
Golden Hills North Wind Energy Center Repowering Project: Project Description and Affected Environment Analysis

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September 2015

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Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
APWRA	Altamont Pass Wind Resource Area
AST	aboveground storage tank
BAAQMD	Bay Area Air Quality Management District
BMPs	best management practices
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAP	Alameda County Climate Action Plan
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH ₄	methane
CHRIS	California Historical Resources Information System
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
County	Alameda County
CUP	conditional use permit
CUPA	Certified Unified Program Agency
dba	A-weighted decibel
Delta	San Joaquin-Sacramento Delta
DWQ	Division of Water Quality
DWR	Department of Water Resources
EACCS	East Alameda County Conservation Strategy
ECAP	East County Area Plan
EIR	environmental impact report
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GH North Project	Golden Hills North Wind Energy Center Repowering Project
GHG	greenhouse gas
H&S	Health and Safety
HCP	habitat conservation plan
HMBP	Hazardous Materials Business Plan
I-580	Interstate 580
IPCC	Intergovernmental Panel on Climate Change
kV	kilovolt
L _{dn}	day-night average sound level
LOS	level of service
MW	megawatt

MWh	megawatt-hour
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	California Native American Heritage Commission
NCCP	natural community conservation plan
NO ₂	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NWIC	Northwest Information Center
O&M	operations and maintenance
O ₃	ozone
PEIR	Altamont Pass Wind Resource Area Repowering Program Environmental Impact Report
PM _{2.5}	fine particulate matter
PM ₁₀	respirable particulate matter
ppm	parts per million
QA/QC	quality assurance/quality control
ROG	reactive organic gas
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SF ₆	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SJVAB	San Joaquin Valley Air Basin
SO ₂	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMP	Traffic Management Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WTG	wind turbine generator

1 Introduction and Project Overview

1.1 Introduction

Alameda County is the lead agency for the Altamont Pass Wind Resource Area (APWRA) Repowering Program Environmental Impact Report (PEIR). This document has been prepared to support Alameda County's review of the Golden Hills North Wind Energy Center Repowering Project (GH North Project) to determine if the proposed GH North Project would result in new or substantially more adverse significant environmental impacts than those disclosed for the Golden Hills Wind Energy Facility Repowering Project (Golden Hills Project) analyzed in the APWRA Repowering PEIR, certified by Alameda County in November 2014 (Alameda County Community Development Agency, 2014). The APWRA PEIR certified by Alameda County analyzed the Golden Hills Project requiring a conditional use permit to allow up to 88.4 megawatts (MW) of electricity from up to 52 wind turbine generators (WTGs) on approximately 4,500 acres.

1.1.1 Lead Agency Contact Information

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1.2 Project Overview

The APWRA PEIR analyzed the potential impacts of repowering the Alameda County portion of the APWRA, including two individual wind energy repowering projects: the Golden Hills Project and the Patterson Pass Wind Farm Repowering Project. The PEIR was intended to identify the anticipated environmental impacts of issuance of conditional use permits (CUPs) approved by the County for repowering windfarm projects in the Alameda County portion of the APWRA through 2018 and beyond, including the two projects evaluated in the PEIR, and those expected to be proposed. As identified in the APWRA PEIR, the Golden Hills Project is separated into 2 phases: Phase 1 includes installation of up to 52 new 1.7 MW turbines and related infrastructure with an aggregate nominal nameplate capacity of 88.4 MW; and Phase 2, the GH North Project, would add an additional 24 turbines to the Golden Hills Project's 52 turbines for a total nameplate capacity of 129.20 MW of energy and is further described and analyzed herein.

The Project Proponent, Golden Hills North Wind, LLC¹, herein proposes to repower Phase 2 of an existing wind energy facility in Alameda County, California, to replace old-technology WTGs with fewer and more efficient modern WTGs. The project requires discretionary approval of a CUP for project facilities. This document demonstrates that the impact conclusions stated for the Golden Hills Project in the APWRA PEIR would not change with the implementation of the GH North Project; the project would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant

¹ Golden Hills North Wind, LLC, is a wholly owned indirect subsidiary of NextEra Energy Resources.

effects for the Golden Hills Project that were analyzed in the APWRA PEIR. Section 2.0, Project Description, provides a detailed description of the GH North Project.

1.3 Document Organization

The content and organization of this document are designed to meet the CEQA requirements and include the following sections (please note that all figures are provided at the end of the applicable section):

- Section 1.0, Introduction and Overview, describes background and introductory information about the GH North Project; includes the background of the APWRA PEIR; and explains the purpose, scope, and content of this document.
- Section 2.0, Project Description, describes the location, details, and objectives for the GH North Project.
- Section 3.0, Environmental Analysis, evaluates whether new or substantially more adverse significant environmental impacts than those disclosed in the APWRA PEIR would result from implementation of the GH North Project.
- Section 4.0, List of Preparers, lists the individuals involved in preparing this document.
- Section 5.0, References, identifies the documents (printed references) and individuals (personal communications) consulted during preparation of this document, including consultation with responsible agencies' staff.

1.4 Scope of Environmental Review

This analysis incorporates the certified final APWRA PEIR by reference and evaluates whether new or substantially more adverse significant environmental impacts from those disclosed in the APWRA PEIR, certified by Alameda County in November 2014, would result from the project. The analysis addresses a subsection of the environmental resource areas previously analyzed in the APWRA PEIR, including:

- Section 3.1 – Aesthetics and Visual Resources
- Section 3.2 – Air Quality
- Section 3.3 – Biological Resources
- Section 3.4 – Climate Change and Greenhouse Gas Emissions
- Section 3.5 – Cultural Resources
- Section 3.6 – Hydrology and Water Quality
- Section 3.7 – Noise
- Section 3.8 – Traffic and Transportation

Resource areas for which the APWRA PEIR analysis is accurate and applicable in full to the proposed GH North Project are incorporated herein by reference (Alameda County Community Development Agency, 2014), and are therefore not further discussed in Section 3.0 of this document. These resource areas include: agricultural and forestry resources; geology, soils, mineral resources, and paleontological resources; hazards and hazardous materials; land use and planning; population and housing; public services; recreation; and utilities and service.

1.5 Entitlements Required

Table 1-1 identifies the permits, approvals, and agency consultations expected to be required for approval of the proposed project.

TABLE 1-1
Expected Permits, Approvals and Consultations

Agency	Permit/Approval Required
Federal	
Federal Aviation Administration	Notice of Proposed Construction or Alteration; Determination of No Hazard.
U.S. Army Corps of Engineers (USACE)	Clean Water Act, Section 404 Nationwide Permit if jurisdictional waters of the U.S. could be affected by construction or operation of the proposed project. Endangered Species Act (ESA) compliance (ESA Section 7 consultation) would be conducted as part of the Clean Water Act Section 404 process.
U.S. Fish and Wildlife Service (USFWS)	If USFWS biologists determine that the proposed project has the potential to adversely affect a species listed under the federal ESA, the proposed project would be subject to review under either Section 7 or Section 10 of the ESA. The Section 7 process would apply if any federal approval, such as a USACE Section 404 Permit, is required. The Section 7 process would result in interagency consultation and could result in the issuance of a biological opinion and/or an incidental take statement. The Section 10 process would apply if the proposed project could cause take of a federally listed species and no other federal approval was required. The Section 10 process would require preparation of a Habitat Conservation Plan and would result in issuance of an incidental take permit.
State	
State Historic Preservation Office	Delegated National Historic Preservation Act Section 106 compliance by Advisory Council on Historic Preservation.
State Water Resources Control Board (SWRCB)	Construction Stormwater General Permit; Notice of Intent to Comply with Section 402 of the Clean Water Act, Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasure (SPCC) Plan; Industrial Stormwater General Permit; approval of operations and maintenance (O&M) SWPPP and SPCC Plan. Section 401 Certification if USACE determines jurisdictional waters of the U.S. would require a Clean Water Act Section 404 permit.
California Department of Fish and Wildlife (CDFW)	Streambed Alteration Agreement; consultation with CDFW would be needed to address potential effects to state-listed species under Section 2080 of the California Fish and Game Code. Upon reviewing the federal Biological Opinion, CDFW would determine if the federal document is "consistent" with the requirements of the California Endangered Species Act (CESA) for jointly listed state/federal listed species. If CDFW determines that the federal statement/permit is not consistent with CESA, or to address impacts to state-listed species that are not federally listed, then the Applicant would be required to apply for a state Incidental Take Permit under Section 2081(b) of the Fish and Game Code.
California Department of Transportation (Caltrans)	Single-trip Transportation Permit; Right-of-way Encroachment Permit.
Bay Area Air Quality Management District (BAAQMD)	Permit for Diesel Powered Generators, Rule 8: 9-8-101 Description.
California Highway Patrol	Notification of Transportation of Oversize/Overweight Loads.
Local	
Alameda County, Department of Conservation and Development	CUP; Demolition Permit; Building Permit; and Grading Permit.
Alameda County, Public Works Department	Encroachment Permit to use right-of-way and install improvements for ingress/egress access to the proposed Project site Transportation Permit for extra-large loads.

2 Project Description

2.1 Introduction and Background

Golden Hills North Wind, LLC, proposes to repower an existing wind energy facility in Alameda County, California, to replace outdated and inefficient WTGs with fewer and more efficient WTGs. The project requires discretionary approval of a CUP for project facilities. Phase 2 of the proposed repowered project is the Golden Hills North Wind Energy Center Repowering Project (GH North Project) in Alameda County, California. The project is located within the Altamont Pass Wind Resource Area (APWRA), which is designated by the State of California and recognized by Alameda County as a Wind Resource Area because the area maintains winds at a level that supports economically viable wind energy projects. The site of the existing wind energy facility and the proposed repowering project is an ideal location for generating electrical power from wind based on the strong, predictable wind currents that occur at the site.

The APWRA PEIR analyzed the potential impacts of repowering the Alameda County portion of the APWRA, including two individual wind energy repowering projects: the Golden Hills Wind Energy Facility Repowering Project and the Patterson Pass Wind Farm Repowering Project. The PEIR was intended to identify the anticipated environmental impacts of issuance of CUPs approved by the County for repowering windfarm projects in the Alameda County portion of the APWRA through 2018 and beyond, including the two projects evaluated in the PEIR, and those expected to be proposed.

This document demonstrates that the impact conclusions stated for the Golden Hills Project in the APWRA PEIR would not change with the implementation of the GH North Project; the project would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects in the APWRA PEIR.

All applicable mitigation measures in the certified APWRA PEIR that have been applied to the Golden Hills Project would be applied as part of the GH North Project. There would be no effect on the existing approvals should this project not be approved.

2.2 Proposed Project

As previously described, the Golden Hills Project is one of the two projects analyzed by the APWRA PEIR. The proposed project is Phase 2 of the Golden Hills Project, which will begin construction in April 2015. Phase 2 includes adding approximately 4,389 additional acres to the approximately 4,500-acre Golden Hills Project, and 24 turbines to the Golden Hills Project's 52 turbines for a total nameplate capacity of 129.20 MW of energy. The proposed GH North Project would be constructed on land north of Interstate 580 (I-580), but adjacent to the Golden Hills Project, and would utilize infrastructure that was approved as part of the Golden Hills Project. Electricity generated by the GH North Project would be collected via an underground collection system and transmission line, which would connect into the electrical infrastructure and project substation located within the boundaries of the Golden Hills Project.

In addition to installing additional wind turbines, up to 324 existing wind turbines on the existing wind farm site, including their transformers and associated electrical infrastructure, would be decommissioned (see Section 2.5). Existing roads and other disturbed areas not needed for the proposed project's new WTGs would be decommissioned and recontoured, as appropriate, to maintain slope stability. Other major components of the proposed project include additional service roads, overhead and underground transmission and collection lines, electrical switchyards, meteorological towers and communication cables. Construction of the project would also require the following temporary project facilities: access roads, laydown areas, and a concrete batch plant. Proposed project facilities are described in more detail in Section 2.6.

2.3 Project Location and Land Ownership

The proposed GH North Project site is located in Alameda County, California, directly north of I-580. The city of Livermore is approximately 5 miles to the southwest, while the city of Tracy is situated 8 miles to the east. The major transportation corridor and infrastructure in the region consists of I-580, which is located immediately south of the project area. The project area is located within Township 1 South, Range 3 East, within a portion of Section 33; and Township 2 South, Range 3 East, within portions of Sections 3, 4, 5, 8, 9, 10, 11, 14, 15, 16, 17, 20, 21, 22, 23, 27, 28, 29, and 30. The proposed project boundary comprises approximately 4,389 acres encompassing all or portions of 60 land ownership parcels.

Site access would be from local roads via existing gates to the north and south of the existing facility. The proposed project would improve access at gates inside and around the site. The Project Proponent maintains existing long-term agreements (easements and wind leases) with landowners to develop the proposed project site, and access to the site is allowed under these existing agreements. Figure 2-1 presents the general location of the project area.

The GH North Project would demonstrate site control and landowner authorization for the existing operations and proposed project components by providing copies of lease agreements that it maintains with the underlying landowners in the project area. These private lease agreements would be modified upon project approval by the Project Proponent and each landowner to identify the final location of proposed project components as authorized by County permits. Table 2-1 lists the parcels and their acreages within the proposed GH North Project site.

TABLE 2-1
Land Parcels Within Project Site

Assessor Parcel Numbers	Acreage
99B-6300-1-2	5.74
99B-6425-2-4	172.70
99B-6010-1-4	2.95
99B-6051-6	114.49
99B-6010-5	4.30
99B-6010-1-3	468.89
99B-6010-3	17.83
99B-6500-2-1	289.79
99B-6010-1-1	0.86
99B-6010-1-5	0.22
99B-6051-14	7.27
99B-6425-4	15.38
99B-6425-5	16.65
99B-6051-18	2.65
99B-6300-6	34.91
99B-6275-1-3	3.45
99B-6051-19	1.30
99B-6051-5	0.75
99B-6275-8	1.40
99B-6300-7	17.69
99B-6051-16	1.08

TABLE 2-1
Land Parcels Within Project Site

Assessor Parcel Numbers	Acreage
99B-6051-17	24.28
99B-6275-4	6.73
99B-6275-11	12.49
99B-6275-9	7.23
99B-6400-3	51.15
99B-7800-3	29.08
99B-6275-2-2	11.88
99B-6275-10	5.27
99A-1785-1-6	1.24
99A-1780-1-5	10.84
99B-6175-2-3	451.53
99B-6175-1-1	115.79
99B-6300-1-1	144.30
99B-6300-1-2	5.75
99B-6175-1-3	11.02
99B-6130-1	10.86
99B-6125-1	214.01
99B-6130-3	158.82
99B-7375-1-1	160.57
99B-7375-1-4	159.43
99B-6130-2	419.21
99B-6325-3	162.41
99B-6300-4-1	141.66
99B-6200-1	643.88
99B-6175-2-2	1.15
99A-1785-1-7	13.82
99B-6010-4	0.96
99B-6010-1-6	115.76
99B-6010-2	13.95
99B-7900-1-7	24.65
99B-7800-8-2	13.49
99B-6300-2-4	4.34
99B-6300-2-1	1.35
99B-6300-2-1	6.21
99B-6300-3-2	9.19
99B-7800-8-1	13.57
99B-7800-7-7	12.64
99B-6125-3	2.06
99B-6250-1	3.56

2.3.1 Land Use and Zoning

Land uses in the region include a mix of wind farms, agricultural, cattle grazing and low-density rural-residential. The area is characterized by mostly treeless, rolling hills of annual grassland, with slopes ranging between 400 and 1,000 feet above mean sea level. The GH North Project is located in a region heavily developed with existing wind energy facilities and with several more projects pending. Other wind projects are located in the APWRA, including the Diablo Wind Energy Center and Vasco Wind Energy Center.

