and improvements used or held only for use in agriculture based on agricultural use value rather than fair market value;
- (3) Reduced infrastructure requirements and facilitated building permit processes for the construction of dedicated agricultural structures;
- (4) Tax incentives that include but are not limited to:
 - (A) Tax credits for the sale or donation of agricultural easements on important agricultural lands; and
 - (B) General excise tax exemption for retail sales of farm produce;
- (5) Incentives that promote investment in agricultural businesses or value-added agricultural development, and other agricultural financing mechanisms;
- (6) Incentives and programs that promote long-term or permanent agricultural land protection, and the establishment of a dedicated funding source for these programs;
- (7) Establishment of a permanent state revolving fund, escalating tax credits based on the tax revenues generated by increased investment or agricultural activities conducted on important agricultural lands, and dedicated funding sources to provide moneys for incentives and other programs;
- (8) Establishment of a means to analyze the conformity of state-funded projects with the intent and purposes of part I of this Act [sections 205-41 to 205-52], and a mechanism for mitigation measures when projects are not in conformance;

- (9) Institution of a requirement for the preparation of an agricultural impact statement that would include mitigation measures for adverse impacts for proposed state or county rulemaking that may affect agricultural activities, operations, and agricultural businesses on important agricultural lands; and
- (10) Other programs to carry out the intent of part I of this Act [sections 205-41 to 205-52].

SECTION 10. Within one year of the adoption of maps of important agricultural lands by the land use commission for the lands within the jurisdiction of each county, all state agencies shall report to the department of agriculture on the impact of projects and programs on the designated important agricultural lands and sustained agricultural use of these lands. State agencies shall develop implementation programs, as needed, to ensure that their programs are supportive of agriculture and consistent with the intent and purposes of this Act."

[\$205-42] Important agricultural lands; definition and objectives.

- (a) As used in this part, unless the context otherwise requires, "important agricultural lands" means those lands, identified pursuant to this part, that:
- (1) Are capable of producing sustained high agricultural yields when treated and managed according to accepted farming methods and technology;
 - (2) Contribute to the State's economic base and produce agricultural commodities for export or local consumption; or
 - (3) Are needed to promote the expansion of agricultural activities and income for the future, even if currently not in production.
- (b) The objective for the identification of important agricultural lands is to identify and plan for the maintenance of a strategic agricultural land resource base that can support a diversity of agricultural activities and opportunities that expand agricultural income and job opportunities and increase agricultural self-sufficiency for current and future generations. To achieve this objective, the State shall:
- (1) Promote agricultural development and land use planning that delineates blocks of productive agricultural land and areas of agricultural activity for protection from the encroachment of nonagricultural uses; and
 - (2) Establish incentives that promote:
 - (A) Agricultural viability;
 - (B) Sustained growth of the agriculture industry; and
 - (C) The long-term agricultural use and protection of these productive agricultural lands. [L 2005, c 183, pt of §2]

[\$205-43] Important agricultural lands; policies. State and county agricultural policies, tax policies, land use plans, ordinances, and rules shall promote the long-term viability of agricultural use of important agricultural lands and shall be consistent with and implement the following policies:

- (1) Promote the retention of important agricultural lands in blocks of contiguous, intact, and functional land units large enough to allow flexibility in agricultural production and management;
- (2) Discourage the fragmentation of important agricultural lands and the conversion of these lands to nonagricultural uses;

- (3) Direct nonagricultural uses and activities from important agricultural lands to other areas and ensure that uses on important agricultural lands are actually agricultural uses;
 - (4) Limit physical improvements on important agricultural lands to maintain affordability of these lands for agricultural purposes;
 - (5) Provide a basic level of infrastructure and services on important agricultural lands limited to the minimum necessary to support agricultural uses and activities;
 - (6) Facilitate the long-term dedication of important agricultural lands for future agricultural use through the use of incentives;
 - (7) Facilitate the access of farmers to important agricultural lands for long-term viable agricultural use; and
 - (8) Promote the maintenance of essential agricultural infrastructure systems, including irrigation systems.
- [L 2005, c 183, pt of §2]

§205-44 Standards and criteria for the identification of

important agricultural lands. (a) The standards and criteria in this section shall be used to identify important agricultural lands. Lands identified as important agricultural lands need not meet every standard and criteria listed in subsection (c).

Rather, lands meeting any of the criteria in subsection (c) shall be given initial consideration; provided that the designation of important agricultural lands shall be made by weighing the standards and criteria with each other to meet the constitutionally mandated purposes in article XI, section 3, of the Hawaii constitution and the objectives and policies for important agricultural lands in sections 205-42 and 205-43.

(b) In a petition for a declaratory order submitted under section 205-45 that seeks to both designate lands as important agricultural lands and reclassify lands in the agricultural district to the rural, conservation, or urban district, the lands shall be deemed qualified for designation as important agricultural land if the commission reasonably finds that the lands meet at least the criteria of subsection (c)(5) and (7) of this section.

If a petition seeks to only designate land as important agricultural lands, then the commission shall evaluate the lands in accordance with subsection (a).

