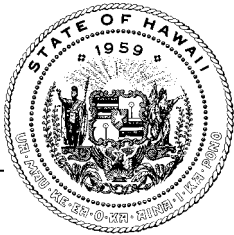


Bill 10 (2022) Testimony



HAWAII STATE ENERGY OFFICE STATE OF HAWAII

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Testimony of
SCOTT J. GLENN, Chief Energy Officer

before the
Committee on Zoning and Planning
CITY COUNCIL
CITY AND COUNTY OF HONOLULU
Thursday, August 25, 2022
9:00 A.M.

Comments on
BILL 10 (22), Proposed CD1
RELATING TO USE REGULATIONS.

The Hawai'i State Energy Office (HSEO) offers the following comments on Bill 10 (22), Proposed CD1, which amends and updates Chapter 21, Revised Ordinances of Honolulu 1990 (Land Use Ordinance or LUO) Article 5 Use Regulations.

HSEO's comments are guided by its statutory purpose under Hawai'i Revised Statutes (HRS) Section 196-71 and its mission to promote energy efficiency, renewable energy, and clean transportation to help achieve a resilient, clean energy, and carbon negative economy by 2045. The island of O'ahu achieved 26% electricity generation from renewable energy in 2021. The execution of the City and County of Honolulu's climate action policy to transition to 100% renewable energy and achieve net negative carbon emissions by 2045 will require replacing the remaining 74% of O'ahu's electricity with non-fossil sources over the next 23 years. Importantly, Hawai'i's renewable energy and energy independence goals must be achieved in ways that prioritize the health and well-being of Hawai'i's people.

The LUO is important as it will help plan and regulate O'ahu's future land use, including the siting of projects and compatible land uses. HSEO appreciates the work done to date by O'ahu's engaged citizens, the Council, the Department of Planning and Permitting, Hawaiian Electric, and other organizations. HSEO offers the following recommendations for the Council's consideration.

Establish a Setback of One Mile for Large Wind Energy Generation Facilities

Onshore wind is needed in some capacity for O'ahu to reach 100% renewable energy generation given O'ahu's limited land space and high electricity consumption; however, a sufficient setback distance must be in place for O'ahu communities to consider hosting large wind energy projects in their areas. HSEO believes a setback of one (1) mile from residences and communities in Country, Residential, Apartment, Apartment Mixed Use, and Resort Districts is appropriate.

For the Council's and public's consideration, Attachment 1 provides information on the three existing O'ahu wind energy projects. Attachment 2 provides maps of the existing wind turbines on O'ahu overlaid with various setbacks from the Country, Residential, Apartment, Apartment Mixed Use, and Resort Districts.¹

HSEO recommends clarifying the language in Proposed CD1 that setbacks for each district are clear and that setbacks apply to individual wind machines. HSEO offers the following language for large wind energy generation facilities to replace Sec. 21-5.60-6(c)(2)(B)(v) on Page 55:

In country, residential, apartment, apartment mixed use, and resort zoning districts large wind energy generation facilities must be set back from the property lines of any zoning lot a minimum of one (1) mile. In all other zoning districts, large wind energy generation facilities must be set back from the property lines of any zoning lot a minimum distance equal to the height of the individual wind energy generation facilities measured from the highest vertical extension of the wind machine. Height includes the height of the tower or its vertical support structure and the farthest vertical extension of the tower. Wind energy generation facilities refers to individual wind machines or turbines.

Clarify Medium Wind Machines Are Up to 99 Kilowatts

The Standards for medium wind energy generation facilities conflict with the definition of large wind energy generation facilities as both include 100 kilowatts. HSEO recommends keeping 100 kilowatts as the low threshold for large wind energy generation facilities. Small wind generation facilities in the Proposed CD1 would go up

¹ Maps were presented to the Zoning and Planning Committee October 2021.

to 15 kilowatts in the allowed districts (see HSEO comments below), medium wind generation facilities would be between 16 kilowatts and 99 kilowatts under this proposal. HSEO offers the following language to amend Sec. 21-5.60-6(b)(2)(C)(i) on Page 53:

A wind energy generation facility is considered a medium utility if it is located within the agricultural, country, industrial, or industrial mixed use zoning districts, and has a rated capacity of up to 99 [400] kilowatts.

