United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

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In Reply Refer To:
12200-2012-CPA-0087, 2012-TA-0417,
ER 12-0574

Mr. Jim Spaeth
U.S. Department of Energy
300 Ala Moana Boulevard
P.O.Box 50247
Honolulu, Hawaii 96850-0247

Subject: Amended Notice of Intent to Prepare the Hawaii Clean Energy Programmatic Environmental Impact Statement

Dear Mr. Spaeth:

The U.S. Fish and Wildlife Service (Service) has reviewed the above referenced notice for the Hawaii Clean Energy Programmatic Environmental Impact Statement (PEIS), as published in the Federal Register (FR Vol. 77, No. 155, Pages 47828-47831) on August 10, 2012. The proposed action is sponsored by the Department of Energy (DOE). The purpose and need for agency action is to support the State of Hawaii's efforts to meet clean energy goals by 2030. This letter has been prepared under the authority of and in accordance with provisions of the National Environmental Policy Act of 1969 [42 U.S.C. 4321 *et seq.*; 83 Stat. 401], as amended (NEPA); the Fish and Wildlife Coordination Act of 1934 [16 U.S.C. 661 *et seq.*; 48 Stat. 401], as amended (FWCA); the National Invasive Species Act of 1996 [P.L.104-332], as amended (NISA); the Endangered Species Act of 1973 [16 U.S.C. 1531 *et seq.*; 87 Stat. 884], as amended (ESA); and other authorities mandating Service concern for environmental values. Based on these authorities, we offer the following comments for your consideration.

The proposed action involves the development of guidance that may be used to plan future projects that address the State of Hawaii's energy efficiency and renewable energy goals. The DOE plans to prepare a PEIS to evaluate potential environmental impacts of clean energy activities and technologies that include: energy efficiency (*e.g.*, buildings, sea water cooling, and solar water heating), distributed renewables (*e.g.*, biomass, hydroelectric, and wind for small systems), utility-scale renewables (*e.g.*, ocean energy, ocean thermal conversion, solar arrays,

solar thermal systems, wind for land-based or offshore), and electrical transmission and distribution (*e.g.*, island transmission, land/sea cable transition sites, undersea cable corridors, smart grid and energy storage).

GENERAL COMMENTS

The Service supports the development of renewable resources that are emission free and that increase energy security, while mitigating impacts to trust resources. However, energy development projects have the potential to adversely impact fish and wildlife resources and habitats of special interest to the Service. Our goal is to restore and protect Federal trust resources supported by the conditions present within the proposed project area. The Service will be seeking information about the chemical, physical, and biological relationships, processes, and linkages necessary to enhance and maintain a healthy, biologically diverse ecosystem in concert with the proposed construction, operation, and maintenance of this proposed action.

We recommend the applicants coordinate with us early in the planning process as we can assist within minimization and avoidance measures to reduce impacts to trust resources. We also recommend coordination with the National Oceanic Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), the U.S. Environmental Protection Agency (USEPA), the Hawaii Department of Lands and Natural Resources (DLNR), The Department of Health and the Office of Hawaiian Affairs (OHA). These agencies can provide guidance in developing the project in a manner that seeks to preserve, protect, and enhance fish and wildlife resources and other environmental values in the project area.

Regardless of the island(s) on which the renewable energy project will either generate or transmit the energy to via land and under-sea transmission lines, impacts of the project itself including transmission lines on terrestrial and marine resources need to be evaluated over the broader project area. The Service will provide technical assistance regarding necessary biological surveys and to help evaluate potential project impacts, including cumulative impacts that may be affect fish and wildlife resources over time.

Impacts on trust resources and their habitats from actions associated with preliminary site feasibility studies also need to be evaluated. A variety of project construction-related activities may negatively impact or disturb native or federally listed threatened and endangered species, such as field studies, vegetative clearing, borings, road construction or widening, site grading, exploratory work, maintenance, drilling, dredging, filling, mooring blocks or to other structures that may be placed in the aquatic environment. Construction-related activities such as these, and any other, need to be considered in the study, planning, environmental review, and implementation of this project. Therefore, we recommend that individual project proponents are recommended to coordinate with the Service prior to undertaking any scientific study, investigation, or other work required by any Federal authorizing, permitting or funding entity.