(c) The standards and criteria shall be as follows:

- (1) Land currently used for agricultural production;
- (2) Land with soil qualities and growing conditions that support agricultural production of food, fiber, or fuel- and energy-producing crops;
- (3) Land identified under agricultural productivity rating systems, such as the agricultural lands of importance to the State of Hawaii (ALISH) system adopted by the board of agriculture on January 28, 1977;
- (4) Land types associated with traditional native Hawaiian agricultural uses, such as taro cultivation, or unique agricultural crops and uses, such as coffee, vineyards, aquaculture, and energy production;
- (5) Land with sufficient quantities of water to support viable agricultural production;
- (6) Land whose designation as important agricultural lands is consistent with general, development, and community plans of the county;
- (7) Land that contributes to maintaining a critical land mass important to agricultural operating productivity; and

- (8) Land with or near support infrastructure conducive to agricultural productivity, such as transportation to markets, water, or power. [L 2005, c 183, pt of §2; am L 2008, c 233, §18]

[\$205-44.5] Important agricultural lands; public lands. (a) Notwithstanding any law to the contrary, before December 31, 2009, the department of agriculture and the department of land and natural resources shall collaborate to identify public lands as defined under section 171-2 that should be designated important agricultural lands as defined in section 205-42 and shall cause to be prepared maps delineating those lands. In making the designations, the departments shall use the standards and criteria of section 205-44.

(b) The designation of important agricultural lands pursuant to this section shall not be subject to the district boundary amendment procedures of section 205-3.1 or 205-4 or declaratory order procedures of section 205-45.

(c) Notwithstanding any law to the contrary, beginning January 1, 2010, after receipt of the maps of public lands identified as important agricultural lands pursuant to subsection (a), the commission shall designate the public lands as important agricultural lands and adopt the maps of those public lands. Upon designation, the public lands shall be subject to this chapter. [L 2008, c

§205-45 Petition by farmer or landowner. (a) A farmer or landowner with lands qualifying under section 205-44 may file with the commission a petition for declaratory order to designate the lands as important agricultural lands. The petition may be filed at any time in the designation process.

(b) Any law to the contrary notwithstanding, within the same petition for declaratory order as described in subsection (a), the petitioner may seek a reclassification of land in the agricultural district to the rural, urban, or conservation district, or a combination thereof; provided that:

(1) The land sought to be reclassified to the rural, urban, or conservation district is within the same county as the land sought to be designated as important agricultural lands;

(2) If the reclassification of the land is proposed to the urban district, that reclassification to urban is consistent with the relevant county general and community, development, or community development plans; and

(3) The total acreage of the land sought to be designated or reclassified in the petition complies with the following proportions:

(A) At least eighty-five per cent of the total acreage is sought to be designated as important agricultural land; and

(B) The remainder of the acreage is sought to be reclassified to the rural, urban, or conservation district.

(c) The petition for declaratory order shall be submitted in accordance with subchapter 14 of the commission's rules and shall include:

(1) Tax map key numbers of the land to be designated as important agricultural lands and, if applicable, the land to be reclassified from the agricultural district to the rural, urban, or conservation district, along with verification and authorization from the applicable landowners;

- (2) Proof of qualification for designation as important agricultural lands under section 205-44, respecting a regional perspective;
 - (3) The current or planned agricultural use of the area sought to be designated as important agricultural lands; and
 - (4) If applicable, the current or planned use of the area sought to be reclassified to the rural, urban, or conservation district.
- (d) Prior to the commission considering a petition for a declaratory order to designate important agricultural land in combination with the reclassification of agricultural land to the rural, urban, or conservation district, the petitioner shall submit to the commission a certification issued by the department of agriculture as to the quality of the land for which designation as important agricultural land is being sought.
- (e) The commission shall review the petition and the accompanying submissions to evaluate the qualifications of the land for designation as important agricultural lands in accordance with section 205-44.
- If the petition also seeks the reclassification of land to the rural, urban, or conservation district, the commission shall review the petition and accompanying submissions to evaluate:
- (1) The suitability of the land for the reclassification in accordance with section 205-2;
 - (2) If the reclassification of the land is proposed to the urban district, that reclassification to urban is consistent with the relevant county general and community, development, or community development plans; and
 - (3) Compliance with the other provisions of subsection (b).
- If the commission, after its review, finds that the designation and, if applicable, reclassification sought in the petition should be approved, the commission shall vote, by a two-thirds majority of the members of the commission, to issue a declaratory order designating the petitioner's identified lands as important agricultural lands and, if applicable, reclassifying the petitioner's identified land from the agricultural district to the rural, urban, or conservation district. The commission may include reasonable conditions in the declaratory order.
- With respect to a petition that seeks to both designate important agricultural lands and reclassify agricultural lands to the rural, urban, or conservation district, if the commission finds that either the designation or reclassification as proposed by the petitioner should not be approved, the commission shall deny the petition in its entirety.
- (f) The designation or reclassification of land pursuant to subsection (a) or (b) shall not be subject to the district boundary amendment procedures of sections 205-3.1 and 205-4 or become effective prior to legislative enactment of protection and incentive measures for important agricultural land and agricultural viability, as provided in section 9 of Act 183, Session Laws of Hawaii 2005.
- (g) Farmers or landowners with lands qualifying under section 205-44 may file petitions for a declaratory order to designate lands as important agricultural lands following the legislative enactment of protection and incentive measures for important agricultural lands and agricultural viability, as provided in section 9 of Act 183, Session Laws of Hawaii 2005.
- (h) A petitioner granted a declaratory order that designates important agricultural land, whether or not combined with the reclassification of land to the rural, urban, or conservation district, shall earn credits if the amount of land reclassified

to the rural, urban, or conservation district is less than fifteen per cent of the total acreage of land subject to the order. The "total acreage of land subject to the order" means the total acreage designated as important agricultural land and, if applicable, reclassified to the rural, urban, or conservation district by the declaratory order.

The credits shall equal the difference between the following, rounded to the nearer tenth of an acre:

- (1) The number that is fifteen per cent of the total acreage of land subject to the order; less
- (2) The amount of the petitioner's land that is reclassified from the agricultural district to the rural, urban, or conservation district by the declaratory order.

