

County of Hawai'i Energy Sustainability Program

FIVE YEAR ROADMAP Executive Summary

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INTRODUCTION

The Island of Hawai'i is a leader in adopting renewable energy technologies. Renewable energy generated from geothermal, hydropower, wind, and solar resources accounted for more than 37% of electricity production in 2011, on track to exceed statewide goals for 2030. However, this renewable production represents just 5% of the island's total energy use, due to generation and transmission losses in the electric power system and the large energy needs of the transportation sector. Despite the successes of the past 30 years, today the island remains overwhelmingly dependent on imported petroleum fuels.

The citizens of the island have a compelling interest in eliminating this dependence due to the instability of the petroleum markets, the insecurity of imported energy, the danger of a crippling environmental or natural disaster, and more recently, the high and volatile price of petroleum products. Hawai'i Island residents routinely pay some of the highest energy costs in the country, which diminishes the competitiveness of local businesses and imposes a particular burden on low-income households. The impacts of energy dependence are linked to many other aspects of island life including agriculture and local food production, civil defense, water supply, tourism, and land use decision-making.

Energy sustainability is an alternative to the island's current petroleum dependence, relying on local, renewable resources to meet the energy needs of the island's residents and power the island's economy. Energy sustainability does not just mean independence and self-sufficiency; it also means ensuring energy resources are available indefinitely and using them in a way that does not degrade the environment, compromise public health, or disrupt the economy.

Because of their isolation and constrained resources, islands are laboratories for sustainability that can provide valuable lessons for the mainland United States and the rest of the world. Hawai'i Island in particular is well situated to demonstrate the benefits of energy sustainability due to the vast renewable energy potential of the island relative to the modest scale of its energy system. The technologies to capture these renewable resources are commercially available today and in many cases are now more cost effective than petroleum-based energy.

However, pursuing energy sustainability is an enormous undertaking. The island's energy system cannot be quickly or easily adjusted given the current overwhelming dependence on imported energy, the uncertainty of future conditions, the long timeline associated with an energy transition of this magnitude, and the local government's current limited authority over the island's energy system. The road to a sustainable and secure energy future for the Island of Hawai'i requires leadership from the County and collective efforts of households, businesses, communities, and other stakeholders throughout the island. The County of Hawai'i has a key responsibility to help the island meet this formidable challenge.



OBJECTIVES

The overall objectives of the *County of Hawai'i Energy Sustainability Program Five Year Roadmap* are to describe the critical role of the County of Hawai'i in the pursuit of the island's sustainable energy future and to provide the County with a set of high-priority policies and programs in the areas of renewable electricity, energy efficiency, and transportation systems. The scope of the roadmap is focused on the implementation details of specific, actionable recommendations for programs the County can legally undertake today. The roadmap can also serve as an informational resource with data and analysis on the functioning of the island's energy system for use by government, the private sector, and individual stakeholders.

The *County of Hawai'i Energy Sustainability Program Five Year Roadmap* describes the challenges, highlights the opportunities, and suggests the highest priority actions the County of Hawai'i can take to lead the island to energy sustainability. Although limited by state law, by implementing the Priority Actions described in the roadmap, the County can help determine the future of the island's energy system, protect the interests of island residents, and ensure the appropriate development of the island's land and other resources. Simultaneously, the roadmap actions can generate significant cost savings to re-invest in a variety of new policies and programs, including returning cost savings to the County General Fund to help contribute to all other county programs.

GUIDING PRINCIPLES

There is no single path to achieving energy sustainability, and some options may not be acceptable to the island's residents. Therefore, the strategies and recommendations in the roadmap are designed to be consistent with four guiding principles derived from the County of Hawai'i General Plan, the Hawai'i State Plan, and Hawai'i state law.



FIGURE 1. GUIDING PRINCIPLES FOR THE COUNTY OF HAWAI'I ENERGY SUSTAINABILITY PROGRAM FIVE YEAR ROADMAP



ENERGY SUSTAINABILITY FOR THE ISLAND OF HAWAI‘I

Hawai‘i Island has the renewable resources to meet all of its energy needs, but energy sustainability is such a departure from the status quo that it will take many years until the energy system can realistically be expected to transition from petroleum dependence to complete self-reliance. In addition to the long timeline associated with this transformation, energy sustainability could take many forms, depending on changes in technology, global markets and state and federal law as well as decisions that are made about the preferred energy future for the island.

Uncertainty about future conditions does not mean that a “wait and see” strategy is best. Petroleum dependence is already impacting the island and there is broad support for pursuing energy sustainability. However, there are significant technical, economic, and political challenges that have so far limited energy independence after decades of effort. Key challenges include the overwhelming reliance of the transportation sector on imported petroleum products, the costs of financing some technology options, the challenge of grid interconnection and power system operations, and the lack of effective government policies and coordination to ensure new energy projects are implemented.

PETROLEUM DEPENDENCE

The island is reliant on imported petroleum fuels for 95% of its energy needs. Rising, volatile energy prices impose a burden on many sectors of the island’s economy, and the high cost of energy disproportionately impacts low-income households. This equity issue could become more acute over time. Overcoming this dependence will require aggressive and sustained efforts from many stakeholders throughout the island for many years.

IMPORTANCE OF TRANSPORTATION

Transportation presents the greatest challenge to energy sustainability for the island because this sector constitutes more than half of energy demand and the market development of sustainable transportation solutions has been slow.

DEPLOYING LOW-COST RENEWABLE ELECTRICITY

Renewable electricity generation costs less than the current petroleum-based electricity generation on the island. These technologies are commercially available today and should be widely deployed alongside a modernized power grid. Regulatory policy may need to change to facilitate rapid deployment.

THE ROLE OF THE COUNTY

The County’s authority and jurisdiction over the energy system is limited by state law, but the local government still has a responsibility to protect the interests of island residents in energy policy decision-making. The County can lead the transition to sustainable energy and also save significant taxpayer dollars by investing in high rate-of-return energy projects for County operations.

FIGURE 2. KEY ENERGY SUSTAINABILITY CONSIDERATIONS

PETROLEUM DEPENDENCE

Unlike most of the United States, Hawai'i Island (and the rest of the state) relies almost entirely on petroleum fuels, not just for transportation, but also for electricity production and even cooking and heating. In 2010, about 95% of the 26,899 terajoules (TJ)^{*} of energy consumed on the island was imported in the form of petroleum fuels such as motor gasoline, distillate fuel oil (diesel), naphtha, residual fuel oil, aviation fuels, and liquefied petroleum gas.[†] Almost every barrel of petroleum was imported into the state from international sources far from the islands.^[1] Just 5% (1,369 TJ) of the energy needs of Hawai'i Island's residents, businesses, and visitors are met through locally produced renewable energy sources, which currently consist of renewable electricity produced from geothermal, wind, solar, and hydropower resources.

