AECOS No. 1386B

Natural resources survey for the Ho'ohana Solar Farm site in Kunia, O'ahu

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Introduction

Ho'ohana Solar 1 plans to construct a solar panel array (the "Project") on a parcel (TMK: 9-4-002:052) at Kunia in the central valley of O'ahu (*na ahupua'a* o Hō'ae'ae and Waikele; see Figure 1). The Project parcel is approximately 161 acres (65 ha) in area, all of which was surveyed for biological and other natural resources. The survey area also included the mostly paved, Plantation Road, to serve as the Project access route through active farm lands from Kunia Road (state route 750).

The project area is gently sloping land at around the 600-ft (180-m) elevation and is nearly all in agriculture (cropping), comprising both fallow and recently tilled fields (see Figure 2). The property is adjacent to Waikele Gulch, ending just short of a road along the lip of the gulch. At the northern end, the parcel drops down onto a sloped shelf some 30 to 70 ft lower than the main part of the property. A steep face separates the shelf from the latter. This shelf appears to be an ancient, abandoned gulch floor of either or Poliwai or 'Ekahanui gulches, which now enter Waikele Gulch along the north edge of the shelf. Project plans presently do not include the portion of this parcel on the shelf (or its steep margin) as part of the development.

At the south end of the parcel, the land is not being used for cropping. Reviewing satellite images available on Google Earth back to about 2000 suggests this southern area has not been used for crops since then, but was probably used as pasture at some time during or before this period. Shrub

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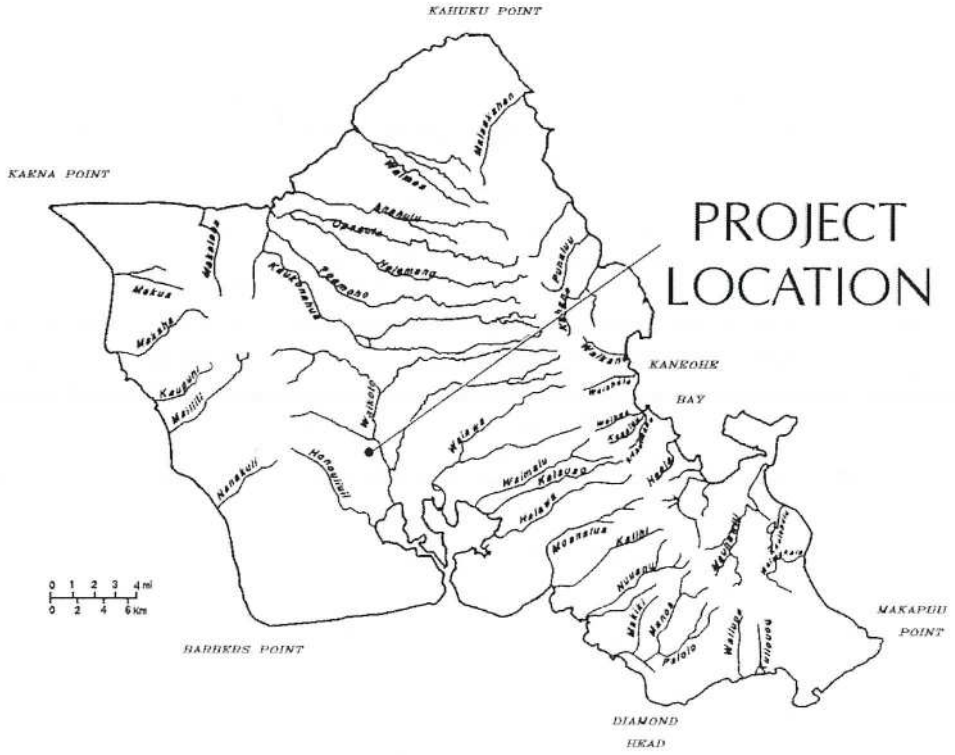

Figure 1. Location of Ho'ohana Solar Farm on O'ahu.

growth starts to appear around 2007, but does not become dominant until 2013. Aerial images from the 1950s (LSB, 1963) show the entire parcel was in pineapple fields at that time, with the exceptions of a small gulch on the eastern edge and the shelf area described above at the north end. Project plans show this southern area will be used for solar arrays and a storm-water runoff detention basin.