A petitioner with credits earned within a county may petition the commission for a declaratory order to reclassify any of the petitioner's other land in the same county from the agricultural district to the rural, urban, or conservation district until the credits are exhausted or expired. The "petitioner's other land in the same county" means land owned by the petitioner that is in the same county as the land designated or reclassified under the petition. The commission may issue the declaratory order if it finds that the land is suitable for reclassification in accordance with section 205-2 and that the reclassification is consistent with the relevant county general and community, development, or community development plans. The petitioner may petition for such reclassification until all of the petitioner's credits are exhausted. Any unexhausted credits shall expire and become unusable ten years after the granting of the declaratory order that designated the important agricultural land and, if applicable, reclassified land to the rural, urban, or conservation district.

A petitioner with unused and unexhausted credits shall not transfer the credits to another person.

(i) Notwithstanding any other law to the contrary, the land use commission may grant declaratory orders pursuant to this section before the commission receives from any county a map delineating recommended important agricultural lands.

(j) Land designated as important agricultural land pursuant to a declaratory order that both designates land as important agricultural land and reclassifies land in the agricultural district to the rural, urban, or conservation district, or a combination thereof pursuant to this section shall be redesignated only with the prior authorization of the legislature. The authorization shall be expressed by the adoption of a concurrent resolution approved by a two-thirds vote of each house of the legislature voting separately. When making its decision, the legislature shall consider the standards and criteria in section 205-50.

(k) The commission may adopt rules pursuant to chapter 91 to effectuate this section. [L 2005, c 183, pt of §2; am L 2008, c 233, §19]

Note

Section 9 of Act 183, Session Laws of Hawaii 2005, is printed after §205-41.

Designations made pursuant to this section take effect at any time after incentives and protections for important agricultural lands and agricultural viability are enacted. L 2005, c 183, §14(1).

Land use commission rules, see chapter 15-15, Hawaii Administrative Rules.

[\$205-45.5] Important agricultural land; farm dwellings and employee housing. A landowner whose agricultural lands are designated as important agricultural lands may develop, construct, and maintain farm dwellings and employee housing for farmers, employees, and their immediate family members on these lands; provided that:

- (1) The farm dwellings and employee housing units shall be used exclusively by farmers and their immediate family members who actively and currently farm on important agricultural land upon which the dwelling is situated; provided further that the immediate family members of a farmer may live in separate dwelling units situated on the same designated land;
- (2) Employee housing units shall be used exclusively by employees and their immediate family members who actively and currently work on important agricultural land upon which the housing unit is situated; provided further that the immediate family members of the employee shall not live in separate housing units and shall live with the employee;
- (3) The total land area upon which the farm dwellings and employee housing units and all appurtenances are situated shall not occupy more than five per cent of the total important agricultural land area controlled by the farmer or the employee's employer or fifty acres, whichever is less;
- (4) The farm dwellings and employee housing units shall meet all applicable building code requirements;
- (5) Notwithstanding section 205-4.5(a)(12), the landowner shall not plan or develop a residential subdivision on the important agricultural land;
- (6) Consideration may be given to the cluster development of farm dwellings and employee housing units to maximize the land area available for agricultural production; and
- (7) The plans for farm dwellings and employee housing units shall be supported by agricultural plans that are approved by the department of agriculture. [L 2008, c 233, §2]

[\$205-46] Incentives for important agricultural lands. (a) To achieve the long-term agricultural viability and use of important agricultural lands, the State and each county shall ensure that their:

- (1) Agricultural development, land use, water use, regulatory, tax, and land protection policies; and
 - (2) Permitting and approval procedures, enable and promote the economic sustainability of agriculture. Agricultural operations occurring on important agricultural lands shall be eligible for incentives and protections provided by the State and counties pursuant to this section to promote the viability of agricultural enterprise on important agricultural lands and to assure the availability of important agricultural lands for long-term agricultural use.
- (b) State and county incentive programs shall provide preference to important agricultural lands and agricultural businesses on important agricultural lands. The State and each county shall cooperate in program development to prevent duplication of and to streamline and consolidate access to programs and services for agricultural businesses located on important agricultural lands.

(c) Incentive and protection programs shall be designed to provide a mutually supporting framework of programs and measures that enhance agricultural viability on important agricultural lands, including but not limited to:

- (1) Grant assistance;
- (2) Real property tax systems that support the needs of agriculture, including property tax assessments based on agricultural use valuation;
- (3) Reduced infrastructure requirements and facilitated building permit processes for dedicated agricultural structures;
- (4) Tax incentives to offset operational costs, promote agricultural business viability, and promote the long-term protection of important agricultural lands;
- (5) Agricultural business planning, marketing, and implementation grants;
- (6) Tax incentives and programs for equity investments and financing for agricultural operations, including agricultural irrigation systems;
- (7) Other programs and mechanisms that promote investment in agricultural businesses or agricultural land protection, such as the purchase of development rights;
- (8) State funding mechanisms to fund business viability and land protection programs;
- (9) Water regulations and policies that provide farmers of important agricultural lands access to adequate and cost-effective sources of water;
- (10) Other measures that would ensure that state capital investments, projects, programs, and rules are consistent with this part; and
- (11) Agricultural education and training for new farmers; upgrading the skills of existing farmers and other agriculture-related employees through the use of mentoring, business incubators, and public or private scholarships; and increasing the returns of farming by adding value to food processing and other tools and methods.

(d) State and county agencies shall review the protection and incentive measures enacted for important agricultural lands and agricultural viability pursuant to this chapter at least every five years to:

- (1) Determine their effectiveness in sustaining agriculture in Hawaii, assuring agricultural diversification, and increasing agricultural self-sufficiency;
- (2) Determine whether the effectiveness of tax credits or incentive programs will be enhanced by creating revolving funds or increasing rates based upon the tax revenues generated by enhanced investment and agricultural activities on important agricultural lands; and
- (3) Modify measures and programs as needed.