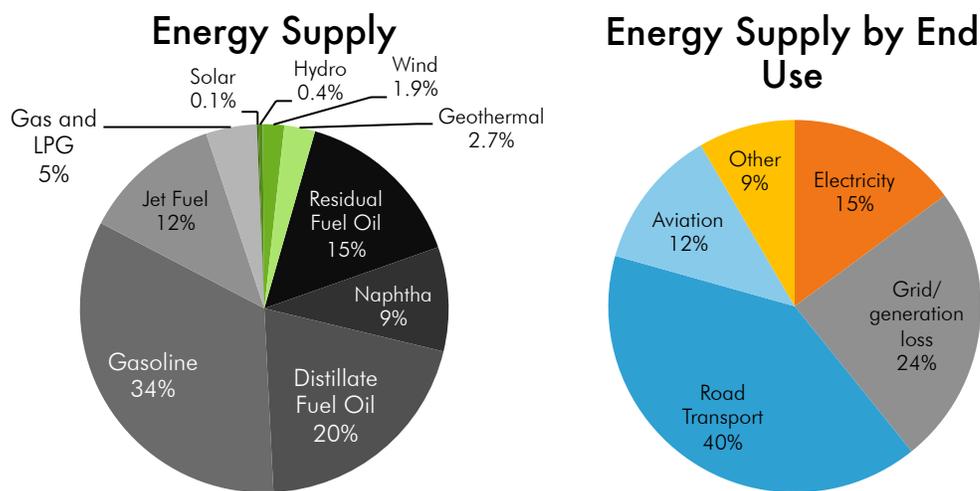


FIGURE 3. HAWAI'I ISLAND ENERGY SUPPLY AND END USE, 2010[‡]

ENERGY PRICES AND EXPENDITURES

The island's residents, visitors, businesses, and government spend more than \$920 million on energy purchases in 2011, with electricity and transportation each accounting for about half of the total.^{§[2]} Over the past six years, electricity prices have risen by over 40%, while consumption has remained flat. Hawai'i Island electricity prices are 35% higher than those on O'ahu, and exceed the mainland average by more than 300%. Over the same period, motor gasoline prices have increased over 48% and diesel prices have increased 58%. Gasoline and diesel prices are at least 25% higher than the mainland average.^[2,3]

^{*} One terajoule is equal to 1 trillion joules, or about 948 million Btu (British thermal unit). This is approximately equal to the energy content of 163 barrels of crude oil or the electricity required to light a 13-Watt compact fluorescent light bulb for 2439 years.

[†] Calculation by The Kohala Center. See: Appendix F

[‡] Grid/generation loss refers to energy losses during combustion-based electricity generation and system-wide transmission and distribution losses. Calculation by The Kohala Center. See: Appendix F.

[§] Includes taxes and excludes off-highway diesel and other fuels whose pricing data is not tracked. Estimates for aviation fuels use West Coast average prices.



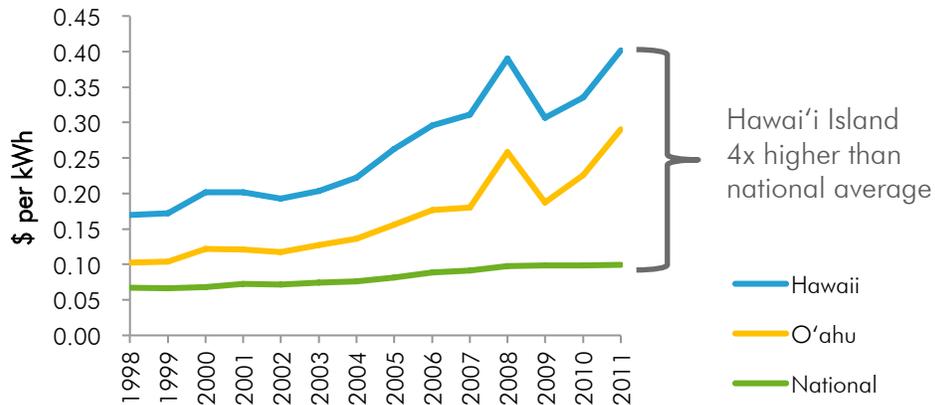


FIGURE 4. AVERAGE ELECTRICITY PRICES; HAWAII' I ISLAND, O' AHU, US AVG., 1998-2011^[4]

Energy-related expenditures are a particular burden on low-income households because they cannot easily reduce consumption in the face of rising prices. On Hawai'i Island, low-income households spend more than twice as much of their income on electricity than the average island household (Figure 5). Hawai'i Island has a higher proportion of low-income families than O'ahu (17% compared to 11%), and a smaller proportion of upper-income families (30% compared to 40%).* The median household income on Hawai'i Island is 27% lower than on O'ahu.

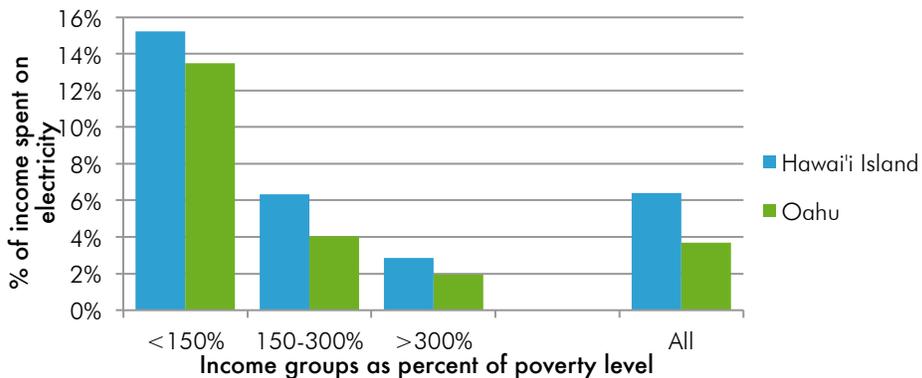


FIGURE 5. HOUSEHOLD ELECTRICITY EXPENDITURES BY INCOME GROUP, 2009^[5]

The burden of rising energy prices may fall disproportionately on low-income customers if wealthier households are able to afford to install renewable energy generation or energy efficiency improvements. Since the utility is currently permitted to impose limits on the amount of customer-sited or variable generation the system can accommodate, these higher-income customers are better able to enjoy cost benefits that may not be available in the future.

* "Low-income" classified as being at or below 150% of the federal poverty level for the state as determined by the Department of Health and Human Services. For example, in 2010 a four-member household that made less than \$25,360 is considered to be "in poverty"; up to \$38,040, the household would be considered "low-income."

IMPORTANCE OF TRANSPORTATION

The transportation sector (both ground and aviation) requires special emphasis because it is not well represented in the major energy policy and decision-making processes, despite accounting for more than half of Hawai'i Island's energy demand. A complete transition to energy sustainability in transportation will require the efforts of a large number of stakeholders (such as car dealers, fuel suppliers, and distributors) that are not regulated or integrated in the same way as electricity sector stakeholders.

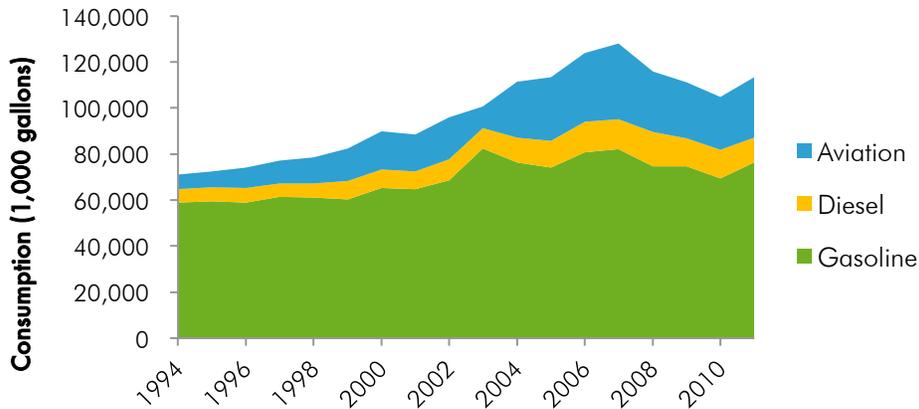


FIGURE 6. TRANSPORTATION FUEL CONSUMPTION, HAWAI'I COUNTY, 1994-2010^[6]

In 2010, Hawai'i Island consumed more than 100 million gallons (14,000 TJ) of ground transportation fuel, about 74% more per capita than O'ahu.^[6] Gasoline consumption alone exceeds 200,000 gallons per day. The island's size, rugged terrain, and high proportion of light-duty trucks contribute to a vehicle stock that has the lowest efficiency in the state at less than 17 miles/gallon (Figure 7).

