DRAFT ENVIRONMENTAL ASSESSMENT

KAIAKEA FIRE STATION PHOTOVOLTAIC POWER SYSTEM

OWNED BY THE COUNTY OF KAUAI

Office of Economic Development
LIHUE, KAUAI, HAWAII

Prepared by

Glenn Sato, Energy Coordinator
for
County of Kaua'i, Office of Economic Development
Telephone 241-4951
FAX 241-6399

August 19, 2010

TABLE OF CONTENTS

SECTION 1: PROJECT SUMMARY

PROJECT NAME:	Kaiakea Fire Station Photovoltaic Power System
PROPOSING AGENCY:	Kauai County Office of Economic Development 4444 Rice Street, Suite 200 Lihue Kauai, Hawaii 96766
APPROVING AGENCY:	Proposing Agency
PROJECT LOCATION:	Kapaa, Kauai, Hawaii
TAX MAP KEY:	4-6-14:26
TOTAL LAND AREA:	13.877 Acres

ANTICIPATED DETERMINATION: It is anticipated that a finding of no significant impact (FONSI) will be made for this project. The project will be an infrastructure enhancement to the Kaiakea Fire Station now under construction. The Environmental Assessment for the Proposed Fire Station for Kawaihau, Kaua'i, HI prepared by Belt Collins Hawai'i, Ltd. for the Public Works Department, County of Kauai in April 2006 determined that the proposed construction of the fire station would have no significant adverse impacts on the environment and that an Environmental Impact Statement was not required. Based on Hawai'i Administrative Rules Chapter 200, Subchapter 6, the County considered the April 2006 fire station's EA information as pertinent to the PV system as applicable and appropriate. This

project proposes to add a ground-mounted solar electric (photovoltaic) power system next to the fire station building to provide renewable energy to the facility.

Project Description: The project involves the installation of a ground mounted 25-30 kW photovoltaic (PV) power system that will provide renewable energy to the fire station and reduce the amount of oil-fired utility power purchased. Improvements will include installation of mounting racks/anchors, solar modules and an inverter(s) to change DC power to AC. The site is located in the Kawaihau District at the northern end of Kapa'a Town.

SECTION 2: PRE-ASSESSMENT CONSULTATION LIST

The following organizations were consulted for comments to the draft Environmental Assessment for the Kaiakea Fire Station Photovoltaic Power System.

FEDERAL:

U.S. Natural Resources and Conservation Service
U.S. Fish and Wildlife Service

STATE:

Dept. of Health
Dept. of Business, Econ. Dev. & Tourism
Dept. of Education
Dept. of Hawaiian Home Lands
Dept. of Land and Natural Resources
Dept. of Land and Natural Resources
Forestry and Wildlife Division
Dept. of Transportation, Highways Div.
State Historic Preservation Division
Mahelona Medical Center
Office of Conservation and Coastal Lands
Office of Environmental Quality Control
Office of Hawaiian Affairs

COUNTY OF KAUAI

Fire Dept.
Department of Parks and Recreation
Department of Water
Planning Dept.
Public Works Wastewater Div.

UTILITY COMPANIES

Kaua'i Island Utility Cooperative
Hawaiian Telcom

OTHERS

Kapa'a Business Association
Kaua'i Economic Development Board

SECTION 3: DESCRIPTION OF THE PROPOSED ACTION

3.1 Project Objective

The County of Kaua'i, Department of Public Works is constructing a new fire station in northern Kapa'a, to supplement and improve existing services for the Fire Department's Kapa'a service district. The station has been named the Kaiakea Fire Station. Figures 1 and 2 shows the location of the project area relative to Kapa'a. Figures 3 and 4 are an aerial site photo and site plan respectively.

The Kaiakea Fire Station will be a full service facility consisting of an engine and rescue company capable of handling structure fires, wild land fires, emergency medical calls and rescue calls. The fire station will consist of a garage with three bays for the fire trucks, kitchen/lounge, sleeping quarter, office, locker room, exercise room, generator compartment, laundry/storage room, and other accessory spaces. Figure 5 shows the PV array layout while Figure 6 shows an artistic rendering of the PV system.

The facility was designed with energy efficiency in mind, including solar hot water, insulation, occupancy sensors, day lighting and tinted windows. Construction plans for the facility were reviewed for energy efficiency by staff from the National Renewable Energy Laboratory (NREL).

In September 2009 the County received a direct allocation block grant from the U.S. Department of Energy via the American Recovery and Reinvestment Act (ARRA). The County administration decided to apply the $267,900 stimulus grant to plan/design and install a 25-30 kW photovoltaic power system for the new fire station. The use of a renewable energy system will serve to enhance the facility and reduce its carbon footprint with the use of renewable energy to offset the use of petroleum-based electricity generated by the local utility.

3.2 Description of the Proposed Action

The 25-30 kW PV system will be 100% funded by federal stimulus funds via a direct allocation to the County of Kaua'i. The PV system is expected to reduce total facility energy use by approximately 40,740 kWh of fossil-fueled generation per year. The PV system will be ground-mounted and will include a computer-