(e) This section shall apply only to those lands designated as important agricultural lands pursuant to sections 205-45 and 205-49. [L 2005, c 183, pt of §2]

[§205-46.5] Agricultural processing facilities; permits; priority. (a) Any agency subject to this chapter or title 13 that issues permits shall establish and implement a procedure for the priority processing of permit applications and renewals, at no additional cost to the applicant, for agricultural processing facilities that process crops or livestock from an

agribusiness; provided that the majority of the lands held, owned, or used by the agribusiness shall be land designated as important agricultural lands pursuant to this part, excluding lands held, owned, or used by the agribusiness in a conservation district.

Any priority permit processing procedure established pursuant to this section shall not provide or imply that any permit application filed under the priority processing procedure shall be automatically approved.

(b) As used in this section, "agribusiness" means a business primarily engaged in the care and production of livestock, livestock products, poultry, poultry products, apiary, horticultural or floricultural products, the planting, cultivating, and harvesting of crops or trees, or the farming or ranching of any plant or animal species in a controlled salt, brackish, or fresh water environment. [L 2008, c 233, §11]

[\$205-47] Identification of important agricultural lands; county process. *[See Note below.]*

(a) Each county shall identify and map potential important agricultural lands within its jurisdiction based on the standards and criteria in section 205-44 and the intent of this part, except lands that have been designated, through the state land use, zoning, or county planning process, for urban use by the State or county.

(b) Each county shall develop maps of potential lands to be considered for designation as important agricultural lands in consultation and cooperation with landowners, the department of agriculture, agricultural interest groups, including representatives from the Hawaii Farm Bureau Federation and other agricultural organizations, the United States Department of Agriculture - Natural Resources Conservation Service, the office of planning, and other groups as necessary.

(c) Each county, through its planning department, shall develop an inclusive process for public involvement in the identification of potential lands and the development of maps of lands to be recommended as important agricultural lands, including a series of public meetings throughout the identification and mapping process. The planning departments may also establish one or more citizen advisory committees on important agricultural lands to provide further public input, utilize an existing process (such as general plan, development plan, community plan), or employ appropriate existing and adopted general plan, development plan, or community plan maps.

(d) The counties shall take notice of those lands that have already been designated as important agricultural lands by the commission.

Upon identification of potential lands to be recommended to the county council as potential important agricultural lands, the counties shall take reasonable action to notify each owner of those lands by mail or posted notice on the affected lands to inform them of the potential designation of their lands. In formulating its final recommendations to the respective county councils, the planning departments shall report on the manner in which the important agricultural lands mapping relates to, supports, and is consistent with the:

- (1) Standards and criteria set forth in section 205-44;
- (2) County's adopted land use plans, as applied to both the identification and exclusion of important agricultural lands from such designation;
- (3) Comments received from government agencies and others identified in subsection (b);
- (4) Viability of existing agribusinesses; and

(5) Representations or position statements of the owners whose lands are subject to the potential designation.

(e) The important agricultural lands maps shall be submitted to the county council for decision-making. The county council shall adopt the maps, with or without changes, by resolution. The adopted maps shall be transmitted to the land use commission for further action pursuant to section 205-48. [L 2005, c 183, pt of §2]

Note

L 2005, c 183, §7 provides:

"SECTION 7. Each county shall submit its report and maps with recommendations for lands eligible for designation as important agricultural lands to the land use commission no later than sixty months from the date of county receipt of state funds appropriated for the identification process. Upon receipt of the county maps, the land use commission shall review and adopt maps designating important agricultural lands to the State in accordance with section [205-49]."

Designations made pursuant to this section take effect three years after incentives and protections for important agricultural lands and agricultural viability are enacted. L 2005, c 183, §14(2).

[\$205-48] Receipt of maps of eligible important agricultural lands; land use commission. (a) The land use commission shall receive the county recommendations and maps delineating those lands eligible to be designated important agricultural lands no sooner than the effective date of the legislative enactment of protection and incentive measures for important agricultural lands and agricultural viability, as provided in section 9 of Act 183, Session Laws of Hawaii 2005.

(b) The department of agriculture and the office of planning shall review the county report and recommendations and provide comments to the land use commission within forty-five days of the receipt of the report and maps by the land use commission. The land use commission may also consult with the department of agriculture and the office of planning as needed.

(c) State agency review shall be based on an evaluation of the degree that the:

- (1) County recommendations result in an identified resource base that meets the definition of important agricultural land and the objectives and policies for important agricultural lands in sections 205-42 and 205-43; and
- (2) County has met the minimum standards and criteria for the identification and mapping process in sections 205-44 and 205-47. [L 2005, c 183, pt of §2]

Note

Section 9 of Act 183, Session Laws of Hawaii 2005, is printed after §205-41.

[\$205-49] Designation of important agricultural lands; adoption of important agricultural lands maps. (a) After receipt of the maps of eligible important agricultural lands from the counties and the recommendations of the department of agriculture and the office of planning, the commission shall then proceed to identify and designate important agricultural lands, subject to section 205-45. The decision shall consider the county maps of eligible important agricultural lands; declaratory orders issued by the commission designating important agricultural lands during the three year period following the enactment of legislation establishing incentives and protections contemplated under section 205-46, as provided in section 9 of Act 183,

Session Laws of Hawaii 2005; landowner position statements and representations; and any other relevant information.