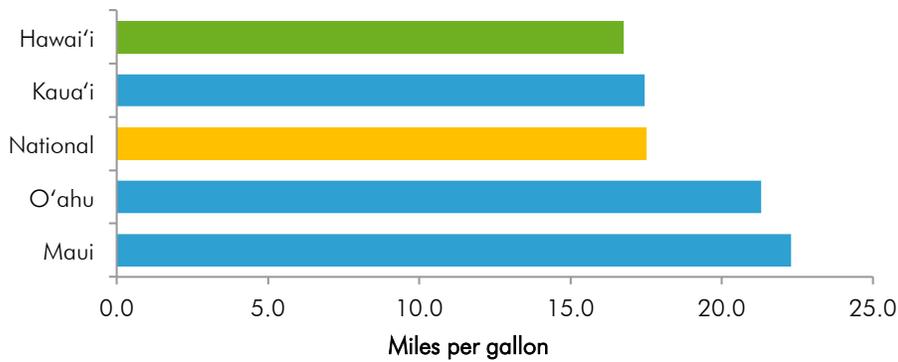


FIGURE 7. FUEL ECONOMY BY ISLAND AND NATIONAL AVERAGE, 2010^[7,8]

Energy sustainability for transportation requires both changing the energy sources used and reducing the total energy consumed by increasing the efficiency of vehicles, reducing the distances traveled, and moving travelers to more efficient modes of transportation.

In the future, electric vehicles will be an essential part of energy sustainability because they are significantly more efficient per vehicle-mile than conventional



engines and they can be powered by electricity from any renewable source. As a result, the operating cost per mile of an electric vehicle on Hawai'i Island is already 47% lower than the average internal combustion vehicle, even after accounting for the island's extraordinarily high electricity prices (Figure 8).

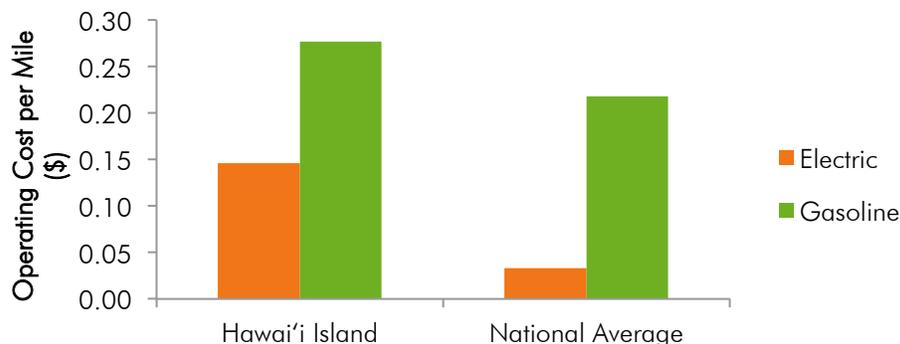


FIGURE 8. OPERATING COST PER MILE FOR ELECTRIC AND INTERNAL COMBUSTION ENGINE VEHICLES, 2011 PRICES.*

Today, less than 1% of registered taxable vehicles are hybrid or electric.^[2] The vehicle stock also has a slow turnover (>25 years),[†] meaning that much of the existing inefficient vehicle stock will persist for decades to come. The limited availability of electric vehicles on the market and the slow turnover of the island's vehicle stock indicate that a transportation system running on sustainable energy will depend on the availability of alternative fuels such as biofuels that can run in conventional vehicle engines.

Estimates of the quantity of biofuels that can be produced on Hawai'i Island vary widely, depending on what portion of existing agricultural land is assumed to be converted to biofuels production. The promise of a reinvigorated agricultural industry that simultaneously reduces energy dependence makes support and development of a biofuels industry a goal of many business, community, and political leaders. Much of Hawai'i Island is not suitable for growing biofuels, however, so competition for high-quality, irrigated land could become an issue.

More efficient modes of transportation are already available and affordable on the island, including mass transit, biking and walking. However, only 1.7% of workers report using the mass transit system to get to work,^[9] suggesting that the current system does not serve the needs of most commuters. Further, biking and walking are limited due to the low development density of the island, its challenging terrain, and a lack of dedicated sidewalks and bikeways.

* Operating cost excludes lifetime maintenance due to lack of available data. Anecdotal evidence suggests maintenance costs for electric drivetrains are significantly lower than for conventional vehicles. See: Appendix F.

† Vehicle turnover rate indicates the relationship between the size of the existing vehicle stock (172,000 vehicles) and the number of new vehicles sold each year (typically <5,000 new vehicle sales). See: Appendix F.

DEPLOYING LOW-COST RENEWABLE ELECTRICITY

Renewable sources collectively provided about 37% of electricity generation in 2011 on Hawai'i Island, with the remainder coming from residual fuel oil, naphtha, and diesel. Nationally, only about 13% of electricity generation is from renewable sources.^[3] The Island of Hawai'i possesses vast untapped potential for electricity generation from renewable resources. Estimates vary, but the total available renewable resource far exceeds current electricity demand, which had a peak of 190.6 MW in 2010.^[10]

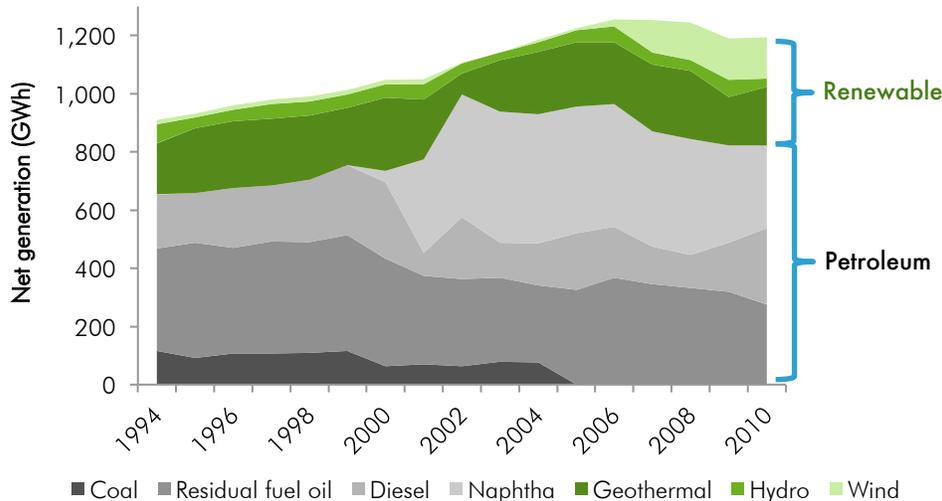


FIGURE 9. ELECTRICITY GENERATION BY SOURCE, 1994 - 2010^{*(11)}

The island's electric power system is owned and operated by Hawaii Electric Light Co., Inc. (HELCO).[†] The State of Hawai'i grants HELCO a non-exclusive franchise for electric utility service, and the company operates as a monopoly regulated by the Public Utilities Commission. HELCO served 80,170 customers and delivered 1,194,000 megawatt-hours (MWh)[‡] of electricity to the power system in 2010.^[2] Between 2007 and 2010, electricity sales actually decreased by an average 1.3% per year, reversing the earlier trend from 1994 to 2007 when sales increased an average of 2.9% per year.^[4]

In the past, the high capital cost of renewable technologies did not compare favorably with the relatively low prices of petroleum products. The existing energy infrastructure was already based on petroleum and other fossil resources and replacing it was infeasible and uneconomical. Today, many renewable energy technologies have matured to the point that they can now compete with current electricity prices. Reducing overall electricity costs by taking advantage of the low cost of renewable electricity generation will require adding relatively large

* Excludes customer-sited generation, which is not typically metered.

† HELCO is a subsidiary of Hawaiian Electric Co. (HECO), which also owns the power systems on O'ahu, Maui, Moloka'i, and Lana'i. HECO itself is a unit of Hawaiian Electric Industries, Inc. (HEI), a company publicly traded on the New York Stock Exchange (symbol HE).