Although the parcel could be accessed by constructing a road over the long narrow strip of land (flag pole) running out to Kunia Road from the western edge of the property, preferred access will be along Plantation Road (see Fig. 2) and then follow the graded agriculture road into the northwest corner of the parcel. The narrow flag pole strip extends across land that is under cropping at either end, but mostly crosses a strip of presently unused land that is vegetatively identical to that described above for the south end of the project parcel. Plantation Road is an improved (paved) agricultural access road located

a short-distance further north off of Kunia Road and is bordered by active cropping of agricultural products, including some pineapple.

Figure 2. Site parcel, TMK: 9-4-002:052, outlined on satellite image.

Methods

Plants

Our survey of the flora in the Project area was undertaken on May 20 and August 18, 2014, and entailed a wandering pedestrian transect that traversed primarily those parts of the property that were not tilled and prepared for cropping. The survey area was all of the property as outlined in Fig. 2 (above) and the mostly paved Plantation Road visible in Fig. 2, coming into actively farmed fields from Kunia Road. A GNSS unit (Trimble, Series 6000 GeoXH) was used to record the progress track of the botanist and provide real time feedback on survey coverage. Plant species were identified as they were encountered and notations used to develop a qualitative sense of abundance as the survey progressed. Although the survey was conducted at the start of the dry season (May) and well; into the dry season (August), conditions on central O'ahu in 2014 were exceptionally wet in terms of regularity of rainfall. The vegetation appeared well watered. The August survey was limited to the Poliwai Shelf (see Figure 2).

For a few species not immediately recognized in the field, photographs were taken and/or material collected for identification at the laboratory. Species names follow the nomenclature in *Manual for the Flowering Plants of Hawai'i: Volumes I and II* (Wagner et al., 1990) as updated by various more recently published papers summarized by Imada (2012).

Animals

Twelve avian count stations were sited roughly equidistant from each other within the survey area. A single six-minute avian point count was made at each of the nine count stations. Field observations were made with the aid of Leica 8 X 42 binoculars and by listening for vocalizations. Avian counts were conducted in the early morning hours. Time not spent counting at point count stations was used to search the area for species and habitats not detected during point counts. Weather conditions were ideal, with no rain, unlimited visibility, and winds of between 3 and 7 kilometers per hour. The avian phylogenetic order and nomenclature used in this report follows the *AOU Check-List of North American Birds* (American Ornithologists' Union, 1998), and the 42nd through 54th supplements to the Check-List (American Ornithologists' Union, 2000; Banks et al., 2002, 2003, 2004, 2005, 2006, 2007, 2008; Chesser et al., 2009, 2010, 2011, 2012, 2013, 2014).

Our survey of mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all mammalian species detected within the project area. Mammal scientific names follow Wilson and Reeder (2005).

Figure 3. View looking northeast into central part of site across a fallow field.

Results

Vegetation

The vegetation over a majority of the site is controlled by the present and past land uses. Large parts are tilled fields with very little vegetation. Other fields are presently fallow and support a weedy growth of grasses and other herbaceous plants (Figure 3, above). Areas not recently in use for agricultural purposes or perhaps never used for agricultural purposes (two small gulches and the northern shelf area) are covered by grassland with patches of scrub growth and scattered trees. In areas not recently cropped, the vegetation is dominated by Guinea grass (*Urochloa maxima*) and *koa haole* (*Leucaena leucocephala*) scrub, with trees (particularly silk oak or *Grevillea robusta*)

coming in (Figure 4). Density of the scrub growth is greatest in areas closest to Waikele Gulch and on the sloping margin of Poliwai Shelf (see Fig. 2).

Figure 4. Waste grassland with shrubs in the southwest and northeast parts of the Project area.

Flora

The flora of a site is a listing of the plant species found there. Table 1 is the list developed from our plant survey of the Ho'ohana Solar Farm site. A total of 63 taxa are listed. The status (whether native or introduced) of each taxon is given in column 3. Sixty-one of the taxa (97%) are introduced or non-native [Nat or Orn] species. Only two species (3%) are considered native Hawaiian plants [**Ind**]: *'uhaloa* (*Waltheria indica*) and *'a'ali'i* (*Dodonaea viscosa*). *'Uhaloa* is a very common ruderal species on lowland O'ahu. In a few areas (particularly field roads that were essentially abandoned), this plant was locally very abundant. *'A'ali'i* is not so common on O'ahu, but is not regarded as rare in the Islands by any means. Several plants were seen during our survey: a relatively

large individual in the less disturbed area at the south end of the Project site and several individuals across the south facing slope in the Poliwai Shelf area.