Permit Small Wind Machines (Up to 15 Kilowatts) in the Agricultural District

The Proposed CD1 precludes small wind energy generation from occurring in the agricultural district, which precludes the use of small wind energy facilities to provide on-site power to local farming operations. HSEO suggests adding the agricultural zone to the districts in which small wind energy generation facilities are permitted as farms could benefit from small scale wind generation. HSEO offers the following language to amend Sec. 21-5.60-6 (a)(2)(C)(i) on Page 51:

A wind energy generation facility is considered a small utility if it is within the agricultural, residential, apartment, apartment mixed use, business, business mixed use, resort, or preservation zoning districts, and has a rated capacity of no more than 15 kilowatts.

Fix Clerical Error Regarding Medium Wind Generation Facilities' Distance to the Ground

There appears to be a clerical error that would allow for the blade tips of medium wind generation facilities to be closer than 15 feet from the ground, which could be a safety concern. HSEO believes the word "not" is missing and offers the following language to amend Sec. 21-5.60-6(b)(2)(C)(ii) on Page 53:

For any ground-mounted wind energy generation facility, the tower climbing apparatus and blade tips of the facility may not be lower than 15 feet from ground level, unless enclosed by a 6-foot high fence, and may not be within 7 feet of any roof or structure, unless the blades are completely enclosed by a protective screen or fence.

Remove Condition that Feedstocks for Biofuel Processing Facilities in the Preservation or Agricultural Zoning Districts Be Grown On-Site

For biofuel processing facilities in the preservation or agricultural districts, HSEO believes the condition that all energy feedstocks must be grown onsite is too restrictive and could limit the use of other preferable feedstocks sourced off-site. On O'ahu, it could be reasonable and possibly preferred in some cases for biofuel feedstocks to be located off-site from the facilities at which the feedstocks are converted or refined into biofuel. Some sites may not be able to accommodate both active crop cultivation and industrial biofuel processing for a variety of reasons. This requirement may also prohibit a biofuel processing facility from providing important services such as the conversion of invasive flora or plants, waste oils and greases (restaurants), or agricultural wastes into biofuels.

HSEO recommends deleting this requirement in Sec. 21-5.40-4(d)(2)(A) (Accessory agricultural uses; Biofuel processing facility) on Page 22:

~~(A) — All energy feedstocks must be grown onsite in the preservation or agricultural zoning districts.~~

Alternatively, should the Council decide to keep this condition in some manner HSEO offers the following language:

For facilities sited in agricultural or preservation districts, the dominant feedstock (e.g., more than 50%) must be grown onsite, with the exception of feedstocks sourced from waste (e.g., agricultural waste or restaurant waste) or invasive species.

HSEO appreciates the opportunity to testify on this important bill and looks forward to continued dialogue with all stakeholders.