The GH North Project encompasses approximately 4,389 acres of lands zoned (A) Agriculture and designated as Large Parcel Agriculture, which is intended to promote implementation of general plan land use proposals (or designations) for agricultural and other nonurban uses. The project site boundaries are depicted in Figures 2-2 and 2-3. Project Assessor parcel numbers are listed in Table 2-1.

The GH North Project falls within one Alameda County General Plan land use designation and one zoning district. The GH North Project is not within an area designated by the California Department of Conservation as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (California Department of Conservation Agricultural Status, 2012).

2.4 Project Need, Goals, and Objectives

The California Renewable Portfolio Standard (RPS) legislation enacted in 2002 (Senate Bill 1078) requires investor-owned utilities, publicly owned utilities, and energy service providers to obtain at least 33 percent of their supply of electricity from renewable energy resources, such as wind, by December 31, 2020. In the interim, each entity is required to procure an average of 20 percent of renewable energy for the period of January 1, 2011, through December 31, 2013; 25 percent by December 31, 2016, and 33 percent by 2020. These RPS requirements were enacted through Senate Bill (SB) X1-2, which was signed by Governor Brown in April 2011, and increase previous requirements described in SB 1078 (which established the California RPS Program) and SB 107 (which accelerated the 20 percent requirement to the year 2010). In his January 2015 inaugural address, Governor Brown proposed a further expansion of California's clean energy goals to 50 percent renewable energy by 2030. Power generated by the proposed project would be delivered to the California energy market. By using the wind sites best suited to generate power, such as the APWRA, the proposed project would meet the California RPS requirements more cost effectively than sites with less wind output. Additionally, the proposed project would contribute to the overall reduction of greenhouse gas emissions that would otherwise be released into the atmosphere from sources of nonrenewable power. This reduction in emissions would contribute to meeting the objectives of the California RPS and greenhouse gas emissions legislation.

The project would comply with and implement provisions of the 2010 "Agreement to Repower Turbines at the Altamont Pass Wind Resource Area." Under that Agreement, executed December 3, 2010), NextEra intends to shut down all its existing turbines no later than November 1, 2015. Up to 324 existing onsite old generation turbines would be decommissioned by NextEra or another entity prior to project construction. The agreement is designed to satisfy NextEra's obligations under the 2007 Settlement Agreement to reduce raptor mortality by 50 percent.

Under the Agreement, NextEra will implement repowering in up to three phases, each of which will represent up to approximately 80.5 MW. Phase 1 repowering is based in Contra Costa County and is the subject of the 2011 Vasco Winds Repowering Facility EIR. Phases 2 and 3 are based in Alameda County. The Golden Hills Project evaluated as a site-specific project in the PEIR comprises Phase 2 of the Agreement. The GH North Project constitutes the Phase 3 repowering, which will be described in a separate focused analysis that tiers off of the PEIR. Phase 3 will be repowered after all approvals are obtained. Under the Agreement and for each phase of repowering, NextEra will also contribute financially to the scientific understanding of raptor use and behavior in and around the APWRA. Additionally, because wind is a domestic and local energy source, the proposed project would also contribute to domestic energy security by reducing reliance on foreign energy sources. Unlike oil, gas, and coal reserves, the supply of wind will not diminish over time.

The proposed project would use wind energy technology, an Eligible Renewable Energy Resource, which meets all criteria set forth in Public Utilities Code Section 399.12, Public Resources Code Section 25741, the California Energy Commission's *Renewables Portfolio Standard: Eligibility Guidebook* (April 2006, Publication CEC-300-2006-007-F) and *New Renewable Facilities Program Guidebook* (April 2006, Publication CEC-300-2006-006-F). Electricity from the proposed project would be sold in the competitive market. After it is contracted, the price of renewable electricity would be fixed and stable over the term of the contract and would not be subject to fluctuations in the price of fuel.

In this context, the Project Proponent is proposing the project to provide an economically viable source of clean, renewable electricity generation that meets California's growing demand for power and fulfills numerous state and national renewable energy policies.

The Project Proponent's additional objectives for the proposed project are as follows:

- Repower existing turbines to achieve increased performance, lower cost, higher reliability, and longer service life that would produce up to 41.16 MW of electricity in an area with proven wind resources.
- Develop an economically viable wind energy project that would support commercially available financing.
- Maximize renewable energy production and economic viability by replacing aging assets with newer and more efficient WTGs in the APWRA.
- Minimize avian and bat impacts, to the extent practicable.
- Support RPS requirements by substantially contributing to its portfolio of wind-generated power, which is no longer subject to curtailment restrictions.
- Contribute positively to economic activity during construction and operation.
- Provide Alameda County with additional property tax revenues.
- Increase local short-term and long-term employment opportunities for communities within 90 miles of the proposed project (which is an acceptable commuting distance for construction and skilled labor resources).
- Offset the need for additional electricity generated from fossil fuels, and thereby assist the state in meeting its air quality goals and reducing greenhouse gas emissions.
- Produce electricity without the need for large amounts of water.
- Provide cost savings to rate payers.
- Contribute to national security by reducing California's reliance on foreign oil.
- Contribute to scientific understanding of raptor use and behavior in and around the APWRA.

2.5 Existing Facilities

Up to 324 existing onsite older-generation turbines would be decommissioned by NextEra or another related entity (as per agreement with Golden Hills North Wind, LLC), prior to project construction. Existing WTG foundations for previously decommissioned turbines within the project development footprint would also be removed prior to project construction. Decommissioning and removal of the existing WTGs and ancillary facilities would allow the existing wind energy facility to be repowered. The existing WTGs have an approximate tower height of 80 feet and, depending on the model, rotor diameters of 63 feet to 76 feet, resulting in an approximate maximum total height of 111 to 118 feet. Figure 2-2 shows the existing facility layout and WTGs that would be decommissioned under the proposed project. The other turbines are controlled by entities other than Golden Hills North Wind, LLC. The existing WTG foundations are composed of a concrete pier or pad (also known as footings), with approximately 10 feet of drain rock placed around

each foundation. The existing underground collection system would remain in place and would not be excavated. Table 2-2 and Table 2-3 summarize the characteristics of the existing WTGs and other components at the site.

TABLE 2-2

Characteristics of Existing Wind Turbine Generators

Turbine Specifications	Feet (approx.)	Meters (approx.)
Rotor diameter	63 to 76	19 to 24
Tower height	80	25
Total height	111 to 118	34 to 36

TABLE 2-3

Characteristics of Existing Wind Energy Facility Components

Facilities	Units of Measurement	Number of Units	Total Area (approximate acres)
Existing turbine piers/towers	3,600 square feet per tower	324	26.8
Main access roads	25 square feet disturbed area per linear foot of road	180,000	103.3
Connector roads	15 square feet disturbed area per linear foot of road	115,000	39.6
Total			169.7

An existing O&M building is located within the project site and could be used for continued O&M activities and storage. Existing roads and other disturbed areas not needed for the proposed project's new WTGs would be decommissioned and recontoured, as appropriate, to maintain slope stability. Following recontouring, surface soils would be prepared for planting and vegetated with seed stock. Temporary erosion control measures would be implemented to maintain topsoil and revegetation.

2.6 Proposed Project Components

The GH North Project would install up to 24 new WTGs and related infrastructure with an aggregate nominal nameplate generating capacity of 41.16 MW of electricity.

2.6.1 Construction of New Wind Turbine Generators and Related Infrastructure

2.6.1.1 Wind Turbine Generators

Following decommissioning of the existing wind turbines and related infrastructure, up to 24 new WTGs would be installed at the site. The specific equipment chosen for the proposed project would depend on final micro-siting, and the geotechnical location of these facilities would be determined prior to construction and based on various siting criteria, such as terrain and geotechnical considerations, and the opportunity to avoid and/or minimize potential impacts.

Regardless of the manufacturer selected, each turbine would include three main physical components that would be assembled and erected during construction: the tower, the nacelle, and the rotor. Other turbine components include a foundation; controller; transformer; braking system; vibration, temperature and fire detection systems; safety lighting; and lightning protection. Table 2-4 presents the rotor diameter and total height of the largest turbine model currently being considered for the proposed project.

TABLE 2-4
Characteristics of Proposed Wind Turbine Generators

	Example WTG Model: GE 2.1MW
Tower height/hub height (not including foundations)	262 feet (80 meters)
Rotor diameter	381 feet (116 meters)
Total height (tower, nacelle, rotor)	453 feet (138 meters)
Tip distance from ground	72 feet (22 meters)

2.6.1.2 Turbine Pad and Foundation Construction

Once the roads are installed, turbine foundations would be constructed. A geotechnical report would be prepared to identify the appropriate turbine foundation design. Pending completion of the geotechnical analysis, each foundation is expected to require an excavation of up to approximately 8 to 10 feet deep and up to 60 feet in diameter, with foundations constructed of steel-reinforced concrete. Concrete for the foundations would be provided from the temporary batch plant and transported using concrete trucks. After each foundation cured, it would be buried and backfilled with the material excavated from that site. The top of the foundation would be a pedestal that would rise approximately 1 foot above grade. A rectangular area approximately 65 feet by 130 feet would be developed at the base of each tower as a gravel crane pad.

2.6.1.3 Turbine Installation

Turbines would likely be delivered to the site from the Port of Stockton or other nearby feasible port or rail transfer location. The turbine towers, nacelles, and rotor blades would be delivered to each foundation site and unloaded by crane. A large track-mounted crane would be used to hoist the base tower section vertically, and then lower it over the threaded foundation bolts. The large crane then would raise each additional tower section to be bolted through the attached flanges to the lower tower section. The crane then would raise the nacelle, rotor hub, and blades to be installed atop the towers. Two smaller wheeled cranes would be used to offload turbine components from trucks and to assist in the precise alignment of the tower sections. Tower erection would require the use of one large track-mounted crane and two small cranes.

2.6.1.4 Turbine Lighting

Federal Aviation Administration (FAA) regulations require lighting on structures over 200 feet high. The proposed WTGs would be up to 430 feet high and, therefore, would require appropriate obstruction lighting. Through its Notice of Proposed Construction or Alteration (Form 7460.1), the FAA would review the proposed project prior to construction (14 CFR Part 77). Recommendations on marking and lighting structures vary depending on terrain, local weather patterns, geographic location, and, in the case of wind farms, the cumulative number of towers and overall site layout. As a result of its review process, the FAA could recommend that tower markings or aviation safety lighting be installed on all or only a portion of the turbine towers. The FAA could determine that the absence of marking and/or lighting would not threaten aviation.

Lighting of the wind farm would be in compliance with the FAA Obstruction Marking and Lighting Advisory Circular (AC70/7460-1K). Intensity of the lights would be based on a level of ambient light, with illumination below 2 foot-candles being normal for the night and illumination of above 5 foot-candles being the standard for the day. It is anticipated that lights would not be mounted on every turbine, but would be located on several strategically selected turbines to mark the extent of the proposed project adequately. The minimum number of required lights would be used to minimize attractants for birds during nighttime migrations.

2.6.2 Roadway Improvements

To the extent possible, existing roads would be used for proposed project construction and operations. The existing roadway system primarily consists of gravel access roads. Existing roads, which are maintained to facilitate O&M activities, are up to 25 feet wide. In general, the existing roadway horizontal and vertical geometry cannot accommodate the equipment transport vehicles required for project construction deliveries. The WTGs have equipment transport and crane requirements that dictate required roadway widths and grades and turning radii. To allow for safe passage of the large equipment transport vehicles and facilitate ingress/egress from local access roads, minor intersection improvements would be required along Altamont Pass Road. Access and turbine delivery to the northern portion of the project area would require use of existing roads within the Vasco Wind Energy Facility by way of Vasco Road in Contra Costa County. Road improvements in Contra Costa County include 400 linear feet of new road and temporary widening of existing roads during construction. Project construction also would require interior site road work. The proposed project roads described below are designed to minimize disturbance, avoid sensitive resources (for example, cultural resource sites and wetlands), and maximize transportation efficiency.

2.6.2.1 Road Grading and Installation

Turbine transportation requires equipment transport and crane specifications that dictate road width and turning radii. To allow safe passage of the large transport equipment used in construction, all-weather gravel roads would be built with adequate drainage and compaction to accommodate equipment transport vehicles.

After sensitive areas have been identified and marked, initial road grading would commence. Proposed project roads would include project access roads and interior project roads. The roads needed for temporary construction access would be graded, as necessary, for use. The proposed permanent roads would be constructed to County standards for gravel roads. Cut materials would be used as fill onsite during the construction process, and no material would be disposed of offsite. General cut-and-fill slopes would be at a ratio of 2:1. The final location of the road and the cut-and-fill volumes would be based on grading, construction, and environmental permitting requirements, topography, and sound engineering principles. The construction-related assumptions for roads are listed below.

2.6.2.2 Interior Project Roads

Interior project roads would have temporary construction widths of up to 52 feet wide, which includes a maximum 40-foot width plus two 6-foot shoulders. After construction, 16 to 32-foot wide permanent access roads would be established and the remaining temporary disturbed area would be reclaimed. Within the proposed project site boundary, the new roadway system would use the existing road network to the greatest extent possible, and is designed to limit disturbance and to avoid sensitive resources to the extent possible. Based on existing topography and required design criteria, the proposed project's new gravel access roads would be constructed (and existing roadway alignments would be redesigned) to gain access to the new turbine locations. Specifically, the proposed project's interior road system would follow existing roadway alignments where possible, but grade adjustments would be required in most locations to accommodate maximum grades, as required by the turbine manufacturers. The maximum road grade on access roads used during construction would be approximately 10 percent.

Drainage culverts (new or upgrade of existing) would be installed (or removed) in accordance with Alameda County standards. Primarily, these culverts would be installed to divert water away from areas where drainage swales intersect with roadways, thus preventing high stormwater flows from crossing road surfaces.

2.6.2.3 Passing Areas

Temporary passing areas would be provided along one-way roadways approximately every 2,500 feet to facilitate safe passing of traffic through the site interior. Up to 50 percent of the turnout areas developed during construction would be maintained to support safe passing for subsequent O&M traffic within the

interior road system. The remaining turnouts and turnaround areas would be reclaimed and temporary shoulder areas would be restored. Temporarily disturbed areas would be restored in accordance with the proposed project's reclamation plan and in accordance with County and other permit conditions.

Following road construction, all roads would be inspected to determine if and where any additional grading or additional gravel would be necessary to meet County standards. Additionally, final road shaping would be completed to ensure proper water flow away from cut-and-fill slopes and into ditches and culverts. Erosion control devices also would be installed or completed, disturbed areas adjoining the roads would be restored, and the appropriate erosion control devices would be installed.

When construction is complete, roads would be left in place or restored in conformance with County standards, depending on whether they would be needed to provide access for O&M.

When construction has been completed, roads that would be left in place to provide access for O&M would be inspected and graded where low spots and ruts have occurred. Culverts would be left in place and the road edges would be restored.

2.6.2.4 Improvements at Local Access Roads

Proposed project ingress/egress to the site would be via Altamont Pass Road to the south and Vasco Road to the north. Improvements could require the widening of Altamont Pass Road as outlined above to provide additional shoulder and lane widths. Minor drainage improvements could be required to adjust existing drainage inlets to grade and provide roadside ditches.

All road improvements would be designed according to Alameda County design standards. The Project Proponent proposes, if necessary, to repair, repave, or reconstruct those portions of existing county roads damaged during construction in accordance with applicable design standards agreed upon prior to beginning construction. Preliminary design for the project ingress and egress points would be provided to the Alameda County Public Works Department. Encroachment permits for minor roadway improvements, if needed, would be obtained from the Alameda County Public Works Department and would be designed to meet Alameda County Design Standards (and Caltrans Highway Design Manual Standards, as applicable). An encroachment permit for improvements within the public right-of-way falling within Alameda County may be needed, and the Alameda County Public Works Department would conduct design review of the proposed improvements.