Table 1. Species listing (flora) for the Ho'ohana Solar Farm site in Kunia, O'ahu.

Species listed by family	Common name	Status	Abundance in survey	Notes
	FLOWERING PLANTS			
	DICOTYLEDONES			
AMARANTHACEAE				
Alternanthera pungens Kunth	khaki weed	Nat	O1	
Amaranthus spinosus L.	spiny amaranth	Nat	C	
Amaranthus viridus L.	slender amaranth	Nat	AA	
ANACARDIACEAE				
Alternanthera pungens Kunth	Christmas berry	Nat	R	<2>
ASTERACEAE (COMPOSITAE)				
Bidens alba (L.) DC.	---	Nat	AA	
Bidens pilosa L.	*kī*	Nat	O2	
Conyza bonariensis (L.) Cronq.	hairy horseweed	Nat	U	<2>
Crassocephalum crepidioides (Benth.) S. Moore	---	Nat	R1	
Emilia fosbergii Nicolson	*pualele*	Nat	R1	
Lactuca serriola L.	prickly lettuce	Nat	O	
Pluchea carolinensis				
Sonchus oleraceus L.	sow thistle	Nat	C	
Verbesina encelioides (Cav.) Benth. & Hook.	golden crown-beard	Nat	AA	
BIGNONIACEAE				
Spathodea campanulata P. Beauv.	African tulip tree	Nat	O2	<2>
BRASSICACEAE				
Lepidium virginicum L.	---	Nat	R	
CHENOPODIACEAE				
Salsola tragus L.	Russian thistle	Nat	O	
CONVOLVULACEAE				
Ipomoea triloba L.	little bell	Nat	A	
CUCURBITACEAE				
Coccinia grandis (L.) Voigt	scarlet-fruited gourd	Nat	R	
Momordica charantia L.	wild bitter melon	Nat	O	

Table 1 (continued).

Species listed by family	Common name	Status	Abundance in survey	Notes
CARYOPHYLLACEAE				
Drymaria cordata (L.) Willd. ex Roem. & Schult.	*pipili*	Nat	R	
EUPHORBIACEAE				
Euphorbia heterophylla L.	*kaliko*	Nat	U	
Euphorbia hirta L.	garden spurge	Nat	R2	
Euphorbia hypericifolia L.	graceful spurge	Nat	U2	
Macaranga tanarius (L.) Müll. Arg.	---	Nat	R	
Ricinus communis L.	castor bean	Nat	R2	
FABACEAE				
Acacia confuse Merr.	Formosan koa	Nat	R	
Albizia saman F. Muell.	monkeypod	Nat	R	
Chamaecrista nictitans (L.) Moench	partridge pea	Nat	R	<2>
Crotalaria incana L.	fuzzy rattlepod	Nat	U	<2>
Crotalaria pallida Aiton	smooth rattlepod	Nat	R	<2>
Desmanthus pernambucanus (L.) Thellung	virgate mimosa	Nat	U	<2>
Falcataria moluccana (Miq.) Barneby & J. W. Grimes	albizia tree	Nat	R	<2>
Indigofera hendicaphyla Jacq.	creeping indigo	Nat	R	
Indigofera suffruticosa Mill.	indigo	Nat	O	<2>
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat	AA	<2>
Macroptilium atropurpureum (DC.) Urb.	---	Nat	C	
Macroptilium lathyroides (L.) Urb.	cow pea	Nat	R	<1,2>
LAMIACEAE				
Hyptis pectinata (L.) Poit.	comb hyptis	Nat	O2	<2>
MALVACEAE				
Malva parviflora L.	cheese weed	Nat	U1	
Sida ciliaris L.	---	Nat	U1	
Sida spinosa L.	prickly sida	Nat	R	
Waltheria indica L.	*'uhaloa*	**Ind**	O3	<2>
MELIACEAE				
Melia azedarach L	Chinaberry	Nat	R	<2>
MORACEAE				
Ficus microcarpa L. f.	Chinese banyan	Nat	R	

Table 1 (continued).