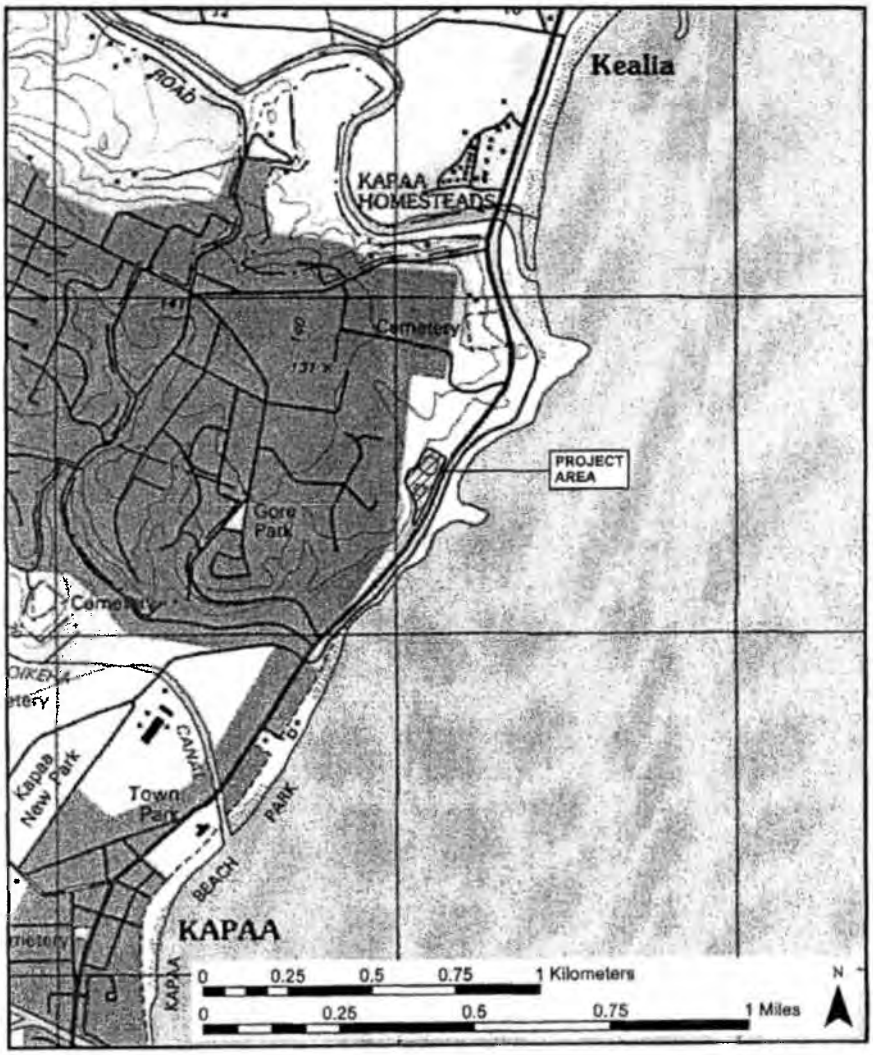


Figure 1. USGS Map showing location of project area

TMK [4] 4-6-014: 26

Figure 1: Project Location

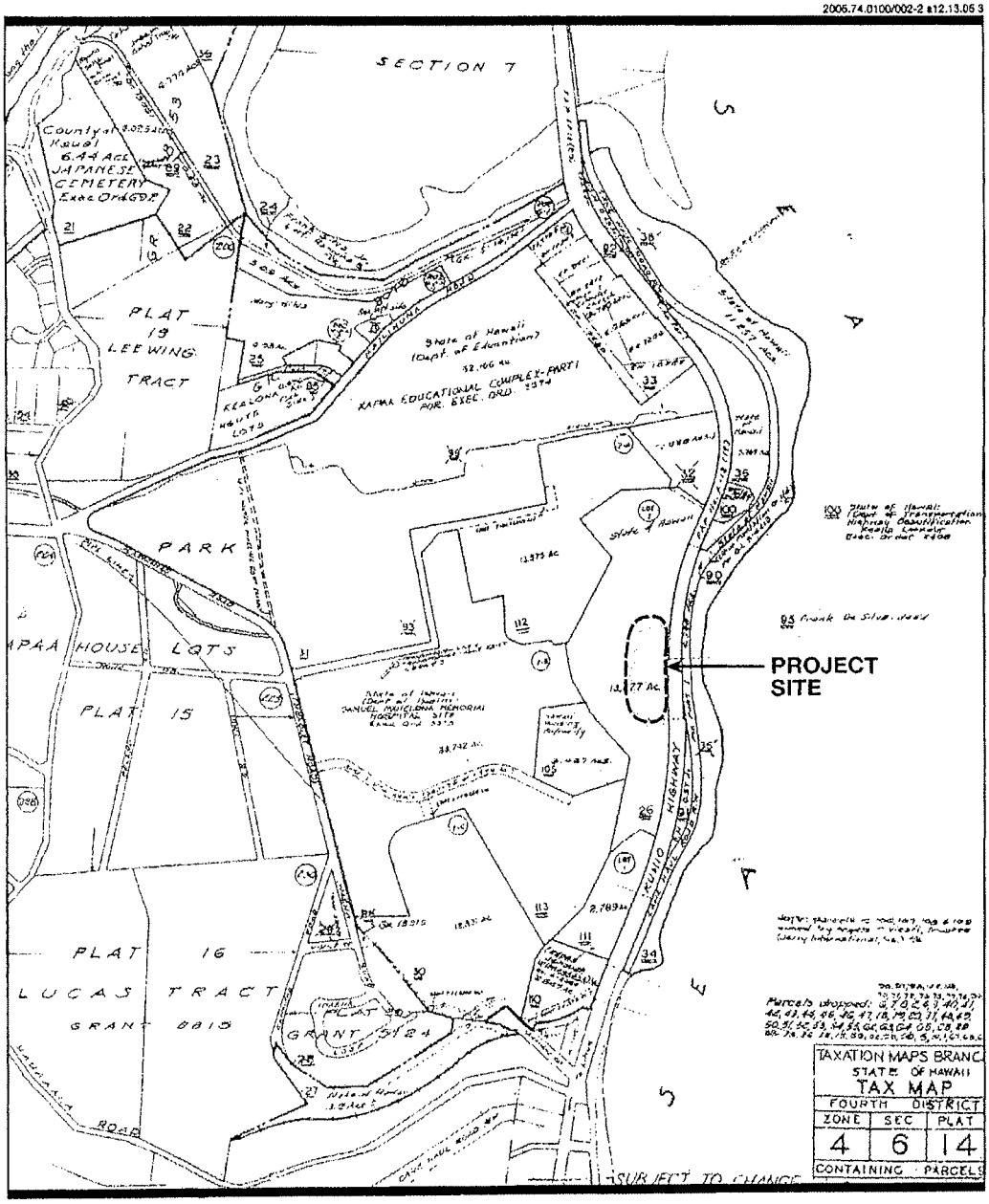


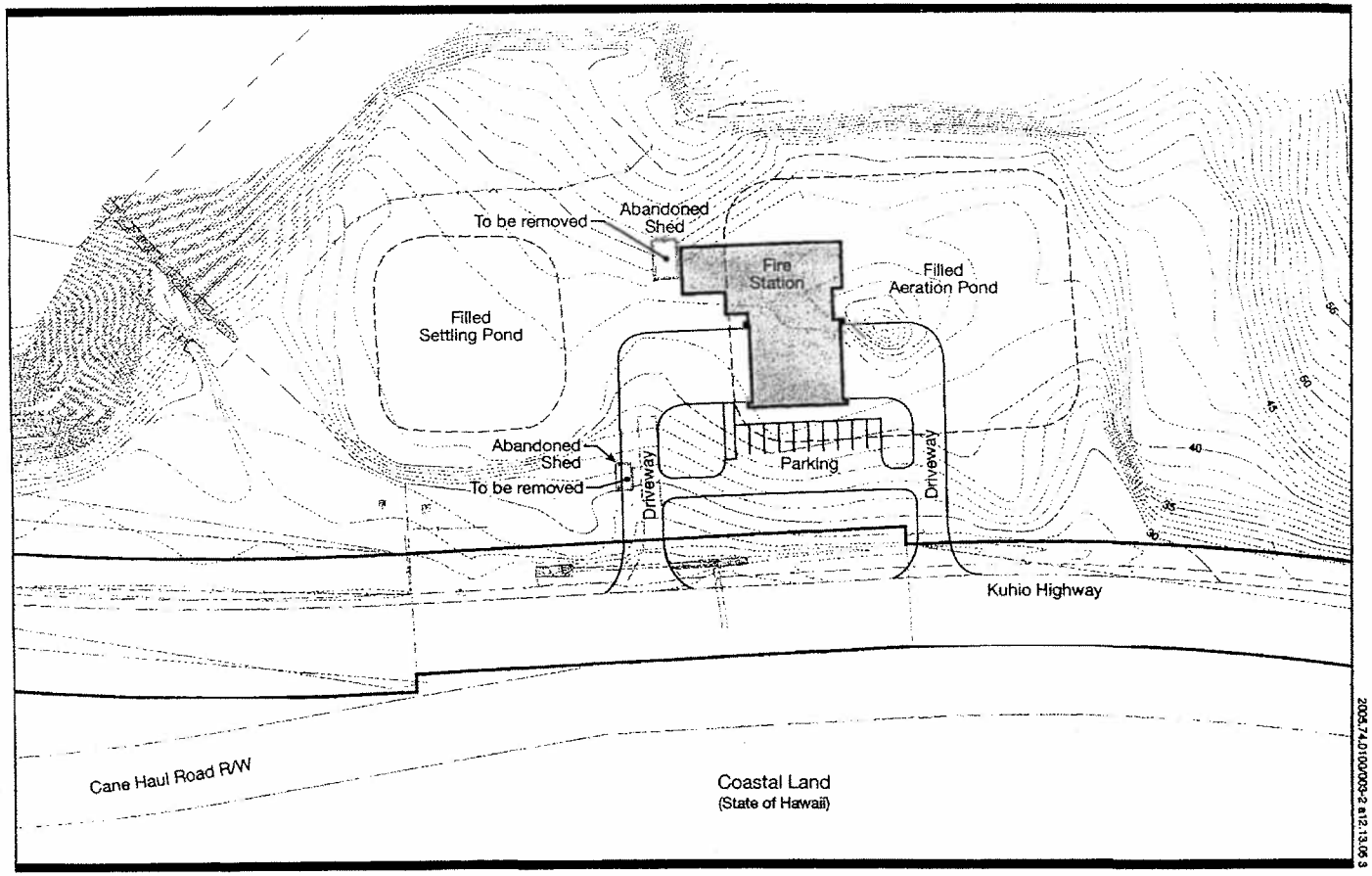
Figure 2
TAX MAP (Portion)
Kapaa, Kauai

Figure 2: Tax Map (Portion)