Impacts on trust resources and habitats that will need to be evaluated for construction and operation of hydroelectric or pumped storage facilities include: stream channelization; hardening embankments; reservoirs/dams; berms; conduits; powerhouses and substations; access tunnels; breakwaters; intake structures with anti-fouling protection; stream water withdrawals or diversions, seawater withdrawal; water discharges, transmission lines; access roads; and long-term operation of the facility. Analysis of impacts also needs to include inseparable components of the overall project that may include supplementary wind turbines and undersea cables (impacts within coral reefs or nearshore marine and coastal habitats).

Also, we request the DOE compare and contrast the relative levels of environmental impact of each clean energy category with each other. For instance, we recommend comparing the environmental impacts of utility scale wind projects with the installation of distributed solar on existing buildings. The comparative environmental impacts of these various technologies should be addressed in the PEIS.

INVASIVE SPECIES

U.S. Executive Order 13112 (February 3, 1999) defines an "invasive species" as an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. It further states the following:

"Each federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law"...."not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by the invasive species; and that all feasible and prudent measures to minimize the risk of harm will be taken in conjunction with the actions."

The proposed actions dealing with energy efficiencies and renewables as well as alternative fuels, transmission and distribution, if not properly mitigated, may pose an increased risk for the introduction and establishment of invasive species into geographical areas that could negatively impact federally listed species and other trust resources. This broad directive has implications for non-Federal agencies as well, in particular to those working in partnership with Federal agencies. Therefore, the Service suggests that the PEIS assess biosecurity risks associated with the movement of equipment and construction materials originating from outside a particular geographical area that would be used throughout the construction phase. This assessment should include future and cumulative impacts relating to both listed species and invasive species associated with the proposed action. As a means to implement feasible and prudent measures to minimize risk of harm, the application of Hazard Analysis and Critical Control planning is a way to manage the risk of moving non-targets including invasive species.

Biological invasions, both from organisms already present and those that may arrive present the greatest threat to diverse native ecosystems in the Pacific region. The intentional and inadvertent movement of plants and plant parts, animals, and other organisms, including aquatic and marine species, beyond their natural range is rising due to increased transport, trade and travel. With 90 percent of Hawaii's consumer goods imported into the state, approximately 20 new insects become established in Hawaii annually. Fortunately, most species are not problematic; however, some species have become established and proliferated threatening biodiversity, natural resources, food security, economic development, human health, and ecosystem services.

With the increased interest in a renewable solution to the declining availability of fossil fuels, the promotion of biofuel crops have continued to grow worldwide. In the U.S. a greater proportion of plant-based biofuels are being integrated as energy renewables, but certain plant species being proposed for biofuel production are invasive species or are likely to escape cultivation and become invasive. In Australia, as a means to mitigate invasive species impacts associated with intentional plant introductions, a weed risk assessment system was developed and used to screen for potentially invasive plant species. Species are scored according to a set of 49 criteria, with those falling above or below a certain threshold designated as high or low risk, and accepted or rejected for importation.

A similar weed risk assessment has been adapted in the State of Hawaii and other Pacific regions. The Service suggests that plant species proposed for biofuel use should be evaluated by utilizing the Hawaii Pacific Weed Risk Assessment to determine invasive tendencies prior to planting (https://sites.google.com/site/weedriskassessment/home). In addition, to minimize the risk of biofuel crop escape into the surrounding environment, the following recommendations identified by the Invasive Species Advisory Committee should be used:

1. Review/Strengthen Existing Authorities – Identify Federal authorities relevant to biofuels; determine their likely influence on biofuel invasiveness; identify gaps and inconsistencies amongst Federal Departments or Agencies; and develop policies and programs to minimize risk.

2. Reducing Escape Risks – Invasive potential of each candidate biofuel crop needs to be evaluated in the context of each region; promote species not currently invasive or are unlikely in the target region; select low potential for escape, establishment and negative impact; and if appropriate, implement mitigation strategies to minimize escapes and other risks.