Species listed by family	Common name	Status	Abundance in survey	Notes
MYRTACEAE				
Psidium guajava L.	common guava	Nat	R	<2>
Syzigium cumini L.	Java plum	Nat	U	
NYCTAGINACEAE				
Boerhavia coccinea Mill.	false *alena*	Nat	O	
PASSIFLORACEAE				
Passiflora foetida L.	running pop	Nat	O	
PORTULACEAE				
Portulaca oleracea L.	pigweed	Nat	U1	
PROTEACEAE				
Grevillea robusta A. Cunn. ex R. Br.	silk oak	Nat	U2	<2>
SAPINDACEAE				
Dodonaea viscosa Jacq.	*'a'ali'i*	**Ind**	U1	<2>
SOLANACEAE				
Nicotiana glauca R.C. Graham	tree tobacco	Nat	R	
Solanum lycopersicum var. *cerasiforme* (Dunal) Spooner, G. Anderson, & Jansen	wild cherry tomato	Nat	R	
VERBENACEAE				
Lantana camara L.	lantana	Nat	U1	<2>
ZYGOPHYLLACEAE				
Tribulus terrestris L.	puncture vine	Nat	O	
	FLOWERING PLANTS			
	MONOCOTYLEDONES			
CYPERACEAE				
Cyperus rotundus L.	nut grass	Nat	U3	
POACEAE				
Avena sativa L.	oat; cult. var.	Orn	A1	
Cenchrus echinatus L.	sand bur	Nat	O	
Chloris barbata (L.) Sw.	swollen fingergrass	Nat	A	
Chloris divaricata R. Br.	stargrass	Nat	R	
Digitaria insularis (L.) Mez ex Ekman	sourgrass	Nat	A	
Eleusine indica (L.) Gaertn.	wiregrass	Nat	A	
Melinus repens (Willd.) Zizka	Natal redtop	Nat	A	
Setaria verticillata (L.) P. Beauv.	bristly foxtail	Nat	O1	
Sorghum cf. *bicolor* (L.) Moench	sorghum; cult. var.	Orn	O	
Sorghum halepense (L.) Pers.	Johnson grass	Nat	O	

Table 1 (continued).

Species listed by family	Common name	Status	Abundance in survey	Notes
POACEAE (continued)				
Urochloa maxima (Jacq.) R. Webster	Guinea grass	Nat	AA	<2>
Urochloa mutica (Forssk.) T.Q. Nguyen	California grass	Nat	R	

Key to Table 1:

STATUS = distributional status for the Hawaiian Islands:

Ind = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.

Nat = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

Orn = A cultivated plant; a species not thought to be naturalized (spreading on its own) in Hawai'i.

ABUNDANCE = occurrence ratings for plant species:

-- - Species not present in area.

R – Rare	seen in only one or perhaps two locations.
U - Uncommon	seen at most in several locations
O - Occasional	seen with some regularity
C - Common	observed numerous times during the survey
A - Abundant	found in large numbers; may be locally dominant.
AA - Very abundant	abundant and dominant; defining vegetation type.

Numbers (1 – 3) following qualitative rating of abundance indicate localized abundance is greater than occurrence rating. For example, R3 would be a plant encountered only once or twice, but very numerous where encountered. An A1 would indicate a plant abundant in a limited portion of the survey area.

NOTES: <1> – A single, dead plant seen.
<2> - Also recorded August 18 on Poliwai Shelf.

Fallow fields provide the greatest diversity of species, dominated by ruderal weeds that have come up after the land has been tilled, planted, and harvested. Unusual in this regard is the fact that most of the species on fallow plots are common or abundant; that is, many species dominate, indicating a seed bank that was allowed to germinate at a specific point in time in the not too distant past. The weeds around the margins of the fields and along farm roads tend to be a bit more diverse, but include many species that are rare or uncommon. Of course, both areas share a mostly similar list of species, so no attempt was made to describe the flora by type of area.