2006.74.0100/004-1 8.12.2.05 1

BeltCollins NOT TO SCALE

Figure 3
SITE PHOTO
Kapaa, Kauai



Belt Collins NORTH 0 20 40 80 SCALE IN FEET

Figure 4
FIRE STATION SITE PLAN
Kapaa, Kauai

based data monitoring system that will show and record the amount of electricity generated by the PV system and used by the fire station. The PV system will be grid connected and station power will be supplemented by the local utility. If the PV system produces excess power at any time, the excess will be metered and fed into the grid. The Kaua'i Island Utility Cooperative is expected to pay the County for excess PV power fed into the grid under its Schedule Q rate. Stainless steel and aluminum will be used as much as possible to withstand the harsh marine-type environment and the useful life of the PV system is expected to be greater than 20 years. Figure 5 shows the Photovoltaic Array layout relative to the fire station.

3.3 ESTIMATED COST

The estimated project costs of the PV system are:

Planning and Design	$25,000
Construction	$242,900

Funds for the PV system are stimulus American Recovery and Reinvestment Act (ARRA) grant funds via the U.S. Department of Energy's Energy Efficiency and Conservation Block Grant (EECBG) program.

3.4 CONSTRUCTION SCHEDULE

The PV system planning and design are expected to be completed by August 2010. The system plans and specifications will be placed in a bid solicitation and advertised soon after. A low bid is expected to be awarded by October/November 2010. Construction should follow soon after and is expected to be completed in 4-6 months following the Notice to Proceed.