3. Determine the Most Appropriate Areas for Cultivation – Biofuel crops propagated in containable systems and unable to survive outside of cultivation; identify the most appropriate sites for cultivation within landscapes; and site selection minimizes the potential escape to sensitive areas and the loss of wildlife habitat.

4. Identify Plant Traits that Contribute to or Avoid Invasiveness – Incorporate desirable traits into biofuel varieties to minimize their potential for invasiveness; and use research information, agronomic models and risk analyses to guide breeding, genetic engineering and variety selection programs.

5. Prevent Dispersal – Develop and coordinate dispersal mitigation protocols prior to cultivation; implement a comprehensive plan appropriate to the specific crop and cultivation period; use of sterile cultivars; species not likely to genetically mix, harvesting prior to seed maturity; cleaning equipment; and minimize propagule dispersal throughout the biofuel production cycle.

6. Establish Eradication Protocols for Rotational Systems or Abandoned Populations – Develop multiple year eradication protocols for rapid removal if dispersal occurs into surrounding areas.

7. Develop and Implement Early Detection and Rapid Response (EDRR) Plans and Rapid Response Funding – Develop EDRR plans that cover multiple years to eliminate or prevent establishment and spread of escaped invasive populations; and a flexible funding source to support efforts.

8. Minimize Harvest Disturbance – Minimize soil disturbance resulting from biofuel harvest by rapidly replanting, using cover crops, or employing other methods the potential for future invasion of non-native plants.

9. Engage Stakeholders – Identify and employ cooperative networks to reduce the risk of biological invasion via the biofuels pathway.

ENDANGERED SPECIES ACT

While the Service supports the development of alternative energy projects, there is the potential to directly and indirectly affect federally listed species and designated critical habitat during the development or implementation of these projects. Therefore, we recommend all aspects of project design, construction, operation, and maintenance should be evaluated and addressed on a project-specific basis for their impacts to listed resources. The Service can assist by giving technical assistance throughout the project development and implementation to minimize and reduce impacts to listed species and designated critical habitat.

If a project is funded, authorized, or permitted by a Federal agency and it may affect listed species or critical habitat, then the agency is required to consult with the Service pursuant to section 7(a)(2) of the ESA. It is the Federal agency's responsibility to determine if the proposed project "may affect" federally listed species or designated critical habitat. Projects that are determined to have "no effect" on federally listed species and critical habitat do not require

consultation with the Service. A "may affect, not likely to adversely affect" determination is appropriate when effects to federally listed species are expected to be discountable (*i.e.*, unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service.

If the proposed project will have adverse impacts to listed species or critical habitat, a "may affect, likely to adversely affect" determination is appropriate. The Service and the action agency will work together to minimize, avoid and offset the adverse effects to listed species or critical habitat. The culmination of this effort is a biological opinion prepared by the Service that analyzes the effects of the proposed action and exempts any take that may result. The lead Federal agency may designate authority to a non-Federal representative to be involved in the informal consultation process only. The action agency must designate the non-Federal representative in writing; however, the ultimate responsibility for section 7 obligations remains with the action agency.

If no Federal agency is involved with the project, and implementation of the project could result in take of a listed animal species, the project proponent should apply for an incidental take permit under section 10(a)(l)(B) of the ESA. Issuance of a permit requires the applicant to submit to the Service an acceptable habitat conservation plan (HCP) that describes the project, the measures that will be implemented to minimize impacts to listed species, the amount of take likely to occur, the mitigation measures that will be implemented to offset impacts, and a monitoring and adaptive management program that ensures the minimization and mitigation measures are effective. The HCP process will also require NEPA and section 7 analysis and review.

The Service can provide technical assistance to help the action agency or non-Federal applicant develop measures and monitoring protocols to decrease the likelihood of adverse effects to listed species or critical habitat. The Service's assistance often includes providing recommendations for preferred site selection and project timing; providing protocols for preliminary surveys, monitoring, and biological studies; and providing guidance regarding development of measures to offset adverse project impacts. Many proposed project sites will require biological surveys. These surveys can take several years, or may need to occur during specific times of the year. Therefore, we recommend that the project proponent begin collecting data on species presence in proposed project areas early in the planning process to ensure adequate time to conduct the surveys prior to final review of the project. This is especially critical for species that may be difficult to detect.