2.6.3 Communications/Supervisory Control and Data Acquisition System

Each WTG would contain electronic devices to monitor turbine performance. A Supervisory Control and Data Acquisition (SCADA) system to be installed at the proposed project site would collect operating and performance data from each WTG and from the operation of the entire proposed project, and would provide remote operation of the wind turbines. The SCADA system would be connected to the turbines via an underground fiber optic communications system. Underground communication cables would be buried in the same trenches as the medium-voltage electrical system. The host computer would be located at the offsite Midway substation. The SCADA software would consist of applications developed by the turbine manufacturer or a third-party SCADA vendor.

2.6.4 Power Collection, Interconnection, and Transmission

2.6.4.1 Collector Lines

The power collection system would consist of medium-voltage, high-density, insulated underground cables that would connect the WTGs to the existing Midway substation. The underground collection cables are generally buried in parallel trenches located adjacent to the roadbed of the interior access roads. The connection to the existing Midway Substation would require that the collector line be installed within a bored crossing under I-580, which may also utilize an existing tunnel conduit. The proposed WTGs generate electricity at low voltage, which would be stepped-up via a transformer located at each WTG to the

34.5-kilovolt (kV) level required for the new medium-voltage collection system (no existing collector lines would be used).

Trenching equipment would be used to excavate trenches in or near the access roadbed to allow installation of the insulated underground cables that would connect each turbine to the substation. The trenches typically would be 12 to 24 inches wide and 48 inches deep, but their depth and number would be determined ultimately by the size of the cable required and the thermal conductivity of the soil or rock surrounding the trench. The large conductor cables would be placed within the trenches, packed in sand or native materials depending on the soil properties, and covered to protect the cables from damage or possible contact. Optical fiber communication links and communication lines for turbine performance remote-sensing equipment would be placed in the same trenches as the conductor cables. In locations where two or more sets of underground lines converged, pad-mounted switch panels would be used to tie the lines together into one or more sets of larger feeder conductors. The accumulated cables from the individual arrays would be spaced 10 feet apart on either side of the road system in “home runs” to the offsite substation. The locations of the buried infrastructure would be recorded in as-built project diagrams that would be developed at the end of the construction period. Because a significant portion of the underground collection cables would be installed parallel to and within the footprint of areas temporarily disturbed by road construction, installation of the collection system is only expected to result in minimal additional permanent disturbance within the proposed project area.

2.6.4.2 Collector Substation

The proposed project would connect to the offsite Midway substation, which is located approximately 1.9 miles southeast of the project area. The existing Midway substation is being upgraded as a part of Phase 1 (Golden Hills Project) of NextEra’s repowering program and will not be evaluated as a part of this project. The main functions of a collector substation are to step-up the voltage from the collection lines (34.5 kV) to the transmission level (115 kV) and to provide fault protection. The basic elements of the substation facilities are a control house, a bank of one or two main transformers, outdoor breakers, capacitor banks, relaying equipment, high-voltage bus work, steel support structures, an underground grounding grid, and overhead lightning-suppression conductors. The project may also utilize battery storage located at the existing Midway substation facility.

2.6.5 Meteorological Towers

Up to three new free-standing monopole meteorological towers, approximately 80 meters in height, and up to three new temporary guyed meteorological towers, approximately 60 meters in height, would be installed as part of the proposed project.

2.6.6 Wastewater and Sewer/Septic Systems

Up to 20 portable toilets are located onsite, year round, serviced by a contractor. No other wastewater or sewer/septic systems are at the existing wind farm, and no changes to the wastewater or sewer/septic system are proposed to support the proposed project.

2.7 Project Construction

2.7.1 Construction Disturbance Area

Table 2-5 presents disturbance associated with construction of project components.

TABLE 2-5
Approximate Disturbance and Restoration Acreage of Project Components

Facilities	Unit of Measurement	Number of Units	Total Approximate Acres
Permanent Facilities			
Turbine pads/towers	40-foot x 40-foot gravel aprons occupied by new WTGs and transformers	24	0.9
Roads, new	36 square feet disturbed area per linear foot of road	100,000	82.6
Met towers	<0.1 acre per tower	3	<0.3
Total Permanent Facilities			83.8
Temporary Facilities			
Cut and fill*			381
Temporary met towers	<0.1 acre per tower	3	<0.3
Staging areas	Varying sizes	7	23.5
Total Temporary Facilities			404.8

*Total cut and fill will be determined during detailed design. Cut and fill estimate provided is extrapolated from as-built design of the Vasco Wind Project and design of the Golden Hills Wind Energy Facility Repowering Project.

2.7.2 Schedule

Proposed project construction would proceed after all construction-related permits are issued. Proposed decommissioning of existing facilities and infrastructure would require approximately 2 months, followed by 8 months to construct the roads, install the WTGs, and reclaim areas of temporary disturbance. Seasonal concerns or constraints are not anticipated to preclude construction from occurring in accordance with this 8-month schedule, although construction-related best management practices (BMPs) would be implemented during the November-through-April wet season. Table 2-6 presents the anticipated decommissioning and construction schedule for the proposed project.

TABLE 2-6
Decommissioning and Construction Schedule

Timeframe	Construction Activity
Month 1	Commence Decommissioning
Month 3	Commence Road Construction
Month 4	Commence WTG Construction
Month 7	Commercial Delivery
Month 10	Reclamation Complete

Decommissioning and construction activities would occur in a manner consistent with County requirements for work days and hours.

2.7.3 Workforce

Based on data provided for typical wind energy projects of similar size, approximately 50 workers would be employed to decommission the existing wind farm. On average, approximately 200 workers would be employed during construction, with a peak workforce of 300. Craft workers employed for construction

would include millwrights, iron workers, electricians, equipment operators, carpenters, laborers, and truck drivers. Local construction contractors and suppliers would be used, to the extent possible.

2.7.4 Construction Equipment and Ancillary Facilities

Table 2-7 lists the types of equipment that would be used during the various stages of decommissioning and construction. On average, all equipment would operate for approximately 8 hours per day.

TABLE 2-7

Initial Decommissioning and Construction Equipment Requirements

Work Activity Primary Equipment Description	Estimated Horsepower	Probable Fuel Type	Primary Equipment Quantity	Estimated Schedule (days)
Existing Turbine Removal and Restoration of Turbine Sites				
Crane	500	Diesel	3	120
Lowboy/Truck/Trailer	500	Diesel	3	120
Excavator	400	Diesel	3	120
Grader	350	Diesel	1	120
Dump Truck	500	Diesel	3	120
Road, Pad, and Collector Line Construction				
1 Ton Crew Cab 4X4	300	Diesel	2	180
Road Grader	350	Diesel	3	180
Track Type Dozer	350	Diesel	3	180
Drum Type Compactor	250	Diesel	3	180
Water Truck	350	Diesel	2	180
Lowboy/Truck/Trailer	500	Diesel	3	180
Backhoe/Front Loader	350	Diesel	2	180
Excavator	350	Diesel	2	180
Rock Crusher	350	Diesel	1	180
Cement Trucks	335	Diesel	3	120
Batch Plant				
Backhoe/Front Loader	350	Diesel	1	120
Generator	350	Diesel	1	120
Turbine Installation				
Crane	500	Diesel	2	90
Lowboy/Truck/Trailer	500	Diesel	2	90
Excavator	400	Diesel	2	90
Restoration of Existing Roads and Temporary Disturbance Areas				
Road Grader	350	Diesel	3	90
Excavator	350	Diesel	3	90

2.7.5 Temporary Concrete Batch Plant

Depending on weather conditions, concrete typically needs to be poured within 90 minutes of mixing with water. Delivery time to onsite pour locations would likely exceed 90 minutes from existing concrete suppliers in the vicinity of the proposed project area. Therefore, the Project Proponent proposes to construct a temporary concrete batch plant onsite to facilitate cement delivery for the turbine foundations.

The temporary batch plant would operate for approximately 8 months of the 10-month construction period. The batch plant would require a stand-alone generator of approximately 250 kW in size. Fuel for the generator would be obtained from an approximately 5,000-gallon aboveground storage tank (AST) with secondary containment for spill prevention. It is estimated that the batch plant would consume up to 8,500 gallons of water per day. A temporary 5,000-gallon water tank would be placed onsite to replenish the batch plant water, as needed.

Stockpiles of sand and aggregate would be located in the vicinity of the batch plant in a manner that would minimize exposure to wind. Cement would be discharged via screw conveyor directly into an elevated storage silo without outdoor storage. The construction managers and crew would use BMPs and standard operating procedures to keep the plant, storage, and stockpile areas clean and to minimize the buildup of fine materials.

Portable Rock Crusher

To construct and improve proposed project roads, a rock crusher would be required to provide appropriately-sized aggregate for fill and road base. The portable rock crusher would be co-located with the batch plant and would have an average capacity of approximately 20,000 tons per day. In accordance with BMPs, the rock-crushing area would be sprayed by a water truck to suppress dust. The proposed crusher contains several dust-suppression features, including screens and water spray. Dust-control measures would be used at all emission points during operation, including startup and shutdown periods, as required.

2.7.6 Equipment Maintenance

During construction, refueling and maintenance of equipment and vehicles that are authorized for highway travel would be performed offsite at an appropriate facility. Equipment and vehicles that are not highway authorized would be serviced on the proposed project site by a maintenance crew using a specially designed vehicle maintenance truck.

2.7.7 Staging and Laydown Areas

The proposed project includes construction staging areas (for storage of project components and equipment) and additional WTG laydown areas at each WTG location (for offloading and storage of the tower components).

2.7.7.1 Construction Staging Areas

Up to 7 temporary staging areas would be used during construction. Staging areas would range from 0.5 acres to 7.25 acres in size and would be used for the storage of turbine components, construction equipment, office trailers, and other supplies including hazardous materials. The batch plant, rock crusher, and associated fuel and water tanks would be co-located within the disturbed area footprint of one of the staging areas. Onsite mobile trailers would be located within the staging areas to support workforce needs and site security. The mobile trailers also would house a first aid station, emergency shelter, and hand tool storage area for the construction workforce. Vegetation would be cleared and each construction staging area would be graded so that it would be level. It then would be covered with a 6-inch gravel surface and a 1-foot-high earthen berm or other appropriate erosion control device, such as silt fences and straw bales, would be installed to contain water runoff. Diversion ditches would be installed, as necessary, to prevent stormwater from running onto the site from surrounding areas. Following completion of construction activities, the contractor would restore the temporary construction staging areas. The gravel surface would be removed and the areas would be recontoured, stockpiled topsoil would be replaced, and the area would be seeded with an approved mixture of grasses.

2.7.7.2 Wind Turbine Generator Laydown Areas

A laydown area would be constructed at each new WTG pad to accommodate offloading and storage of the tower sections, nacelle, rotor hub, and blades, as well as some construction equipment. Each WTG laydown area would occupy approximately a 0.5 acre area. The WTG laydown areas would include a compacted,

gravel-surfaced crane pad within the 0.5-acre area. The crane pad would be approximately 65 feet wide (constructed adjacent to the turbine access road) to allow a large track-mounted crane to gain access to the turbine foundations. The laydown areas must be level or near-level, and vegetation clearing and/or grading would be required to achieve these conditions. The crane pad must be nearly flat to allow the crane to lift the large and extremely heavy turbine components safely. The crane pad would be constructed using standard cut-and-fill road construction procedures. In general, WTG laydown areas would be circular. The actual dimensions of the individual WTG laydown areas would be based on site topography and the need to minimize cut and fill. Construction access to this area would be limited to wheeled vehicles.

2.7.8 Hazardous Materials Storage

Hazardous materials would be stored at one of the staging areas (use of extremely hazardous materials is not anticipated). To minimize the potential for harmful releases of hazardous materials through spills or contaminated runoff, these substances would be stored within secondary containment areas in accordance with federal, state, and local requirements and permit conditions. Storage facilities for petroleum products would be constructed, operated, and maintained in accordance with the SPCC Plan that would be prepared and implemented for the proposed project (*Code of Federal Regulations* [CFR], Title 40, Part 112), including engineering standards (for example, secondary containment), administrative standards (for example, training with special emphasis on spill prevention, standard operating procedures, inspections), and BMPs.

A Hazardous Materials Business Plan (HMBP) would be developed for the proposed project. The HMBP would contain specific information regarding the types and quantities of hazardous materials, as well as their production, use, storage, spill response, transport, and disposal.

2.7.9 Traffic and Parking

The Project Proponent would prepare a Traffic Management Plan (TMP) for the proposed project to reduce hazards that would result from the increased truck traffic, and to ensure that traffic flow on local public roads and highways would not be affected adversely. The TMP would incorporate measures such as informational signs, traffic cones, and flashing lights, to identify any necessary changes in temporary land configuration. Flaggers with two-way radios would be used to control construction traffic and reduce the potential for accidents along roads. Speed limits would be set commensurate with road type, traffic volume, vehicle type, and site-specific conditions as necessary to ensure safe and efficient traffic flow. Onsite construction traffic would be restricted to the roads developed for the proposed project. Use of existing unimproved roads would be restricted to emergency situations only.

Preconstruction decommissioning activities and delivery of construction materials and equipment would require approximately 8,257 fully-loaded inbound trips of large trucks to the site from offsite sources for a total of up to 16,514 inbound and (empty) outbound truck trips associated with the proposed project. It is estimated that up to 450 of these trips would include oversized vehicles delivering WTG and substation materials, heavy equipment, and other construction-related materials; and up to 200 (of the 450) trips would occur on roads within Contra Costa County. Construction of the proposed project components (roads, turbines, and electrical/communication lines) would occur at about the same time, using individual vehicles for multiple tasks. Based on data provided for typical wind energy projects of similar size, it is anticipated that during the construction period, there would be approximately 60 daily round trips by vehicles transporting construction personnel to the site. Assuming that construction material deliveries from external sources would occur over the 8-month construction period at 20 workdays per month, an average of about 81 one-way truck trips per day (that is, 40.5 trucks generating one trip to the proposed project site and one trip away from the site) would be added to background traffic volumes on area roadways. In addition to the large truck loads shown in Table 2-7, there would be over 12,000 truck trips within the site by dump trucks, concrete trucks, water trucks, cranes, and other construction and trade vehicles. Construction-related parking would be located in construction staging areas. Carpooling from a location within 10 miles of the site, other than the O&M facility, also would be employed.

After construction, O&M of the proposed project would require five round trips per day using pickups or other light-duty trucks.

2.7.10 Water and Wastewater Needs

Water for project construction activities would be provided through an agreement with municipal or private suppliers. Temporary onsite water tanks and water trucks would be made available for firewater support, dust suppression, and construction needs. One or more 3,500-gallon tanks or other means for fire water support would be subject to approval by Alameda County.

During construction, up to 50 million gallons of water would be used for the turbine tower and electrical substation foundations, dust control on roads and during grading and site work, as well as for mixing with cement and aggregate to form concrete.

Daily water use would vary, depending on the weather conditions and time of year, which affect the need for dust control. Hot, dry, windy conditions would require greater amounts of water. Tanker trucks would apply water where needed to construction areas to aid in road compaction and reduce construction-generated dust.

A minimal amount of water would be required for construction worker needs (drinking water, sanitation facilities). This water would be trucked in or delivered via bottled drinking water. A local sanitation company would provide and maintain appropriate construction sanitation facilities. Portable toilets would be located at each of the crane assembly areas, the concrete batch plant, the substation, and the trailer pad area. When necessary, additional facilities would be placed at specific construction locations.

During construction, stormwater would be managed through the BMPs in the project-specific SWPPP that would be prepared in accordance with the 2010 Construction Stormwater General Permit. Non-stormwater discharges are not anticipated to occur from implementing the proposed project, due to implementation and maintenance of the BMPs. Discharge of water from dust suppression and control is not expected to occur because the water from this use would likely infiltrate into the road surface or evaporate. Appropriate BMP training would be provided to truck operators to prevent runoff from dust suppression and control activities. Water used for cement mixing and truck washing would be managed in accordance with applicable permit conditions (and BMPs) and would not be discharged offsite.