Birds

A total of 722 individual birds of 24 species, representing 17 separate families, was recorded during station counts (Table 2). All 24 avian species recorded during the course of this survey are alien to the Hawaiian Islands. Avian diversity and densities are in keeping with the highly disturbed nature of the environment present in the survey area. Three species—Zebra Dove (*Geopilia striata*), Common Waxbill (*Amandava amandava*), and Red-vented Bulbul (*Pycnonotus cafer*)—accounted for slightly less than 48.5% of all birds recorded during station counts. The most frequently recorded species was Zebra Dove, which accounted for 20% of the total number of individual birds recorded during station point counts.

Table 2. Avian species detected at the Ho'ohana Solar Farm site in 2014.

Common Name	Scientific Name	ST	RA
	PHASIANIDAE - Pheasants & Partridges		
	Phasianinae - Pheasants & Allies		
Gray Francolin	*Francolinus pondicerianus*	A	0.83
0.670.67Black Francolin	*Francolinus francolinus*	A	2.08
Ring-necked Pheasant	*Phasianus colchicus*	A	0.33
	PELECANIFORMES		
	ARDEIDAE - Herons, Bitterns & Allies		
Cattle Egret	*Bubulcus ibis*	A	3.92
	COLUMBIFORMES		
	COLUMBIDAE - Pigeons & Doves		
Spotted Dove	*Streptopelia chinensis*	A	3.75
Zebra Dove	*Geopelia striata*	A	16.67
	PSITTACIFORMES		
	PSITTACIDAE – Lories, Parakeets, Macaws & Parrots		
	Psittacini –Typical Parrots		
Rose-ringed Parakeet	*Psittacula krameri*	A	0.17
	PASSERIFORMES		
	ALAUDIDAE - Larks		
Sky Lark	*Alauda arvensis*	A	1.50
	PYCNONOTIDAE - Bulbuls		
Red-vented Bulbul	*Pycnonotus cafer*	A	5.75
Red-whiskered Bulbul	*Pycnonotus jocosus*	A	0.83

Table 2 (continued).

Common Name	Scientific Name	ST	RA
	CETTIIDAE - Cettia Warblers & Allies		
Japanese Bush-Warbler	*Cettia diphone*	A	0.92
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	2.00
	TIMALIIDAE - Babblers		
Red-billed Leiothrix	*Leiothrix lutea*	A	0.17
	TURDIDAE - Thrushes		
White-rumped Shama	*Copsychus malabaricus*	A	0.08
	STURNIDAE - Starlings		
Common Myna	*Acridotheres tristis*	A	3.00
	THRAUPIDAE - Tanagers		
Red-crested Cardinal	*Paroaria coronata*	A	1.75
	EMBERIZIDAE - Emberizids		
Saffron Finch	*Sicalis flaveola*	A	0.25
	CARDINALIDAE - Cardinals Saltators & Allies		
Northern Cardinal	*Cardinalis cardinalis*	A	2.25
	FRINGILLIDAE - Fringilline and Carduline Finches & Allies		
	Carduelinae - Carduline Finches & Hawaiian Honeycreepers		
House Finch	*Haemorhous mexicanus*	A	3.58
	ESTRILDIDAE - Estrildid Finches		
Common Waxbill	*Estrilda astrild*	A	7.42
Red Avadavat	*Amandava amandava*	A	0.92
Java Sparrow	*Lonchura oryzivora*		0.67
Scaly-breasted Munia	*Lonchura punctulata*	A	0.89
Chestnut Munia	*Lonchura atricapilla*	A	0.33

Key to Table 2:

ST Status

A Alien – Introduced to the Hawaiian Islands by humans

RA Relative Abundance – Number of birds detected divided by the number of count stations (12)

Mammals

Four terrestrial mammalian species were detected on site during the course of this survey. Scat, tracks and sign of dog (*Canis familiaris*), small Indian mongoose (*Herpestes auropunctatus*), cat (*Felis catus*), and pig (*Sus scrofa*) were recorded in numerous locations within the survey site. All four of the mammalian species recorded are alien to the Hawaiian Islands and all are deleterious to native species.

Discussion

Plant Resources

No botanical resources of interest or concern were noted by our survey of the Ho'ohana Solar Farm site. With but a couple of common native plants as exceptions, the plants growing at this site are all non-native species. No plants listed as threatened or endangered under either state or federal endangered species statutes occur here now or would be anticipated to be growing in this area (DLNR, 1998; USFWS; 2005a, 2005b, 2012a).