Attachment 1

Information on Existing O'ahu Wind Energy Generation Facilities

- Collective contribution to O'ahu generation in 2021: 3.6%

Kahuku Wind

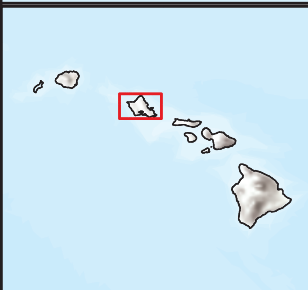
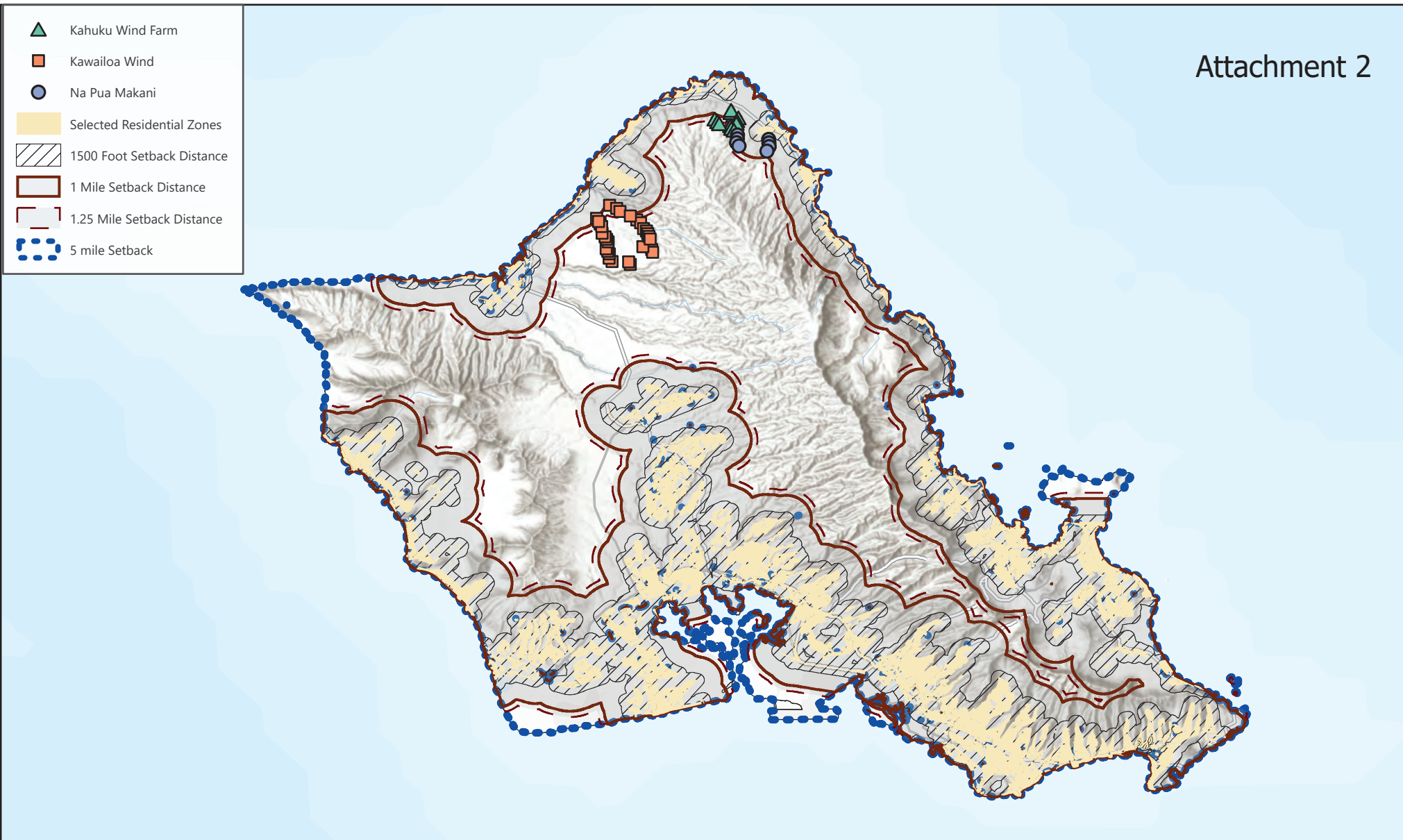
- In Service: 3/23/2011
- Project Size (megawatts): 30
- Power Purchase Agreement Duration (years): 20
- Power Purchase Agreement Expiration: 5/31/2031
- Number of Turbines: 12
- Size of Each Turbine (MW): 2.5
- Height of Each Turbine (feet): 453
- Average FY2021 PPA Price: \$0.2144/kWh