Minimization and Avoidance Measures

Placement of project structures, access roads, power distribution lines, and associated infrastructure should be planned to minimize soil disturbance, clearing of native vegetation, critical habitat, habitats occupied by listed species, and other native habitats. Measures should be taken to ensure invasive species are not spread to areas where they may impact listed species

or critical habitat. Any increased threat of wildfire to listed species, their habitat, or critical habitat that may result from the project should be minimized and project plans should include measures to ensure burned areas are restored and impacts of fire to the species are offset. Noise from construction or operation that may adversely affect listed vertebrates should be avoided, especially during breeding seasons.

Below, we describe some Best Management Practices and avoidance recommendations for several species that may be affected by alternative energy projects. This information is offered to assist with the writing of the Draft PEIS. Please note these recommendations do not address all listed species in Hawaii and may not include the full suite of measures we would recommend for any specific project. We recommend project proponents, early in the planning process, request a complete species list for their particular project area and request technical assistance from us so that we may help them incorporate the appropriate avoidance and conservation measures into their project.

Sea turtles

Any beach in the main Hawaiian Islands is potential nesting habitat for the endangered hawksbill turtle (*Eretmochelys imbricata*) and threatened green turtle (*Chelonia mydas)*, collectively referred to as sea turtles. Sea turtles are susceptible to artificial lighting that is visible from the beach, barriers on the beach, disturbance of the nest site by humans and predators. Sea turtles come ashore to nest on beaches from May through September, peaking in June and July. Optimal nesting habitat is a dark beach free of human and non-native animal disturbance and free of barriers that restrict their movement. Lighting can disorient turtles away from the ocean. We recommend installation of shielded lighting around all shoreline development to reduce the direct and ambient lighting of beach habitats within and adjacent to the project site. Light shields should be completely opaque, sufficiently large, and positioned so that light from the shielded source does not reach the beach. Turtle nests and hatchlings are also susceptible to human disturbance and predation by feral mammals such as small Indian mongoose (*Herpestes auropunctatus*), cats (*Felis catus*), dogs (*Canis familiaris*), and pigs (*Sus crofa*). Physical disturbance of beach material should be minimized to reduce the likelihood of adverse impact to a sea turtle nest. Animal-proof waste containers should be used to minimize attraction of non-native predators to beach areas. Avoidance and minimization measures, and measures to offset adverse project impacts to sea turtles should be developed based on the anticipated level of take, the type of take, and conservation needs of the species.

The Service addresses sea turtles and their use of terrestrial habitats (beaches where nesting and/or basking is known to occur); whereas the National Marine Fisheries Service (NMFS) has oversight of sea turtles in the near-shore, off-shore and open ocean habitats. Therefore, we review proposed projects for potential impacts to turtles in their terrestrial habitats only. We recommend that you consult with NMFS regarding the potential impacts from proposed projects to sea turtles and their use near-shore, off-shore and open ocean habitats.

Hawaiian hoary bat

The endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) roosts on all main Hawaiian Islands in both exotic and native woody vegetation and, while foraging, will leave young unattended in "nursery" trees and shrubs. If trees or shrubs suitable for bat roosting are cleared during the breeding season, there is a risk that young bats could inadvertently be harmed or killed. To minimize impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Site clearing should be timed to avoid disturbance to breeding Hawaiian hoary bats.

If a project has the potential to harass, harm, or kill a Hawaiian hoary bat, acoustic monitoring devises (*i.e.*, Anabats) should be used to determine the bat's seasonal presence and distribution throughout the proposed project area. The exact survey requirements will be project specific and depend on the type of action and the potential adverse effect to the Hawaiian hoary bat. Sometimes, continuous surveys over a period of one or more years are recommended. Survey results should be used to develop avoidance and minimization measures and to determine the potential adverse project impacts to the Hawaiian hoary bat from the proposed project. The Service can help the project proponents develop measures such as on- and off-site bat habitat restoration and predator control to ensure potential adverse project impacts to the Hawaiian hoary bat are offset.

