
Final Environmental Impact Statement

**CAMPBELL INDUSTRIAL PARK
GENERATING STATION & TRANSMISSION ADDITIONS**

**PREPARED FOR:
Hawaiian Electric Company, Inc. (HECO)**

PREPARED BY:



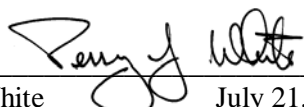
JULY 21, 2006

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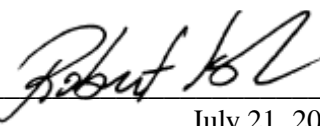
CAMPBELL INDUSTRIAL PARK GENERATING STATION & TRANSMISSION ADDITIONS

SIGNATORY CERTIFICATION:

This Final Environmental Impact Statement and all ancillary documents were prepared under my direction or supervision, and, to the best of my knowledge, the information submitted fully addresses the document content requirements as set forth in HAR §11-200-18.



Perry J. White July 21, 2006



Robert Isler July 21, 2006

**PREPARED FOR:
Hawaiian Electric Company, Inc. (HECO)**

PREPARED BY:



JULY 21, 2006

PROJECT SUMMARY

Project:	CIP Generating Station and Transmission Additions Project
Applicant	Hawaiian Electric Company, Inc. P.O. Box 2750 Honolulu, HI 96840 Contact: Robert Isler (808) 543-7206
Approving Agency	Department of Planning and Permitting City and County of Honolulu 650 South King Street Honolulu, HI 96813 Contact: Matthew Higashida (808) 527-6056
Location	Campbell Industrial Park (CIP) and the future expansion area of the Kapolei Business Park (KBP), Barbers Point, 'Ewa District, Island of O'ahu
Tax Map Keys	9-1-015:002; 9-1-015:016; 9-1-015:020; 9-1-014:033; 9-1-014:034; 9-1-014:035; 9-1-014:010; 9-1-014:014; 9-1-026:018; 9-1-026:039; 9-1-014:029; 9-1-026:038; 9-2-003:027; 9-2-003:011
State Land Use District	Mostly Urban with some Agriculture.
<u>Ewa DP Land Use Designation</u>	<u>Industrial</u>
County Zoning	I-2 Intensive Industrial, Ag-1 Restricted Agriculture, Ag-2 General Agriculture
Proposed Action	Construction of a new fossil-fueled electrical generating station, a new 138kV overhead transmission line, and associated improvements at two electrical substations in and around Campbell Industrial Park, 'Ewa, Hawai'i.
Associated Actions Requiring Environmental Assessment	Electrical power generating facility, electrical substation improvements, and 138 kV electrical transmission line.
Required Permits & Approvals	Conditional Use Permit, NPDES Construction Permit, <u>NPDES Industrial Storm Water Permit</u> , PUC Approval, <u>Well Construction and Well Operation Permits</u> , <u>Pump Installation Permit</u> , <u>Water Use Permit</u> , Initial Covered Source/Prevention of Significant Deterioration Permits, Wastewater Treatment Permit, Fuel Tank Construction Permit, FAA Clearance, Grading Permit, Building Permit, <u>Construction Noise Permit</u>
Agencies Consulted	City & County of Honolulu Department of Planning and Permitting, State of Hawai'i Department of Health, Public Utilities Commission, DOH, EPA, FAA, PUC, DPP Numerous Federal, State, County, and private organizations as listed in Chapter 10.
Consultant	Planning Solutions, Inc. 210 Ward Ave, Suite 330 Honolulu, HI 96814 Contact: Perry White (808) 550-4483

NOTES ON FORMAT USED TO DEPICT REVISIONS

The following notation has been used to depict substantive differences between this document and the *Draft Environmental Impact Statement*:

- Insertions are noted by a **double underline**;
- Deletions are noted with a **~~strike-through~~**.

All changes, whether insertions or deletions are indicated by a vertical line in the outside margin of the changed page. In order to maintain legibility, formatting changes (such as revised headers and footers), updates to the table of contents with new page numbers and cross-references, changes to the publication date, revisions to the title page to reflect the fact that the document is a “Final” EIS, rather than a “Draft” EIS, and other non-substantive changes are not marked.