2.7.11 Demarcation of Sensitive Resources

Sensitive resources adjacent to and within the proposed project construction areas would be marked to ensure adequate avoidance. Areas would be staked and flagged, as appropriate, as identified through the environmental approval and permitting processes. Prior to construction, an environmental inspector (if required), the construction contractor, and any subcontractors would conduct a walk-through of areas to be affected, or potentially affected, by construction activities. The preconstruction walk-throughs would occur regularly to identify sensitive resources to be avoided, limits of clearing, location of drainage features, and the layout for sedimentation and erosion control measures. Following identification of these features, specific construction measures would be reviewed, and any modifications to construction methods or locations would be agreed upon before construction would begin. Agency representatives would be consulted or included on these walk-throughs as needed.

2.7.12 Materials and Services

Approximately 200,000 cubic yards of aggregate would be brought onto the proposed project site for roadway construction, turbine foundations, and the on-site substation.

2.7.13 Inspection and Startup Testing

Prior to operation, each completed WTG would be inspected and checked for mechanical, electrical, and control functions in accordance with the manufacturer's specifications before being released for startup testing. A series of startup procedures would then be performed by the manufacturer's technicians. Final testing would involve additional mechanical, electrical, control, and communications inspections and tests

to ensure that all systems were working properly. After the WTGs had been commissioned and were producing power, a period of acceptance testing would be initiated to ensure that the WTGs were performing in accordance with the agreed-upon parameters, including the manufacturer's warranted power curve. During this time, the power produced would be fed into the PG&E transmission system. Electrical tests on the transformers, underground power lines, and collector substation would be performed by qualified engineers, electricians, and test personnel to ensure that electrical equipment was operating within tolerances and that the equipment had been installed in accordance with design specifications. The aboveground power lines interconnecting to the PG&E system would be tested and inspected as required.

2.8 Site Restoration

Clearing and disposing of trash, debris, and scrub on those portions of the site where construction would occur would be performed at the end of each work day through all stages of construction. Existing vegetation would be cleared only where necessary. All excavations made by clearing would be backfilled with compacted earth and aggregate as soon as cable infrastructure is tested. Disposal of cuttings and debris would be in an approved facility designed to handle the waste.

Also, before construction is complete, all remaining trash and debris would be removed from the site. All temporarily disturbed areas would be returned to their previous contours and any debris would be removed and properly disposed of offsite consistent with Alameda County restoration requirements and described in a Reclamation Plan, which would be developed prior to construction, as part of the construction planning and permitting process. Any material placed in the areas of the foundations or roads would be compacted as required for soil stability.

2.9 Operation and Maintenance

O&M activities for the proposed project would be similar to the O&M activities presently conducted for the existing wind facility. An existing O&M building is located within the project site and could be used for continued O&M activities and storage.

2.9.1 Safety and Environmental Compliance Programs

2.9.1.1 Quality Assurance and Quality Control

A quality assurance/quality control (QA/QC) program would be implemented to ensure that construction and startup of the facility are completed as specified. The Project Proponent would be responsible for ensuring implementation of the QA/QC program prior to construction. The program would implement and maintain QA/QC, environmental compliance programs and procedures, and health and safety compliance programs and procedures, and would integrate the Project Proponent's activities with the contractors during proposed project construction. The Engineering Procurement and Construction contractor and turbine supplier would be responsible for enforcing compliance with the construction procedures program of all of its subcontractors.

2.9.1.2 Environmental Compliance

Construction staff site orientation would include education on the potential environmental impacts of proposed project construction. The construction manager would establish a method for staff to formally report any issues associated with the environmental impacts, to keep management informed, and allow for rapid response.

2.9.1.3 Stormwater Control

A National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit) Water Quality Order 99-08-DWQ would be obtained from the SWRCB – Division of Water Quality (DWQ). A SWPPP that includes erosion control measures would be generated for the proposed project and implemented onsite. The SWPPP would include the elements described in Section A of the Construction General Permit, including a site map(s), which

shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the proposed project. The SWPPP also would list BMPs, including erosion control BMPs that would be used to protect stormwater runoff and the placement of those BMPs, and would include a description of required monitoring programs.

The SWPPP would be based on the U.S. Environmental Protection Agency EPA document entitled *Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices*. Guidance from other documents, such as the Caltrans publications *The Construction Site BMPs Manual* and the *SWPPP and Water Pollution Control Program Preparation Manual*, also could be included in the SWPPP. The SWPPP would be developed with the civil engineering design of the proposed project.

2.9.1.4 Safety Compliance

The Project Proponent and its construction contractors and subcontractors would be responsible for construction health and safety issues. Each contractor and subcontractor would provide a Health and Safety (H&S) Coordinator, who would ensure that applicable laws, regulations, ordinances, and standards concerning health and safety were followed and that any identified deficiencies were corrected as quickly as possible. The H&S Coordinator would conduct onsite orientation and safety training for contract and subcontract employees and would report back to the onsite construction manager. Upon identification of a health and safety issue, the H&S Coordinator would work with the construction manager and responsible subcontractor or direct hire workers to correct the violation.

2.9.1.5 Emergency Situations

If severe storms resulted in a downed interconnection power line, standard O&M procedures would be applied. In the event of a high-voltage grid outage, or turbine failure related to fire or mechanical problems, the WTGs would have internal protective control mechanisms to safely shut them down. A separate low-voltage distribution service feed might be connected to the low-voltage side of the collector substation as a backup system to provide auxiliary power to proposed project facilities in case of outages. For safety, the collector substation will be fenced, locked, and properly signed to prevent access to high-voltage equipment. Safety signing would be posted around WTGs, transformers, other high-voltage facilities, and along roads, as required. Vegetation clearance would be maintained adjacent to the project ingress and egress points, and around the collector substation, transformers, and interconnection riser poles.

2.9.1.6 Public Access and Security

The proposed project would be located entirely on private property and public property with restricted public access. Only authorized access to the proposed project site would be allowed. The existing site is fenced to prevent public and wildlife access to high-voltage equipment. The project would include some fence installation and repair, as needed. Safety signs would be posted in conformance with applicable state and federal regulations around all WTGs, transformers, and other high-voltage facilities, and along access roads. Vegetation clearance would be maintained adjacent to the project ingress and egress points, and around the collector substation, transformers, and interconnection riser poles.

2.9.1.7 Hazardous Materials Storage and Handling

As indicated above the County's Hazardous Materials Program Division is the Certified Unified Program Agency (CUPA) for all areas of Alameda County. Management of hazardous materials would occur in accordance with a County-approved HMBP developed for the proposed project in accordance with the requirements of the CUPA.

Hazardous materials used during O&M would be stored, within the existing O&M building in aboveground containers with appropriate spill containment features as prescribed by the local fire code or the SPCC Plan for the O&M building as stipulated by the appropriate regulatory authority. Such materials would be

substantially similar in types and amounts to the materials currently stored and used for O&M for the existing facility.

Lubricants used in the turbine gearbox are potentially hazardous. The gearbox would be sealed to prevent lubricant leakage. The gearbox lubricant would be sampled periodically and tested to confirm that it retains adequate lubricating properties. When the lubricants have degraded to the point where they no longer contain the needed lubricating properties, the gearbox would be drained, new lubricant would be added, and the used lubricants would be disposed of at an appropriate facility in accordance with all applicable laws and regulations.

Transformers contain oil for heat dissipation. The transformers are sealed and contain no polychlorinated biphenyls or moving parts. The transformer oil would not be subject to periodic inspection and does not need replacement.

O&M vehicles would be properly maintained to minimize leaks of motor oils, hydraulic fluids, and fuels. During operation, O&M vehicles would be serviced and fueled at the existing O&M building, or at another offsite location, as no storage tanks are located at the existing wind farm, and none are proposed for the proposed project.

2.9.2 Operation and Maintenance Activities

Maintenance of wind turbine generators and associated infrastructure includes a wide variety of activities. Routine maintenance involves activities such as: checking torque on tower bolts and anchors; checking for cracks and other signs of stress on the turbine mainframe itself and other turbine components; inspecting for leakage of lubricants, hydraulic fluids and other hazardous materials, and replacing them as necessary; inspecting the grounding cables, wire ropes and clips, and surge arrestors; cleaning; and repainting. Most routine maintenance activities occur within and around the tower and the nacelle. Cleanup from routine maintenance activities would be performed at the time of maintenance by the O&M personnel. While performing most routine maintenance activities, O&M staff would travel via pickup or other light-duty trucks. Though unlikely, non-routine maintenance such as repair or replacement of rotors or other major components could become necessary. Such maintenance would involve use of one or more cranes and equipment transport vehicles, though the cranes would not be as large as the large track-mounted cranes needed to erect the turbine towers.

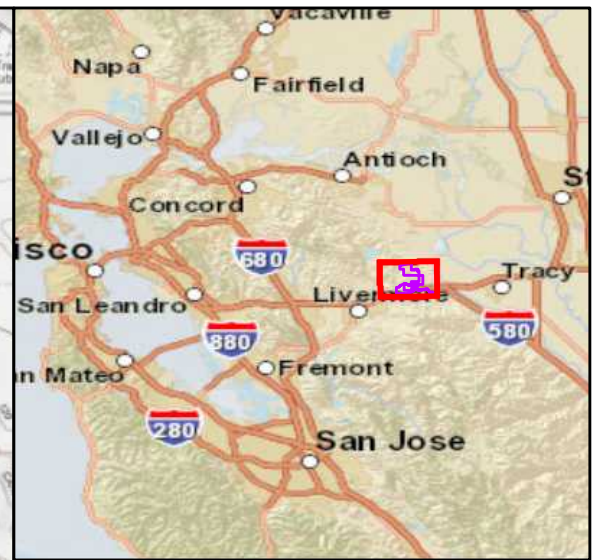
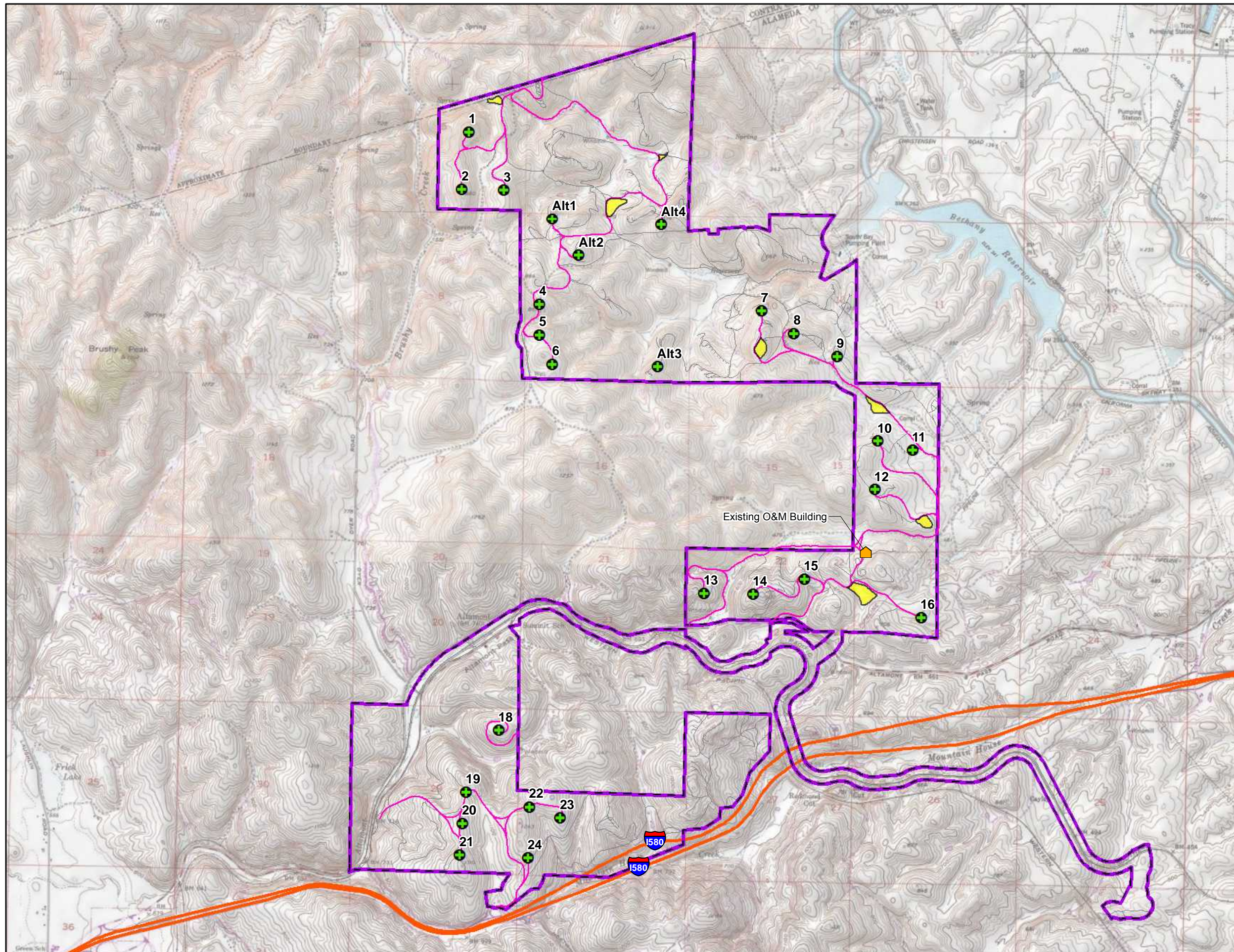
Monitoring of the proposed project's operations would be computer-based; computers located in the base of each WTG tower would be connected to the existing local substation control room server through fiber-optic telecommunication links.

The O&M workforce is not anticipated to change from the existing WTG technicians, operations personnel, administrative personnel, and management staff. O&M staff would continue to monitor WTG and system operation, perform routine maintenance, shut down and restart WTGs when necessary, and provide security. All O&M staff would be trained as needed to provide best-practice services.

2.10 Ultimate Decommissioning and Reclamation

The anticipated life of the wind farm is more than 30 years, as upgrading and replacing equipment could extend the operating life indefinitely. The ultimate decommissioning and removal of the proposed project would be similar to the decommissioning and removal of existing wind farm components that would occur prior to construction of proposed project facilities, except considerably less intensive in that no concrete batch plant, rock crusher, concrete trucks, or cable delivery trucks would be required, no cable trenching or similar work would occur, and the amount of WTG material to be removed would be considerably less than the amount contemplated under initial decommissioning of the existing facility based on the fewer number of turbines. In addition, existing service roads would be used. No new access roads, and no widening of then-existing access roads, would be required.

Decommissioning would involve removing the turbines, transformers, substation, foundations and related infrastructure to a depth of 3 feet below grade. A single large crane would be used to disassemble the WTGs, and smaller cranes would lift the parts onto trucks to be hauled away. Generally, turbines, electrical components, and towers either would be refurbished and resold or recycled for scrap. All unsalvageable materials would be disposed of at authorized sites in accordance with federal, state, and local laws, regulations, ordinances, and adopted County policies in effect at time of final decommissioning. Following removal of the equipment and structures, a dozer would be used to spread dirt over the foundations. Road reclamation would be accomplished using scrapers and gravel trucks. Site reclamation after decommissioning would be subject to a County-approved reclamation plan (County Code Article 88-3.8), which based on site-specific requirements would include regrading, spot replacement of topsoil, and revegetation of disturbed areas with an approved seed mix.