‡ One megawatt-hour is the energy provided by one megawatt of power for a duration of one hour. One megawatt is equal to 1 million watts. Note: About 7% of energy delivered to the system is lost during transmission and distribution.



amounts of new renewables to displace existing petroleum-based generation.*

As shown in Table 1, some renewable technologies use variable resources such as the wind and sun and thus cannot alone replace firm resources. Safety and reliability are also important considerations that may affect the feasibility of different technologies, particularly with respect to known hazards such as seismic, volcanic, and other risks present on Hawai'i Island.†

TABLE 1. COMPARISON OF GENERATION TECHNOLOGIES^[2,12,13]

	Generation Cost	Firm Resource	Commercially Available
HELCO production	Status Quo	Firm	Yes
Solar PV	Lower	Variable	Yes
Wind	Lower	Variable	Yes
Geothermal	Lower	Firm	Yes
Hydropower	Lower	Variable‡	Yes
Biomass	Lower	Firm	Yes
Waste to Energy	Lower	Firm	Yes
Energy Efficiency	Lower	Variable	Yes
Ocean	Unknown	Firm	No

Note: Technology characteristics based on most recent available cost estimates from National Renewable Energy Laboratory and Hawai'i-based energy developers. Individual project costs will vary based on many factors. Specific project proposals should be evaluated on a case-by-case basis.

ENERGY EFFICIENCY

Energy efficiency improvements can be viewed as a renewable energy resource because they reduce overall demand, most of which comes from petroleum. If the residents, businesses, and government of Hawai'i Island take steps now to improve energy efficiency, it could dramatically lower the overall cost of transitioning the island's energy system to renewable sources. Energy efficiency improvements are often the most cost-effective energy investments. There is already a ratepayer-funded program branded as "Hawai'i Energy" to address residential and commercial energy efficiency.

Because of the energy losses during power generation, switching to renewable sources can also save large amounts of imported energy. The island's existing petroleum-fired electric generators are only about 32% efficient on average,^[11] which means that renewable technologies not only displace kilowatt-hours of electricity, they also displace large amounts of imported petroleum products used in conventional generation. Replacing petroleum-based generation with renewable generation could save some or all of the more than \$120 million in spent on fuel purchases for power generation in 2011.^[14] Eliminating power generation and grid losses would reduce the island's total energy consumption by 24%.

* Adding new, lower-cost renewable generation will also have the effect of lowering the utility's avoided cost of energy, which will decrease payments made to independent power producers under current contracts.

† For additional discussion of natural hazards on Hawai'i Island, see *Seismic, Volcanic, and other Natural Hazards*, below.

‡Hydropower can be a firm resource but the existing units on Hawai'i Island are variable or "run of river."

ELECTRICITY MARKETS AND REGULATION

The relatively low cost of renewable electricity provides a powerful market signal, but it has not been sufficient to induce widespread adoption of renewable energy in the electricity sector. There are technical challenges associated with interconnecting some renewables into the current power grid; however, they have been successfully managed in other places by investing in a modernized power grid and using existing technologies and applications to improve control and efficiency of the power system. Regulatory, policy, and financial incentive issues remain the key barriers to a full transition to renewable electricity.

In general, the regulatory system needs to be designed to encourage the kinds of investments required to transition the island's energy system to sustainability. There have been significant changes in energy policy since the Hawai'i Clean Energy Initiative began in 2008, and state-level decision-makers continue to consider broad regulatory adjustments to accelerate the state's transition to clean energy. However, so far, these changes have not resulted in substantial additions of renewable energy on Hawai'i Island, suggesting continued policy innovation will be necessary to realize a full transformation away from petroleum dependence.

ROLE OF THE COUNTY

Most of the planning and decision-making for Hawai'i Island's energy system is made at the state-level in Honolulu, either by the state legislature, the State of Hawai'i Public Utilities Commission, or by O'ahu-based Hawaiian Electric Industries, the owner of HELCO and the island's electric power system. State law limits the County's authority and jurisdiction to certain specific areas, which prevents the County from unilaterally restructuring the island's energy system. Nonetheless, the County has a critical role to play in facilitating appropriate renewable energy development and leading the island toward energy sustainability.

In the short term, the County should focus on building the capacity of its own energy program and directing its substantial energy expenditures into investments that will reduce costs to taxpayers. Over the long-term, the County can take action to guide the transition to energy sustainability by contributing to official decision-making processes and advising the island's communities about the impacts of energy choices being made off-island.

PROMOTE APPROPRIATE ENERGY DEVELOPMENT AND USE

The County has the ability to influence the path taken by actively participating in off-island energy decision-making processes. The primary formal venues for contributing to energy planning and decision-making are the proceedings of the Public Utilities Commission and the state legislature. The County can analyze proposed laws, regulations, and energy development projects and help ensure local impacts are given due consideration by those who control the island's energy system. Effective participation in state-level decision-making will give a



voice to the island in determining its own energy future. In the electricity sector in particular, it is important to ensure coordinated energy development because there is a limited need for new generation capacity (electricity demand is flat or falling) and power purchase agreements for new generation tend to last twenty years or more.

These analyses can also support County efforts for improving public understanding of benefits and costs of energy sustainability and contribute to other critical community-based initiatives such as the Community Development Plans. Further County-sponsored public outreach should be coordinated with the education efforts of other energy stakeholders.

DEVELOP INNOVATIVE AND PROACTIVE POLICY

The County must anticipate the challenges and issues that will arise around exploiting Hawai'i Island's natural resources for energy and constructing the island's energy system. The County can be prepared for new project developments by creating rigorous, succinct and comprehensible frameworks for analyzing energy issues to be used in local land use planning and permitting processes. The County can insist on community-supported and evidence-based decision making. Due to state law, the County has more leeway in directing the development of transportation policy and infrastructure for the island, in particular the mass transit system.

LEAD BY EXAMPLE IN COUNTY OPERATIONS

The County of Hawai'i spent over \$35 million on electricity and fuel for its own operations in 2011.^[15,16] Most of this (\$19M) is spent by the Department of Water Supply on electricity to obtain and deliver water to its customers.* Even excluding the large Water Supply energy expenditure, government operations required more than \$15 million for energy purchases in 2011, of which more than \$7.8 million was used for electricity and \$7.5 million for liquid fuels for transportation and equipment.

In addition, the County of Hawai'i provides essential services to the island that are dependent on energy for their continued operation (e.g., water supply, civil defense, public safety, etc.). Investments in renewable energy systems can improve the resilience of energy supply for essential government services, while simultaneously lowering costs to taxpayers.

Energy efficiency and renewable energy projects developed by the County for both electricity and transportation can result in substantial savings that more than pay for the cost of installation and operation over the life of the projects. These savings can be used to support both energy and non-energy policy efforts of the County.

* The County of Hawai'i Department of Water Supply is a semi-autonomous agency governed by an elected Board of Water Supply, which administers the department's budget separately from the rest of the County.

FIVE YEAR ROADMAP

The Five Year Roadmap describes the components of a strengthened County energy program and presents a set of County energy “Priority Actions” focused on developing innovative policies to more effectively lead the island-wide energy sustainability transition while modernizing County operations and facilities. The Roadmap has the potential to save nearly \$4 million in County operations over the next five years after covering program and staffing costs.