Kawailoa Wind

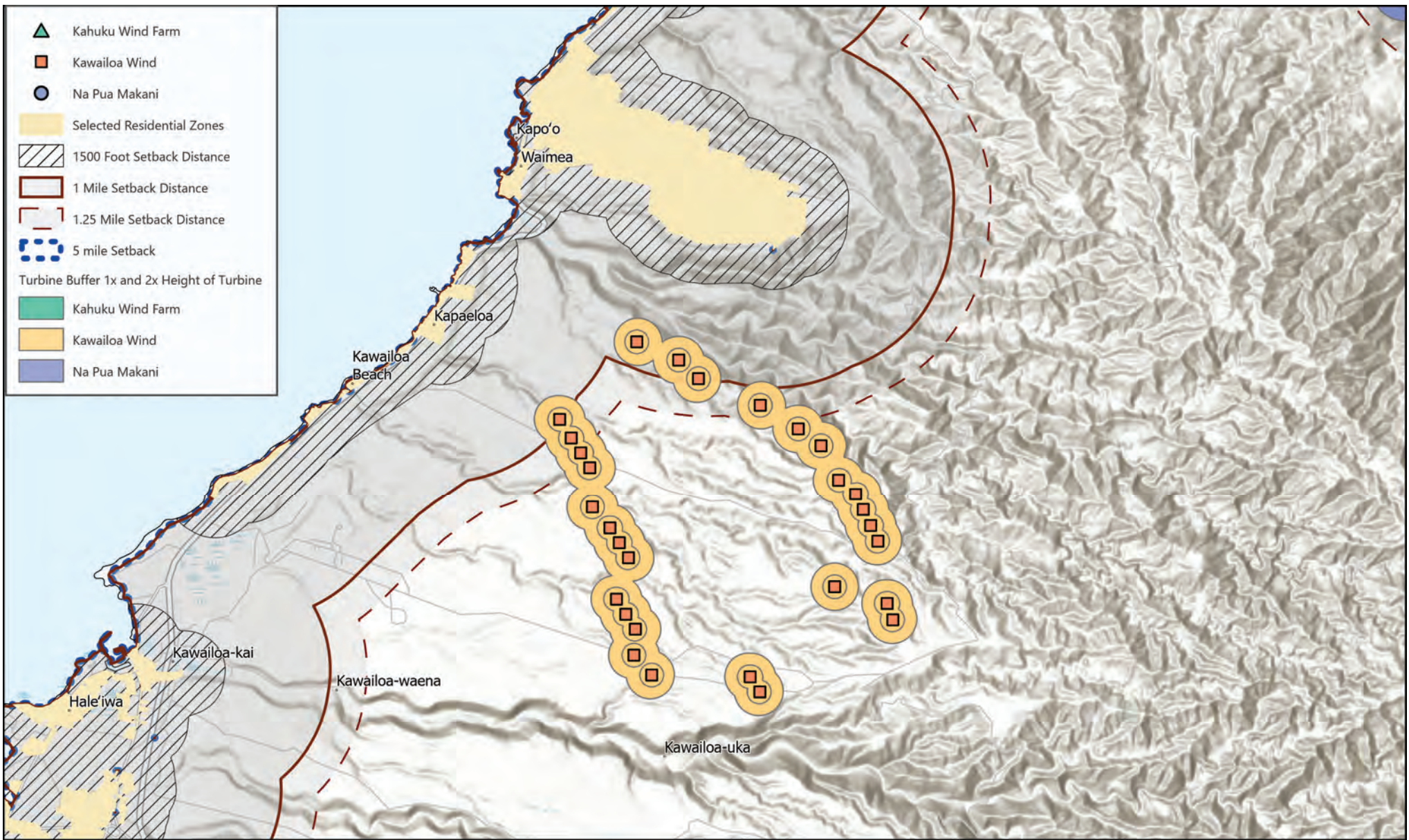
- In Service: 11/2/2012
- Project Size (megawatts): 69
- Power Purchase Agreement Duration (years): 20
- Power Purchase Agreement Expiration: 11/30/2032
- Number of Turbines: 30
- Size of Each Turbine (MW): 2.3
- Height of Each Turbine (feet): 493
- Average FY2021 PPA Price: \$0.1273/kWh

Na Pua Makani

- In Service: 12/11/2020
- Project Size (megawatts): 24
- Power Purchase Agreement Duration (years): 20
- Power Purchase Agreement Expiration: 12/11/2040
- Number of Turbines: 8
- Size of Turbines (MW): 3
- Height of Each Turbine (feet): 568
- Average FY2021 PPA Price: \$0.1393/kWh



Setback distances 1500 ft, 1 mile, and 1.25 Mile, and 5 mile Setback buffer from Residential, Apartment, Apartment Mixed-Use, and Resort Zones	
Hawaii State Energy Office, National Renewable Energy Laboratory, Setback from areas zoned: Country, Residential, Apartment, Apartment Mixed-Use, or Resort Districts Honolulu Land Information System (HOLIS), C&C of Honolulu, Sept. 2020 Service Layer: Esri, NASA, NGA, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, Esri, USGS	2021
Coordinate System: GCS WGS 1984	



Setback distances 1500 ft, 1 mile, and 1.25 Mile, and 5 mile. Setback buffer from Residential, Apartment, Apartment Mixed-Use, and Resort Zones.
Existing turbine locations with buffers showing 1x height and 2x height.

Hawaii State Energy Office, National Renewable Energy Laboratory, Setback from areas zoned: Country, Residential, Apartment, Apartment Mixed-Use, or Resort Districts Honolulu Land Information System (HOLIS), C&C of Honolulu, Sept. 2020 Service Layer: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, USDA, Esri, NASA, NGA, USGS, FEMA, Esri, CGIAR, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