In designating important agricultural lands in the State, pursuant to the recommendations of individual counties, the commission shall consider the extent to which:

- (1) The proposed lands meet the standards and criteria under section 205-44;
- (2) The proposed designation is necessary to meet the objectives and policies for important agricultural lands in sections 205-42 and 205-43; and
- (3) The commission has designated lands as important agricultural lands, pursuant to section 205-45; provided that if the majority of landowners' landholdings is already designated as important agricultural lands, excluding lands held in the conservation district, pursuant to section 205-45 or any other provision of this part, the commission shall not designate any additional lands of that landowner as important agricultural lands except by a petition pursuant to section 205-45.

Any decision regarding the designation of lands as important agricultural lands and the adoption of maps of those lands pursuant to this section shall be based upon written findings of fact and conclusions of law, presented in at least one public hearing conducted in the county where the land is located in accordance with chapter 91, that the subject lands meet the standards and criteria set forth in section 205-44 and shall be approved by two-thirds of the membership to which the commission is entitled.

(b) Copies of the maps of important agricultural lands adopted under this section shall be transmitted to each county planning department and county council, the department of agriculture, the agribusiness development corporation, the office of planning, and other state agencies involved in land use matters. The maps of important agricultural lands shall guide all decision-making on the proposed reclassification or rezoning of important agricultural lands, state agricultural development programs, and other state and county land use planning and decision-making.

(c) The land use commission shall have the sole authority to interpret the adopted map boundaries delineating the important agricultural lands.

(d) The land use commission may designate lands as important agricultural lands and adopt maps for a designation pursuant to:

- (1) A farmer or landowner petition for declaratory ruling under section 205-45 at any time; or
- (2) The county process for identifying and recommending lands for important agricultural lands under section 205-47 no sooner than three years,

after the enactment of legislation establishing incentives and protections contemplated under section 205-46, as provided in section 9 of Act 183, Session Laws of Hawaii 2005. [L 2005, c 183, pt of §2]

Note

Section 9 of Act 183, Session Laws of Hawaii 2005, is printed after §205-41.

§205-50 Standards and criteria for the reclassification or rezoning of important agricultural lands. (a) Any land use district boundary amendment or change in zoning involving important agricultural lands identified pursuant to this chapter shall be subject to this section.

(b) Upon acceptance by the county for processing, any application for a special permit involving important agricultural lands shall be referred to the department of agriculture and the office of planning for review and comment.

(c) Any decision by the land use commission or county pursuant to this section shall specifically consider the following standards and criteria:

- (1) The relative importance of the land for agriculture based on the stock of similarly suited lands in the area and the State as a whole;
- (2) The proposed district boundary amendment or zone change will not harm the productivity or viability of existing agricultural activity in the area, or adversely affect the viability of other agricultural activities or operations that share infrastructure, processing, marketing, or other production-related costs or facilities with the agricultural activities on the land in question;
- (3) The district boundary amendment or zone change will not cause the fragmentation of or intrusion of nonagricultural uses into largely intact areas of lands identified by the State as important agricultural lands that create residual parcels of a size that would preclude viable agricultural use;
- (4) The public benefit to be derived from the proposed action is justified by a need for additional lands for nonagricultural purposes; and
- (5) The impact of the proposed district boundary amendment or zone change on the necessity and capacity of state and county agencies to provide and support additional agricultural infrastructure or services in the area.

(d) Any decision pursuant to this section shall be based upon a determination that:

- (1) On balance, the public benefit from the proposed district boundary amendment or zone change outweighs the benefits of retaining the land for agricultural purposes; and
- (2) The proposed action will have no significant impact upon the viability of agricultural operations on adjacent agricultural lands.

(e) The standards and criteria of this section shall be in addition to:

- (1) The decision-making criteria of section 205-17 governing decisions of the land use commission under this chapter; and
- (2) The decision-making criteria adopted by each county to govern decisions of county decision-making authorities under this chapter.

(f) Any decision of the land use commission and any decision of any county on a land use district boundary amendment or change in zoning involving important agricultural lands shall be approved by the body responsible for the decision by a two-thirds vote of the membership to which the body is entitled.

(g) A farmer or landowner with qualifying lands may also petition the land use commission to remove the "important agricultural lands" designation from lands if a sufficient supply of water is no longer available to allow profitable farming of the land due to governmental actions, acts of God, or other causes beyond the farmer's or landowner's reasonable control. If the "important agricultural lands" were designated by a declaratory order in combination with the reclassification of land in the agricultural district to the rural, urban, or conservation district pursuant to section 205-45, the commission

shall not remove the designation unless the legislature provides prior authorization by adoption of a concurrent resolution in accordance with section 205-45. [L 2005, c 183, pt of §2; am L 2008, c 233, §20]

[\$205-51] Important agricultural lands; county ordinances. (a)

Each county shall adopt ordinances that reduce infrastructure standards for important agricultural lands no later than the effective date of the legislative enactment of protection and incentive measures for important agricultural lands and agricultural viability, as provided in section 9 of Act 183, Session Laws of Hawaii 2005.