Blackburn's sphinx moth

Adult Blackburn's sphinx moths (*Manduca blackburni*) feed on nectar from native plants, including beach morning glory (*Ipomoea pescaprae*), iliee (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*). Blackburn's sphinx moth larvae feed upon the native aiea (*Nothocestrum sp.*), which is found in dry to moist forests at elevations ranging from 1,500 to 5,000 feet, but also the non-native tree tobacco (*Nicotiana glauca*), which occupies disturbed areas such as open fields and roadway margins. If a project is planned for an area within the historical range of the Blackburn's sphinx moth in Maui Nui or the Island of Hawaii (shown in Figures 8 through 12 of the Recovery Plan for Blackburn's sphinx moth (Service 2005, pp 21-25)) the following guidelines are examples of conservation measures that we may recommend for a specific project.

Blackburn's sphinx moth pupae may occupy the soil in the vicinity of larval host plants for a year or longer; therefore, close coordination with the Service, well in advance of ground-breaking, should be sought when a project has the potential to disturb habitat occupied by Blackburn's sphinx moth host plants. We recommend that a qualified biologist survey all project areas where disturbance of the ground or alteration of the vegetation may occur in addition to the area adjacent to these project areas for the presence native and non-native Blackburn's sphinx moth host plants. The locations and densities of the host plants should be mapped and the

biologist should document the size and condition of the host plants, the presence of Blackburn's sphinx moth larvae, and any signs of larval feeding damage on plant leaves. We recommend these surveys for the Blackburn's sphinx moth and its potential host plants be conducted during the wettest portion of the year (usually November-April), approximately four to eight weeks following a significant rainfall event. In some cases, multiple surveys may be recommended.

Because adult Blackburn's sphinx moths may fly distances greater than 6 miles (10 kilometers) and range over large areas of the landscape, removal of Blackburn's sphinx moth host plants has the potential to adversely affect the moths. Projects should be sited to minimize impacts to the Blackburn's sphinx moth's native habitat. Loss of native and degraded Blackburn's sphinx moth habitat will need to be offset with implementation of projects to restore and conserve Blackburn's sphinx moth habitat on- or off-site. The Service can help the applicants identify the appropriate amount and location of offsetting restoration during project development. We recommend project proponents contact us early in their planning process so that we may provide this technical assistance.

Hawaiian seabirds

Seabirds, including the threatened Newell's shearwater (*Puffinus auricularis newelli*), endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), and the candidate band-rumped storm-petrel (*Oceanodroma castro*), fly at night and are attracted to artificially-lighted areas, which can result in disorientation and subsequent fallout due to exhaustion. Once grounded, they are vulnerable to predators and may be struck by vehicles along roadways. Seabirds are also susceptible to collision with objects that protrude above the vegetation layer or ocean surface, such as utility lines, guy-wires, communication towers and wind turbines. The risk of bird strike may be increased if at-sea installations attract fish the seabirds prey upon. Projects should not be constructed within seabird breeding colonies. To reduce potential impacts to seabirds, the following measures are examples of what we would recommend be incorporated into specific project plans:

- To minimize light attraction of seabirds, construction activities should only occur during daylight hours. Any increase in the use of nighttime lighting, particularly during peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality. If lights cannot be eliminated due to safety or security concerns, then they should be positioned low to the ground, be motion-triggered, and be shielded or full cut-off. Effective light shields should be completely opaque, sufficiently large, and positioned so that the bulb is only visible from below bulb-height.

If a project entails development of a structure that will protrude above the vegetation layer or ocean surface, the following guidelines should be followed to assess the bird strike risk associated with the action:

- Seabird passage rates should be determined to assess project risk to seabirds and to develop the project to minimize potential bird strike risk. If requested, the Service can work with the project proponent to determine if radar surveys will need to be conducted. Development of aerial structures should be minimized, particularly where seabird passage rates are high. However, bird strike risk can be minimized by situating structures in areas with lower bird passage rates, increasing the visibility of structures by painting them white, attaching visibility marking, and by slowing the speed or curtailing the movement of moving parts.