- LEGEND**
- Project Boundary (4,389 Acres)
 - + Proposed Turbines (Subject to Refinement)
 - + Existing O&M Building
 - Laydown Areas
 - Proposed Roads
 - Existing Roads

Note:
Preliminary Project Layout – Subject to Change

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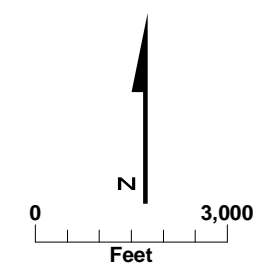
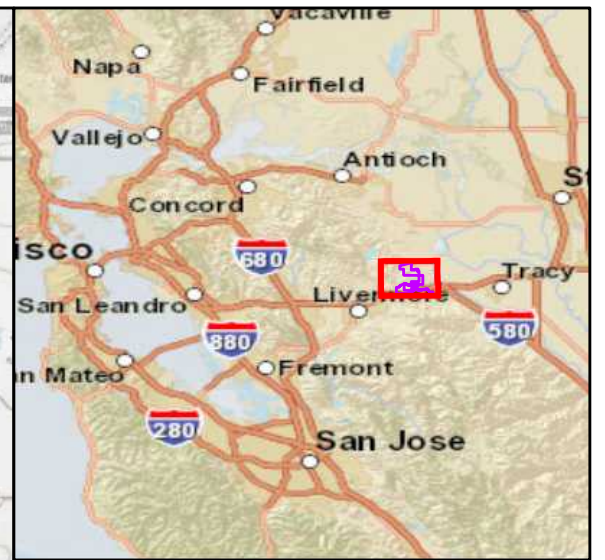
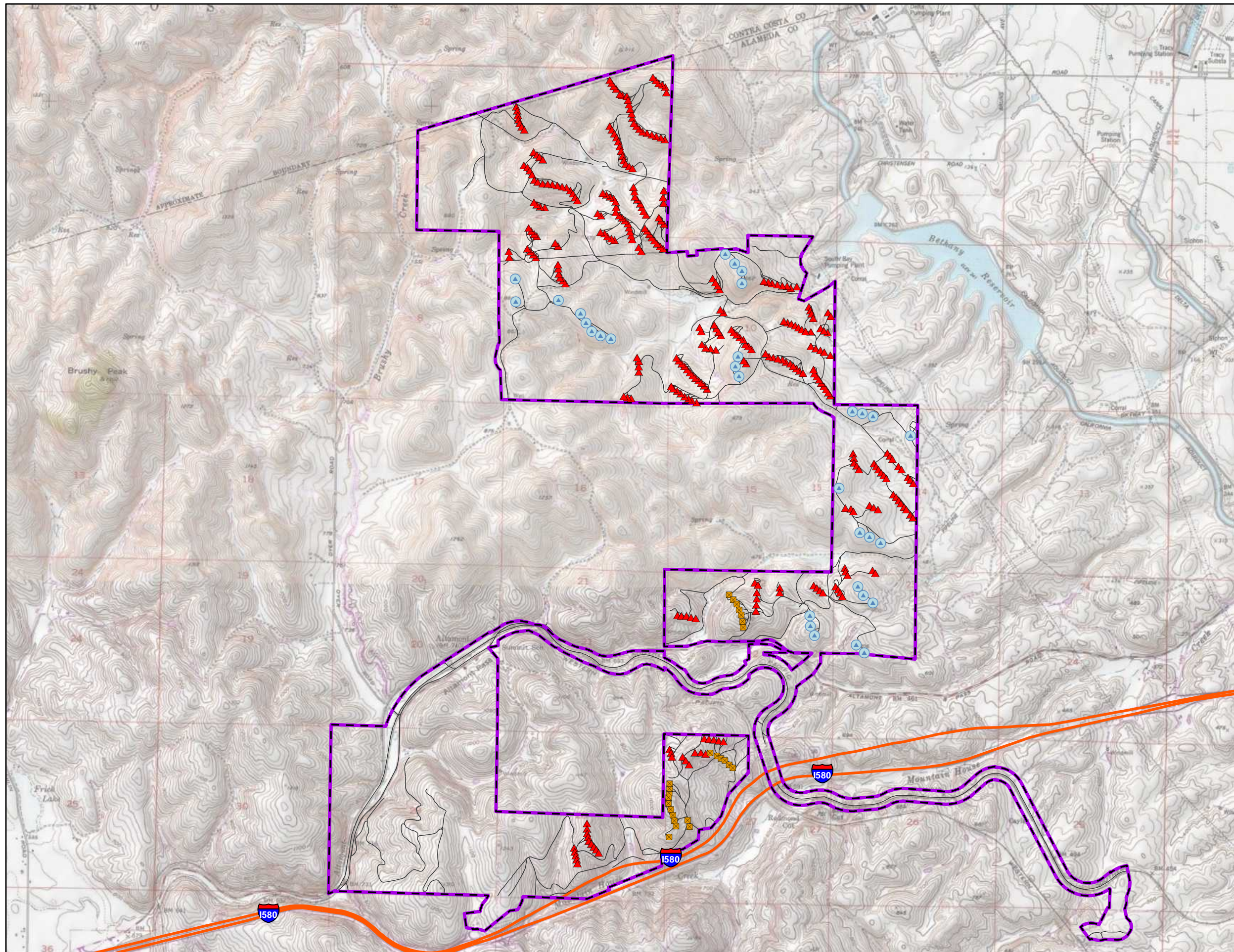


FIGURE 2-3
Proposed Project Features
Golden Hills North Wind Energy Center
Repowering Project



- LEGEND**
- Project Boundary (4,389 Acres)
 - ▲ Existing Turbines to be Removed
 - Existing Diablo Winds Turbines
 - Existing Turbine Pad Foundations
 - Existing Roads

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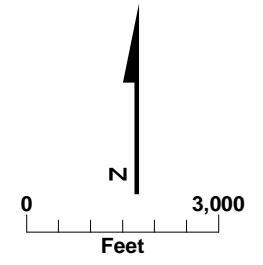
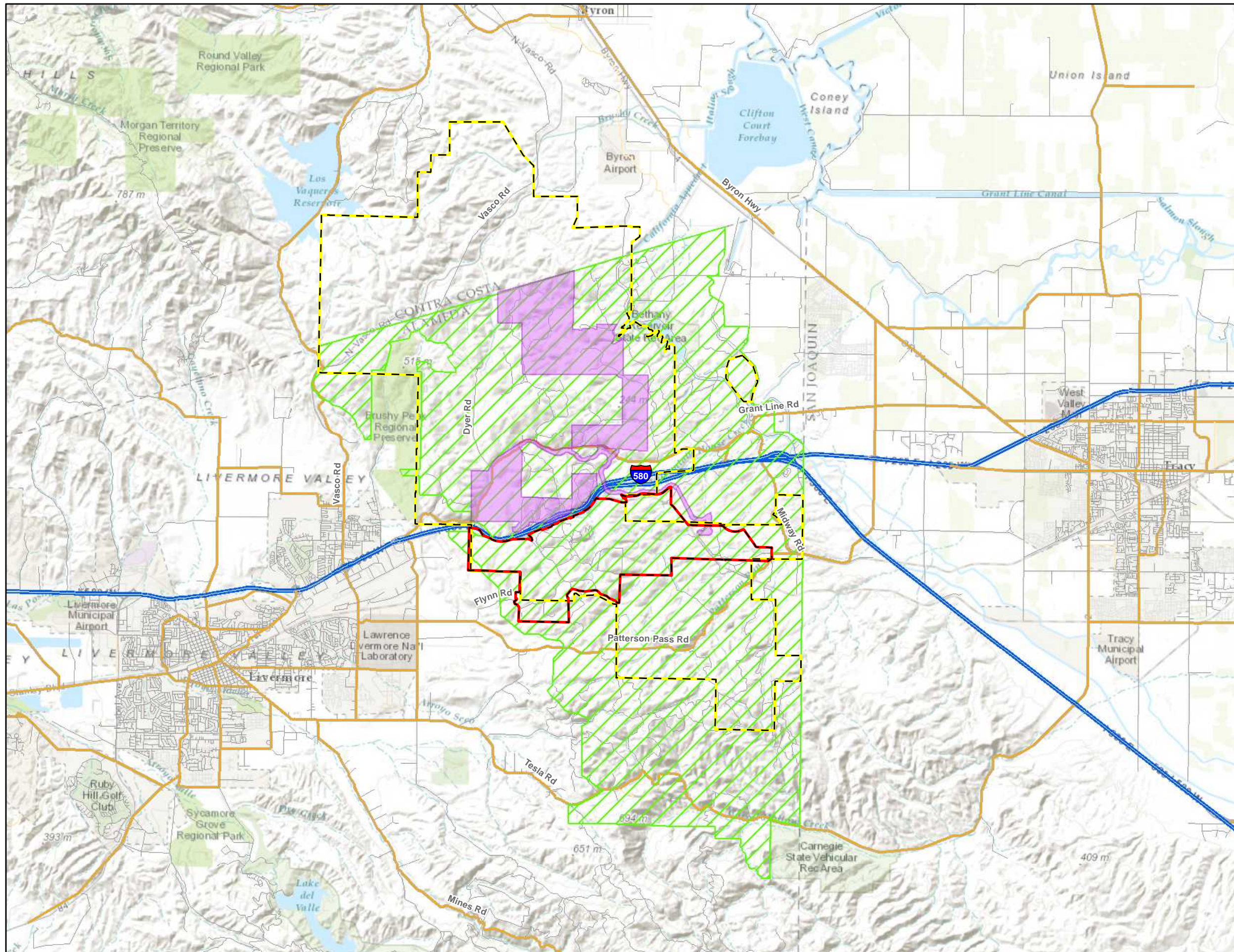


FIGURE 2-2
Proposed Turbines for Decommissioning
Golden Hills North Wind Energy Center Repowering Project



- LEGEND**
- Golden Hills North Project Boundary
 - Golden Hills Project Boundary
 - Altamont Pass Wind Resource Area
 - Programmatic EIR Area

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 Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, IPC, TomTom

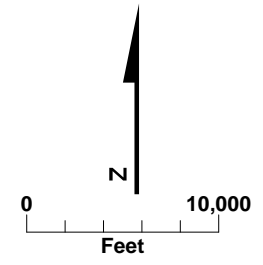


FIGURE 2-1
Project Vicinity
 Golden Hills North Wind Energy Center
 Repowering Project

3 Environmental Analysis

The environmental analysis provided in this section describes the information that was considered in evaluating the questions contained in the CEQA Environmental Checklist (California Code of Regulations [CCR]). The information used in this evaluation is derived from the literature review, field reconnaissance, and meetings with Alameda County. The evaluation of direct, indirect, and cumulative impacts considered the existing conditions within the GH North Project boundary, immediately adjacent properties, and surrounding communities.

The GH North Project would incorporate and implement all mitigation measures specified in the APWRA PEIR and certified by the Alameda County East County Board of Zoning Adjustments. Specific mitigation measures relevant to a particular impact of the GH North Project are cited in the same manner as in the APWRA PEIR and the associated Mitigation Monitoring and Reporting Program adopted for the Golden Hills Project in conjunction with APWRA Repowering Program approval.

3.1 Aesthetics and Visual Resources

This section discusses the effects on aesthetic and visual resources from the proposed GH North Project, Phase 2 of the Golden Hills Project. This analysis relies on and incorporates by reference the project setting and regulatory setting as described in the APWRA Repowering PEIR (Alameda County Community Development Agency, 2014). Potential impacts to aesthetics and visual resources from the GH North Project are discussed relative to conclusions stated for the Golden Hills Project in the APWRA Repowering PEIR. The APWRA Repowering PEIR conclusion stated that the Golden Hills Project would result in less-than-significant impacts with regard to aesthetics and visual resources, with the incorporation of Mitigation Measures AES-1 through AES-5. Cumulative effects would be less than significant.

3.1.1 Setting

The GH North Project site is north of the Golden Hills Project area (the general locations of the two project sites are separated by I-580), but within the larger program area described in the APWRA Repowering PEIR.

The environmental setting for aesthetic and visual resources is functionally the same as described for the Golden Hills Project area and the greater program area, characterized by grass-covered, and rolling hills, with road cuts to accommodate rural roads and I-580. Consistent with the PEIR, strings of wind turbines, power lines, transformers, access roads, and substations are the most visually distinct artificial features throughout most of the GH North Project area. The project vicinity is dotted with industrial sites, residences, and stock ponds, including a few clusters of smaller rural residential properties on Dyer Road, Midway Road, and Mountain House Road.

The program area north of I-580 is specifically described in the PEIR specifically as being primarily composed of rolling terrain that transitions to flatter agricultural lands just outside of the northeastern program area boundary. Notable features in this portion of the program area include the California Aqueduct, California Aqueduct Bikeway, Bethany Reservoir State Recreation Area (Bethany Reservoir), Altamont and Vasco Road Landfills, Summit School, Mountain House Bar, Mountain House School, and a series of multi-use regional trails connecting Brushy Peak Regional Preserve to Del Valle Regional Park, San Joaquin County border to Shadow Cliffs Regional Recreation Area, Brushy Peak Regional Preserve to Bethany Reservoir, and Vasco Caves Regional Preserve to Brushy Peak Regional Preserve.

As described in Section 2.2 of this document, the GH North Project would add approximately 4,389 acres to the approximately 4,500 acre Golden Hills Project, and up to 24 WTGs to the Golden Hills Project's 52 WTGs for a total nameplate capacity of 129.20 MW (see Figure 2-3). Electricity generated by the GH North Project would be collected via an underground collection system and transmission line, which would connect into the electrical infrastructure and project substation located within the boundaries of the Golden Hills Project. In addition, up to 324 existing wind turbines on the existing wind farm site, including their transformers and associated electrical infrastructure, would be decommissioned (see Figure 2-2). Existing roads and other disturbed areas not needed for the proposed project's new WTGs would be decommissioned and recontoured, as appropriate, to maintain slope stability. Other major components of the proposed project include additional service roads, transmission and collection lines, meteorological towers and communication cables. Construction of the project would also require the following temporary project facilities: access roads, laydown areas, and a concrete batch plant. Proposed project facilities are described in more detail in Section 2.6.

Given the project setting and proposed activities described above, and in coordination with Alameda County, a number of Key Observation Points (KOPs) were selected for use in this analysis of potential effects to aesthetics and visual resources. These KOPs are intended to represent a variety of publicly-accessible viewpoints and visual sensitivities within and in the vicinity of the project area (see Figure 3.1-1):

- KOP 1 is located along the northern extent of Flynn Road, just south of I-580 and approximately 0.4 mile from the nearest proposed turbine (see Figure 3.1-2 for existing and simulated views from this viewpoint). Flynn Road is among the local roads identified by Alameda County in the PEIR as Scenic

Rural-Recreation Routes (or as mapped Major Rural Roads). Typical viewers from this location are traveling toward the I-580 corridor from the area south of the freeway and east of Livermore.

- KOP 2 is located within the westbound lane of I-580, approximately 1.1 miles east of the Flynn Road overpass and approximately 0.7 mile from the nearest proposed turbine (see Figure 3.1-3 for existing and simulated views from this viewpoint). As identified in the PEIR, this segment of I-580 is a state-designated scenic route. Typical viewers from this location are drivers and passengers traveling through the Altamont Pass from the San Joaquin Valley toward the Bay Area.
- KOP 3 is located alongside the westbound lane of Altamont Pass Road, approximately 0.6 mile from the nearest proposed turbine (see Figure 3.1-4 for existing and simulated views from this viewpoint). Altamont Pass Road is among the local roads identified by Alameda County in the PEIR as Scenic Rural-Recreation Routes (or as mapped Major Rural Roads). Typical viewers from this location include local residents as well as commute traffic; Altamont Pass Road is used by some commuters as an alternative to I-580.
- KOP 4 is located along the eastern shoreline of Bethany Reservoir, approximately 1.1 miles from the nearest turbines, which would be located across the waterbody (see Figure 3.1-5 for existing and simulated views from this viewpoint). Typical viewers from this location are recreationists, primarily those fishing in Bethany Reservoir. This viewpoint also approximates the view from the California Aqueduct Bikeway, which passes within 0.1 mile of the viewpoint to the northeast.
- KOP 5 is located along the northbound lane of Dyer Road, approximately 1.3 miles from the nearest visible turbines (see Figure 3.1-6 for existing and simulated views from this viewpoint). Typical viewers from this location are occupants of the rural residences clustered along this segment of Dyer Road.
- KOP 6 is located along the Brushy Peak Loop Trail, near the top of Brushy Peak, approximately 3.0 miles away from the nearest visible turbines to the southeast (see Figure 3.1-7 for existing and simulated views from this viewpoint). Typical viewers from this location are recreational hikers who have ascended to this location near the peak or who have emerged from the wooded upper reaches of the Brushy Peak Regional Preserve and are able to see expansive, unobstructed views toward the south and east.
- KOP 7 is located along Great Valley Parkway, along the western edge of the Mountain House Community, approximately 3.4 miles east of the nearest turbine (see Figure 3.1-8 for the existing view from this viewpoint). This view is included at the request of Alameda County to document existing views from Mountain House toward the project area. Because of the distance between viewpoint and project site and the intermittency of this view (the western edge of Great Valley Parkway is predominantly lined with trees that obstruct long-distance views to the west), a simulated view is not included here.