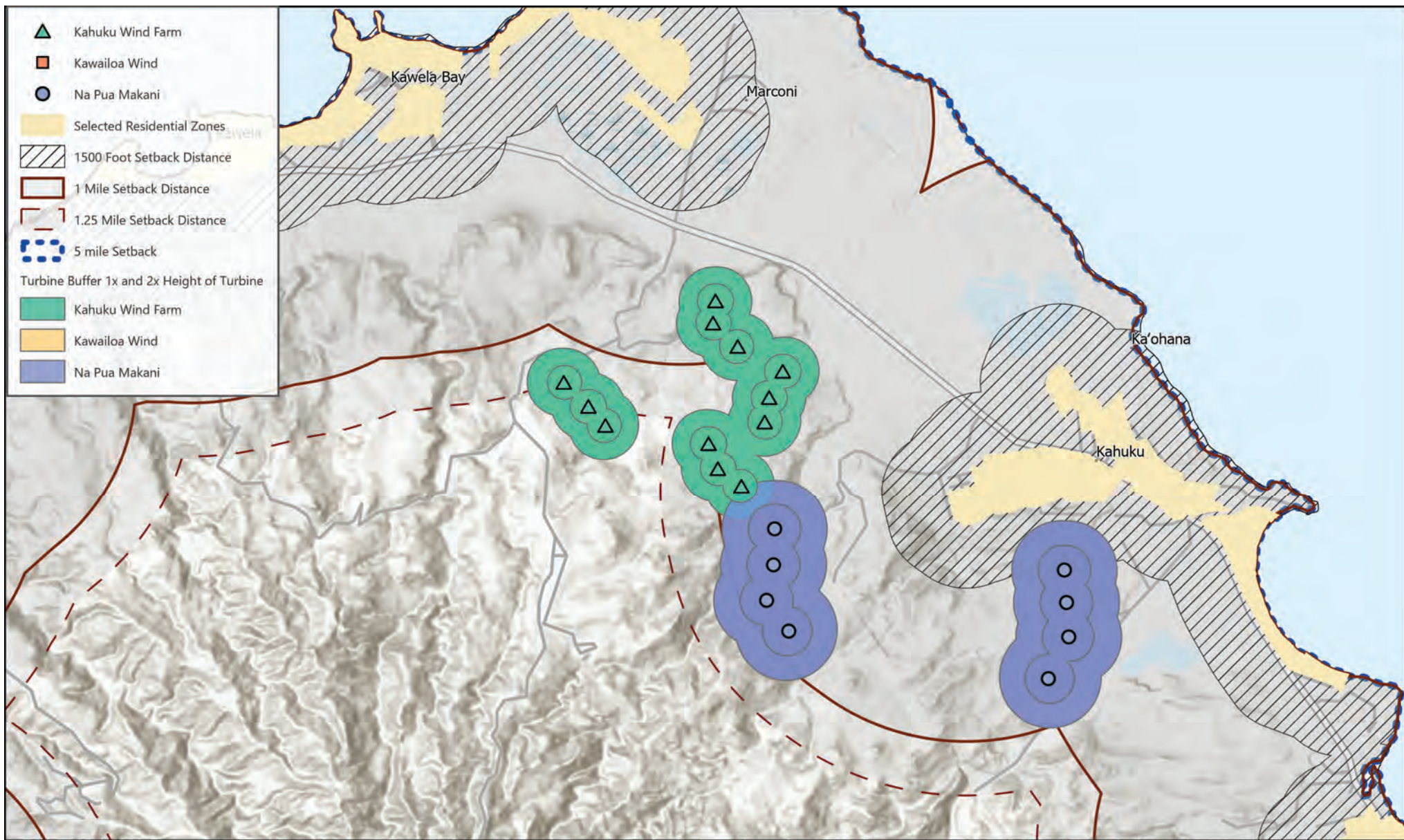
Coordinate System: GCS WGS 1984

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0 0.8 1.5
Mi



Setback distances 1500 ft, 1 mile, and 1.25 Mile, and 5 mile. Setback buffer from Residential, Apartment, Apartment Mixed-Use, and Resort Zones. Existing turbine locations with buffers showing 1x height and 2x height.

Hawaii State Energy Office, National Renewable Energy Laboratory, Setback from areas zoned: Country, Residential, Apartment, Apartment Mixed-Use, or Resort Districts Honolulu Land Information System (HOLIS), C&C of Honolulu, Sept. 2020 Service Layer: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, USDA, Esri, NASA, NGA, USGS, FEMA, Esri, CGIAR, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