- If seabird radar surveys are recommended, they should be conducted at potential project sites three times per year in ten day consecutive blocks: once during the seabird fledging season (October); once during the seabird prospecting season (mid-to-late April); and once during the peak seabird season (June), prior to project implementation. Radar station(s) should be situated to maximize coverage of the potential project site (most sites require several stations to cover the property). At a minimum, the radar surveys should be conducted for three hours beginning at sunset and during the three hour period prior to sunrise. We recommend radar data be collected for two years to capture inter-annual viability. If a project is likely to result in bird strike impacts to one or more listed seabird species, the project proponent must develop a plan to ensure anticipated take is offset. The Service can provide technical assistance to project proponents to develop these plans.

Hawaiian waterbirds

The endangered Hawaiian coot (*Fulicia alai*), Hawaiian moorhen (*Gallinula chloropus sandvicenis*), and Hawaiian duck (*Anas wyvilliana*) (collectively referred to as waterbirds), may occur within proposed project areas. Waterbirds may also strike vertical project-related structures that are installed in waterbird flight paths.

To minimize potential adverse impacts to waterbirds, projects should not be situated in or near wetlands. When projects are located near wetlands, an assessment of potential project impacts to waterbirds should be conducted. Point count surveys should be conducted at the proposed project site; the number of point count surveys required will depend on the scope of the proposed project. Surveys should be conducted prior to project implementation in all wetland habitats within and adjacent to a potential project site. If project structures will protrude above the vegetation, the risk of bird strike should be assessed.

If waterbirds or their habitats are likely to be adversely affected by a project, the Service recommends the project proponent develop plans to ensure anticipated take and habitat loss are offset. Conservation measures may include protecting waterbirds from predator impacts for the duration of project implementation and conducting habitat restoration to conserve waterbird habitat in perpetuity. In addition, control of cat, mongoose, rat (*Rattus spp*), bullfrog (*Rana catesbeiana*), and other predators in areas used by waterbirds increases the survival and

reproductive success of the waterbirds. The Service can provide technical assistance to project proponents to develop these plans.

Hawaiian goose

The endangered Hawaiian goose (*Branta sandvicensis*; nene) may be present within proposed project area and these birds may traverse project sites. Surveys for the Hawaiian goose will need to be conducted at proposed project sites. The type and length of surveys required will depend on the scope of the proposed project. If project structures will protrude above the vegetation, the risk of bird strike should be assessed.

To avoid potential adverse impacts to breeding geese, we recommend avoiding work during the Hawaiian goose breeding season, which varies locally. If the Hawaiian goose or its habitat is likely to be adversely affected by a project, the Service recommends the project proponent develop plans to ensure anticipated take and habitat loss are offset. Conservation measures may include, but are not necessarily limited to, protecting breeding Hawaiian geese from predator impacts for the duration of project implementation and conducting habitat restoration to conserve goose habitat.

Hawaiian hawk

The endangered Hawaiian hawk (*Buteo solitarius*; io) is widely distributed on the island of Hawaii and is locally common on the slopes of Mauna Loa, on both the windward and Kona coasts, and to a lesser extent on Mauna Kea. Hawaiian hawks occur from low to high elevations. They nest in both exotic and native woody vegetation from March through September. The Hawaiian hawk may be present within proposed project areas or may traverse project sites. Surveys for the Hawaiian hawk should be conducted at proposed project sites. The type and length of surveys required will depend on the scope of the proposed project.

To avoid impacts to Hawaiian hawks we recommend avoiding brush and tree clearing during the breeding season (March through September). If a project proponent must clear the property during the Hawaiian hawk breeding season, we recommend conducting biological surveys to determine if nests are present. The Service can provide guidance regarding survey methodology. If project structures will protrude above the vegetation, the risk of bird strike should be assessed. If adverse impacts to the Hawaiian hawk are anticipated from the proposed project, the project should incorporate measures to offset such impacts.