SUMMARY

S-1.0 PROJECT DESCRIPTION

S-1.1. PROPOSED ACTION (ALTERNATIVE 1)

Hawaiian Electric Company, Inc. (HECO) is proposing to improve the electrical generation and transmission infrastructure on O'ahu. If the required land use approvals and environmental permits are granted, HECO will:

- Construct a 110 MW simple-cycle combustion turbine on its Barbers Point Tank Farm (BPTF) site in Campbell Industrial Park (CIP) by mid-2009. The unit will burn clean fuels with low air emissions, like naphtha or diesel, and will include provisions to allow burning of biofuels, such as ethanol, when they become commercially viable. This unit is primarily intended to supplement existing capacity during periods of peak use; however, it would also be operated during non-peak hours if other units are not reasonably able to serve system needs. By providing this type of unit and continuing its efforts to limit electricity demand, HECO hopes to delay the need for the 180 MW coal unit identified in IRP-3. ~~meet the peak energy demands, but may be needed during emergency conditions when other units are not available.~~
- Install new electrical equipment (e.g., relays, circuit breakers, and related support equipment) within the AES Substation, which is adjacent to the BPTF site.
- Acquire the 44-foot wide strip of property between the Tank Farm parcel and the adjoining AES Substation and the parcel between the AES Substation and Hanua Street to provide additional space for the proposed generating and substation equipment.
- Acquire easements for and construct an additional, two mile-long, 138 kV overhead transmission circuit linking the expanded AES Substation with the existing Campbell Estate Industrial Park (CEIP) Substation.
- Install new electrical equipment (e.g., relays, circuit breakers, and related support equipment) within the existing CEIP Substation.
- Install a new underground water pipeline to transport recycled wastewater (RO water) from the City and County of Honolulu's Honouliuli Wastewater Treatment Plant (WWTP) to HECO's Kahe Generating station in accordance with HECO's proposed community benefits program.
- Plan for, and be prepared to construct, a second 110 MW simple-cycle combustion turbine on the BPTF site if demand-side management (DSM), conservation, renewable energy and combined heat and power (CHP) programs cannot provide the demand reduction and/or additional firm generating capacity needed to meet peak demand.

The project is needed to meet the existing and forecasted future system load growth on the island of O'ahu and is an integral part of HECO's continuous commitment to providing safe, adequate, and reliable electric service to its customers. The proposed improvements are designed to improve system reliability, minimize adverse effects on the environment, and maintain costs to HECO's customers at a reasonable level.

S-1.2 ACTION ALTERNATIVES EVALUATED IN DETAIL

The following alternatives to the proposed action are evaluated in this environmental impact statement:

Alternative 2: Transmission Circuit & Single Combustion Turbine. This "reduced scale" alternative is nearly the same as Alternative 1 except that it does not include the option of installing a second CT. Thus, the maximum generating capacity provided by this alternative would be the 110 MW provided by the first combustion turbine and may not be sufficient to meet the peak demand on the system.

Alternative 3: Single Combustion Turbine Only. The generation part of this alternative is identical to that in Alternative 2. However, this alternative does not provide additional transmission capacity.

SUMMARY

As a result, the electrical transmission system serving the area would not have sufficient capacity to accommodate the total output from all of the electrical generating units at CIP.

Alternative 4: Additional Transmission Circuit Only. This alternative consists solely of the transmission-related improvements in Alternative 1. It would improve the reliability of the transmission facilities that connect the three major CIP generating complexes (Kalaeloa, AES, and HPOWER) to the grid, but it would not supply additional generating capacity to the system.

No Action Alternative. “No Action” consists of failing to install or arrange for the installation of the additional generating capacity and transmission capacity needed to bring electrical energy supply and demand into balance. This alternative would not meet any of the objectives of the proposed action, but is included to comply with regulatory requirements.

S-2.0 SIGNIFICANT BENEFICIAL & ADVERSE IMPACTS

S-2.1 PROBABLE IMPACTS OF THE ACTION ALTERNATIVES

The effects that construction of each alternative would have are summarized in Table S-1 below. Table S-2 summarizes the effects that would result from operation of the facilities in each alternative.

As can be seen from the tables, none of the alternatives entail significant adverse effects on the physical or human environment. Because Alternatives 2, 3, and 4 are reduced-scale subsets of the proposed action, they entail similar impacts but on a smaller scale. Eliminating the generation portion of the project reduces potential effects to a much greater extent than elimination of the transmission elements. However, eliminating project components also has serious implications for the reliability of electrical service on O‘ahu, and therefore also for its economic health and quality of life, as described below.