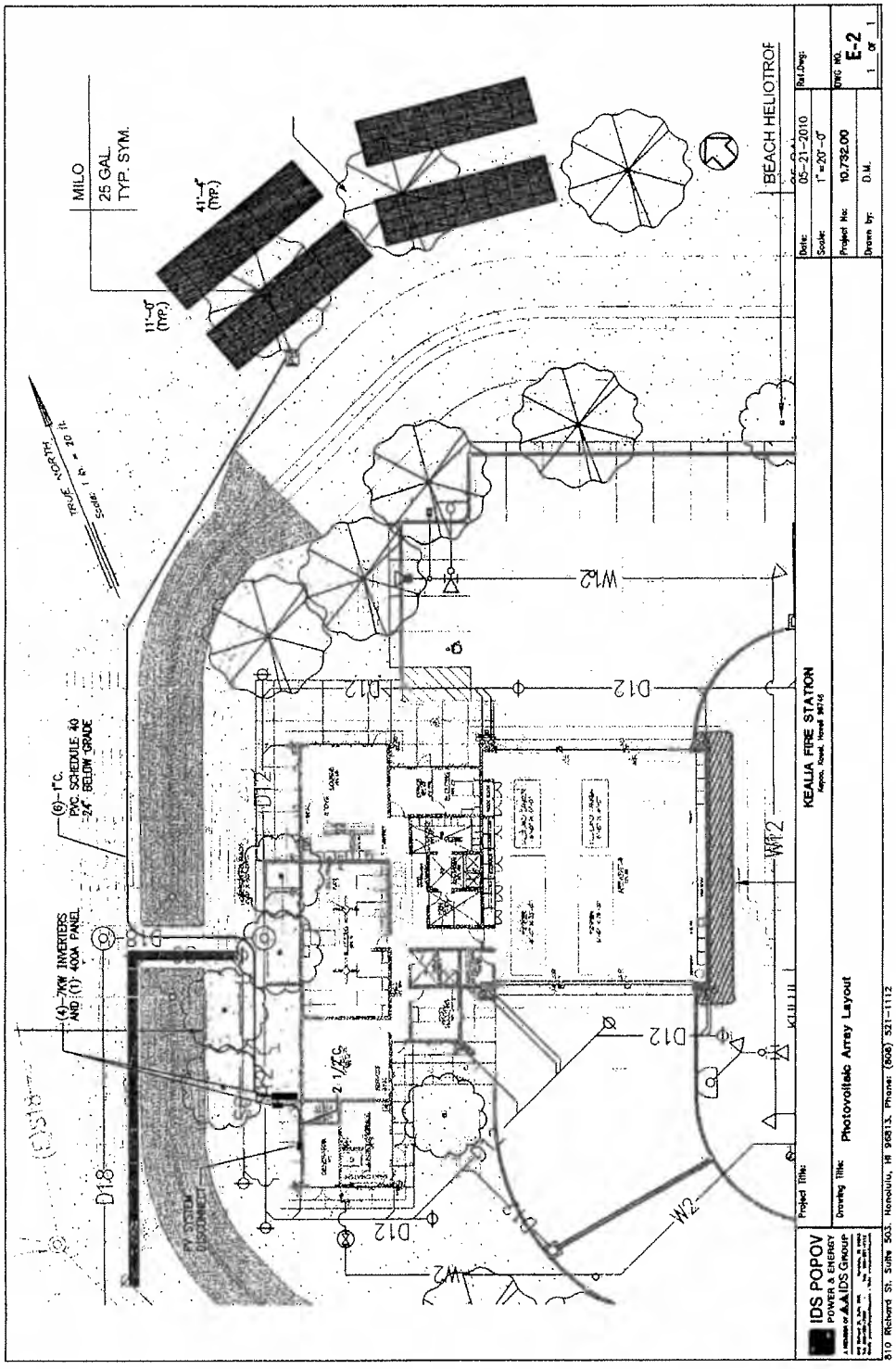


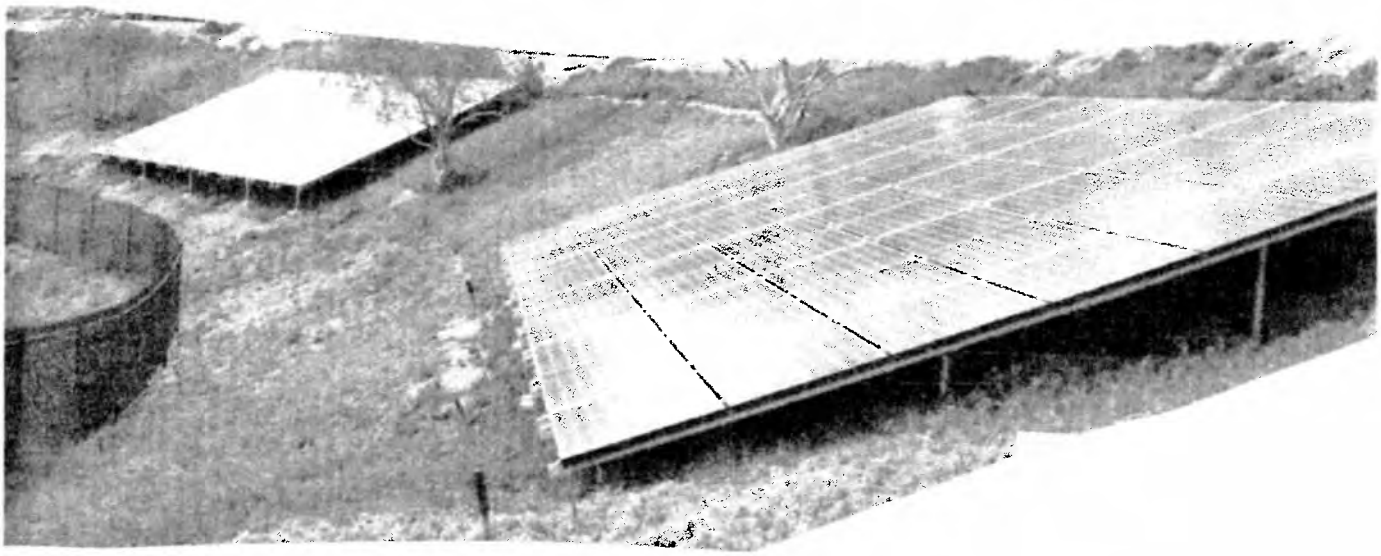
FIGURE 5

Figure 5: Photovoltaic Array Layout

Figure 6

KAIAKEA FIRE STATION
KAPA'A, KAUAI-HAWAII

PHOTOVOLTAIC PANELS
(Artistic Rendering)



IDS POPOV, Inc.
Honolulu, Oahu

SECTION 4: DESCRIPTION OF THE AFFECTED ENVIRONMENT

4.1 REGIONAL SETTING

The proposed site, situated in Kawaihau, Kaua'i, is in a region that extends from the ocean to the mountains. The town of Kapa'a, beach resorts of Wailua and Waipouli, residential homes, agricultural farms, grazing lands, and large open spaces comprise the region. Most of the uplands in the district are homestead lands that are in rural and agricultural uses.

A mix of long-term residents, newcomers, and visitors populate the region. Kuhio Highway, a State right-of-way, serves as the main access through Kapa'a, and extends approximately 30 miles from Lihu'e to Hanalei with numerous local side roads that provide access to the inland and coastal areas. The project site lies on Kuhio Highway between Kawaihau and Mailihuna Roads, approximately one mile north of the Kapa'a town center.

4.2 EXISTING LAND USE

A wastewater treatment facility (WWTF) previously occupied the project site to service the Mahelona Medical Center, Kapa'a Elementary, Middle and High Schools (Kapa'a Educational Complex), and a nearby low-income elderly housing development. According to the County Department of Public Works, the WWTF ceased operations about 14 years ago and two ponds (aeration and settling) were filled.

The site is now the new home for the Kaiakea Fire Station and construction activities are currently underway. All former structures on the project site have been cleared during pre-construction activities for the fire station. The Kaiakea Fire Station is expected to be completed in late 2010.

4.3 LAND TENURE

The PV system would be located adjacent to the Kaiakea Fire Station now under construction. The 50,000 square foot fire station project site is located on a 13.877 acre state parcel acquired by the County via Governor's Executive Order

No. 4217 setting aside the land for public purposes.

4.4 TOPOGRAPHY

The topography of the project area generally slopes from its western boundary at approximately 45-feet elevation to Kuhio Highway at its eastern boundary at approximately 27-feet elevation. Surrounding the site on three sides are steep banks of over 20 percent grade. The fourth side, which is opened to Kuhio Highway, is the longest side of the property. The level area of the site, which consists of approximately 58,000 sq. ft. or 1.4 acres, includes the filled ponds of the former wastewater treatment facility. The new fire station site will occupy approximately 50,000 sq. ft. of the level area. The PV system will be located just north of the main building on land that will be graded and grassed as part of the fire station construction work.

4.5 GEOLOGY:

Kaua'i, the oldest of the major Hawaiian Islands and the most weathered or eroded geologically, consists of at least one extinct volcano. Lavas from the shield, post shield, and rejuvenated stages formed the island. Kaua'i, which notably lacks rift zones, contains an enormous caldera complex with a graben, or down-dropped block on the caldera's south side. Rejuvenated-stage lavas have covered much of the eastern half of the island. Over time, numerous landslides and long-term erosion have modified Kaua'i's northern, northeastern, eastern and southern flanks.

The project site is situated on the eastern side of Kaua'i along Kuhio Highway across coastal land comprised of a rocky shoreline. The frequent high surf and predominant trade winds contribute to the long-term modification of this coastal area.

4.6 SOILS

According to the *Soil Survey of the Islands- Kaua'i, O'ahu, Maui, Molokai, and Lanai, State of Hawai'i* (1972), soil on the property consists of "Lihue silty clay, 25 to 40 percent slopes, eroded." This well-drained soil type developed in material weathered from basic igneous rock. Runoff on this soil is rapid and its potential erosion hazard severe. Its

Capability Classification is Vle, non-irrigated, which indicates that the soil has severe limitations (hazard of erosion) that make it generally unsuited for cultivation.

Approximately 14 years ago, the wastewater treatment facility ceased operations on the site and its aeration and settling ponds were filled. According to the contractor, the berm around each pond was pushed in to fill the basin. It is not known, however, whether off-site or on-site material was used to complete the fill.

In the April 2006 Final Environmental Assessment prepared by Belt Collins Hawai'i, Ltd., a preliminary investigation of the ponds by Belt Collins Hawai'i revealed that an official at the Mahelona Medical Center indicated that the hospital, adjacent schools, and nearby low-income elderly housing project used the WWTF for domestic wastewater treatment. Wastewater from the hospital consisted only of domestic waste and did not include industrial waste or hazardous materials. It is not known whether the ponds were lined or not.

In the mid to late 1990s, the WWTF ceased operations after the hospital, schools, and housing project were able to connect to the County's expanded sewer system. The closure included pumping of the liquid out of the ponds, allowing the accumulated wastewater sludge to dry, excavating the soil berms from the pond perimeters, and backfilling the ponds with soil from the berms.

In the 2006 Fire Station EA, an official from the State Department of Health (DOH) indicated that the Hawai'i Administrative Rules (HAR), specifically Title 11, Chapter 62, Part 23, on *Wastewater Systems*, provides general guidance and could be interpreted to mean that filling of the ponds would indicate sufficient closing of the facility.

The nutrients and organisms in the accumulated bio-solids have undergone several years of anaerobic decomposition and are expected to be a stabilized, insoluble material. Although wastewater sources into these former ponds were non-industrial, the possibility exists that the domestic wastewater contained metals and organic contaminants from household products such as pesticides and personal hygiene

products.

According to HRS Chapter 128D, *Environmental Response Law*, releases from sewerage systems collecting and treating primarily domestic wastewater are not considered to be releases of hazardous substances or pollutants into the environment.

4.7 FLOOD HAZARD

Flood Insurance Rate Map (FIRM) – Map No. 1500020210E (September 16, 2005) indicates that the project site is located in Zone X. Areas included within this zone are determined by the Federal Emergency Management Agency (FEMA) to be outside the 0.2 percent annual chance flood.

Although situated near the coastline, the site does not fall within the Special Flood Hazard Area, which is subject to coastal inundation by the 1 percent (100-year flood) annual chance flood. The Special Flood Hazard Area has a 1 percent chance of being equaled or exceeded in any given year, and includes zones A,AE,AH,AO,AR,A99,V and VE. The base flood elevation as shown on the FIRM for each zone is the water-surface elevation of the 1 percent annual chance flood.

Additionally, the site is not located within any tsunami evacuation area as identified on Kauai's Civil Defense Tsunami Evacuation Map No. 3: Ke lia to Alakukui Pt.