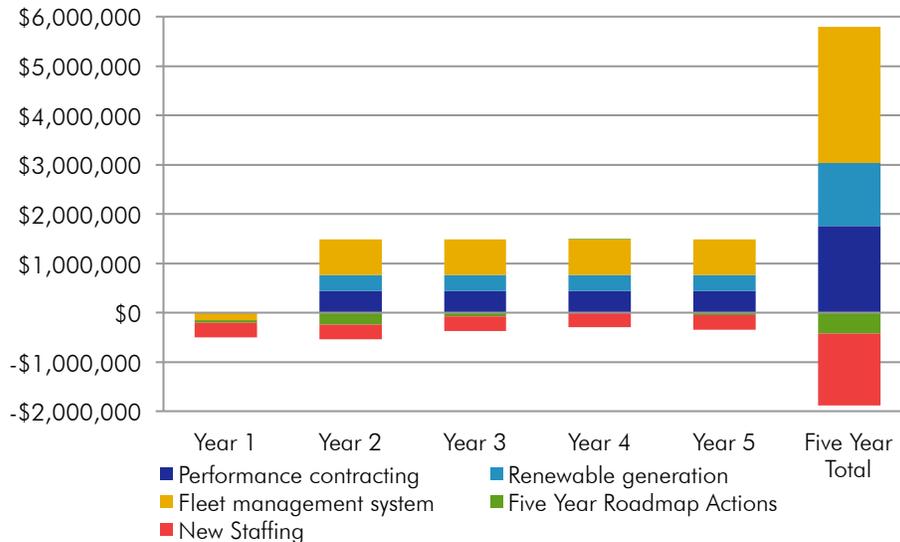


FIGURE 10. FIVE YEAR COST SAVINGS OF PROPOSED ENERGY PROGRAM

COUNTY ENERGY PROGRAM

An overview of the resources and general procedures for a energy program for the County are presented in the following sections, with key recommendations to:

- Create and empower a robust energy program with sufficient resources to provide leadership and coordinate energy initiatives across departments.
- Utilize energy savings to provide dedicated and predictable funding for the energy program through a revolving fund.
- Create a system for the accountability of the energy program through consistent documentation and reporting of activities and by restructuring County energy consumption and cost data collection and analysis.

LEADERSHIP AND RESOURCES

A central objective of the *County of Hawai‘i Energy Sustainability Program Five Year Roadmap* is to provide not only recommendations regarding energy initiatives but also to outline the resources necessary for execution of those initiatives. The success of the Five Year Roadmap will require changing the status quo. Creating a strong and independent energy program would send a clear message that sustainability issues, particularly energy, are a core priority of the County and the current administration.



The County energy program should be led by an energy program manager with the ability to broadly coordinate energy initiatives across departments and represent the island’s interests outside of county operations. Past projects have demonstrated that interdepartmental cooperation is essential, such as the successful solar photovoltaic system and electric vehicle program at the West Hawaii Civic Center primarily involving the Department of Research & Development, the Department of Public Works, and the Department of Finance. The energy program manager would be supported by both new and existing positions, the Energy Advisory Commission, and the interdepartmental task force known as the Green Team.

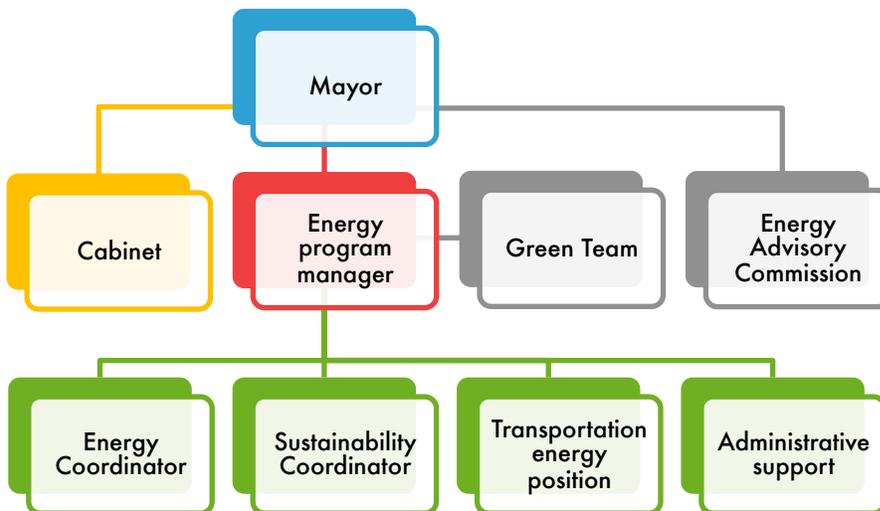


FIGURE 11. PROPOSED STAFF RESOURCES FOR THE COUNTY ENERGY PROGRAM

DEDICATED AND PREDICTABLE FUNDING

The cost savings generated from renewable energy projects can allow funds to be reallocated to support staff and new projects, but only if the appropriate tracking mechanisms are made part of the budget process. The majority of the savings can be directed to the General Fund to help support all County programs. However, a “revolving fund” should be established to capture part of the savings from energy projects to pay for the energy program staff and activities to assure and continue this cost-saving trajectory. The energy program staff should have responsibility for selecting appropriate projects for the revolving fund and accountability for achieving the necessary savings to cover their operating costs.

ACCOUNTABILITY

Quality data and reporting is necessary for effective decision making for energy programs and projects. Similarly, it is essential for tracking progress such as cost savings. At present, the County does not have a formal system to track, measure, or monitor energy consumption together with costs. Energy expenditures are recorded by the Department of Finance but there is no system of accountability for department heads to monitor and control energy use. Similarly, the public cannot easily get an understanding of how energy is used or paid for by its local government.

Accountability extends to the employees charged with implementing this roadmap and the energy program more generally. The Five Year Roadmap identifies what data sources currently exist and contains measurement guidelines that should be reliably tracked and reported to gauge the success of the energy program. The Five Year Roadmap and any other energy planning documents should be revisited regularly, updated on predictable schedules and coordinated with critical county decision-making processes such as the General Plan.

SUMMARY OF PRIORITY ACTIONS

TRANSPORTATION

Reducing transportation energy demand and shifting to non-fossil energy sources will require long-term, concerted effort. In the short-term, the County of Hawai'i should organize its actions around mass transit system improvements, County-wide transportation laws and regulations, and County vehicles and operations. Additionally, the County can take steps to promote the adoption of new and better vehicles that consume little or no fossil fuel.

The County has several specific powers related transportation planning and regulation that can be leveraged to promote more sustainable and efficient use of energy in transportation. It also can wield influence as a major consumer of fuel on the island with total expenditures of about \$7.5 million per year.

1. Coordinate the formation of a large fleet owners consortium
2. Fund a comprehensive mass transit strategic plan to increase ridership and introduce modern transit management technologies
3. Increase the user-friendliness of Hele-On bus information for riders
4. Provide grant funding to vehicle dealers and repair businesses to acquire and install electric vehicle servicing equipment
5. Create a property tax credit for electric vehicle charging stations
6. Establish a county-wide priority policy for alternative fuels
7. Adopt or develop a biofuels evaluation framework to support County decision-making and advocacy that addresses the specific needs of the island
8. Institute a fuel tax schedule for alternative fuels
9. Develop a framework for increasing the fuel tax on fossil fuels at a future date
10. Implement a Complete Streets policy to improve the safety and accessibility of the island's public roadways
11. Enforce the state law requiring large parking lots to provide electric vehicle parking and charging
12. Reduce fossil-fuel consumption in the County fleet through vehicle purchasing and a fleet management system
13. Encourage County employees to use an existing free private platform for carpooling and ridesharing.



RENEWABLE ELECTRICITY

Public discussions about energy sustainability are often dominated by debates about the technology options and infrastructure development for electricity generation. The State regulates the development of power plants through law and the Public Utilities Commission. Because of this, the County is not in a position to select the projects that will be providing the majority of the island's energy in the future. However, it must ensure that energy development proceeds in a way that protects the welfare of residents and the environment.

In the short-term, the County of Hawai'i should maximize its own production of renewable energy allowed by current law, develop smart renewable energy policies designed to facilitate the orderly and appropriate development of the island's renewable energy resources, and support the deployment of technologies likely to help achieve the island's energy goals in the future.

14. Devote additional resources to representing the County's interest in Public Utilities Commission proceedings
15. Introduce an expedited permitting process for small solar photovoltaic systems
16. Institute a county-level review process for geothermal exploration and development that ensures a project is not materially detrimental to the public welfare and includes a public hearing
17. Expand the definition of the Geothermal Asset Fund and the Geothermal Relocation and Community Benefits Fund to address any future geothermal development
18. Release a master request for proposals for renewable energy generation and energy efficiency for all public facilities

ENERGY EFFICIENCY

There are many ways to boost the island's economy and lower energy expenditures through energy efficiency investments. However, energy efficiency for homes and businesses is largely out of the hands of the County government. The immediate priorities of the County should focus on actions that it has explicit authority to carry out, are low or no cost and are not being carried out already by Hawai'i Energy, the rate-payer funded energy efficiency program. The County does have the ability to create policies through property taxes, building codes, and permitting. As one of the largest energy users on the island, the County can also lead by example with its own facilities and operations.