S-2.2 PROBABLE IMPACTS OF THE NO ACTION ALTERNATIVE

At the very least, failure to construct the 110 MW combustion turbine that HECO proposes to place in service in mid-2009 could force HECO to suspend service temporarily to selected areas through rolling blackouts. At worst, it has the potential to disrupt service throughout the entire grid. The frequency and duration of the service interruptions and the number of customers affected will depend upon the particular circumstances of the outage and cannot be accurately predicted. However, analyses show that even small outages have substantial economic effects on customers, as well as potential health and safety impacts.

Failure to add a third transmission line to serve the CIP area will increase the probability that the transmission system would be unable to reliably connect the substantial generating capacity at Campbell Industrial Park to HECO’s islandwide electrical grid. This, in turn, would increase the likelihood that rolling blackouts might be needed and the potential for a system-wide blackout.

Whether caused by shortfalls in generating or transmission capacity, even brief power outages that affect only a small fraction of HECO’s customers impose considerable costs on the community. Outages that affect all of HECO’s customers for even a few hours are even more expensive, and could have other serious health and safety consequences. Neither type of outage is consistent with HECO’s obligation to serve its customers.

S-3.0 CONSISTENCY WITH LAND USE POLICIES AND PLANS

HECO’s Proposed CIP Generating Station and Transmission Additions project is located in an area set aside for heavy industrial uses and is consistent with State and County land use plans and controls. It would be constructed and operated in accordance with applicable environmental regulations. Table 6.1 lists the permits and other approvals that HECO will need.

S-4.0 OTHER CHAPTER 343 TOPICS

The proposed improvements are not directly related to other possible actions by HECO and would not lead to growth or changes in the character of economic activity (e.g., the opening of new industries not previously practical) that might have secondary impacts. They would, however, avoid projected shortfalls in electrical power, thereby ensuring that HECO's customers continue to receive reliable and affordable electrical service. Fuel to power the generating unit will be naphtha or other light fuels that are already produced at the two refineries located in Campbell Industrial Park. The construction and operation of the proposed transmission line does not involve the extension of electrical power service into new service areas or the provision of services not previously available to HECO's customers. Hence, it does not have the ability to cause secondary impacts except insofar as it helps forestall unintended power outages that might otherwise encourage businesses to locate their activities elsewhere.

Constructing and operating the proposed peaking units at the BPTF and installing a second transmission line between the AES and CEIP Substations will allow HECO to maintain reliable electrical service to its customers. It would not prevent other uses of the property that might be more productive over the long term.

HECO's plans for the proposed facilities do not foreclose any energy supply options. Because the proposed CTs are designed primarily as peaking units to be used only when needed to meet peak demand, they involve the minimum capital investment required to maintain service reliability. If demand should be lower than anticipated, HECO will operate the units for fewer hours. The availability of the firm capacity will allow HECO to continue its alternate energy efforts with the confidence that a shortfall from those sources can be made up by operating the peaking units during those periods when the alternate energy sources are not available.

The construction of the proposed generating units, substation additions, and transmission improvements does not irrevocably commit HECO to the continued use of fossil fuels for power generation. As mentioned, both proposed generating units can utilize biofuels should they become commercially available and economical for use in Hawai'i.

At present, ~~there are no known unresolved issues.~~ the only known unresolved issue that is not directly a function of the Public Utility Commission's final decision on HECO's pending application is the extent to which the mauka portion of the transmission line may be constructed underground in response to the landowner's request. However, numerous permits and approvals must still be obtained, and it is possible that issues may arise as applications for these are prepared and processed.

S-5.0 PARTIES CONSULTED

HECO distributed the EIS Preparation Notice (EISPN) to the individuals and organizations listed in Table 10.1 and requested their comments on the proposed scope of the analysis and on the completeness of the alternatives that HECO proposed to evaluate. It also conducted extensive community outreach through meetings with representatives of the West O'ahu/Wai'anae Coast communities. The public ~~will have had~~ an opportunity to review and comment on these DEIS for the project in accordance with HRS Chapter 343. Their comments are reproduced in Chapter 10 of this FEIS.