Existing and simulated views from these locations are referenced as applicable throughout the analysis of potential impacts in the following section. Alternative turbines, as labeled in Figure 3.1-1, have been included in simulations. As such, this analysis evaluates a maximum visibility scenario with regard to visible new WTGs.

3.1.2 Impact Analysis

This section evaluates the potential for the GH North Project to result in new or substantially more adverse significant effects to aesthetics relative to the impacts identified for the Golden Hills Project in the PEIR. The following discussion of the GH North Project's potential effects is organized by impacts discussed in the PEIR. These impacts include the complete set of criteria by which projects must be evaluated for potential impacts to aesthetic resources in CEQA analyses.

Impact AES-1: Temporary visual impacts caused by construction activities (less than significant with mitigation)

Construction activities are temporary in nature and are therefore not considered as sources of permanent visual impacts. The PEIR acknowledges that construction impacts would be temporary and short-term, and decommissioning and construction activities would occur in a manner consistent with Alameda County requirements for work days and hours. However, it also acknowledges that highly sensitive viewers in the program area (residents and recreationists) could perceive these impacts as significant and requires mitigation measures to reduce any potential impacts to a less-than-significant level. Implementation of Mitigation Measure AES-1 would ensure that any potential impacts to aesthetics from construction activities remain less than significant.

Impact AES-2: Have a substantial adverse effect on a scenic vista (less than significant)

As with the Golden Hills Project site, there are no designated scenic vistas within the GH North Project site, though there are a number of expansive views, distinctive to this particular region, that could reasonably be described as “scenic vistas.” The view from KOP 6, along the Brushy Peak Loop Trail just below the tree line, is demonstrative of such views, in which the “rolling, grass-covered, rural landscape dotted with existing turbines” described in the PEIR is visible. With the GH North Project’s turbines constructed, relatively large turbines would be added to this view in a cluster beginning approximately three miles away from the viewpoint. Two groups of existing, smaller turbines to the east of the new turbines would be removed. The overall effect would be a reduction in the overall number of visible turbines in this view, but an addition of seven turbines that would be much more prominent than the existing turbines. However, the new turbines would relate to existing, visible features and would not encroach upon the distant mountain skyline. There would be a less than significant effect on the qualities of this view that make it a scenic vista.

In another vista view from KOP 4, which is located along the eastern shore of Bethany Reservoir, all but a few of the existing turbines would be removed and replaced with relatively few, though pronouncedly larger, new turbines. The effect would be the same as that described in the PEIR for a number of views in which similar construction and removal of turbines was analyzed: the new, more efficient turbines, though larger than the existing turbines, would be placed in a more widely distributed configuration, which would detract “less from the natural landscape than the existing string configuration.”

In general, because of similar effects throughout the GH North Project area, and because new wind turbines would not be placed in any location adjacent to, or in close proximity to, locations from which vista views are available, effects to scenic vistas would be less than significant with the project. Because the project site is within an area previously developed with wind energy facilities, not all of the mitigation measures identified in the PEIR would apply. Unlike the Golden Hills project, however, the GH North Project would be within the vicinity of Vasco Road, as well as other designated scenic roadways. As such, implementation of Mitigation Measures AES-2b and AES-2c identified in the PEIR would further reduce effects on scenic vistas.

Impact AES-3: Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings along a scenic highway (less than significant with mitigation)

The PEIR described scenic routes in the Golden Hills Project area as being already lined with existing wind turbines, and the related “accustomed views” on the part of drivers along such roads. Further, removal of numerous existing turbines and their replacement by fewer, larger turbines, would allow for “views of the rolling, grassy terrain to become more prominent, back-dropped against the sky, and less interrupted by anthropogenic features.” This is contrasted in the PEIR with existing conditions, in which “the eye is drawn to and focused on the numerous turbines that clutter the view by sticking up and across the hillsides and ridgelines.”

This analysis applies to the view from I-580, the single state-designated scenic highway in the project vicinity. The existing and simulated views from KOP 2, within the westbound lane of the freeway, are representative of views from I-580 toward the location where new turbines would be most proximate to the

roadway and most visible. As alluded to in the PEIR, removal of the existing turbines would increase the definition of the small ridgelines in the immediate foreground, and because the new turbines would be set further back from the freeway than the existing ones, they would not appear substantially taller, or appear to extend substantially further above the ridgeline, in this view.

KOP 3 is located along Altamont Pass Road, a locally-designated scenic route. In this particular view, the same number of existing turbines would be replaced by visibly larger turbines, without the benefit of the less cluttered views described and implied for the views above. However, Altamont Pass is lined with turbines under existing conditions, including larger, more modern turbines. The addition of four turbines (three of which are visible from KOP 3) in the vicinity of Altamont Pass Road, the nearest of which would be within 0.2 mile, would not constitute substantial damage to scenic resources, particularly given the broader context and character (to be discussed in greater detail below) of the current landscape.

The PEIR concluded that impacts to scenic highways would be less than significant with mitigation for all alternatives and projects that included or were adjacent to designated scenic highways. Because the proposed GH North Project would be adjacent to the state-designated scenic highway I-580, PEIR Mitigation Measures AES-2a, AES-2b, and AES-2c would apply. Implementation of these measures would ensure a less-than-significant impact to scenic highways.

Impact AES-4: Substantially degrade the existing visual character or quality of the site and its surroundings (less than significant with mitigation)

The PEIR demonstrates that, along with the underlying topography, the project area and its surroundings are visually characterized by the expansive presence of existing wind energy resources. In the majority of representative views evaluated here, the visual character of the project site in existing views is made evident by the persistent presence of old generation wind turbines. Existing turbines are present in close-in views from I-580 (KOP 2) and Altamont Pass Road (KOP 3). In broader views such as that from Dyer Road (KOP 5), existing strings of turbines are prominent. And in the most expansive views, including those from Bethany Reservoir (KOP 4), Brushy Peak (KOP 6) and Mountain House (KOP 7), the presence of turbines throughout the larger area – the area evaluated programmatically in the PEIR – is notable. As shown in the simulated views of the proposed project, the removal of older turbines and addition of fewer, newer, and larger turbines would not substantially degrade the existing visual character or quality; rather, they would appear consistent with the existing visual character of the general site and, as demonstrated in the PEIR and cited above, would improve visual quality in views where the removal of existing turbines allowed for more of the natural-appearing landscape between larger turbines to be visible.

The view to the north from the northern extent of Flynn Road (KOP 1) is the one view in which no turbines are visible under existing conditions. Viewed narrowly, the addition of turbines of this size to the existing view would appear as a substantial alteration of existing visual character. However, from this general location along Flynn Road, existing turbines are visible to the east and west, along the I-580 corridor, and to the south. Drivers with this particular view would most likely have just passed through an area heavily developed with wind energy facilities and which, in the future, will include turbines of the same size as those proposed for the GH North Project (KOP 1 is within the northern extent of the Golden Hills Project area). While the view toward the GH North Project site from KOP 1 does not include wind turbines, the surrounding landscape does, and typical views in other directions from this location include numerous wind turbines, visible as individual towers, strings and in clusters. As such, the addition of wind turbines to the northward view from KOP 1 would not constitute a substantial alteration in the character of this view in the context of the larger project site and its vicinity.

The PEIR anticipated that portions of the program area where there were no turbines at present would be developed and concluded that such change would substantially degrade the existing visual character and quality of such areas. Incorporation of Mitigation Measures AES-2a, AES-2b, and AES-2c were anticipated to reduce the impact to less-than-significant levels. Implementation of these mitigation measures for the GH North Project would similarly reduce the degree of potential impact to less-than-significant levels.

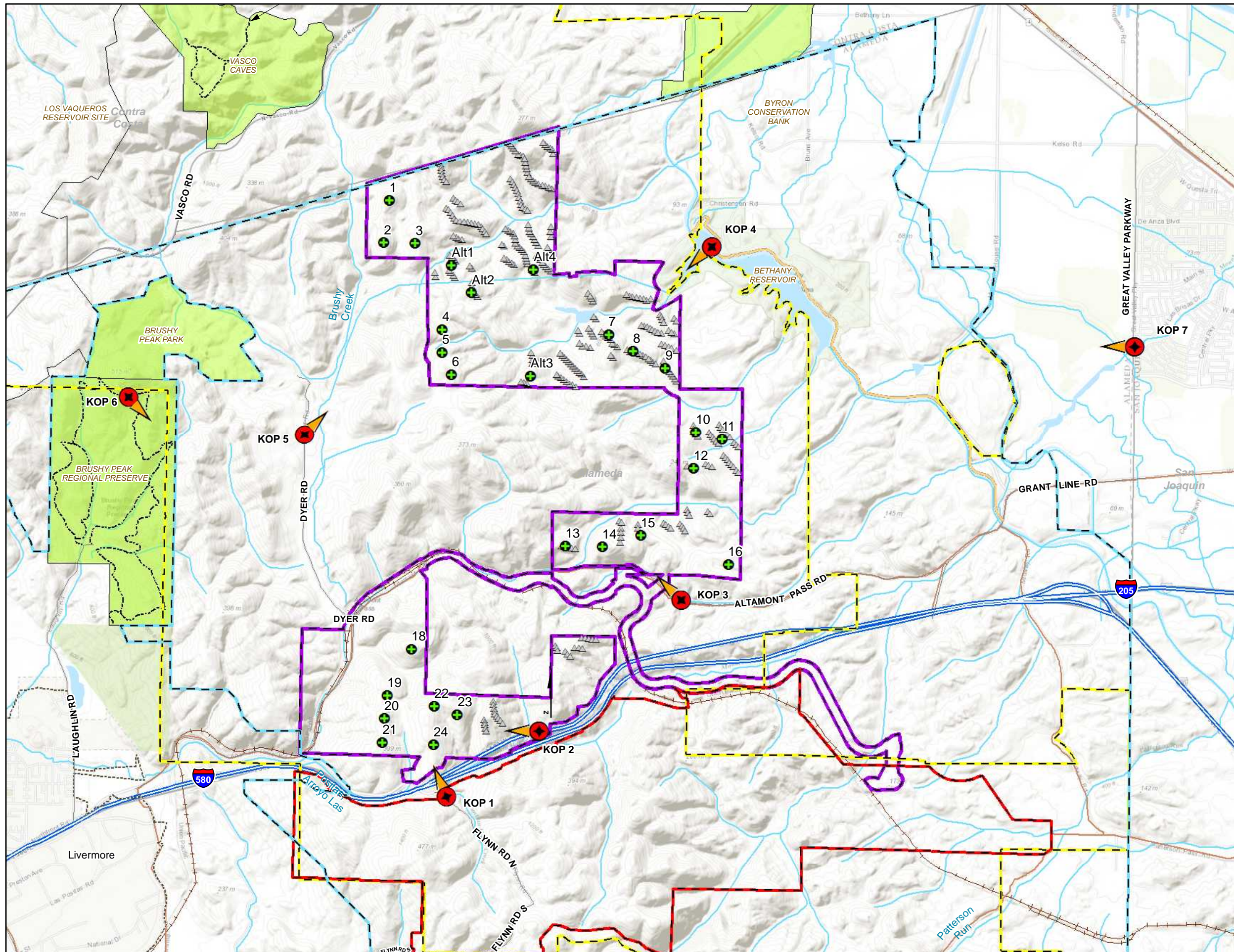
Impact AES-5: Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area (less than significant with mitigation)

The project effects for the GH North Project would be the same as those described for the Golden Hills Project in the PEIR. The 24 new turbines would require FAA lighting. New lighting would appear, throughout the majority of the project site, alongside FAA lighting currently installed atop the 31 existing Diablo Winds turbines. As such, with the relatively minor exception of the northernmost and southernmost extents of the project site (where there are no current turbines with FAA lighting), the FAA lighting associated with the proposed turbines would increase the total amount of safety lighting visible in nighttime views, but would not appear as entirely new sources of nighttime lighting. A new potential source of substantial glare could be created in locations where new turbines would be installed and no turbines currently exist. However, as stated in the project description, the color of towers and rotors on the new turbines would be neutral and non-reflective (e.g., dull white or light gray).

Finally, as discussed in the PEIR, blade rotation could cause shadow flicker that could be a visual intrusion to viewers and could be especially disruptive to residents who would be exposed for long periods of time. Implementation of Mitigation Measure AES-5 would reduce this impact to a less-than-significant level.

Impact AES-6: Consistency with state and local policies (less than significant with mitigation)

The PEIR determined that all alternatives and projects evaluated would be consistent with state and local policies (a less than significant impact) with implementation of mitigation measures. Because the GH North Project is entirely within the programmatic area evaluated in the PEIR, implementation of Mitigation Measures AES-2a, AES-2b, AES-2c, and AES-5 would ensure a less than significant effect on consistency with state and local policies.



LEGEND

- Key Observation Point (KOP)
- Proposed Turbines (Subject to Refinement)
- Existing Turbines to be Removed
- Golden Hills North Project Boundary
- Golden Hills Project Boundary
- Bike Paths
- Parks
- Altamont Pass Wind Resource Area (APWRA)
- Programmatic EIR Area

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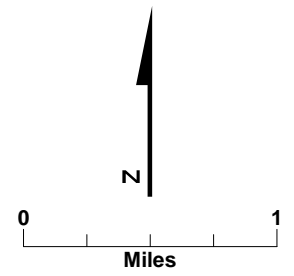


Figure 3.1-1
Key Observation Point Locations
 Golden Hills North Wind Energy Center
 Repowering Project



Figure 3-2a
View from KOP 1 to the north from the northbound shoulder of Flynn Road, approximately 0.1 mile south of I-580.



Figure 3-2b
View from KOP 1 with proposed project simulated. The nearest visible new turbine, in the right half of the view, would be approximately 0.4 mile from the viewpoint.

FIGURE 3-2
Key Observation Point 1
Golden Hills North Wind Energy Center
Repowering Project



Figure 3-3a
View from KOP 2 to the west from the westbound lane of I-580.



Figure 3-3b
View from KOP 2 with proposed project simulated. The nearest visible new turbine in this view would be approximately 0.7 mile from the viewpoint, and existing turbines in the foreground would be removed.

FIGURE 3-3
Key Observation Point 2
Golden Hills North Wind Energy Center
Repowering Project



Figure 3-4a
View from KOP 3 to the northwest from the westbound shoulder of Altamont Pass Road.



Figure 3-4b
View from KOP 3 with proposed project simulated. The nearest visible new turbine in this view would be approximately 0.6 mile from the viewpoint, and existing turbines present in the right half of the existing view would be removed.

FIGURE 3-4
Key Observation Point 3
Golden Hills North Wind Energy Center
Repowering Project



Figure 3-5a
View from KOP 4 to the southwest from the east bank of Bethany Reservoir.



Figure 3-5b
View from KOP 4 with proposed project simulated. The nearest visible new turbines, in the center of the view, would be approximately 1.1 miles away. All existing turbines within the project area would be removed. Existing turbines in the foreground outside of the project area would remain.