The County must be careful not to duplicate existing efforts or introduce new layers of programs and policies that only add to the complexity of implementing energy efficiency. The County should move away from direct funding towards design requirements and other enabling policies.

19. Adopt and maintain strong building energy codes
20. Create a building energy performance rating and disclosure program
21. Require independent commissioning for all new large commercial construction projects and major renovations
22. Restrict the solar water heater tax credit to existing buildings

23. Create a revolving energy fund to capture energy cost savings for reinvestment
24. Conduct energy service performance contracting for County facilities
25. Establish efficiency standards for County equipment purchases



PRIORITY ACTIONS: TRANSPORTATION

Promote appropriate energy development and use

1. Coordinate the formation of a large fleet owners consortium

Goal: To increase the deployment of alternative vehicles and fuels

Potential members: State agencies, resorts, car rental companies, tour companies, cab companies, delivery companies, construction companies, and transportation contractors.

Key activities of the consortium could include:

- information sharing on best practices, new projects, and industry news;
- making policy recommendations
- funding demonstration projects
- procurement guidelines
- public commitments to energy goals
- strategies for attracting efficient vehicles and alternative fuels

If the County aggressively pursues strong vehicle purchasing policies and shows success in reducing fuel consumption, it can communicate the best practices to other consortium members.

The consortium members can also communicate their needs and goals to vehicle suppliers and service providers. This may help draw a larger number of high-efficiency vehicles to the island.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Public Works • Other county departments with fleet oversight • Large fleet owners 	Upfront: \$1,000 - 5,000 Annual: \$5,000 Total: \$16,000+

2. Fund a comprehensive mass transit strategic plan to increase ridership and introduce modern transit management technologies

Goal: To reduce vehicle miles traveled and shift to more efficient modes of travel

Include a comprehensive analysis of available data, current data collection methods and potential objective, quantifiable performance measures.

Examine complementary services such as ridesharing, vanpools and public information systems

The plan and associated tools must give Mass Transit Agency employees the ability to perform evaluations and interim planning without outside consultants

A strategic plan that incorporates new technologies and strategies will allow the mass transit system to better meet the needs of county residents. Importantly, it can give the Mass Transit Agency tools to conduct continual analysis and planning as the county grows and changes. Well-designed information tracking will give the County a much better understanding of the energy savings attributable to mass transit.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Mass Transit Agency • Energy program staff • County Council • Planning Department • Planning Commissions 	Upfront: \$250,000 Total: \$250,000

3. Increase the user-friendliness of Hele-On bus information for riders

Goal: To reduce vehicle miles traveled and shift to more efficient modes of travel

Use a third-party vendor to develop and maintain a system for both internal and public route information vehicle tracking. Use a service based on a recognized standard such as the General Transit Feed Specification (GTFS) or Extensible Markup Language (XML) that allow integration into recognized web platforms.

Physical Branding and Visibility: On-street visibility of the bus stops; clear and widely available route maps and schedules; increased marketing.

The intended result of supplying more and better information to riders is to increase ridership. Residents and visitors will be able to more effectively plan their trips in advance or on the fly. Visitors in particular will be able to more quickly learn how to use the system.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Mass Transit Agency • Energy program staff • Information Technology • Contractors 	Upfront: \$40,000 Annual: \$3,500 Total: \$50,500

4. Provide grant funding to vehicle dealers and repair businesses to acquire and install electric vehicle servicing equipment

Goal: To increase the deployment of alternative vehicles

Dealers must make a difficult economic choice between installing servicing equipment before there is a large enough vehicle base to pay back the costs and selling vehicles they cannot service. Research suggests the cost for a dealer to install servicing equipment in an existing facility and train technicians could be up to \$100,000.

The recommended annual funding level is \$40,000 each year for three years for approximately six projects total. The proposed fleet owners consortium may be able to organize additional funding and implementation support.

Allowing dealers and repair businesses to overcome the "chicken or egg" challenge should allow them to provide better service. This is essential for building consumer confidence in new vehicle technologies. The equipment may also require new training and employees.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Research & Development • Department of Finance • County Council • Auto dealers • Auto repair businesses 	Annual: \$40,000 Total: \$120,000

5. Create a property tax credit for electric vehicle charging stations

Goal: To increase the deployment of alternative vehicles

A resident purchasing an electric vehicle will most likely need to also install a charging station at an estimated cost of \$1,000 or more.

The County Council should adopt as ordinance amending the County Code a one-time electric-vehicle charging station property tax credit of \$500. The credit should be directly modeled on the existing solar water heater tax credit.

Supporting private investment in charging infrastructure may make the purchase more attractive. A sunset provision may encourage earlier adoption. Can also be an opportunity for data collection.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • County Council • Department of Finance 	Total: \$155,000* *Lost revenue. Depends on adoption and application rate

Develop innovative and proactive policy

6. Establish a county-wide priority policy for alternative fuels

Goal: To reduce dependence on imported energy by promoting locally produced fuels

No fuel should be eligible for applicable county policies and procurement, unless the alternative fuel producer, distributor or retailer demonstrates that the production, distribution, sale and use of each type of fuel it provides does not have the effect of a net increase in fossil-fuel consumption on a life-cycle basis.

- Priority 1: Fuels produced on-island from feedstocks grown on-island.
- Priority 2: Fuels produced on-island from off-island but in-state feedstocks or, in the case of waste, on-island sourced feedstocks.
- Priority 3: Fuels produced off-island but in-state with in-state feedstocks.
- Priority 4: Fuels produced off-island but in-state from out-of-state feedstocks.
- Priority 5: Fuels neither produced nor sourced on-island or in-state.

A clear statement of the County's view of alternative fuels sustainability will set a precedent for future policy and project development both in the government and private sector.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • County Council • Mayor's Office • Energy program staff • Department of Finance • Department of Public Works 	Staffing



7. Adopt or develop a biofuels evaluation framework to support County decision-making and advocacy that addresses the specific needs of the island

Goal: To anticipate the challenges and mitigate the impacts of locally produced fuels

Use a stakeholder-based process to either adopt an existing biofuels certification framework, adapt an existing framework to Hawai'i or develop a completely new framework. Possible existing frameworks include: Roundtable on Sustainable Biofuels, REDcert, and the International Sustainability & Carbon Certification.

Adapting an existing framework may be the most suitable approach. Partner with organizations with expertise and experience in biofuels certification.

The framework can be applied to County purchases and evaluation of private-sector projects for permitting or County support.

As one of the largest single potential biofuels customers, the County could strongly influence choices made about biofuels. However, it cannot mandate that fuel distributors, major consumers (e.g. HELCO) or regulators (e.g. the PUC) use its framework. A state-level framework may have the greatest impact, but the County may have to lead the way for change to occur.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Planning Department • Department of Research & Development • County Council 	Upfront: \$50,000 Total: \$50,000

8. Institute a fuel tax schedule for alternative fuels

Goal: To reduce dependence on imported energy by promoting locally produced fuels

The County's fuel tax schedule should be tiered to reflect the Alternative Fuel Priority Policy. Fuels that have net-positive fossil-fuel energy consumption on a life-cycle basis, including those that fall under the previous categories, should be taxed at the same rate as diesel and gasoline.

Fuels that are a blend of different fuels, including diesel and gasoline should be taxed proportionally the energy content of each component fuel, using the lower-heating value.

In the near term, both sales the tax revenue are likely to be small. The policy would clearly communicate the County's policy on alternative fuels and its willingness to consistently apply it. It may influence private-sectore decisionmaking for fuels.