Table S-1 Comparison of Impacts: Construction Period

EIS Section	Impact Topic	Proposed Action (Alternative 1) Combustion Turbine (CT) + Overhead Transmission Circuit + Possible Second CT	Alternative 2 Transmission Circuit + Single CT	Alternative 3 Single CT Only	Alternative 4 Additional Transmission Circuit Only
4.1	Physiography & Topography	<u>Power Generation and Substation Facilities.</u> The project will involve minor excavation for foundations and small volumes of fill for protective berms and pads suitable for the emplacement of large equipment. Trenches will be excavated for the proposed RO water line but will later be backfilled. No significant lasting changes to topography will occur. <u>Power Transmission Facilities.</u> The only earthwork needed is borings for the pole foundations. If the underground alternative is selected, substantial trenching will be required. Neither option results in permanent changes to topography.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 2. <u>Power Transmission Facilities.</u> None included.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.
4.2	Geology & Soils	<u>Power Generation and Substation Facilities.</u> Disturbance of approximately 9 acres on the BPTF site. A few thousand cubic yards of structural fill will be needed. The BPTF is underlain by coral outcrop, which is not valued for agriculture. The new RO line will require trenching along the proposed route; a distance of about 4 miles, but the trenches will be backfilled and they are along existing roadway and utility corridors. <u>Power Transmission Facilities.</u> Very little ground disturbance if the lines are suspended on overhead poles as proposed. If the transmission lines are installed underground, the work would require trenching along the entire length of the transmission corridor. Disturbance would be limited to areas along existing and/or planned roadways or storm drains.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> None as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.
4.3	Air Quality & Climate	<u>Power Generation and Substation Facilities.</u> Minor, temporary dust and vehicle exhaust from construction of the proposed generating station and substation improvements. <u>Power Transmission Facilities.</u> Overhead transmission line entails very limited ground disturbance and does not, therefore, have the potential to produce significant fugitive dust emissions. The underground variant would involve greater ground disturbance.	<u>Power Generation and Substation Facilities.</u> Largely the same as Alternative 1. However, internal combustion engine emissions associated with construction activities related to the installation of the second generating unit would be eliminated. <u>Power Transmission Facilities.</u> Same as described for Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> None as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.
4.4	Hydrology & Water Resources	<u>Power Generation and Substation Facilities.</u> Construction will not substantially alter the overall drainage pattern or significantly alter runoff volumes across the BPTF site or the water line route. <u>Power Transmission Facilities.</u> The proposed changes along the transmission line route will have minimal to no effect on drainage patterns or water quality.	<u>Power Generation and Substation Facilities.</u> Largely the same as Alternative 1. Possible slight reduction in stormwater runoff. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.
4.5	Exposure to Natural Hazards	<u>All Facilities.</u> All construction will take place outside defined hazard areas and will not exacerbate existing hazards in the project area.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.
4.6	Biota	<u>Power Generation and Substation Facilities.</u> No sensitive or endangered species inhabit the areas to be directly affected by construction. <u>Power Transmission Facilities.</u> No endangered, threatened, or candidate species are known to exist along the proposed transmission corridor. The area is heavily disturbed and is slated for extensive development.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> None as Alternative 1.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.