FIGURE 3-5
Key Observation Point 4
Golden Hills North Wind Energy Center
Repowering Project



Figure 3-6a
View from KOP 5 to the northeast from the northbound lane of Dyer Road.



Figure 3-6b
View from KOP 5 with proposed project simulated. The nearest visible new turbines, partially visible in the right portion of the view, would be approximately 1.3 miles away. The more visible new turbines, in the left portion of the view, would be approximately 1.7 miles away from the viewpoint. Distant turbines partially visible in the left portion of the view would be removed.

FIGURE 3-6
Key Observation Point 5
Golden Hills North Wind Energy Center
Repowering Project



Figure 3-7a
View from KOP 6 to the southeast from the Brushy Peak Loop Trail.



Figure 3-7b
View from KOP 6 with proposed project simulated. The nearest visible new turbines would be those appearing in a cluster in the right half of the view, between approximately 3.0 and 3.7 miles away. Existing turbines to the east of those new turbines, in the left portion of the view, would be removed.

FIGURE 3-7
Key Observation Point 6
Golden Hills North Wind Energy Center
Repowering Project



View from KOP 7 to the west. This view is included at the request of Alameda County to demonstrate existing views from the western edge of Mountain House. The proposed project would be partially and intermittently visible from Mountain House, as close as approximately 3.4 miles away; it would appear amid a broader landscape currently developed with wind energy.

FIGURE 3-8
Key Observation Point 7
Golden Hills North Wind Energy Center
Repowering Project

3.2 Air Quality

This section discusses the effects on air quality from the proposed GH North Project, Phase 2 of the Golden Hills Project. This analysis relies on and incorporates by reference the project setting and regulatory setting as described in the APWRA Repowering PEIR (Alameda County Community Development Agency, 2014). Potential impacts to air quality from the GH North Project are discussed relative to conclusions stated for the Golden Hills Project in the APWRA Repowering PEIR. The APWRA Repowering PEIR conclusion stated that the Golden Hills Project would result in significant and unavoidable impacts to air quality with regard to short-term construction and cumulative impacts, and less than significant air quality impacts with regard to project operations with the incorporation of Mitigation Measures AQ-2a and AQ-2b.

Consistent with the APWRA Repowering PEIR, air quality impacts for the GH North Project were evaluated with regard to the Alameda County General Plan–East County Area Plan (ECAP) (Alameda County Community Development Agency, 2000), the Bay Area Air Quality Management District (BAAQMD) significance thresholds, rules and regulations (Bay Area Air Quality Management District, 2011 and 2012), the California Ambient Air Quality Standards (CAAQS), and the National Ambient Air Quality Standards (NAAQS). The San Joaquin Valley Air Basin (SJVAB) is included in the study area for the GH North Project in order to maintain consistency with the PEIR’s analysis of emissions associated with project transportation.

A review of available records and literature determined that new air quality information has become available since the certification of the APWRA Repowering PEIR for the 2013 ambient air quality in the program area vicinity and the attainment status for Alameda County. These updates are discussed in Section 3.2.1.

3.2.1 Setting

3.2.1.1 Regulatory Setting

The regulatory framework pertaining to air quality (including federal, state, and local regulations and ambient air quality standards), has not changed since the preparation of the certified APWRA Repowering PEIR. The United States Environmental Protection Agency (EPA), California Air Resources Board (CARB), and the local air districts classify an area as attainment, unclassified, or nonattainment depending on whether or not the monitored ambient air quality data shows compliance, insufficient data available, or noncompliance with the ambient air quality standards, respectively. The NAAQS and CAAQS relevant to the proposed project include the following criteria pollutants: ozone, respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), carbon monoxide (CO), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂). These standards, are regulated and enforced by BAAQMD in the GH North Project area.

In January 2014, the BAAQMD provided guidance associated with a trial court’s order expressly stating the district no longer recommends the use of the district-specific significance thresholds adopted on June 2, 2010, as a generally applicable measure of a project’s significant air quality impacts. Lead agencies may, however, opt to rely on the BAAQMD’s 1999 approved thresholds of significance to make determinations regarding the significance of an individual project’s air quality impacts (BAAQMD, 2015). Notwithstanding, in order to maintain consistency with the analysis of the Golden Hills Project in the APWRA Repowering PEIR, as well as evaluate the proposed GH North Project using the more stringent, comprehensive, and quantitative standards, this analysis continues to utilize the BAAQMD’s 2010 thresholds of significance to assess air quality impacts.

3.2.1.2 Environmental Setting

The environmental setting for air quality, sensitive receptors, and the air pollutants of concern are functionally the same as described for the Golden Hills project area in the certified APWRA Repowering PEIR, with the following exceptions: existing Alameda County ambient air quality data (updated data provided in Table 3.2-1), and the attainment status for Alameda County (updated information provided in Table 3.2-2). Data on existing air quality in the San Francisco Bay Area Air Basin (SFBAAB), where the GH North Project is located, are collected by a network of air monitoring stations operated by the EPA, CARB, and BAAQMD.

TABLE 3.2-1
Summary of 2011–2013 Ambient Air Quality in the Program Area Vicinity

Pollutant Standards	2011	2012	2013
Ozone (O₃)—Livermore – 793 Rincon Avenue			
Maximum 1-hour concentration (ppm)	0.115	0.102	0.096
Days exceeding ^a the CAAQS 1-hour standard (>0.09 ppm)	3	2	3
Maximum 8-hour concentration (ppm)	0.085	0.090	0.077
Days exceeding ^a the CAAQS 8-hour (>0.070 ppm)	9	4	3
Days exceeding ^a the NAAQS 8-hour (>0.075 ppm)	2	3	1
Carbon monoxide (CO)—Fremont – Chapel Way			
Maximum 8-hour concentration (ppm)	—	—	—
Days exceeding ^a the NAAQS 8-hour (>9 ppm)	0	0	0
Days exceeding ^a the CAAQS 8-hour (>9.0 ppm)	0	0	0
Nitrogen Dioxide (NO₂)—Livermore – 793 Rincon Avenue			
State maximum 1-hour concentration (ppm)	0.057	0.052	0.051
Annual average concentration (ppm)	0.011	0.010	0.011
Days exceeding ^a the CAAQS 1-hour (0.18 ppm)	0	0	0
Particulate matter (PM₁₀)—Tracy – Airport			
National ^b maximum 24-hour concentration (µg/m ³)	110.8	73.4	73.2
State ^c maximum 24-hour concentration (µg/m ³)	—	—	—
Days exceeding ^a the NAAQS 24-hour (>150 µg/m ³)	0	0	0
Days exceeding ^a the CAAQS 24-hour (>50 µg/m ³)	—	—	—
Particulate matter (PM_{2.5})—Livermore – 793 Rincon Avenue			
National ^b maximum 24-hour concentration (µg/m ³)	45.4	31.1	40.1
State ^c maximum 24-hour concentration (µg/m ³)	45.4	31.1	40.1
Days exceeding ^a the NAAQS 24-hour (>35 µg/m ³)	2	0	4

^a An exceedance is not necessarily a violation. This is a mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

^b Measurements usually are collected every 6 days.

^c State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

Source: CARB, 2015.

ppm = parts per million

µg/m³ = micrograms per cubic meter

— = data not available.

TABLE 3.2-2
Federal and State Attainment Status for Alameda County

Criteria Pollutant	Federal Designation	State Designation
O ₃ (1-hour)	(No federal standard)*	Serious Nonattainment (2011)
O ₃ (8-hour)	Nonattainment	Nonattainment
CO	Unclassified/Attainment	Attainment
PM ₁₀	Attainment (2012)	Nonattainment
PM _{2.5}	Nonattainment	Nonattainment
NO ₂	Unclassified/Attainment	Attainment
SO ₂	Attainment	Attainment
Lead	Unclassified/Attainment	Attainment
Sulfates	(No Federal Standard)	Attainment
Hydrogen sulfide	(No Federal Standard)	Unclassified
Visibility	(No Federal Standard)	Unclassified

*The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in the state implementation plans.

Sources: CARB, 2013; EPA, 2013

O₃ = ozone

CO = carbon monoxide

PM₁₀ = particulate matter less than or equal to 10 microns

PM_{2.5} = particulate matter less than or equal to 2.5 microns

NO₂ = nitrogen dioxide

SO₂ = sulfur dioxide

3.2.2 Impact Analysis

3.2.2.1 Methods for Analysis

Criteria pollutant emissions were estimated for construction and operational activities in the APWRA Repowering PEIR at a programmatic level, with additional detail given to the Golden Hills Project. In the absence of final project design data, emissions were calculated for a typical 80 MW repowering project using project data from the *Vasco Winds Repowering Project Draft Environmental Impact Report* (Contra Costa County, 2010). Because the Vasco example provides a comprehensive analysis of typical construction activity for repowering, it was used to estimate total and daily emissions for the proposed project, as it is considered representative of a typical project associated with the program. Total emissions from the Vasco example were scaled to the Golden Hills Project based on the nameplate capacity of the program area. A scaling factor of 1.11 was used for total construction emissions for the Golden Hills Project (88.4 MW nameplate capacity ÷ 80 MW metric nameplate capacity). In order to maintain consistency with the estimation of construction and operational emissions for the Golden Hills Project, this analysis incorporates by reference the methods, models, emission factors, and assumptions used to calculate emissions used in the APWRA PEIR, per standard federal, state, and local air quality protocols.

Emissions were estimated for the construction and operational activities of the GH North Project using an expansion of the PEIR's scaling methodology. In order to accurately assess project emissions while maintaining consistency with the PEIR, scaling factors were determined for each major construction activity for which emissions were estimated in the PEIR based on a unit of significance for the emissions produced by each activity. Table 3.2-3 describes the major construction activities, specific units of significance, and the

calculated scaling factor for each. As indicated in Tables 3.3-13 and 3.3-16 of the PEIR, emissions were not calculated for minor construction activities not anticipated to occur during the time period producing the maximum daily emissions for construction. These activities include laydown, substation, and switchyards; turbine delivery and installation; utility collector line installation; and site restoration.

TABLE 3.2-3
Construction Emissions Scaling Factors

Construction Activity	Unit of Significance	Golden Hills	GH North	Scaling Factor
Decommissioning and foundation removal	Number of decommissioned turbines	775	324	0.42
Road construction	Linear feet of new roads	104,000	100,000	0.96
Turbine foundations and batch plant	Number of new turbines	52	24	0.46
Offsite truck trips	Total project truck trips	33,026	16,514	0.50
Offsite worker trips	Average daily workers	200	200	1.00
Operational Activity	Number of new turbines	52	24	0.46

The potential for the GH North Project to result in new or substantially more adverse significant impacts to air quality than those evaluated for the Golden Hills Project was evaluated in relation to the five questions recommended for consideration by the CEQA Guidelines.

Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan (less than significant)

The GH North Project would not create a new or substantially more adverse significant impact to air quality related to conflicting with or obstructing implementation of an applicable air quality plan than those disclosed in the certified APWRA Repowering PEIR.

As described in the certified APWRA PEIR and updated in Table 3.2-2 above, the project area and Alameda County as regulated by BAAQMD is in nonattainment for the state 1-hour and 8-hour ozone standards, the federal 8-hour ozone standard, the state PM₁₀ and PM_{2.5} standards, and the federal PM_{2.5} standard. The project area and Alameda County is designated as in attainment for CO, NO_x, and SO₂ for both federal and state standards; however, some standards are designated as unclassified at this time for federal and state standards (CARB, 2013). As described below, the GH North Project would not further contribute to air quality impacts and exacerbate Alameda County's compliance status.

The GH North Project would be constructed in the same manner and using the same equipment as outlined for the Golden Hills Project in the certified APWRA PEIR. Construction of the GH North Project would result in emissions of the air pollutants reactive organic gases (ROGs), NO_x, CO, PM₁₀, PM_{2.5}, and SO₂ from fuel combustion and exhaust from construction equipment and vehicle traffic, use of toxic materials (e.g., paints and lubricants), and grading/ground disturbance. Although short-term mitigated emissions resulting from GH North Project construction would exceed the previously adopted BAAQMD significance threshold for NO_x (see Impact AQ-2), the GH North Project would result in long-term benefits from new renewable wind-generated energy, including reduction of NO_x emissions relative to the production of comparable energy from fossil fuel sources. Thus, the GH North Project would be consistent with the Bay Area 2010 CAP regardless of this short-term impact.

Operation and maintenance of the GH North Project would not exceed the thresholds of significance previously adopted by BAAQMD. Implementation of the GH North Project would result in no new permanent employees relative to existing conditions, nor would it increase population projections.

Therefore, the Golden Hills Project would not induce population or employment growth and would result in no net increase in vehicle miles traveled in the SFBAAB.

The GH North Project would conform to the Alameda County General Plan and the policies of the Agriculture Zone, as well as foreseeable future basin plans and revised State Implementation Plans. Therefore, consistent with the APWRA PEIR analysis, the GH North Project would result in less-than-significant impacts and would not conflict with or obstruct implementation of the applicable air quality plan.

Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation (significant and unavoidable)

The GH North Project would not create a new or substantially more adverse significant impact to air quality related to violation of any air quality standard or substantial contribution to an existing or projected air quality violation than those disclosed in the certified APWRA Repowering PEIR.

Construction Activities

As stated previously, the GH North Project would be constructed in the same manner, with equivalent phasing, and using the same equipment as outlined for the Golden Hills project in the certified APWRA PEIR. The GH North Project would not overlap with the construction of the Golden Hills Project, for which construction will commence in spring 2015. Consistent with the Golden Hills project, the construction exhaust and fugitive dust emissions associated with the GH North Project within the SJVAB would not exceed the significance threshold of any criteria pollutants (see Table 3.2-4). Although no significance thresholds are exceeded, implementation of Mitigation Measures AQ-2a and AQ-2b would further reduce construction related exhaust emissions in the SJVAB.

TABLE 3.2-4

Construction Exhaust and Fugitive Dust Emissions within the SJVAB — Maximum Daily Unmitigated Emissions

Construction Activity	Estimated Maximum Annual Unmitigated Emissions (tons/year)					
	ROG	NO _x	CO	SO ₂	PM ₁₀ Total	PM _{2.5} Total
Total Offsite Truck Trip Emissions	0.13	4.29	0.66	<0.01	0.14	0.11
SJVAPCD Significance Threshold	10	10	NA	NA	15	15
Significant Impacts?	No	No	No	No	No	No

Criteria pollutant emissions of ROG, NO_x, CO, SO₂, PM₁₀, and PM_{2.5} from construction equipment would incrementally add to the regional atmospheric loading of these pollutants during construction of the GH North Project. The maximum daily unmitigated construction-related exhaust emissions that would occur in the SFBAAB have been estimated and are presented in Table 3.2-5.

Consistent with the APWRA PEIR, emissions of fugitive dust also would be generated by project-related construction activities associated with grading and earth disturbance, travel on paved and unpaved roads, and operation of the concrete batch plant and rock crusher. BAAQMD's applicable recommended fugitive dust control measures, which are contained in Mitigation Measures AQ-2a and AQ-2b, would be implemented to reduce impacts associated with fugitive dust emissions to a less-than-significant level. Implementation of BAAQMD's best available control technologies for batch plants and crushing equipment would also ensure that fugitive dust emissions impacts that would be associated with these facilities would be less than significant.

As indicated in Table 3.2-5, maximum daily unmitigated exhaust emissions of NO_x associated with the GH North Project would exceed BAAQMD's significance threshold, resulting in a significant impact.