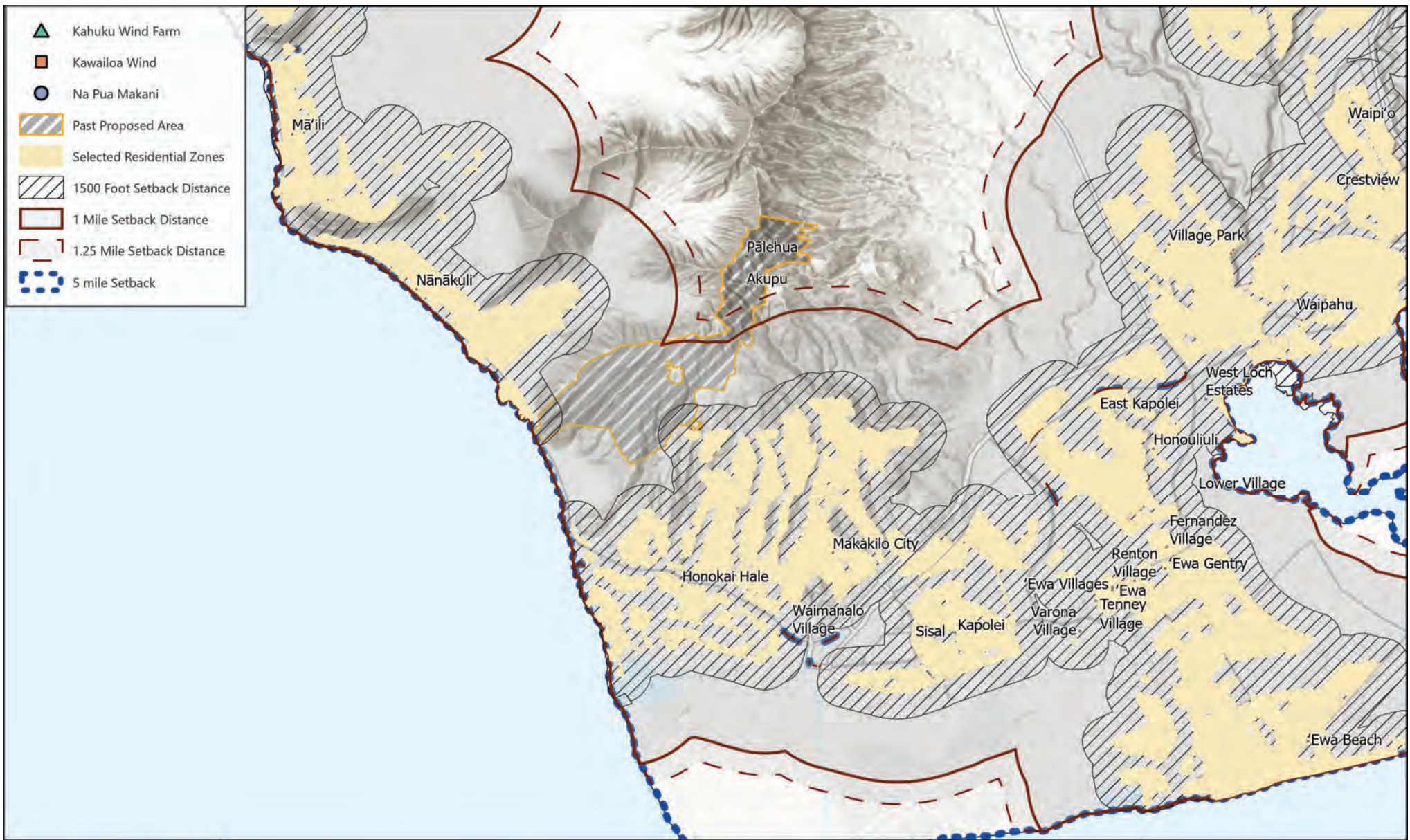
Coordinate System: GCS WGS 1984

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0 0.5 1 Mi



Setback distances 1500 ft, 1 mile, and 1.25 Mile, and 5 mile. Setback buffer from Residential, Apartment, Apartment Mixed-Use, and Resort Zones.
Past proposed parcel TMK for Palehua. Wind turbines proposed within 1mile and 1.25 mile setback distances.

Hawaii State Energy Office, National Renewable Energy Laboratory, Setback from areas zoned: Country, Residential, Apartment, Apartment Mixed-Use, or Resort Districts Honolulu Land Information System (HOLIS), C&C of Honolulu, Sept. 2020 Service Layer: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, USDA, Esri, NASA, NGA, USGS, FEMA, Esri, CGIAR, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