Habitat Occupied by Listed Plants

A qualified botanist should conduct botanical surveys prior to project implementation to document any listed plant species in the proposed development area. Botanical surveys should be conducted during the wettest part of the year when target species may be more prevalent. Projects should be situated to minimize disturbance to listed plants and habitat suitable for listed

plants. Unavoidable permanent impacts to plant habitat should be offset by restoring and conserving, in perpetuity, habitat to improve the recovery potential for the species impacted by the proposed project. Unavoidable impacts to listed plants can be offset by propagating the listed plants and common native plants and outplanting them to areas that are protected from ungulate browsing, wildfire, competition from invasive species, and other disturbances.

Critical Habitat

The Service recommends adverse permanent impacts to critical habitat be avoided. Where critical habitat is temporarily impacted, measures to restore and conserve temporarily disturbed areas should be incorporated into project plans. Where permanent impacts to critical habitat are unavoidable, habitat loss should be offset elsewhere within the critical habitat unit.

Use of Native Plants

Hawaii's native ecosystems are heavily impacted by exotic invasive plants. Whenever possible we recommend using native plants for landscaping purposes. If native plants do not meet the landscaping objectives, we recommend choosing species that are thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (http://www.hear.org/Pier/), Hawaii-Pacific Weed Risk Assessment (http://www.botany.hawaii.edu/faculty/daehler/wra/full_table.asp) and Global Compendium of Weeds (www.hear.org/gcw).

FISH AND WILDLIFE COORDINATION ACT (FWCA)

Consultation Trigger

The goal of the FWCA is to provide that wildlife conservation shall receive equal consideration and be coordinated with other features of water resource development projects. Whenever the waters of any stream or other body of water are modified for any purpose by any department or agency of the United States, such department or agency shall first consult with the Service and the head of the State conservation agency (which in this case is the State of Hawaii's Department of Land and Natural Resources or DLNR), and NMFS as necessary. Consultation requires timely notification to the Service and the State of Hawaii DLNR concerning the proposed energy project. The objective of consultation is to conserve wildlife by preventing loss and damage to fish and wildlife resources while providing for development and improvement.

Marine and Aquatic Habitats

Important fish and wildlife resources occur throughout the proposed project areas, including the marine and aquatic environments. We recommend that the PEIS analyze the potential for clean energy activities and technologies development-related losses of marine and aquatic ecological

functions. The Service recommends that particular attention be given in the PEIS concerning construction and operational impacts to coral reefs, fisheries, non-coral invertebrates, rare and listed waterbirds and native marine and aquatic species and habitats, including wetlands, streams and rivers. The PEIS should discuss the direct, indirect and cumulative effects of these impacts over time and propose and evaluate potential measures to mitigate planned impacts.

The PEIS should include an analysis of potential impacts to coral reef-related ecological functions in terms of degrading species groups and habitats, such as corals, other reef macro-invertebrates, coralline and macro-algae, sand flats and associated infauna, seagrasses, and rare and native marine species. We are concerned that the proposed development-related activities, such as the placement of undersea energy transmission cables designed to distribute power between the main Hawaiian Islands, could result in the degradation or loss of coral reef resources, including live coral colonies and other marine animals and plants that rely upon coral habitat for shelter, forage and reproduction. We recommend that shallow and deep water coral reef habitats (*e.g.*, depth range from 0-150 meters or 0-500 feet) that may be affected planned DOE-related activities are clearly identified and analyzed in the PEIS. In addition to our concerns for shallow reef habitats, we would like to emphasize the need to identify and evaluate potential project-related impacts to deeper water coral habitats that may affect Pink (*Corallium* spp) and Gold (*Geradia* spp) corals.