As aforementioned, vegetation on the site consists primarily of low groundcover. However, a moderately dense growth of ironwood trees occurs on the steep slopes surrounding the site. On the plateau above the slopes, open lawns landscape the hospital and school grounds. Brush fires may pose a potential threat. However, its impact may be limited to the location of the trees. The site is susceptible to high winds which could stir up or accelerate any brush fire that might occur there.

4.8 FLORA AND FAUNA

The project site was previously cleared of vegetation and used by the WWTF. After closure of the WWTF, the area was overtaken by stray salt-torrent vegetation from adjoining coastal areas. The vegetation included primarily California

grass, wedelia, sandbur, indigo, morning glory, and asystasia. There were some light scatterings of Guinea grass, koa haole, and Christmas berry. On the steep slopes surrounding the site are stands of ironwood trees. No rare, threatened, or endangered species are known to occur on the site. Current construction activity for the fire station has removed all scrub vegetation. After construction of the fire station is completed, the landscaping plans call for plantings of beach heliotrope, milo, and kukui trees; kului shrubs; and seashore paspalum grass.

Located along Kuhio Highway and formerly being covered with low weedy groundcover, and now under full construction activities, the attributes of the site deter species that favor quiet, remote areas with tall, dense vegetation. Avifaunal species that have been observed or are expected to occur in the area, are typically low-land urban species, which include the common myna, zebra dove, house finch, Japanese white eye, house sparrow, red-crested cardinal, chestnut munia, and spotted dove. Feral chickens are also common in this area.

The Pacific golden plover, a migratory shorebird that spends winters in the islands from August to late April, typically frequent inter-tidal reef flats at low tide in the coastal areas and open lawns in the adjacent mauka lands. Also known to occur in the general area are wedge-tailed shearwater and white-tailed tropicbird. Both are indigenous and were observed during a faunal survey of the Kapa'a- Kealia coast. The survey also noted that there were observations of the endangered dark-rumped petrel and the threatened Newell's shearwater along the coast.

Although no feral mammals were observed on the project site during a site inspection on March 26, 2010, feral cats, dogs, and rodents are expected to occur in the area. The existing landscape and vegetation do not suggest the presence of feral pigs. Rare, threatened, or endangered avifauna or feral mammals are not known to occur specifically on the project site, but the endangered Hawaiian hoary bat has been observed along the Kapa'a coast.

4.9 CLIMATE

The project site faces the predominant northeast trade winds

of the Kapa'a coastline. These winds are typically breezy and at times relatively strong with speeds of 13 to 24 mph.

The air is generally warm and mild with temperatures averaging 70 F throughout the year. The average annual rainfall is between 40 and 50 inches with the heaviest occurring during the winter months and least during the dry summer months.

4.10 HYDROLOGY

There are no natural surface water features such as lakes, ponds, streams or springs on the site. Groundwater occurs near mean sea level. Surface runoff across the fire station site will be channeled to rainwater retention basins which will then flow into the county storm drain system.

4.11 ARCHEOLOGICAL RESOURCES

An archeological reconnaissance was conducted for the fire station EA by Cultural Surveys Hawai'i. The survey found the site to have undergone extensive alteration. During the survey, two modern, abandoned wastewater treatment facility sheds were found but no traditional Hawaiian or historic sites were observed. The archeological consultant indicated that the likelihood of encountering intact subsurface cultural deposits is low. Nonetheless, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance required for PV installation, work will cease immediately and the appropriate agencies will be contacted pursuant to applicable historic preservation law.

4.12 CULTURAL IMPACT ASSESSMENT

Cultural Surveys Hawai'i also conducted a cultural impact evaluation as part of the fire station EA process. The consultant conducted historic research and contacted local people knowledgeable of the project area regarding cultural resources and practices. The fire station site was not specifically identified as having any notable presence in the past or present other than functioning as a wastewater treatment facility. The cultural study concluded that the proposed station will have very minimal or no impact on Hawaiian culture, its practices, or traditions. The PV system, located close to the fire station is also expected

to have minimal or no impact to Hawaiian culture, its practices, or traditions.

SECTION 5 SOCIOECONOMIC SETTING

5.1 SOCIOECONOMIC BACKGROUND OF THE REGION

The Wailua-Kapa'a region is populated by approximately 16,000 residents, making it the most populated area on the island. Three geographic sub areas define this region: 1) the coastal urban areas of Wailua/Waipouli and Kapa'a Town proper; 2) the inland homestead lands of Wailua; and 3) the mauka homestead lands of Kapa'a.

The Wailua/Waipouli and Kapa'a town areas have become the resort destination for the east side, with hotels and shopping complexes attracting visitors as well as residents. Economic activities in this area have attracted many support businesses and services. A consequence of the business activities has been traffic congestion. Current highway improvements along K hi' Highway near the two bridges crossing the Wailua River are under construction to alleviate traffic congestion. The current construction activities have resulted in long traffic lines through Kapa'a Town.

5.2 ECONOMIC IMPACTS ASSESSMENT

Construction of the new fire station is generating construction activity during a prolonged economic recession and the positive economic impacts through the employment of construction labor and equipment are quite evident. Construction workers shop and patronize the local businesses in the Kapa'a-Wailua area, multiplying the economic impact beyond the amounts in their weekly paychecks. The PV system construction, although small in comparison to the fire station cost, will also generate some short-term construction activity. If a local company wins the bid, most of the employment dollars associated with labor costs are expected to stay on Kaua'i. If an outer island company wins the bid, there will be some tradeoffs due to outside workers needing food and lodging as well as commuting expenses that will benefit local businesses. The PV system will provide the facility with renewable energy and will help to stabilize electrical billings for the Fire

Department.

The Kauai and United States economy will be favorably impacted during construction. The stimulus funds require that the PV system components be American-made and that the labor for installation be paid at the higher of Davis Bacon or State of Hawai'i wage rates. The dollars spent for labor will have a very positive impact on the state and local economy.

5.3 SOCIAL IMPACT ASSESSMENT

It is difficult to single out only the PV system when discussing community impacts. The PV system will be part of the infrastructure for the new fire station that will provide emergency and rescue services that will benefit both residents and visitors. The facility will operate 24/7 with staff living on a rotational basis in on-site boarding facilities. The station is located within the community but not among the homes and businesses of the area. Any negative impacts from station operations due to siren soundings, periodic fire alarm drills and practices and other station activities will be short-term and be offset by the positive public safety services provided.

The PV system will make the fire station partly energy self sufficient and will be a good example of government reducing its long-term operational costs to the taxpayers. As oil and electricity prices continue to rise, these benefits will become more evident over time. Long term impacts of the project will be continued production and use of renewable energy at the fire station. The PV system will be visible from the adjacent highway and will remind residents and visitors that the County is being a responsible steward in promoting the use of indigenous energy for the county fire station.

SECTION 6 INFRASTRUCTURE AND UTILITIES

6.1 CIRCULATION AND TRAFFIC

The fire station's location on Kuhio Highway provides immediate access to Kaua'i's major roadway system. Kuhio

Highway, a primary collector road, connects all of the communities along the east and north coasts of the island between Lihue and Haena. As a consequence, a high volume of traffic occurs on this right-of-way throughout the day. The heaviest traffic occurs south of the project area in Kapa'a town and between Kapa'a and Lihue during peak commuter hours. At the project site, Kuhio Highway is a two-lane State right-of-way with limited access.

The 24-hour traffic count on Kuhio Highway in the project vicinity is approximately 14,300 vehicles. The morning peak-hour traffic, which occurs between 7:00 a.m. and 8:00 a.m., is 1,013 vehicles. The afternoon peak hour traffic, which occurs between 3:45 p.m. and 4:45 p.m., is 1,225.