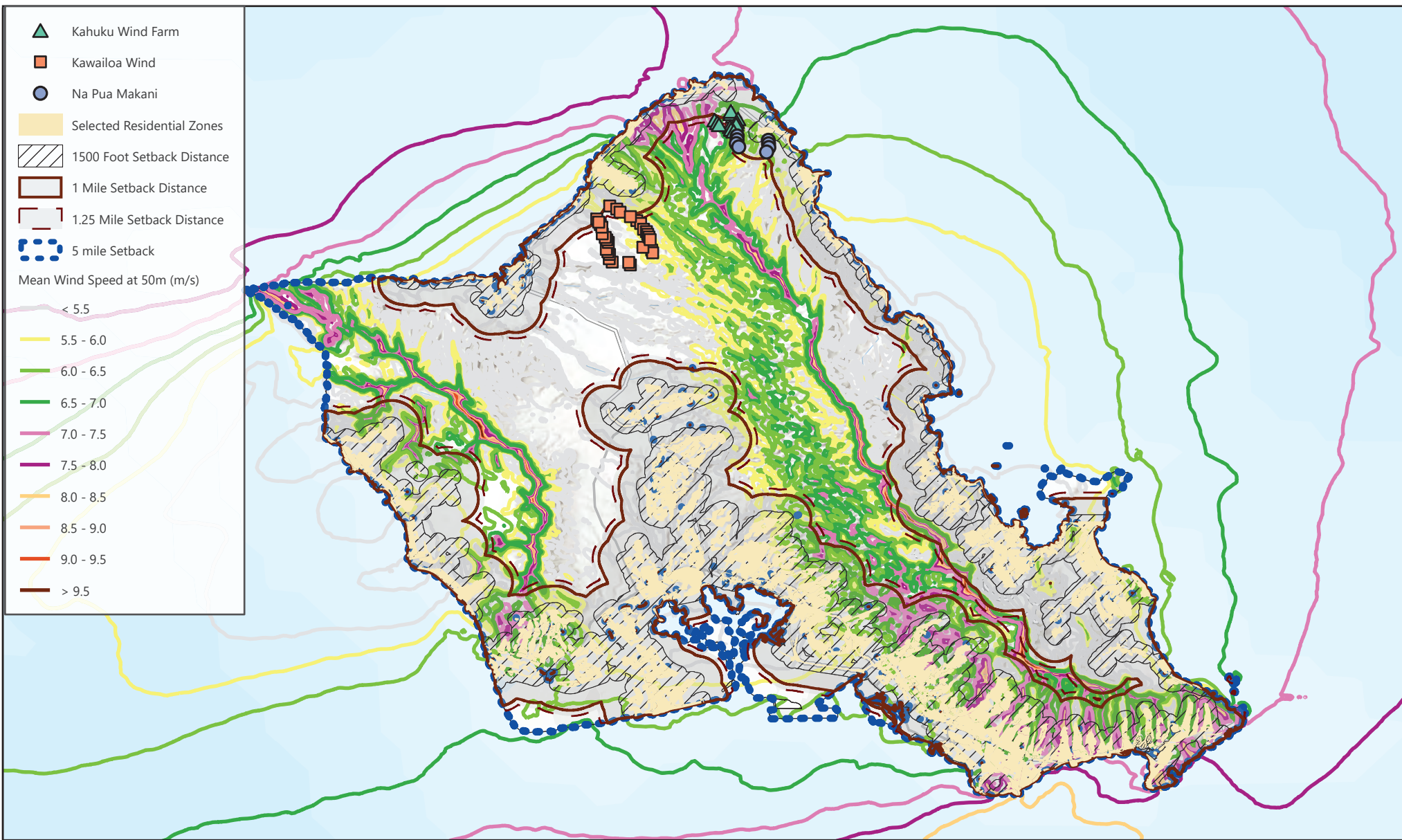
Coordinate System: GCS WGS 1984

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0 1.1 2.3 Mi



Setback distances 1500 ft, 1 mile, and 1.25 Mile, and 5 mile
Setback buffer from Residential, Apartment, Apartment Mixed-Use, and Resort Zones and Mean
Wind Speed MesoMap AWS Truewind, LLC, June 30, 2004

Hawaii State Energy Office, National Renewable Energy Laboratory, Setback from areas zoned: Country, Residential, Apartment, Apartment Mixed-Use, or Resort Districts Honolulu Land Information System (HOLIS), C&C of Honolulu, Sept. 2020 Service Layer: Esri, NASA, NGA, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, Esri, USGS