(b) For counties without ordinances adopted pursuant to subsection (a), important agricultural lands designated pursuant to this part may be subdivided without county processing or standards; provided that:

- (1) None of the resulting lots shall be used solely for residential occupancy; and
- (2) The leasehold lots shall return to the original lot of record upon expiration or termination of the lease. [L 2005, c 183, pt of §2]

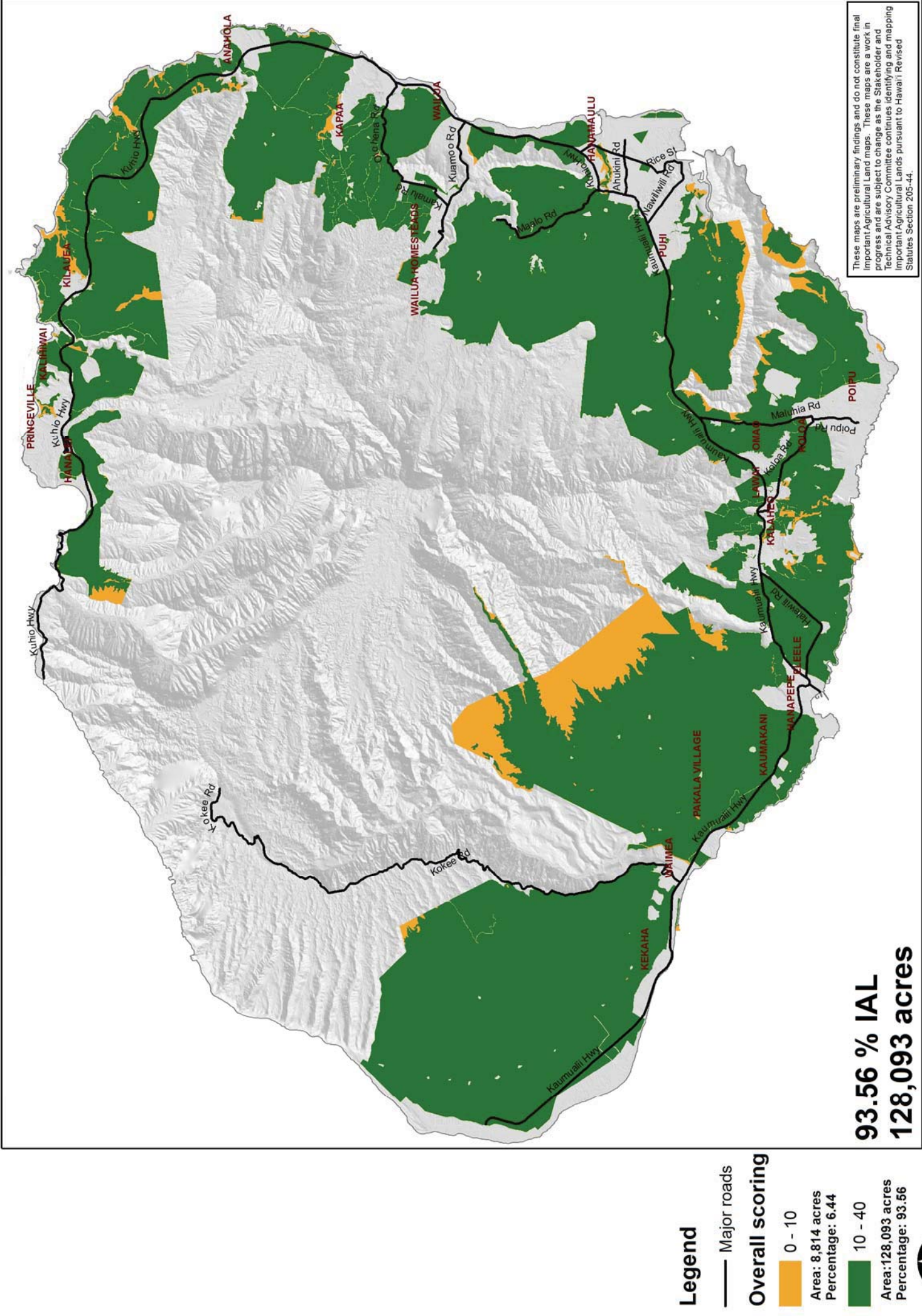
Note

Section 9 of Act 183, Session Laws of Hawaii 2005, is printed after §205-41.