The under-construction fire station is expected to have minimal impact on traffic. Staff personnel, who will be living on-site in boarding facilities on a rotational basis, will not be contributing to the daily commuter traffic.

During construction of the PV system, construction equipment and supplies would be scheduled for site delivery during off-peak hours to avoid traffic congestion, and construction workers are likely to arrive at the project site from the Lihue/South Kauai sections of the island traveling in the opposite direction of the peak morning commuter traffic.

Two access points on Kuhio Highway are provided for the fire station. An ingress is located at the existing driveway that served the former wastewater treatment facility. A second access is located a short distance to the north for the facility's egress.

6.2 WATER

An 8-inch water line, owned by the County Department of Water, extends from Kapaa town along Kuhio Highway up to approximately 1,100 feet from the project site. A 12-inch line is located along Kawaihau Road approximately 1,900 feet from the project site. Water service for the fire station site will be provided by a line extension from the main water line along Kuhio Highway. Water may be required to periodically clean the PV modules but the existing fire station water system and hoses will be sufficient for this purpose.

6.3 WASTEWATER

The sewer lines that were installed to bypass the now abandoned wastewater treatment facility continue to operate over the project site. The sewer lines traverse the central and southern sections of the property to link with a manhole located within the adjacent Kuhio Highway right-of-way. Wastewater is then conveyed through the Kapaa system and collected at the Wailua WWTF where it is treated and disposed. The fire station will be connected to the County system. In the 2006 Fire Station EA, a County Wastewater official indicated that the existing Wailua WWTF was at approximately 60 percent capacity with several planned projects to be on line in the near future. Still, it is anticipated that the County's existing WWTF will be adequate to accommodate the new fire station, when completed.

6.4 POWER AND COMMUNICATIONS

There is electrical power, telephone and cable TV in the Kuhio Highway right-of-way. Kaua'i Island Utility Cooperative's overhead 57 Kv lines are located along the K hi' Highway corridor and will service the fire station. The existing electrical capacity is adequate to serve the fire station, however, the County desires to self-generate a portion of the facility power requirements via renewable energy, thus reducing it's reliance on oil-fired generation from KIUC.

Hawaiian Telcom also has telephone lines along K hi' Highway and the station will be connected to those overhead lines. Cell phone service and 800 MHz communications are also available.

6.5 SOLID WASTE

Solid Waste generated by the new station will be taken to Kapa'a Transfer Station then hauled to the County landfill at Kekaha. Currently, the landfill has adequate space to accommodate the trash generated from the new station. The PV system will come with associated packing materials and construction debris. The PV contractor will be responsible to hire a private contractor to haul construction-related waste to the landfill. Any recyclable materials such as

cardboard, wood pallets and metals will be recycled.

SECTION 7 PUBLIC FACILITIES AND SERVICES

7.1 SCHOOLS

Kapa'a High School is located less than one mile away on Mailehuna Road. Kapa'a Elementary School is located adjacent to Kapa'a High School. St. Catherine School is also located nearby on Kawaihao Road.

7.2 PARKS

Several parks are located in the Kapa'a Town area approximately 1-1.5 miles from the fire station site. Kapa'a Town Park across from Miura Store is used for special events like the Coconut Festival, Veteran's Day Parade, and soccer. People also use the pavilion for family picnics.

The park across the Kapa'a Armory is the Kapa'a New Park Stadium complex. There is a skateboard park, a roller hockey rink, tennis courts, basketball court, as wekk as softball, baseball, football,and soccer fields. Sometimes special events are held on these fields. Residents also use the pavilion for family gatherings. Farmer's market sets up there once a week, catering to both residents and visitors.

7.3 FIRE

Kapa'a Fire Station is located approximately 3 miles away in Kapa'a Town, near the Foodland Super Market and McDonald's Restaurant.

7.4 HOSPITAL AND EMERGENCY MEDICAL SERVICES

The nearest hospital and emergency service room is the Mahelona Medical Center in Kapaa, located less than one mile from the site on Kawaihao Road.

SECTION 8 RELATIONSHIP TO PUBLIC LAND USE POLICIES

8.1 Hawai'i State Plan

The Hawai'i State Plan was enacted by State law to serve as

a guide for the future long-range development of the State. It is intended to identify the goals, objectives, policies, and priorities of the state government to: (1) provide a basus for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water and other resources; (2) improve coordination of federal, state, and county plans, policies, programs, projects, and regulatory activities; and (3) establish a system for plan formulation and program coordination to provide for an integration of all major state and county activities. State Plan objectives and policies that are relevant to the use of renewable energy at appropriate public facilities in the Kapa'a community are:

- to ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user;
- to encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demand and priorities;
- to increase energy self-sufficiency where the ratio of indigenous to imported energy use is increased;
- to have greater energy security and diversification in the face of threats to Hawai'i's energy supplies and systems;
- to reduce, avoid, or sequester greenhouse gas emissions from energy supply and use;

8.2 State Land Use Law

The State Land Use District Maps, as administered by the State Land Use Commission, defines the site as part of the Urban District. According to the land use law, urban districts shall include activities or uses as provided by ordinances or regulations of the county within which the urban district is situated. The fire station is a permitted use in the Urban District.

8.3 State Environmental Policy

The proposed PV system construction is consistent with the State Environmental Policy, Hawai'i Revised Statute (HRS), Chapter 344. One of the guidelines outlined in Chapter 344

is to encourage the efficient use of energy resources which supports the use of photovoltaic power production for the fire station.

8.4 Kaua'i County General Plan

The County of Kaua'i updated and adopted the General Plan in November 2000. The plan sets forth policies that govern the future development of the County. The General Plan supports the need to build and upgrade public facilities and services to support current and projected economic and population growth by the year 2020.

The General Plan recognizes the value of reducing Kaua'i's reliance on imported oil by advocating that the County:

- Promote the use of renewable energy resources;
- Invest capital funds to make County facilities energy efficient and to reduce operating costs;

The Land Use Map of the General Plan designates the project area as "Open." The intent of the Open designation is to preserve, maintain, or improve the natural characteristics of non-urban lands and water areas that:

(a) are of significant value to the public as scenic or recreational resources;
(b) perform essential physical and ecological functions important to the welfare of surrounding lands, waters and biological resources;
(c) have the potential to create or exacerbate soil erosion or flooding on adjacent lands;
(d) are potentially susceptible to natural hazards such as flood, hurricane, tsunami, coastal erosion, landslide or subsidence; or
(e) form a cultural, historic or archaeological resource of significant public value.

The fire station site is located on the base of steep sloping lands which have been identified by the General Plan as susceptible to soil erosion and other possible coastal climatic and ocean/shoreline processes. The new station, however, is being constructed on a small portion of this area on level, stable land mauka of the State highway and from coastal lands. The PV system will be located just

north of the fire station and construction of the PV system will consider the area's susceptibility to soil erosion and possible sedimentation.

One of the elements of the General Plan is the identification and designation of scenic roadway corridors on the island. The fire station site as well as the PV project site and adjacent areas are not designated as a scenic corridor.

8.5 Kapa'a-Wailua Development Plan

The Kapa'a-Wailua Development Plan, adopted in 1975 details the County's development guidelines for the Kapa'a-Wailua region. The Development Plan primarily focuses on built up areas of the coastal and makai lands of the Kapa'a-Wailua region between Lydgate Park and Kawaihau Road. The Development Plan does not designate any specific long-range land use for the property.