Avian Resources

The findings of the avian survey are consistent with the location of the property, and the habitats present on the site. A total of 24 avian species were recorded. As previously discussed, all of the avian species recorded during the course of this survey are alien to the Hawaiian Islands. The study site is an active large mixed agriculture farm. Locations, and densities of avian species will change as different crops are planted and/or fields are plowed or left fallow.

Although no seabirds were detected during this survey, it is possible that the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*) over-fly the project area between April and the middle of December each year in very small numbers. Newell's Shearwaters are not known to breed on the Island of O'ahu, though seabirds likely to be this species have been recorded on ornithological radar in low numbers flying over parts of the island.

The primary cause of mortality in Newell's Shearwaters is thought to be predation by alien mammalian species at the nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley et al., 2001). Collision with man-made structures is considered to be the second most significant cause of mortality of this seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the fall, can become disoriented by exterior lighting. When disoriented, seabirds may collide with man-made structures and, if not killed outright, dazed or injured birds become easy targets of opportunity for feral mammals (Hadley, 1961; Telfer, 1979; Sincock, 1981; Reed et al., 1985; Telfer et al., 1987; Cooper and Day, 1998; Podolsky et al., 1998; Ainley et al., 2001; Hue et al., 2001; Day et al., 2003).

Although no shorebirds were recorded, it is probable that at least one of the migratory shorebirds species commonly encountered in Hawai'i, the Pacific-Golden Plover (*Pluvialis fulva*), uses resources on a seasonal basis within the

project site. The plover is an indigenous migratory shorebird species which nests in the high Arctic during the late spring and summer months, returning to Hawai'i and the tropical Pacific to spend the fall and winter months each year. They usually leave Hawai'i and return to the Arctic in late April or the very early part of May. As this survey was conducted after most of the wintering plover in Hawai'i had left the Islands for their breeding grounds, it is not surprising that none was recorded. Pacific Golden-Plover are commonly encountered throughout the Hawaiian Islands during late summer through mid-spring months.

The principal potential impact that the installation and operation of a PV electrical generating site poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the birds' nesting season. The two situations with outdoor lighting that might pose a threat to nocturnally flying seabirds are: 1) during construction it is deemed necessary to conduct night-time construction activities; and, 2) following build-out, security lighting is used around the site. If night-time construction activity or equipment maintenance is proposed during construction, all associated lights should be shielded, and where large flood/work lights are used, they should be placed on poles that are high enough to allow the lights to be pointed directly at the ground. If streetlights or exterior facility lighting is installed at the Project, the lights need to be shielded (Reed et al., 1985; Telfer et al., 1987).

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitats currently present on the site. Although no rodents were recorded it is likely that some of the four established alien *muridae* found on O'ahu—roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), Polynesian rat (*Rattus exulans hawaiiensis*), and European house mouse (*Mus musculus domesticus*)—use various resources found within the general project area on a seasonal basis. There are a number of rodent bait stations scattered about the farm, trucking and storage areas, indicating that rodents are present and are controlled on parts of the property. All of these introduced rodents are deleterious to native ecosystems.

With the exception of the endangered Hawaiian hoary bat or *'ōpe'ape'a* (*Lasiurus cinereus semotus*), all terrestrial mammals currently found on the Island of O'ahu are alien species, and most are ubiquitous. Hawaiian hoary bat was not detected during the course of this survey. Given the habitats present on the site and the lack of suitable roosting trees, any usage of the area by this species would be of an incidental foraging nature.

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR, 1998; USFWS; 2005a, 2014).

Critical Habitat

No federally-declared critical habitat occurs in the project area. There is no equivalent statute or rule under State of Hawai'i laws or regulations.