Table S-1 Comparison of Impacts: Construction Period

EIS Section	Impact Topic	Proposed Action (Alternative 1) Combustion Turbine (CT) + Overhead Transmission Circuit + Possible Second CT	Alternative 2 Transmission Circuit + Single CT	Alternative 3 Single CT Only	Alternative 4 Additional Transmission Circuit Only
4.7	Noise	<p><u>Power Generation and Substation Facilities.</u> Construction noise from excavators, trucks, and other heavy equipment will occur at the BPTF and along the route of the new RO water line to Kane Generating Station. A construction noise permit may be required.</p> <p><u>Power Transmission Facilities.</u> Temporary increase in noise along transmission corridor as a result of construction activities.</p>	<p><u>Power Generation and Substation Facilities.</u> Same as Alternative 1, but the duration of construction noise will be shortened by elimination of work required to install the second CT.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>	<p><u>Power Generation and Substation Facilities.</u> Same as Alternative 2.</p> <p><u>Power Transmission Facilities.</u> None included.</p>	<p><u>Power Generation and Substation Facilities.</u> None included.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>
4.8	Archaeological, Historic, & Cultural Resources	<p><u>Power Generation and Substation Facilities.</u> The BPTF site is heavily disturbed and developed, and no historic or archaeological resources have been found there. The RO water line to Kane will be within the historic OR&L Railroad right-of-way. HECO will minimize disruptions to the railroad's use to the greatest extent possible. An SHPD-approved archaeological monitoring plan will be in place during construction of the proposed water line. If any archaeological deposits or human burials are encountered, the contractor will halt work and contact the State Historic Preservation Division (SHPD).</p> <p><u>Power Transmission Facilities.</u> The surface inspection carried out along the transmission corridor did not reveal any archaeological materials in primary (in situ) or secondary (disturbed) context. If any archaeological deposits or human burials are encountered, the contractor will halt work and contact the State Historic Preservation Division (SHPD).</p>	<p><u>Power Generation and Substation Facilities.</u> Same as Alternative 1.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>	<p><u>Power Generation and Substation Facilities.</u> None included.</p> <p><u>Power Transmission Facilities.</u> None included.</p>	<p><u>Power Generation and Substation Facilities.</u> None included.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>
4.9	Visual Resources	<p><u>Power Generation and Substation Facilities.</u> Minor grading, equipment parking, materials storage, the erection of structures and placement of equipment, and other aboveground activities will take place at the BPTF site, mostly in areas that are not readily seen from Hanua Street or other public areas. Work on the AES Substation site and the RO water line route will be more visible, but will be temporary and will not substantially alter the appearance of the area.</p> <p><u>Power Transmission Facilities.</u> Most transmission elements are located in areas (e.g., Chevron refinery, undeveloped areas, etc.) not readily visible to the public. The construction activities associated with the transmission lines would be visible from some locations within CIP, but would be distant from more sensitive/residential areas.</p>	<p><u>Power Generation and Substation Facilities.</u> Same as Alternative 1.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>	<p><u>Power Generation and Substation Facilities.</u> None included.</p> <p><u>Power Transmission Facilities.</u> None included.</p>	<p><u>Power Generation and Substation Facilities.</u> None included.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>
4.10	Transportation Facilities	<p><u>Power Generation and Substation Facilities.</u> Construction would generate a small number of vehicle-trips on area roadways for the delivery of construction materials and employee trips. Would not significantly affect the level-of-service. No work is planned in existing road rights-of-ways. Delivery of oversized equipment could slow local traffic for very short periods of time.</p> <p><u>Power Transmission Facilities.</u> Installing the overhead lines would generate a small number of construction vehicle-trips; it would not affect the Level of Service on area roadways. The underground variant would occur partially within existing road rights-of-ways and would require traffic controls and re-routing.</p>	<p><u>Power Generation and Substation Facilities.</u> Same as Alternative 1.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>	<p><u>Power Generation and Substation Facilities.</u> None included.</p> <p><u>Power Transmission Facilities.</u> None included.</p>	<p><u>Power Generation and Substation Facilities.</u> None included.</p> <p><u>Power Transmission Facilities.</u> Same as Alternative 1.</p>

Table S-1 Comparison of Impacts: Construction Period

<i>EIS Section</i>	<i>Impact Topic</i>	<i>Proposed Action (Alternative 1) Combustion Turbine (CT) + Overhead Transmission Circuit + Possible Second CT</i>	<i>Alternative 2 Transmission Circuit + Single CT</i>	<i>Alternative 3 Single CT Only</i>	<i>Alternative 4 Additional Transmission Circuit Only</i>
4.11	Public Infrastructure & Services	<i>Power Generation and Substation Facilities:</i> Construction would require small (less than 1,000 gallons per day) amounts of water from the existing BWS system. BWS has adequate source and transmission capacity to meet the expected need. All construction waste would be trucked away and properly disposed of. Construction would not substantially affect police, fire, emergency medical services, or recreational areas. <i>Power Transmission Facilities:</i> Construction of the transmission facilities would have no significant effect on public infrastructure and services.	<i>Power Generation and Substation Facilities:</i> Same as Alternative 1. <i>Power Transmission Facilities:</i> Same as Alternative 1.	<i>Power Transmission Facilities:</i> None included. <i>Power Transmission Facilities:</i> Same as Alternative 1.	<i>Power Generation and Substation Facilities:</i> None included. <i>Power Transmission Facilities:</i> Same as Alternative 1.
4.12	Land Use & Socioeconomic Resources	<i>Power Generation and Substation Facilities:</i> HECO will acquire the 44-foot right of way parcel and the parcel between AES Substation and Hanua Street prior to commencing construction, both of which are vacant. Construction will not interfere with use of or access to existing facilities. Construction-generated expenditures and employment could total approximately \$200 million (\$6 million of which is for community benefit activities). <i>Power Transmission Facilities:</i> HECO will acquire easements for construction of the transmission line. The corridor traverses land that is either already in industrial use or is currently vacant and slated for industrial use in the future. Construction will not interfere with the use of these areas.	<i>Power Generation and Substation Facilities:</i> Same land use effects as Alternative 1. Construction employment, business activity, and construction cost are reduced by elimination of second unit. <i>Power Transmission Facilities:</i> Same as Alternative 1.	<i>Power Generation and Substation Facilities:</i> Same as Alternative 2. <i>Power Transmission Facilities:</i> None included.	<i>Power Generation and Substation Facilities:</i> None included. <i>Power Transmission Facilities:</i> Same as Alternative 1.
4.13	Electric & Magnetic Fields (EMF)	<i>Power Generation and Substation Facilities:</i> These will not emit EMF until they are placed in operation. <i>Power Transmission Facilities:</i> These will not emit EMF until they are placed in operation.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