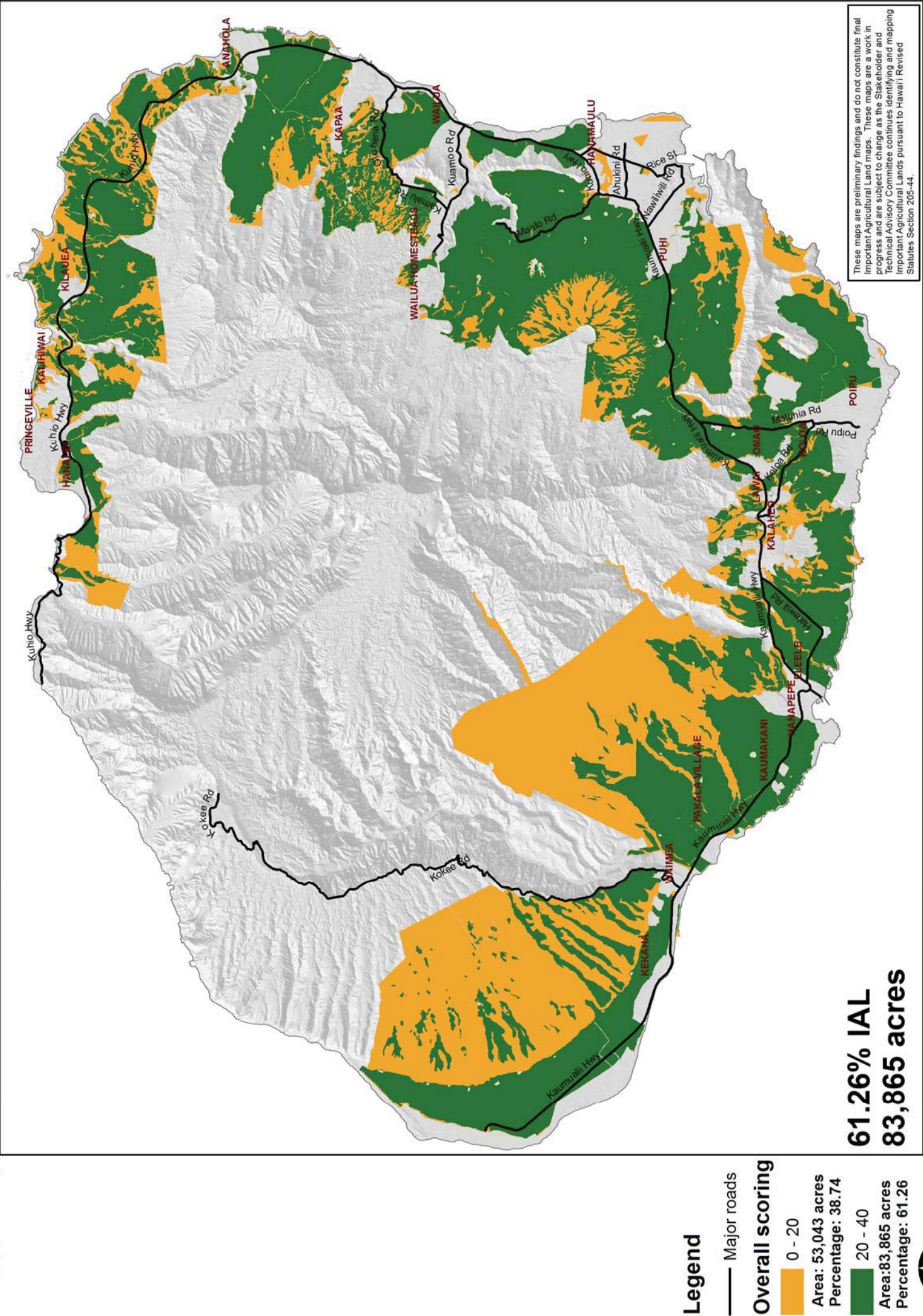
§205-52 Periodic review and amendment of important agricultural lands maps. The maps delineating important agricultural lands shall be reviewed in conjunction with the county general plan and community, development, or community development plan revision process, or at least once every ten years following the adoption of the maps by the land use commission; provided that the maps shall not be reviewed more than once every five years. Any review and amendment of the maps of important agricultural lands shall be conducted in accordance with this part. In these periodic reviews or petitions by the farmers or landowners for declaratory rulings, the "important agricultural lands" designation shall be removed from those important agricultural lands where the commission has issued a declaratory order that a sufficient supply of water is no longer available to allow profitable farming of these lands due to governmental actions, acts of God, or other causes beyond the farmer's or landowner's reasonable control; provided that, if the "important agricultural lands" were designated by a declaratory order in combination with the reclassification of land in the agricultural district to the rural, urban, or conservation district pursuant to section 205-45, the commission shall not remove the designation unless the legislature provides prior authorization by adoption of a concurrent resolution in accordance with section 205-45. [L 2005, c 183, pt of §2; am L 2008, c 233, §21]