Because fuel taxes are critical for road maintenance, the taxes should be reevaluated as alternative fuels become a significant part of the transportation energy supply.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • County Council • Department of Finance • Department of Public Works • Energy program staff 	Staffing

9. Develop a framework for increasing the fuel tax on fossil fuels at a future date

Goal: To reduce dependence on imported energy by promoting locally produced fuels

The energy program staff should reassess the option every year and make a recommendation to the Mayor. If the market conditions are favorable, the County Council should increase the fuel tax on highway fossil fuels by formal resolution./

The level of the tax should be set so that a clear price signal is sent to consumers of fossil transportation fuels, without overburdening individuals and households. The burden could be offset by using fuel tax revenue to for subsidies or assistance for low-income households, but current state law would not allow this.

A clearly defined schedule for increasing fuel taxes may allow consumers to anticipate the rising costs and influence their vehicle purchasing decisions.

The increased revenue to the Highway Fund can be used for specific purposes such as bikeways and mass transit.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Mayor's Office • County Council • Department of Finance 	Staffing

10. Implement a Complete Streets policy to improve the safety and accessibility of the island's public roadways

Goal: To reduce vehicle miles traveled and shift to more efficient modes of travel

Section 264-20.5 of the Hawaii Revised Statutes requires the incorporation of complete streets principles during the maintenance and new construction of the state's public roadways, with a few allowed exceptions. Complete streets principles are consistent with the policies and goals of the Hawai'i County General Plan, which has several provisions related to accessible and efficient transportation systems

At the request of the County Council, the Department of Public Works is developing a complete streets policy, though it has not yet been made public. The State of Hawai'i Complete Streets Task Force guidelines provide a good model. For specific road projects, decisionmaking on this matter should be completely transparent. If a complete street approach is not being used, the decision should specifically reference which of the four exceptions in HRS §264-20.5 is being applied.

The energy impact of complete streets are difficult to quantify. Over time, the expansion of alternative transit options on the island will decrease transportation energy demand.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Department of Public Works • Energy program staff • Department of Planning 	Project specific

11. Enforce the state law requiring large parking lots to provide electric vehicle parking and charging

Goal: To increase the deployment of alternative vehicles

State law (HRS §291-71) mandates that public, private and government parking lot owners with at least one lot containing 100 spaces set aside at least one space for electric vehicles, and provide one or more charging stations by July 1, 2012.

The Mayor should direct the relevant permitting departments, including Public Works and Planning, to suspend the processing of County permits for applicants who are found to be out of compliance with HRS §291-71. Relevant inspectors and auditors should include a check for compliance in any inspections or site visits.

Having charging stations at major destinations will increase the visibility of EVs both by standing alone, and drawing EV drivers to those sites.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Mayor's Office • Energy program staff • Department of Public Works • Planning Department • Department of Finance 	Staffing

Lead by example in County operations

12. Reduce fossil-fuel consumption in the County fleet through vehicle purchasing and a fleet management system

Goal: To increase the deployment of alternative vehicles and fuels

The County currently has no comprehensive system to track fuel volume, energy consumption, or efficiency for the fleet, although it spends about \$7.5 million per year on fuel.

- Contract with a third-party to supply the County with a modern fleet data management system including fuel consumption, mileage and GPS tracking.
- Any new vehicle purchased should have the effect of increasing the fleet wide fuel economy. In passenger applications, electric vehicles should have priority.
- When purchasing biofuels, the County should adhere to the Alternative Fuels Priority Policy described in the roadmap when financially feasible.
- Use a centralized motor pool for County employees to allow electric and high efficiency vehicles to be used more often than if assigned to individual employees.

The Aberdeen Group reports fuel cost and operating savings of over 20% per year in organizations using GPS-based management. Based on other available information 10% savings is used for this plan. A National Renewable Energy Laboratory (NREL) study showed that replacing 25% of the West Hawaii Civic Center fleet with electric vehicles would save over \$130,000 in fuel costs over six years.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy Coordinator • Department of Finance, Purchasing Division • Department of Public Works, Automotive Division 	Upfront: \$150,000 Annual cost: \$25,000 Annual savings: \$750,000 Total: \$2.75 million savings



13. Encourage County employees to use an existing free private platform for carpooling and ridesharing.

Goal: To reduce vehicle miles traveled

Starting with a pilot project, adopt a voluntary ride-sharing program for county employees as a model to be expanded to all island residents. An existing free or low-cost service can be utilized instead of creating a customized portal with an service provider.

Incentivizing employees may increase utilization. Possible strategies include: Priority parking; public acknowledgement; friendly competition; rewards.

The immediate effect of this program is not certain. The intent is more to assess the workability of a rideshare program for the island. If the program is not a success, there will be valuable information for other similar programs.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> Energy program staff 	Rewards: \$1,000

PRIORITY ACTIONS: RENEWABLE ELECTRICITY

Promote appropriate energy development and use

14. Devote additional resources to representing the County's interest in Public Utilities Commission proceedings

Goal: To promote appropriate energy development and use

Proceedings before the Hawai'i Public Utilities Commission are formal, public, quasi-judicial arenas where major electricity policy and regulatory matters are decided. It is incumbent upon the County to actively participate in PUC proceedings in order to influence energy policymaking that affects the island's power system.

The County should maintain active participation in the Intra-governmental Wheeling and Reliability Standards dockets. Participation should be expanded to include the upcoming HELCO 2013 Test Year Rate Case, the Integrated Resource Planning docket and any dockets concerning Power Purchase Agreements or other energy supply contracts. New dockets are opened frequently and activities of the utility and the PUC should be monitored for new policy investigations that may impact the island.

It is difficult to precisely measure expected impacts of participation in PUC dockets. Without effective contributions, however, the County could see its interests compromised due to competition for limited resources or failure to incorporate the specifics of Hawai'i Island into state-level decision-making

Responsibility	5-Year Cost
<ul style="list-style-type: none"> Energy program staff 	Staffing

15. Introduce an expedited permitting process for small solar photovoltaic systems

Goal: To ease the deployment of renewable electricity sources

The Solar America Board for Codes and Standards (Solar ABCS) has developed an expedited model permitting process that it estimates would apply to 50-75% of systems under 15kW.

The Department of Public works should review the model expedited solar PV permitting process and make a recommendation to the County Council for adoption.

The improved permitting process reduces the burden on the contractor more than the system owner. However, the customer will likely save money from reduced labor time from permit and supporting information writing. Permitting also represents an opportunity for data collection by the County.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> Department of Public Works, Building Division Energy program staff 	Staffing

Develop innovative and proactive policy

16. Institute a county-level review process for geothermal exploration and development that ensures a project is not materially detrimental to the public welfare and includes a public hearing

Goal: To anticipate the challenges and potential impacts of geothermal energy

The current County and State administrations have both supported the pursuit of geothermal development as a critical component of energy sustainability for Hawai'i Island. The Geothermal Working Group, created in response to Senate Concurrent Resolution 99 in 2010, issued a report generally supportive of geothermal development, while emphasizing a need for ongoing attention to public safety as well as environmental and community impacts. To advance geothermal energy on the island, HELCO is developing a request for proposals for a new 50 MW plant.

In May 2012, Act 97 of the state legislature repealed HRS §205-5.1. This law effectively eliminates the County's current geothermal approval process.

The County Council should ensure that the County has an opportunity to review proposed geothermal exploration and development on the island. Section 25-2-61 of the County Code pertaining to use permits may be modified to include geothermal exploration and development in all land use districts. The existing (but no longer used) geothermal resource permit procedures could be adapted to this use.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Planning Commission • Planning Department • County Council 	Staffing

17. Expand the definition of the Geothermal Asset Fund and the Geothermal Relocation and Community Benefits Fund to address any future geothermal development

Goal: To anticipate the challenges and potential impacts of geothermal energy

The laws and rules governing the Geothermal Relocation and Community Benefits Fund and the Geothermal Asset Fund are specific to the one existing geothermal power plant on the island, Puna Geothermal Venture.

In anticipation of future geothermal development, the laws and rules should be modified to be applicable to all geothermal energy projects.