Source: Compiled by Planning Solutions, Inc.

Table S-2 Comparison of Impacts: Normal Operations.

EIS Section	Impact Topic	Proposed Action (Alternative 1) Combustion Turbine (CT) + Overhead Transmission Circuit + Possible Second CT	Alternative 2 Transmission Circuit + Single CT	Alternative 3 Single CT Only	Alternative 4 Additional Transmission Circuit Only
4.1	Physiography & Topography	<i>Power Generation and Substation Facilities.</i> No operational impacts. <i>Power Transmission Facilities.</i> No operational impacts.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 1. <i>Power Transmission Facilities.</i> Same as Alternative 1.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 1. <i>Power Transmission Facilities.</i> None included.	<i>Power Generation and Substation Facilities.</i> None included. <i>Power Transmission Facilities.</i> Same as Alternative 1.
4.2	Geology & Soils	<i>Power Generation and Substation Facilities.</i> No operational impacts. <i>Power Transmission Facilities.</i> No operational impacts.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 1. <i>Power Transmission Facilities.</i> Same as Alternative 1.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 1. <i>Power Transmission Facilities.</i> None included.	<i>Power Generation and Substation Facilities.</i> None included. <i>Power Transmission Facilities.</i> Same as Alternative 1.
4.3	Air Quality & Climate	<i>Power Generation and Substation Facilities.</i> HECO is employing Best Available Control Technology (BACT) to minimize emissions. Worst-case scenarios were modeled with both units operating at 100% of their rated capacity. The results showed that 3-hour and 24-hour SO ₂ was the only pollutant averaging periods above the modeling significant impact levels and that SO ₂ is therefore the only pollutant which required a full impact analysis. Additional modeling (including non-HECO sources) for SO ₂ showed that the operation of the generating station will not cause or contribute to an exceedance of National or State Ambient Air Quality Standards. <i>Power Transmission Facilities.</i> The transmission line will not have a measurable effect on climate or air quality.	<i>Power Generation and Substation Facilities.</i> Worst-case operating scenarios for one CT and one BSG were compared with the PSD modeling significant impact levels. As for Alternative 1, 3-hour and 24-hour SO ₂ was the only pollutant averaging periods above the modeling significant impact levels. The subsequent analysis showed that no exceedance of National or State Air Quality Standards would occur due to operation, and BACT would be in place. <i>Power Transmission Facilities.</i> Same as Alternative 1.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 2. <i>Power Transmission Facilities.</i> None included.	<i>Power Generation and Substation Facilities.</i> None included. <i>Power Transmission Facilities.</i> Same as Alternative 2.
4.4	Hydrology & Water Resources	<i>Power Generation and Substation Facilities.</i> The proposed facility would require less than 1,000 gallons per day of water from the Board of Water Supply's potable water system. Most of the water used at the facility will be recycled water from the City's Honolulu Wastewater Treatment Plant or saline water from on-site wells tapping a non-potable aquifer. Estimated water use for the CTs (under a heavy use scenario) would be 106,000 gallons per day (GPD) of RO water or 252,000 GPD of saline groundwater. Wastewater would be disposed of in two on-site disposal wells. Estimated wastewater volumes for both CTs would be 19,000 GPD of RO water or 162,000 GPD of saline groundwater. The very small volume of sanitary wastewater generated would be treated in an individual wastewater treatment system and disposed of into the on-site injection wells. No surface water features are located nearby, and none will be affected by the proposed generating station. Storm water runoff would be collected in swales, inlets, and subsurface conduits and routed to a detention basin. <i>Power Transmission Facilities.</i> No impacts once operational.	<i>Power Generation and Substation Facilities.</i> The types of effects are the same as for Alternative 1, but volumes are lower. Estimated water use is as follows: 53,000 GPD of RO water or 126,000 GPD of saline groundwater from on site well. Process wastewater volumes are projected as 9,000 and 81,000 for RO and saline groundwater, respectively. Potable water use and sanitary wastewater volumes are the same as for Alternative 1. <i>Power Transmission Facilities.</i> Same as Alternative 1.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 2. <i>Power Transmission Facilities.</i> None included.	<i>Power Generation and Substation Facilities.</i> None included. <i>Power Transmission Facilities.</i> Same as Alternative 1.
4.5	Exposure to Natural Hazards	<i>Power Generation and Substation Facilities.</i> Same as construction period. <i>Power Transmission Facilities.</i> Same as construction period.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 1. <i>Power Transmission Facilities.</i> Same as Alternative 1.	<i>Power Generation and Substation Facilities.</i> Same as Alternative 2. <i>Power Transmission Facilities.</i> None included.	<i>Power Generation and Substation Facilities.</i> None included. <i>Power Transmission Facilities.</i> Same as Alternative 1.