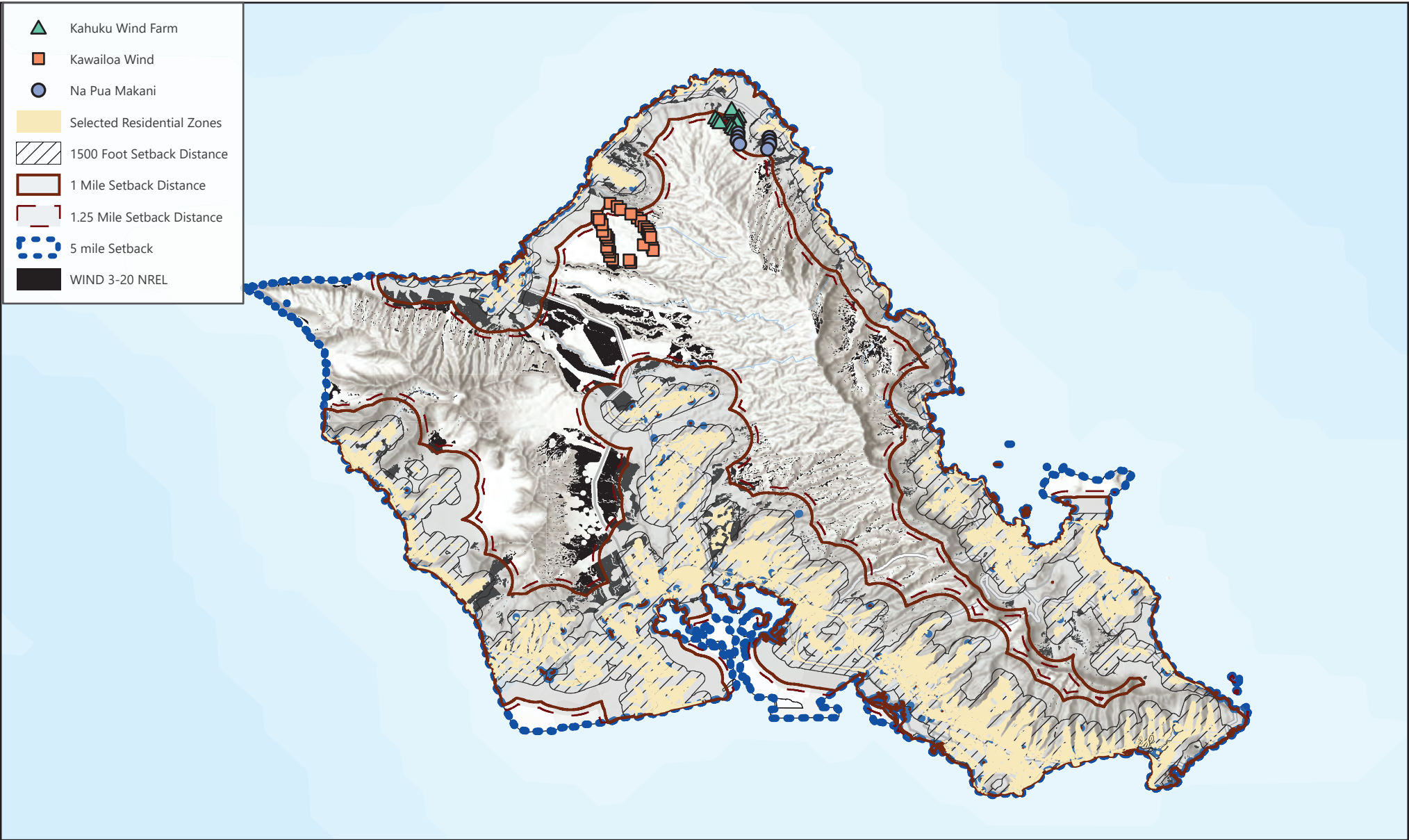
Coordinate System: GCS WGS 1984

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0 5 10
Mi



Setback distances 1500 ft, 1 mile, and 1.25 Mile, and 5 mile. Setback buffer from Residential, Apartment, Apartment Mixed-Use, and Resort Zones. NREL 3-20 Technically Suitable Land for Wind (slopes <20%, windspeed threshold >6.5m/s). Exclusions applied for areas zoned as urban, DOD lands, areas with "A" level flood zones; wetlands; IAL lands; SLR areas (6ft scenario); tsunami zones; and road, building, and transmission right-of-way setbacks.

Hawaii State Energy Office, National Renewable Energy Laboratory, Setback from areas zoned: Country, Residential, Apartment, Apartment Mixed-Use, or Resort Districts Honolulu Land Information System (HOLIS), C&C of Honolulu, Sept. 2020 Service Layer: Esri, NASA, NGA, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, Esri, USGS

Coordinate System: GCS WGS 1984

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