The Geothermal Asset Fund wasn't created until about six years after PGV was first issued its permit in 1989 with the Relocation Fund following a year later. Rather than wait for the community surrounding a new geothermal development to request compensation, the County can proactively provide for its needs.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Finance • Planning Department 	Unknown revenues

Lead by example in County operations

18. Release a master request for proposals for renewable energy generation and energy efficiency for all public facilities

Goal: To displace imported energy, save taxpayer money and support the County's energy program

The County of Hawai'i should develop and release a Master RFP for renewable electricity generation for all public facilities, including those managed by the Departments of Public Works, Water Supply, Environmental Management, the Police Department, and the Fire Department. Respondents to the RFP should be required to evaluate the electricity generation potential for all public facilities and incorporate a portfolio approach to achieving energy savings.

The County should be diligent in evaluating proposed financing mechanisms to ensure the County receives the highest value for these projects.

Each County facility will have a different level of achievable electricity generation at a specific

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Finance • Department of Public Works • Department of Parks & Recreation • Department 	Upfront: \$0 Annual savings: \$320,000 Total: \$1.28 million



estimated cost. By combining all facilities together in a portfolio approach, the County can maximize renewable energy production given the current regulatory limitations. In 2011, the County installed a 250 kW solar photovoltaic system at the West Hawai'i Civic Center, which is estimated to save \$60,000 a year in energy costs. An estimate in the County Green Government Action Plan indicates 10% of County facilities could accommodate 1,000 kW of solar PV (4 times the size of the facility at WHCC) and save the County \$320,000 per year in energy costs.

of
Environmental
Management
• Police
Department
• Fire
Department

PRIORITY ACTIONS: ENERGY EFFICIENCY

Promote appropriate energy development and use

19. Adopt and maintain strong building energy codes

Goal: To encourage residents to reduce home energy consumption

The energy program staff and the Department of Public Works should track the development of new model codes by the International Code Council and adapt them to Hawai'i as they become available, starting with the 2012 IECC if they will result in increased energy savings. Adoption should be within one year of publication by the International Code Council. Staff training may be necessary

The intent of this priority action is less about creating specific changes to the existing code than ongoing diligence in the analysis, adaptation and adoption of improved energy codes. The U.S. DOE reports that the 2009 IECC has a 14% improvement in energy savings over the 2006 version, and the 2012 version has further improvements. The Building Codes Assistance Project estimates that the 2009 IECC and the ASHRAE 90.1 standard could save over \$30 million a year in energy costs statewide. Staff training is estimated at \$8,000 for two employees over two building code cycles

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Department of Public Works • Energy program staff • Planning Department 	Total: \$8,000

20. Create a building energy performance rating and disclosure program

Goal: To encourage residents and businesses to reduce building energy consumption

The energy program staff and the Department of Public Works should implement a mandatory building energy rating and disclosure system for all buildings on the island at the time of construction or sale. The Department of Energy's Home Energy Score or RESNET HERS should be the basis of the residential rating system. The Energy Star Portfolio Manager or the ASHRAE Building Energy Quotient should be the basis of the commercial system.

The program can begin with a County facility pilot, followed by a large commercial pilot, then all commercial buildings and finally residential buildings.

Building energy performance disclosure is intended to provide information for buyers and tenants that will allow them to more completely compare the cost of occupying a building. This may spur landlords and sellers to invest in energy improvements to achieve a better rating and make their building more attractive to prospective tenants or buyers. Importantly, these improvements would largely be for existing buildings, which the building energy code typically do not address unless the building is undergoing major renovation.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Public Works • Building owners • Energy raters • Real estate agents 	Upfront: \$14,500 Total: \$14,500

21. Require independent commissioning for all new large commercial construction projects and major renovations

Goal: To encourage businesses to reduce building energy consumption

The County Council should adopt an ordinance creating a requirement for building commissioning in large commercial building construction and major renovation. Commissioning agents should be certified by an approved organization and operate independently of the owner, architect, construction firm or equipment installer. A commissioning statement should be submitted along with the building permit (similar to ADA and IECC 2006 certifications), signed by the commissioning agent.

A Lawrence Berkeley National Lab study revealed that commissioning adds an 0.4% (median) to a construction budget for a new building, but resulted in a 13% (median) energy savings for the whole building. For existing buildings, the median savings were found to be 16%. The study found that commissioning can begin to pay for itself even before any energy savings are realized through reduced equipment costs.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • County Council • Department of Public Works 	Staffing

22. Restrict the solar water heater tax credit to existing buildings

Goal: To increase the efficiency of taxpayer-funded subsidies

Starting in January 2010, the state legislature (HRS §196-6.5) requires all new single-family residential construction to include a solar water heater, with exceptions. Hawai'i County's solar water heater tax credit (Chapter 19, Article 13 of the County Code) does not distinguish between new and existing building.

The County Council should amend Section 19-104 of the County Code to make new single-family residential construction ineligible for the solar water heater tax credit.

This change would reduce revenues lost to free-ridership for the tax incentive. It is not necessary to subsidize something that is required. With current application rates for the credit (261 in 2010), the County could expect a maximum of \$72,000 in savings. New single-family construction in 2011 was 581 homes, or a potential for \$174,300 in lost tax revenue. A total of 301 of those homes applied for exemption from the solar water heater requirement. However, this does not mean that every new home applied for the credit. The actual figure likely includes new and existing homes.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • County Council • Department of Finance 	Tax revenue not lost: \$140,000

Lead by example in County operations

23. Create a revolving energy fund to capture energy cost savings for reinvestment

Goal: To support the County's energy program

The energy program manager should work with the Department of Finance and the Department of Public Works to establish a Revolving Energy Fund for county operations. This fund can be used to capture some savings from energy efficiency and renewable energy projects to pay for the County's energy program.

Establishing a Revolving Energy Fund leverages savings from existing and future energy projects to continually finance new energy saving opportunities. Each project funded will have different energy savings potentials and expected operation cost savings. Because more savings than needed for the energy program are predicted, most savings can go to the General Fund.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Finance 	Staffing

24. Conduct energy service performance contracting for County facilities

Goal: To reduce energy demand, save taxpayer money and support the County's energy program

The County of Hawai'i should develop and release a Master RFP for energy performance contracting for all public facilities. The County should utilize the considerable knowledge and

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Finance 	Upfront: \$0 Annual (savings): \$440,000



<p>experience of the State of Hawai'i in developing the Master RFP and throughout the EPC selection and contracting process. The State Procurement Office, the State Department of Accounting and General Services, and the State Department of Business, Economic Development, and Tourism have resources available to assist the County with this process.</p> <p>Overall savings are unknown at this time; however, a qualified energy service contractor (ESCO) will make detailed evaluations of each building to determine achievable savings. The final contract with the ESCO will allow the County to achieve energy savings with no up-front investment and realize immediate and continuous savings in operating expenses going forward.</p> <p>If the county sees savings similar to the State, a 5.1% reduction in consumption would equal over \$400,000 annually while a 13.5% reduction would be over \$1 million, assuming the price of electricity remains constant.</p>	<ul style="list-style-type: none"> • Department of Public Works • Department of Parks & Recreation • Department of Environmental Management • Police Department • Fire Department 	<p>Total: \$1.76 million</p>
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25. Establish efficiency standards for County equipment purchases

Goal: To reduce energy demand, save taxpayer money and support the County's energy program

The County of Hawai'i should adopt a policy that establishes energy efficiency requirements for new purchases and bids. The policy should be based on the life-cycle cost of the product or equipment purchased. The federal government, the State of Hawai'i, and many local governments have model policies

Energy efficient products (such as Energy Star-rated products) reduce energy consumption by 10-75% and result in operational cost savings of 5-75% percent on a continual basis, depending on the product replaced.

Responsibility	5-Year Cost
<ul style="list-style-type: none"> • Energy program staff • Department of Finance, Purchasing Division 	<p>Staffing</p>

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