Wetlands and Streams

No wetlands or streams occur at the project site. However, what appears to be an agricultural drainage system running roughly downslope (north to south) off to the west of the parcel is crossed by the flagpole portion of the parcel. This ditch feature, shown in the National Wetland Inventory (NWI; USFWS, 1984), widens out in the area where it is crossed. The ditch feature is coded in the NWI as PEM1C (seasonally flooded palustrine [marsh] wetland with persistent emergent vegetation) and the expanded feature is coded PEM1Ch (same, plus diked or impounded). Thus, the former is likely a farm drainage ditch and latter is likely a detention basin. Features indicated on NWI maps are not necessarily jurisdictional (that is, do not necessarily come under U.S. Army Corps of Engineers authority) and, indeed, do not necessarily exist. Not all areas mapped by USFWS were field validated by the agency The NWI does not determine federal jurisdiction of wetlands; it is only an inventory of aquatic features. Generally, man-made agricultural ditch and pond systems are exempted from requirements under Section 404 of the Clean Water Act (USACE, 2005; USACE & USEPA, 2007). Of relevance are flow characteristics and where the flow eventually ends up. Flow in this feature appears to be clearly ephemeral in nature in the Project vicinity, and its disposal seems to be into a series of normally dry detention ponds upslope of and within Royal Kunia subdivision in Waipahu.

The pond feature is shown on the USGS topographic sheet (Schofield Barracks Quadrangle, USGS, 7.5-minute Series, 1998) as a pond. A weak blue line is shown on the same sheet below a lower detention basin, this line eventually going into Waipahu near the shore of West Loch, Pearl Harbor. This urban ditch is shown on earlier sheets (Waipahu Quadrangle, USGS, 7.5-minute Series, 1983) as ending at the West Loch shore, but does not appear on the more recent Pearl Harbor Quadrangle (USGS, 7.5-minute Series, 1999). Our assessment, without investigating beyond the maps and satellite images, is that this feature is not jurisdictional in the Project vicinity. However, if it is contemplated to construct a road crossing this feature, the matter should be investigated further.

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GOV. MSG. NO. 1197

EXECUTIVE CHAMBERS
HONOLULU

DAVID Y. IGE
GOVERNOR

June 8, 2015

The Honorable Ronald D. Kouchi,
President
and Members of the Senate
Twenty-Eighth State Legislature
State Capitol, Room 409
Honolulu, Hawai'i 96813

The Honorable Joseph M. Souki,
Speaker and Members of the
House of Representatives
Twenty-Eighth State Legislature
State Capitol, Room 431
Honolulu, Hawai'i 96813

Dear President Kouchi, Speaker Souki, and Members of the Legislature:

This is to inform you that on June 8, 2015, the following bill was signed into law:

HB623 HD2 SD2 CD1 RELATING TO RENEWABLE STANDARDS
ACT 097 (15)

Sincerely,

DAVID Y. IGE
Governor, State of Hawai'i

PETITIONER'S EXHIBIT 14

Approved by the Governor
on JUN 8 2015

ORIGINAL

ACT 097

HOUSE OF REPRESENTATIVES
TWENTY-EIGHTH LEGISLATURE, 2015
STATE OF HAWAII

H.B. NO. 623 H.D. 2 S.D. 2 C.D. 1

A BILL FOR AN ACT

RELATING TO RENEWABLE STANDARDS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that Hawaii's dependency on imported fuel drains the State's economy of billions of dollars each year. A stronger local economy depends on a transition away from imported fuels and toward renewable local resources that provide a secure source of affordable energy.

The legislature further finds that alternative energy technologies have advanced significantly in recent years, leading to an explosion of new markets, jobs, and local energy sources. Due to these and other advances, Hawaii is currently ahead of its timeline in reaching its goal of becoming forty per cent renewable by 2030.

The legislature also finds that Hawaii is in a period of energy transition, with many long-term agreements soon to be executed for new forms of imported fuels that may act as temporary "bridge" fuels until local sources of renewable energy can be developed.

The purpose of this Act is to update and extend Hawaii's clean energy initiative and renewable portfolio standards to ensure maximum long-term benefit to Hawaii's economy by setting a goal of one hundred per cent renewable by 2045; provided that

extending the renewable portfolio standard goals and transition to energy independence beyond 2030 shall be undertaken in a manner that benefits Hawaii's economy and all electric customers, maintains customer affordability, and does not induce renewable energy developers to artificially increase the price of renewable energy in Hawaii. This target will ensure that Hawaii moves beyond its dependence on imported fuels and continues to grow a local renewable energy industry.