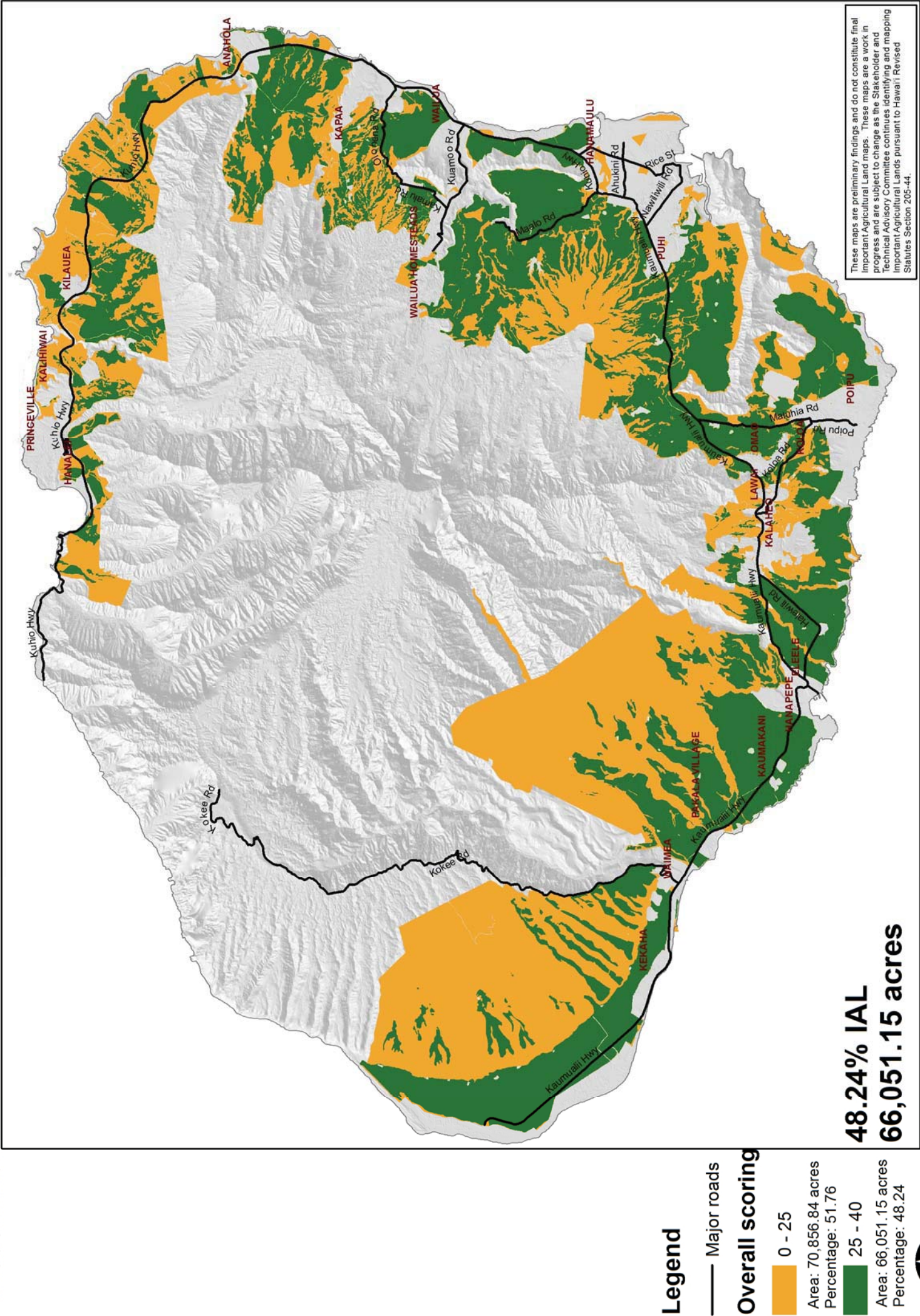


Appendix F — Threshold Maps



Overall IAL score (10 point threshold)





Overall IAL score (25 point threshold)

— Major roads

Overall scoring

0 - 28

Area: 83,361 acres
Percentage: 60.89

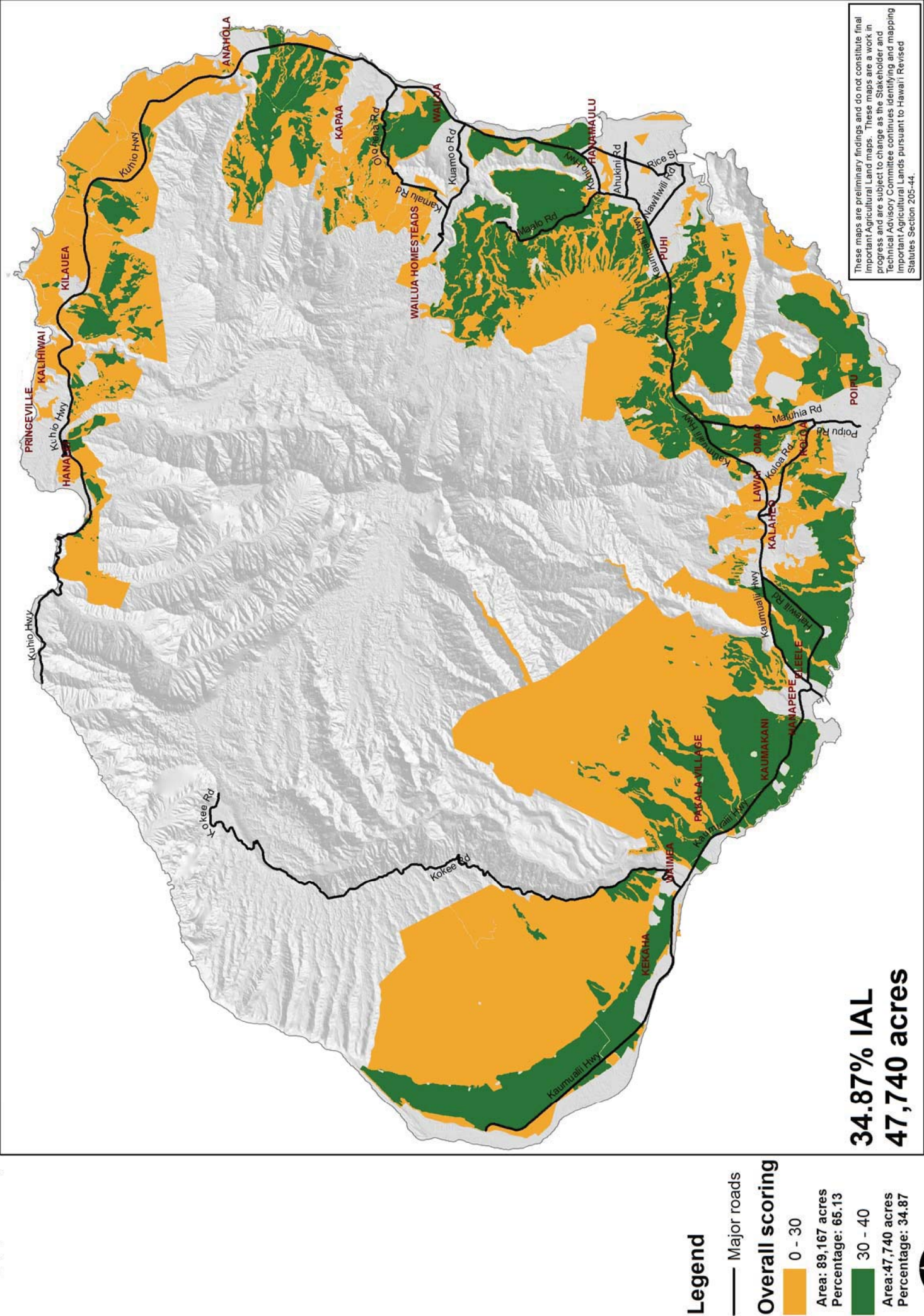
28 - 40

Area: 53,547 acres
Percentage: 39.11



Overall IAL score (28 point threshold)

These maps are preliminary findings and do not constitute final Important Agricultural Land maps. These maps are a work in progress and are subject to change as the Stakeholder and Technical Advisory Committee continues identifying and mapping Important Agricultural Lands pursuant to Hawai'i Revised Statutes Section 205-44.



Overall IAL score (30 point threshold)