Table S-2 Comparison of Impacts: Normal Operations.

EIS Section	Impact Topic	Proposed Action (Alternative 1) Combustion Turbine (CT) + Overhead Transmission Circuit + Possible Second CT	Alternative 2 Transmission Circuit + Single CT	Alternative 3 Single CT Only	Alternative 4 Additional Transmission Circuit Only
4.6	Btota	<u>Power Generation and Substation Facilities.</u> No operational impacts. <u>Power Transmission Facilities.</u> No operational impacts.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> None included.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> None included.
4.7	Noise	<u>Power Generation and Substation Facilities.</u> Noise levels have the potential to exceed 70 dBA along both the north and future south boundary lines, in part because noise emitted by neighbors already exceeds that level. The adjoining land areas where the noise levels could exceed 70 dBA are not considered to be noise sensitive, or areas where noise levels of 70 to 75 dBA would interfere with current activities. <u>Power Transmission Facilities.</u> No impacts once operational.	<u>Power Generation and Substation Facilities.</u> For a single CT, it was concluded that noise levels from the generating station could exceed 70 dBA along the future south boundary line, an area where this is already the case. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 2. <u>Power Transmission Facilities.</u> None included.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.
4.8	Archaeological, Historic, and Cultural Resources	<u>Power Generation and Substation Facilities.</u> No impacts once operational. <u>Power Transmission Facilities.</u> No impacts once operational.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 2. <u>Power Transmission Facilities.</u> None included.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 1. <u>Power Transmission Facilities.</u> None included.
4.9	Visual Resources	<u>Power Generation and Substation Facilities.</u> The proposed generating facilities at the BPIF are set back approximately 600 feet from Hamia Street, limiting close up views. Moreover, they would all be behind perimeter fencing and located in an industrialized zone. The facilities would largely blend in to the surrounding industrial landscape when seen from near and far vantage points. Improvements to the substations are minor and would not significantly impact the appearance of the existing facilities. <u>Power Transmission Facilities.</u> The transmission line would run through a heavy industrial facility, across Malakole Road, and through a large extent of vacant land that is planned for eventual commercial and industrial development. A few hundred feet of the route passes the eastern end of a future golf course. With the possible exception of the golf course crossing, none of these uses are particularly sensitive to the visual and aesthetic effects that would result from an additional transmission line passing nearby. Once the area is developed as planned, the transmission lines would be barely visible from far vantage points.	<u>Power Generation and Substation Facilities.</u> The effect would be nearly the same Alternative 1, with the most notable difference being the elimination of one of the two tall exhaust stacks and slightly less equipment at the site. <u>Power Transmission Facilities.</u> Same as Alternative 1.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 2. <u>Power Transmission Facilities.</u> None included.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.
4.10	Transportation Facilities	<u>Power Generation and Substation Facilities.</u> Operation of the generating facilities would contribute little traffic to the roadways in and around Campbell Industrial Park. Only 5 employees maximum would be on site at one time, in addition to the occasional maintenance worker, inspector, or visitor. None of these (with the possible exception of some maintenance vehicles) would consist of oversize vehicles. Fuel would arrive via pipeline. Preliminary analyses indicate that the 210-foot exhaust stacks do not constitute a hazard to air navigation. <u>Power Transmission Facilities.</u> No impacts once operational.	<u>Power Generation and Substation Facilities.</u> Largely the same as Alternative 1. Maintenance and overhaul-related traffic would be slightly lower and/or present during 2-4 fewer weeks each year. However, the difference is so small it would not affect the level-of-service on area roadways. <u>Power Transmission Facilities.</u> No impacts once operational.	<u>Power Generation and Substation Facilities.</u> Same as Alternative 2. <u>Power Transmission Facilities.</u> None included.	<u>Power Generation and Substation Facilities.</u> None included. <u>Power Transmission Facilities.</u> Same as Alternative 1.