SECTION 2. Section 269-92, Hawaii Revised Statutes, is amended as follows:

1. By amending subsection (a) to read:

"(a) Each electric utility company that sells electricity for consumption in the State shall establish a renewable portfolio standard of:

(1) Ten per cent of its net electricity sales by December 31, 2010;

(2) Fifteen per cent of its net electricity sales by December 31, 2015;

(3) [~~Twenty five~~] Thirty per cent of its net electricity sales by December 31, 2020; [~~and~~]

(4) Forty per cent of its net electricity sales by December 31, 2030[~~.~~] ;

(5) Seventy per cent of its net electricity sales by December 31, 2040; and

(6) One hundred per cent of its net electricity sales by December 31, 2045."

2. By amending subsection (d) to read:

"(d) Events or circumstances that are outside of an electric utility company's reasonable control may include, to the extent the event or circumstance could not be reasonably foreseen and ameliorated:

(1) Weather-related damage;

(2) Natural disasters;

(3) Mechanical or resource failure;

(4) Failure of renewable electrical energy producers to meet contractual obligations to the electric utility company;

(5) Labor strikes or lockouts;

(6) Actions of governmental authorities that adversely affect the generation, transmission, or distribution of renewable electrical energy under contract to an electric utility company;

(7) Inability to acquire sufficient renewable electrical energy due to lapsing of tax credits related to renewable energy development;

(8) Inability to obtain permits or land use approvals for renewable electrical energy projects;

(9) Inability to acquire sufficient cost-effective renewable electrical energy;

(10) Inability to acquire sufficient renewable electrical energy to meet the renewable portfolio standard goals beyond 2030 in a manner that is beneficial to Hawaii's economy in relation to comparable fossil fuel resources;

[~~(10)~~] (11) Substantial limitations, restrictions, or prohibitions on utility renewable electrical energy projects; and

[~~(11)~~] (12) Other events and circumstances of a similar nature."

SECTION 3. Section 269-95, Hawaii Revised Statutes, is amended to read as follows:

"**§269-95 Renewable portfolio standards study.** The public utilities commission shall:

(1) By December 31, 2007, develop and implement a utility ratemaking structure, which may include performance-based ratemaking, to provide incentives that encourage Hawaii's electric utility companies to use cost-effective renewable energy resources found in Hawaii to meet the renewable portfolio standards established in section 269-92, while allowing for deviation from the standards in the event that the standards cannot be met in a cost-effective manner or as a result of events or circumstances, such as described in section 269-92(d), beyond the control of the electric utility company that could not have been reasonably anticipated or ameliorated;

(2) Gather, review, and analyze empirical data to:

(A) Determine the extent to which any proposed utility ratemaking structure would impact electric utility companies' profit margins; and

(B) Ensure that the electric utility companies' opportunity to earn a fair rate of return is not diminished;

(3) Use funds from the public utilities special fund to contract with the Hawaii natural energy institute of the University of Hawaii to conduct independent studies to be reviewed by a panel of experts from entities such as the United States Department of Energy, National Renewable Energy Laboratory, Electric Power Research Institute, Hawaii electric utility companies, environmental groups, and other similar institutions with the required expertise. These studies shall include findings and recommendations regarding:

(A) The capability of Hawaii's electric utility companies to achieve renewable portfolio standards in a cost-effective manner and shall assess factors such as:

(i) The impact on consumer rates;

(ii) Utility system reliability and stability;

(iii) Costs and availability of appropriate renewable energy resources and technologies[~~,~~], including the impact of renewable portfolio standards, if any, on

the energy prices offered by renewable energy developers;

(iv) Permitting approvals;

(v) Effects on the economy;

(vi) Balance of trade, culture, community, environment, land, and water;

(vii) Climate change policies;

(viii) Demographics; [~~and~~]

(ix) Cost of fossil fuel volatility; and

[~~(ix)~~] (x) Other factors deemed appropriate by the commission; and

(B) Projected renewable portfolio standards to be set five and ten years beyond the then current standards;

(4) Evaluate the renewable portfolio standards every five years, beginning in 2013, and may revise the standards based on the best information available at the time to determine if the standards established by section 269-92 remain effective and achievable; and

(5) Report its findings and revisions to the renewable portfolio standards, based on its own studies and

other information, to the legislature no later than twenty days before the convening of the regular session of 2014, and every five years thereafter."

SECTION 4. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 5. This Act shall take effect on July 1, 2015.

APPROVED this 8 day of JUN , 2015

GOVERNOR OF THE STATE OF HAWAII