8.6 Kaua'i County Zoning Ordinance

The Comprehensive Zoning Ordinance (CZO) of the County of Kaua'i provides regulations and standards for land development and the construction of buildings and other structures in the County of Kaua'i. The regulations and standards prescribed by the CZO are intended to promote development that is compatible with Kaua'i's scenic beauty and environment and to preclude inadequate, harmful or disruptive condition that may prove detrimental to the social and economic well-being of the residents of Kaua'i. The project site is currently zoned Special Treatment District-Public (ST-P) with an underlying zoning designation of Residential R-1. Development of the site for the fire station required a Class IV Zoning Permit and Use Permit. A ground mounted PV system would require an amendment to the existing permits approved for the fire station.

8.7 Special Management Area

A very limited portion of the project site is located in a Special Management Area (SMA) and the fire station application was not processed as an SMA permit. It is also anticipated that an SMA permit will not be required for the PV system.

SECTION 9 SUMMARY OF MAJOR IMPACTS

9.1 SHORT-TERM CONSTRUCTION-RELATED IMPACTS

Construction of the PV system for the new fire station will require some site preparation, minor grading, mounting rack installation/anchoring and assembly of the modules to the mounting racks and final connection to the fire station. Prior to the site preparation work, existing debris will be removed. The preliminary site work will be minimal because the location will be graded and grassed as part of the fire station construction. Construction equipment will include trucks, concrete mixers, a backhoe, and generator(s). After the anchor points and mounting racks are in place, workers will assemble and attached the PV modules to the racks and fasten them in place. The modules will be connected to the inverter(s) via underground conduits. The inverter(s) will be located outside, close to the fire station. The inverter(s) will then be connected to the fire station's power system. A commissioning process will ensure that the system is functioning properly and according to design standards. Construction will be completed after the site is cleaned up and all construction debris removed from the property.

During construction of the PV system, there will be no impact to native plants and fauna. No rare, threatened or endangered vegetation or wildlife species will be affected. Since no surface water features traverse the project area, no impacts are anticipated to U.S. waters. Groundwater is located more than 20 feet beneath the surface of the site. Therefore, natural foundations and utility installations are not expected to penetrate this natural resource.

The PV system will be anchored with sturdy concrete anchor points which will support the aluminum/stainless steel mounting system. The power inverter(s) will be installed on a concrete base. The inverter(s) will be connected to the station's electrical system.

The site's elevated location along the coast provides a margin of safety from potential tsunami inundation. FIRM maps show a base flood elevation of 18 feet along the

coastline and the project site has a minimum elevation of 27 feet, well over the potential flood level.

Brush fires are a potential threat to the site, but landscaping and irrigation will offer little fuel for wildfires and the fire station will be prepared to control that threat.

Earthwork during PV construction may generate construction dust. Areas where vegetation are to be removed for installation of the concrete anchor points will be the most susceptible to strong winds. Down-wind of the predominant northeast tradewinds is the Mahelona Medical Center. Implementation of dust control measures and the hospital's location on a high bluff, will help buffer or reduce the impacts of fugitive dust during PV construction and installation.

The use of equipment during site grading will generate noise levels that could be audible at surrounding properties. Although noise would be generated during the entire construction phase, the level of noise would vary depending on the specific phase of construction. Other than grading activities, the assembly of the PV system is expected to generate very minimal noise levels mostly associated with the use of small portable tools such as drills, saws and ratchets. The most audible noises would occur during the construction of the anchor points with the use portable saws and hammers for form construction, and the sounds from concrete truck(s). The noise impacts on surrounding properties will be minimal and short-term.

Although no archaeological features or historic structures have been identified on the property via an archeological literature review and field inspection for the fire station site by Cultural Surveys Hawai'i, Inc., the County will be on guard if any unexpected features are uncovered during the PV site preparation stage. Should historical remains such as artifacts, burials, concentrations of charcoal and shells be encountered during construction activities, work shall cease immediately in the immediate vicinity of the find and the State Historic Preservation Division and the Kaua'i Planning Department will be notified. These agencies will assess the significance of the find and recommend the appropriate mitigation measures, if necessary.

Cultural and traditional practices occur in the region but none has been specifically identified on the project site. As a result, no cultural preservation measures are being proposed for the PV site.

The use of heavy construction vehicles will not be required for site preparation.

Construction of the PV system will not impact utility services to the area. Water will be provided via the fire station and portable toilets will be provided by the PV contractor or via the fire station. Power requirements will either be provided by the fire station or via portable generators. Phone service will be provided by cellular phones. Also, solid-waste and construction debris will be removed from the site by the contractor and hauled to the landfill in Kekaha.

The fire station's location on Kuhio Highway provides immediate access to Kaua'i's major roadway system. Kuhio Highway, a primary collector road, connects all of the communities along the east and north coasts of the island between Lihue and Haena. As a consequence, a high volume of traffic occurs on this right-of-way throughout the day. The heaviest traffic occurs south of the project area in Kapa'a town and between Kapa'a and Lihue during peak commuter hours. At the project site, Kuhio Highway is a two-lane State right-of-way with limited access.

The 24-hour traffic count on Kuhio Highway in the project vicinity is approximately 14,300 vehicles. The morning peak-hour traffic, which occurs between 7:00 a.m. and 8:00 a.m., is 1,013 vehicles. The afternoon peak hour traffic, which occurs between 3:45 p.m. and 4:45 p.m., is 1,225.

The under-construction fire station is expected to have minimal impact on traffic. Staff personnel, who will be living on-site in boarding facilities on a rotational basis, will not be contributing to the daily commuter traffic.

During construction of the PV system for the fire station, construction equipment and supplies would be scheduled for site delivery during off-peak hours to avoid traffic congestion, and construction workers are likely to arrive at

the project site from the Lihue/South Kauai sections of the island traveling in the opposite direction of the peak morning commuter traffic.

It is anticipated that the PV system will support the retention of 8 full-time workers during the planning/design stage and construction/installation period. These include one PV system designer; one PV installation manager; one licensed electrician; four PV system installers and one equipment operator.

9.2 LONG-TERM IMPACTS

The new fire station is not expected to generate long term negative impacts. As an infrastructure addition, the PV system is also not anticipated to generate any long term negative impacts. Once constructed, the PV system will not impact traffic. The PV site will be located on land that will be graded and planted in grass as part of the fire station construction. Once the PV system anchor foundation has been constructed, the area will be re-grassed if needed. The visual impact of the ground-mounted PV system will be minimal with no significant glare that would impact drivers on K hi' Highway. No view planes will be impacted.

The PV system will not generate any air emissions so air quality will not be impacted. The PV system will reduce the amount of oil-based electricity purchased from the local utility, so there is an indirect, long-term benefit associated with PV power.

Additional utility services beyond what is required for the new fire station will not be required due to the PV system addition.

There will be positive, long-term impacts to the community, including reduced electrical bills resulting in lower operational costs, a reduced carbon footprint from station operations and a valuable community educational example of renewable energy use at a public service facility.

SECTION 10 PROPOSED MITIGATION MEASURES

As discussed in the previous section, most negative impacts are

related to the short-term construction period. Since the fire station construction will be well underway, water will be available onsite and can be used to control fugitive dust by water sprinkling or exposed dirt areas, if required. The site will be graded and grassed as part of the fire station construction project so major dust problems are not anticipated when the PV system is installed.

Noise activities associated with PV construction should be insignificant. The nearest occupied lands are located high above the fire station site more than 300 feet away. There will be no early morning or late evening work associate with PV system installation.

Potential runoff and sedimentation that might occur will be the responsibility of the PV contractor and will be monitored by the County. Runoffs and sediment movement will be directed to the sedimentation basins and cut-off swales and ditches. Ground cover will be re-planted as soon as construction is completed.