Table S-2 Comparison of Impacts: Normal Operations.

EIS Section	Impact Topic	Proposed Action (Alternative 1) Combustion Turbine (CT) + Overhead Transmission Circuit + Possible Second CT	Alternative 2 Transmission Circuit + Single CT	Alternative 3 Single CT Only	Alternative 4 Additional Transmission Circuit Only
4.11	Public Infrastructure & Services	<p><i>Power Generation and Substation Facilities.</i> Potable water use from the existing BWS system is less than 1,000 gallons per day. The facility will treat and dispose of its own wastewater. The water line that HECO will install to its Kahe Generating Station will allow it to substitute recycled water from the Honolulu Wastewater Treatment Plant for potable water that is now used for process purposes at Kahe.</p> <p>The facility would have its own security system. It would not place substantial additional demands upon existing police service. Similarly, the facility includes fire water storage and other fire protection facilities required by all applicable ordinances and regulations, thus reducing the potential for additional burden on the Fire Department. It would not place additional demands on area schools, recreational facilities, or health care facilities.</p> <p><i>Power Transmission Facilities.</i> No impacts once operational.</p>	<p><i>Power Generation and Substation Facilities.</i> Same as Alternative 1.</p> <p><i>Power Transmission Facilities.</i> Same as Alternative 1.</p>	<p><i>Power Generation and Substation Facilities.</i> Same as Alternative 2.</p> <p><i>Power Transmission Facilities.</i> None included.</p>	<p><i>Power Generation and Substation Facilities.</i> Same as Alternative 1.</p> <p><i>Power Transmission Facilities.</i> None included.</p>
4.12	Land Use & Socioeconomic Resources	<p><i>Power Generation and Substation Facilities.</i> The proposed generating and substation facilities are located in the midst of an area devoted to heavy industrial uses. They are consistent with the existing zoning, and their construction and operation will not alter the existing land use pattern. The facility would utilize the 44-foot right of way and the parcel between AES Substation and Hanua Street, both of which are currently vacant.</p> <p>A total of 12 workers will man the generating station over a typical 24 hour period. HECO estimates that most of these would be drawn from its existing pool of employees, and thus operation will not generate significant employment. Ongoing expenditures for materials and outside services will also occur. These benefits are relatively small compared to the economic and social costs associated with <u>not</u> providing needed generating capacity.</p> <p><i>Power Transmission Facilities.</i> No impacts once operational.</p>	<p><i>Power Generation and Substation Facilities.</i> Same as for Alternative 1, because the generating station would require the same number of employees with one CT as with two.</p> <p><i>Power Transmission Facilities.</i> Same as Alternative 1.</p>	<p><i>Power Generation and Substation Facilities.</i> Same as Alternative 2.</p> <p><i>Power Transmission Facilities.</i> None included.</p>	<p><i>Power Generation and Substation Facilities.</i> None included.</p> <p><i>Power Transmission Facilities.</i> Same as Alternative 1.</p>
4.13	Electric & Magnetic Fields (EMF)	<p><i>Power Generation and Substation Facilities.</i> EMF from these facilities are very low.</p> <p><i>Power Transmission Facilities.</i> EMF from these facilities would be far below levels at which adverse effects can occur.</p>	<p><i>Power Generation and Substation Facilities.</i> Same as Alternative 1.</p> <p><i>Power Transmission Facilities.</i> Same as Alternative 1.</p>	<p><i>Power Generation and Substation Facilities.</i> Same as Alternative 2.</p> <p><i>Power Transmission Facilities.</i> None included.</p>	<p><i>Power Generation and Substation Facilities.</i> None included.</p> <p><i>Power Transmission Facilities.</i> Same as Alternative 1.</p>

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