Also, we are concerned that the suspension of fine sediments from construction-related activities, such as dredging, filling or upland construction, may settle on and smother established coral colonies, algae meadows, or sessile organisms that occur within the marine environment. Suspended sediments may reduce coral survival by decreasing levels of available sun light necessary for photosynthesis and elevating metabolic energy necessary to remove sediment from the coral's exoskeleton (Hubbard and Pocock 1972, Dodge and Vaisnys 1977, Bak 1978, Kendall et. al., 1985, Meesters *et. al.*,1992, Hubbard and Scaturo, 1985, Tomascik and Sanders 1985). Also, altered water quality has been demonstrated to have negative impacts on coral fertilization (Richmond 1993, Richmond,1995). Elevated turbidity and sediments can reduce adult coral fecundity (Kojis and Quinn,1984), and interrupt egg-sperm interactions (Jokiel,1985). Increased sedimentation has also been observed to negatively impact coral settlement and juvenile growth processes of corals (Hunte and Wittenberg,1992, and Telesnicki and Goldberg,1995). Therefore, we recommend these concerns be addressed in the PEIS.
We recommend that proposed development-related dredging, filling and construction operations be scheduled to avoid the spawning period for most corals. Also, future facilities and operations should be designed to avoid any unnecessary impacts to fish and wildlife resources and include measures to minimize those impacts. Unavoidable losses to fish and wildlife resources should be offset through an appropriately designed compensatory mitigation plan. We recommend that future pre-construction and post-construction assessments evaluate impacts to affected resources as well as an assessment of the effectiveness of each mitigation action that is implemented. We recommend that proposed mitigation measures be identified and justified in the PEIS in relation to offsetting anticipated impacts being analyzed.

CONTAMINANTS

We recommend that the PEIS fully disclose and evaluate all contaminants that the U.S. Department of Energy may include as part of the proposed action. Additionally, we recommend that a risk analysis be prepared to evaluate the exposure risk to the environment of clean energy use-related contaminants and the accidental release of contaminants into the environment, including plans to minimize the risk of exposure to resources. We recommend that the PEIS include a contaminants assessment as part of the section on environmental impacts of each, clean energy category and include proposed mitigation measures to offset the impacts to protected species (plants and animals) in Hawaii. If the use of insecticides, rodenticides, or herbicides could be included as part of the mitigation, the impacts of these pesticides to non-target species should also be evaluated. Finally, we recommend the PEIS discuss plans to remediate the accidental release of contaminants in the terrestrial and marine environments and exposure to fish and wildlife resources.

GLOBAL CLIMATE CHANGE

Emerging research on global climate change indicates that many coastal areas may be impacted in the future by sea level rise due to rising global temperatures and subsequent melting of polar ice caps and ice sheets. The affects of climate change may significantly impact DOE sponsored clean energy facilities, equipment or operations, resulting in further project modifications. Future clean energy facilities modifications in response to rising sea level may result in additional impacts to coral reef resources and other aquatic resources. Therefore, we recommend the PEIS discuss the potential impacts of climate change in relation to facility development and operations and discuss adaptive management strategies to protect clean energy facilities and adjacent coral reef resources from those impacts.

SUMMARY

The Service applauds the DOE's efforts to promote the development of renewable energy resources for the purpose of reducing emissions and increasing energy security in the State of Hawaii. We are willing to work with your agency to coordinate the development of such activities in a manner that will provide for the consideration of fish and wildlife resources during project development. We also suggest that future coordination occur as early on in the project planning phase as feasible to allow DOE to comply with requirements stated under the National Invasive Species Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act. We are also willing to provide the DOE with technical assistance as may be necessary to identify fish and wildlife resources, evaluate project alternatives and associated impacts and develop recommendations to conserve resources in coordination with the DOE and other federal and state resource agencies.

We appreciate the opportunity to comment on the referenced NOI. If you have any questions regarding invasive species please contact Dan Clark or Domingo Cravalho, for endangered species questions please contact Patrice Ashfield or Dawn Greenlee, or for fish and wildlife coordination questions please contact Dan Polhemus or Kevin Foster, by telephone at (808) 792-9400.

Sincerely,

for Loyal Mehrhoff
Field Supervisor

cc: DOI-OEPC, Oakland
ACOE-Honolulu District
NMFS-PIRO-Honolulu
USEPA-Region IX, San Francisco
USEPA-PICO, Honolulu
HDAR, Honolulu
HCWB, Honolulu
HCZMP, Honolulu

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