The PV contractor will be required to remove all construction-related debris and to recycle all recyclables generated by the project.

SECTION 11 ALTERNATIVES TO THE PROPOSED ACTION

11.1 NO ACTION ALTERNATIVE

The No Action alternative involves no installation of a PV system for the fire station. A no action alternative would have the fire station receiving 100% of its power from the local utility grid whose overall generation is roughly 90% from fossil fuels.

11.2 ALTERNATIVE LOCATION OFF-SITE

An alternative location offsite on an adjacent or nearby property was explored but was determined to be unfeasible. A site on an adjacent or nearby property would require a lengthy land acquisition process and the high cost of land purchase or lease rent. The current parcel is 13.877 acres, with the fire station occupying 50,000 square feet. The close location of the PV system to the facility would also

lower transmission costs to move power from the PV system to the facility.

11.3 ALTERNATIVE RENEWABLE ENERGY DEVELOPMENT OPTIONS

Alternate renewable energy systems such as a wind turbine or concentrated solar system were also considered. Additional considerations also included a fuel cell power system. The fire station site was deemed unsuitable for a wind turbine due to its close proximity to the highway and also in consideration of danger to shearwaters or other threatened and endangered bird species. A concentrated solar power system and a fuel cell power system were determined to be too expensive or not suited for the facility size and power requirements.

SECTION 12 DETERMINATION

This environmental assessment demonstrates that the proposed construction of a photovoltaic power system for the Kaiakea Fire Station will have no significant adverse impacts on the environment and that an Environmental Impact Statement is not warranted.

SECTION 13 FINDINGS & REASONS FOR SUPPORTING THE DETERMINATION

13.1 SIGNIFICANCE CRITERIA

According to Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the following criteria:

A. Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;

The proposed PV project will not cause any irrevocable loss

of natural or cultural resources. The site has been a former wastewater treatment facility which will soon be a new fire station serving the eastside of Kauai. View planes will not be impacted and there will be no blockage of mauka or ocean views from the surrounding areas. The PV array will not be higher than ___ feet off the ground.

As previously noted, no significant archaeological or historical sites are known to exist on the site. Should any archaeologically significant artifacts, bones, or other indicators of previous on-site activity be uncovered during the construction phase, their treatment will be conducted in strict compliance with the requirements of the Department of Land and Natural Resources.

B. Curtails the range of beneficial uses of the environment;

The project site will house a fire station when construction is completed in late 2010. The PV system will be part of the fire station infrastructure and will provide renewable energy for station use. The system will also be grid connected and any excess PV power will be sent to the grid for use by other users. The proposed PV system will not require changes that would curtail the range of beneficial uses of the environment.

C. Conflicts with the State's long-term environmental policies and guidelines as expressed in Chapter 344, HRS; and any revisions thereof and amendments thereto, court decisions, or executive orders;

The proposed development is consistent with the Environmental Policies established in chapter 344, HRS, and the National Environmental Policy Act. In applying for the EECBG grant, the county filled out an Environmental Questionnaire as part of the U.S. Dept. of Energy's grant review process. The Dept. of Energy National Environmental Policy Act Implementing Procedures Act (10 CFR 1021) required careful consideration and discussion of the potential environmental consequences of all proposed actions during the early planning stages of a project or activity. The County's grant application submittal for a 25-30 kW roof or ground mounted PV system for the Kaiakea Fire Station met

these requirements and the project was approved on September 28, 2009.

D. Substantially affects the economic or social welfare of the community or state;

The proposed PV project will provide a significant and positive impact on the Kauai community by providing an example of government striving to use renewable energy on public facilities. The construction activity associated with the proposed action will generate jobs and stimulate local economic activity. The proposed project will not negatively or significantly alter existing residential areas, nor will it encourage unplanned population growth.

E. Substantially affects public health;

During the construction period there will be minor impacts to air quality and noise levels. After completion of the construction work, these will be insignificant or not detectable. The positive aspects of the proposed project in the areas of economic and social benefits to the community are greater than the "no action" alternative.

F. Involves substantial secondary impacts, such as population changes or effects on public facilities.

The PV system will have very positive impacts on the fire station. It is unlikely that the project will have any substantial secondary impacts on population or on public facilities.

G. Involves a substantial degradation of environmental quality;

The new PV system will not involve any degradation of environmental quality but will serve to enhance environmental quality by reducing the burning of fossil fuels.

H. Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger action; PV systems typically have a useful life of at least twenty years of service and

we do not anticipate any increased impacts to the environment. In its small way, the PV system will actually serve to reduce the production of greenhouse gases by reducing the amount of oil-fired electricity used by the fire station.

I. Substantially affects a rare, threatened or endangered species or it habitat;

No endangered plant or animal species are located on or around the project site.

J. Detrimentally affects air or water quality or ambient noise levels;

No air quality issues are anticipated from construction of the PV system. A ground-mounted system may require some grading but air quality can be controlled with proper dust control measures. Ambient noise levels are established and have been found to be well within acceptable levels for urban uses. The PV system will not generate any noise.

K. Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone areas, geologically hazardous land, estuary, freshwater, or coastal areas; The proposed PV project site is not located in or near any environmentally sensitive or geologically hazardous area. As the property is currently developed for agricultural uses, and has had that use for many years, the site no longer reflects a natural environment.

L. Substantially affects scenic vistas and view planes identified in county or state plans or studies;

The property is essentially flat, surrounded by bluffs to the northwest and the ocean to the northeast. No scenic vistas or view planes will be affected.

M. Requires substantial energy consumption.

The size and scope of the project will not have a measurable impact on energy supplies. In fact, the new PV system will

reduce the County's dependence on fossil fuels.

REFERENCES

County of Kaua'i, Planning Dept. November 2000. Kaua'i General Plan

County of Kaua'i, Dept. of Water. March 2001. Water Plan 2020. Prepared by R.W. Beck and CH2M Hill.

County of Kaua'i, Dept. of Water. February 1990. Kaua'i Water Use and Development Plan. Prepared by R.M. Towill Corp.

Cultural Surveys Hawai'i, Inc. Archaeological Literature Review and Field Inspection, and Cultural Impact Evaluation of a 3.1 acre Area, Kapa'a Ahupuaa, Kawaihau District, Kauai Island. TMK: [4] 4-6-014:26. December 2005.

Federal Emergency Management Agency: FIRM Flood Insurance Rate Maps, Kauai County, Hawaii, Panel 202 of 225, dated March 4, 1987.

Final Environmental Assessment: Proposed Fire Station, Kapa'a, Kaua'i, Hawai'i. Prepared by Belt Collins Hawai'i Ltd., April 2006.

Handbook of Hawaiian Weeds, Hawaiian Sugar Planters' Association Printed by Lyon Arboretum Association June 1976.

In Gardens of Hawai'i, Marie C. Neal Bishop Museum Press 1965.

Photovoltaic Power System Evaluation Report, Kaiakea Fire Station, Kapa'a, Kaua'i, Hawai'i. Prepared by IDS Popov, Inc., August 16, 2010.

State of Hawai'i, Dept. of Transportation, Advance Planning Division, 24-Hour Traffic Count, Station No. 26-X. August 27-28, 2003.

United States Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Molokai and Lanai, State of Hawaii, August 1972.

U.S. Census, 2000

U.S. Dept. of Transportation, Federal Highways Administration; State Dept. of Transportation, Highway Division; and County of Kaua'i, Dept. of Public Works. Consultant SSFM International. Final Environmental Assessment, Kapa'a-Ke lia Bike & Pedestrian Path, Basis of Design Project, August 2003.

University of Hawai'i, Dept. of Geography, Atlas of Hawaii Third Edition, 1998