TABLE 3.2-5
Construction Exhaust and Fugitive Dust Emissions within the SFBAAB — Maximum Daily Unmitigated Emissions

Construction Activity	Estimated Maximum Daily Unmitigated Emissions (pounds/day)							
	ROG	NO _x	CO	SO ₂	PM ₁₀ Exhaust	PM ₁₀ Dust	PM _{2.5} Exhaust	PM _{2.5} Dust
Decommissioning and foundation removal	6.32	53.00	19.70	0.07	1.85	2.67	1.83	0.12
Road construction	13.59	114.59	50.31	0.16	4.08	39.32	16.93	12.44
Turbine foundations and batch plant*	10.87	92.06	39.36	0.13	3.23	10.10	3.18	8.20
Offsite truck trips	2.71	55.23	14.08	0.17	1.39	0.53	1.28	0.20
Offsite worker trips	0.29	1.32	9.58	0.11	0.01	0.23	0.01	0.09
Total Emission	33.78	316.20	133.03	0.64	10.56	52.85	23.23	21.05
BAAQMD Significance Threshold	54	54	NA	NA	82	NA	54	NA
Significant Impact?	No	Yes	No	No	No	No	No	No

*Includes construction activities along with fugitive dust emissions from the concrete batch plants.

Note: Construction activity with zero emissions means that this activity is not anticipated to occur during the time period producing the maximum daily emissions for construction.

As indicated in Table 3.2-6, implementation of Mitigation Measures AQ-2a and AQ-2b would reduce construction-related exhaust emissions in the SFBAAB, however NO_x emissions would remain in exceedance of the significance threshold. Nonetheless, construction of the GH North Project would result in a lesser impact than the Golden Hills project analyzed in the APWRA PEIR, which estimated that emissions for both ROG and NO_x would exceed the BAAQMD significance threshold with mitigation incorporated.

TABLE 3.2-6
Construction Exhaust and Fugitive Dust Emissions within the SFBAAB — Maximum Daily Mitigated Emissions

Construction Activity	Estimated Maximum Daily Unmitigated Emissions (pounds/day)							
	ROG	NO _x	CO	SO ₂	PM ₁₀ Exhaust	PM ₁₀ Dust	PM _{2.5} Exhaust	PM _{2.5} Dust
Decommissioning and foundation removal	6.32	42.39	19.70	0.07	1.02	1.20	1.01	0.06
Road construction	13.59	91.68	50.31	0.16	2.25	17.70	2.22	5.60
Turbine foundations and batch plant*	10.87	73.65	39.36	0.13	1.78	4.54	1.75	3.69
Offsite truck trips	2.71	55.23	14.08	0.17	1.39	0.53	1.28	0.20
Offsite worker trips	0.29	1.32	9.58	0.11	0.01	0.23	0.01	0.09
Total Emissions	33.78	264.27	133.03	0.64	6.45	24.20	6.27	9.64
BAAQMD Significance Threshold	54	54	NA	NA	82	NA	54	NA
Significant Impact?	No	Yes	No	No	No	No	No	No

*Includes construction activities along with fugitive dust emissions from the concrete batch plants.

Note: Construction activity with zero emissions means that this activity is not anticipated to occur during the time period producing the maximum daily emissions for construction.

Operational Activities

Daily and annual operational exhaust and fugitive dust emissions for the GH North Project within the SFBAAB would be approximately half of those analyzed for the Golden Hills project (APWRA PEIR Tables 3.3-14 and 3.3-15), based upon the number of proposed new turbines and anticipated O&M staff. Thus, similar to the certified APWRA PEIR, operations and maintenance of the GH North Project would not exceed the thresholds of significance established by BAAQMD. Therefore, operation of the GH North Project would have a less-than-significant impact on air quality.

Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors) (significant and unavoidable for construction and less than significant for operation)

Construction and operation of the GH North Project would not create a new or substantially more adverse significant impact to air quality related to a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard than those disclosed in the certified APWRA Repowering PEIR.

Operation of the GH North Project would not result in new permanent stationary sources of criteria pollutants, nor would it increase emissions from existing stationary sources. Drive-by inspections and maintenance would continue to occur periodically. Daily emissions of criteria pollutants associated with these activities are anticipated to be unchanged under the proposed project and would not be considered to result in a significant contribution to existing air quality violations. Therefore, as analyzed for Impact AQ-2, operation and maintenance of the GH North Project would not exceed the thresholds of significance established by BAAQMD. In addition, as discussed in the certified APWRA PEIR, the GH North Project would further contribute to the positive cumulative benefit to air quality in the region by displacing fossil-fuel-generated energy.

Because construction emissions of NO_x for the GH North Project would be greater than the BAAQMD thresholds after the implementation of Mitigation Measures AQ-2a and AQ-2b (see Table 3.2-6), construction impacts would be significant and unavoidable.

Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations (less than significant with mitigation)

The GH North Project would not create a new or substantially more adverse significant impact to air quality related to exposure of sensitive receptors to substantial pollutant concentrations than those disclosed in the certified APWRA Repowering PEIR. Long-term operations associated with the GH North Project would result in no new emissions. Construction activities would generate air pollutant emissions, including equipment exhaust emissions and suspended and inhalable PM. However, construction activities are anticipated to last for only 10 months, and associated emissions would be spatially dispersed over the approximately 4,389-acre project area.

With implementation of Mitigation Measures AQ-2a and AQ-2b, which would reduce both criteria pollutants and toxic air contaminant emissions from construction equipment and reduce the potential health risks to sensitive receptors, this impact would be less than significant.

Impact AQ-5b: Create objectionable odors affecting a substantial number of people (less than significant)

The GH North Project would not create a new or substantially more adverse significant impact to air quality related to creation of objectionable odors affecting a substantial number of people than those disclosed in the certified APWRA Repowering PEIR. Although project construction would involve the use of diesel equipment and a temporary batch plant that could result in the creation of odors, the construction activities would be temporary, spatially dispersed over the 4,389-acre project area, and would take place in areas that

are not in the vicinity of sensitive receptors. Therefore, the proposed project would not affect a substantial number of people. This impact would be less than significant. No mitigation is required.

3.3 Biological Resources

This section discusses the effects on biological resources from the proposed GH North Project, Phase 2 of the Golden Hills Project. This analysis relies on and incorporates by reference the project setting and regulatory setting as described in the APWRA Repowering PEIR (Alameda County Community Development Agency, 2014). Potential impacts to biological resources from the GH North Project are discussed relative to conclusions in the APWRA Repowering PEIR for the Golden Hills Project. The APWRA Repowering PEIR conclusion stated that the project would result in significant and unavoidable impacts with regard to adverse impacts to special-status species and cumulative impacts. Consistent with the APWRA Repowering PEIR, biological resources for the GH North Project were evaluated with regard to the East County Area Plan (Alameda County, 1994 and 2000); East Alameda County Conservation Strategy (ICF International, 2010); coordination with USFWS and CDFW; a query of the California Native Plant Society (CNPS) online inventory (CNPS, 2015); a query of the California Natural Diversity Database (CNDDDB) (CDFW, 2015) for the United States Geological Survey (USGS) 7.5-minute series Byron Hot Springs, Altamont, Clifton Court Forebay, and Midway topographic quadrangles in which the GH North Project property is located, as well as a 10-mile radius around the project boundary.

3.3.1 Setting

The APWRA Repowering PEIR list of special-status and sensitive species with the potential to occur was updated for the GH North Project property based on a review of published and unpublished literature as well as a comparison of each species' habitat and range to the characteristics present within the GH North Project boundary. The approximately 4,389-acre project area was evaluated during reconnaissance-level and focused species surveys as well through review of available documents and past technical studies (Alameda County Community Development Agency, 2014). Vegetation and rare plant surveys were conducted on September 23–26, 2014, March 24–27, April 1–3, 6, 11, 14, 16–17, and May 13–14, 2015. A general wildlife survey and formal wetland delineation occurred in January 2015. Protocol-level fairy shrimp surveys commenced on November 13, 2014, occurring every two weeks throughout the 2014–2015 winter season. The focused surveys will continue through the end of the 2015 summer season.

The vegetation and wildlife surveys determined that no substantial changes had occurred with respect to the circumstances under which the project would be undertaken that would necessitate major revision to the certified PEIR for the approved Golden Hills Project. The existing plant communities, topography, and nature of the biological resources were found to be consistent with previous surveys undertaken for the approved Golden Hills Project. Figure 3.3-1 depicts the existing land cover types in the project area including annual grassland, alkali and seasonal wetlands, ponds, drainages, and developed areas. These plant communities and habitat types are the basis of the special-status and sensitive species impact analyses described below, which is consistent with the overall analyses presented in the APWRA Repowering PEIR.

3.3.2 Impact Analysis

The potential for the GH North Project to result in new or substantially more adverse significant impacts to biological resources was evaluated in relation to the seven questions recommended for consideration by the CEQA Guidelines:

- (a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*
- (b) *Have a substantial adverse effect on any riparian other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?*
- (c) *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

- (d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*
- (e) *Substantially reduce the habitat of a common plant or wildlife species, cause a plant or wildlife population to drop below self-sustaining levels, or threaten to eliminate a plant or animal community?*
- (f) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*
- (g) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

The evaluation of flora and fauna for the GH North Project was undertaken using the same methods as for the approved Golden Hills Project. The scope of habitat assessments and directed surveys that were undertaken were based on literature and database reviews to identify rare, threatened, and endangered species, as well as locally important species that have the potential to be present within or adjacent to the GH North Project property. A USFWS species list for Alameda County was reviewed (Alameda County Community Development Agency, 2014; USFWS, 2015). CH2M HILL conducted a search of the 2015 CNDDDB within the GH North Project property and a 10-mile radius to determine reported occurrences of rare, threatened, and endangered species for the GH North Project. CH2M HILL also conducted a CNPS online inventory for the USGS 7.5-minute series topographic quadrangles in which the GH North Project property is located and the adjacent quadrangles. This list of species was evaluated with respect to the habitats present at the GH North Project property; species not expected to occur at the GH North Project property were removed from the list of species to be evaluated.

The certified PEIR disclosed the potential for the approved Golden Hills Project to result in significant and unavoidable impacts to resident and migratory avian, raptor, and bat species known from the region in addition to movement of native resident or migratory wildlife species with established native resident or migratory wildlife corridors. As described in the APWRA Repowering PEIR, the GH North Project would result in similar significant adverse impacts to resident and migratory avian, raptor, and bat species as well as wildlife migration corridors. The GH North Project would require Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-4a, BIO-5a, BIO-5b, BIO-5c, BIO-7a, BIO-8a, BIO-8b, BIO-9, BIO-10a, BIO-10b, BIO-11a through BIO-11i, BIO-12a, BIO-12b, and BIO-14a through BIO-14e to reduce significant impacts to resident and migratory avian, raptor, and bat species as well as wildlife migration corridors to the maximum extent practicable. As discussed in the APWRA Repowering PEIR, impacts to these wildlife species from the GH North Project would remain significant and unavoidable after implementation of the aforementioned Mitigation Measures.

Based on surveys conducted for the approved Golden Hills Project and the vegetation and habitat surveys conducted in fall and winter of 2014 and winter and spring of 2015 for the proposed GH North Project, it was determined that the biological resources designated as federal and state listed species pursuant to the ESA and CESA are consistent with those analyzed in the APWRA Repowering PEIR. Thus, the level of impact from implementation of the proposed GH North Project is comparable to the level of impact that was assessed in the certified PEIR. The proposed GH North Project would incorporate Mitigation Measures BIO-1 through BIO-18 for all listed and sensitive species specified as conditions of approval for the approved APWRA Repowering Project.

Similar to the Golden Hills Project, a total of 75 special-status plant (36) and wildlife (39) species were identified as potentially occurring in the proposed GH North Project area. Of these, 20 special-status plant species and 25 special-status wildlife species were determined to have a moderate or high potential or are known to occur in one or more subareas of the project. Eight special-status plant species defined by the CNPS online inventory including CNPS 1B through 4 species were observed in the project area (Sycamore Environmental Consultants, 2015), and 12 special-status wildlife species were observed during wildlife

surveys of the site or cited by the CNDDDB (CDFW, 2015). The remaining 16 special-status plant species and 14 special-status wildlife species were determined to be unlikely occur in the project area.

Potential impacts to special-status species would be the same as those identified in the certified APWRA Repowering PEIR. To reduce or eliminate impacts to special-status species, the full suite of mitigation measures in the certified APWRA Repowering PEIR would be implemented. The implementation of the GH North Project would not result in new or substantially more adverse significant impacts related to special-status species.

The following discussion assesses potential impacts on biological resources resulting from implementation of the GH North Project. Wildlife species with similar habitat use (e.g., tree-nesting species) were grouped in the impact discussions below.

3.3.2.1 Special-status Plant Species

Impact BIO-1: Potential for ground-disturbing activities to result in adverse effects on special-status plants or habitat occupied by special-status plants (less than significant with mitigation)

Livermore tarplant (*Deinandra bacigalupii*). This California Rare Plant Rank of 1B.2 species may potentially occur within alkali meadow habitat on the GH North Project property. The closest known population is approximately 3.7 miles southwest of the project (CDFW, 2015). This summer to fall blooming species was not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). The potential for Livermore tarplant was not identified in the approved Golden Hills Project and therefore potential impacts to this species were not assessed in the APWRA Repowering PEIR. However, Mitigation Measures BIO-1a through BIO-1e and BIO-2 outlined in the APWRA Repowering PEIR for special-status plants would reduce potential impacts to a less-than-significant level for the Livermore tarplant. Mitigation measures would include preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention.

Mt. Diablo buckwheat (*Eriogonum truncatum*). This California Rare Plant Rank of 1B.1 species may potentially occur within annual grassland habitat on the GH North Project property. The closest known population is approximately 9.5 miles northwest of the project (CDFW, 2015). This spring to winter blooming species was not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). The potential for Mt. Diablo buckwheat was not identified in the approved Golden Hills Project and therefore potential impacts to this species were not assessed in the APWRA Repowering PEIR. However, Mitigation Measures BIO-1a through BIO-1e and BIO-2 outlined in the APWRA Repowering PEIR for special-status plants would reduce potential impacts to a less-than-significant level for the Mt. Diablo buckwheat. Mitigation measures would include preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention.

Delta button-celery (*Eryngium racemosum*). This state endangered and California Rare Plant Rank of 1B.1 species may potentially occur within alkali wetland habitat on the GH North Project property. The closest known population is approximately 7.6 miles north of the project in Discovery Bay (CDFW, 2015). This spring to fall blooming species was not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). The potential for Delta button-celery was not identified in the approved Golden Hills Project and therefore potential impacts to this species were not assessed in the APWRA Repowering PEIR. However, Mitigation Measures BIO-1a through BIO-1e and BIO-2 outlined in the APWRA Repowering PEIR for special-status plants would reduce potential impacts to a less-than-significant level for the Delta button-celery. Mitigation measures would include preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention.

Spiny-sepaled button-celery (*Eryngium spinosepalum*). This California Rare Plant Rank of 1B.2 may potentially occur within the annual grassland habitat on the GH North Project property. The closest known population is approximately 2 miles north of the project in a vernal pool grassland complex (CDFW, 2015). This spring blooming species was not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). The potential for spiny-sepaled button-celery was not identified in the approved Golden Hills Project and therefore potential impacts to this species were not assessed in the APWRA Repowering PEIR. However, Mitigation Measures BIO-1a through BIO-1e and BIO-2 outlined in the APWRA Repowering PEIR for special-status plants would reduce potential impacts to a less-than-significant level for the spiny-sepaled button-celery. Mitigation measures would include preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention.

Showy madia (*Madia radiata*). This California Rare Plant Rank of 1B.1 species may potentially occur within annual grassland habitat on the GH North Project property. The closest known population is approximately 10 miles southeast of the project (CDFW, 2015). This spring blooming species was not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). The potential for showy madia was not identified in the approved Golden Hills Project and therefore potential impacts to this species were not assessed in the APWRA Repowering PEIR. However, Mitigation Measures BIO-1a through BIO-1e and BIO-2 outlined in the APWRA Repowering PEIR for special-status plants would reduce potential impacts to a less-than-significant level for the showy madia. Mitigation measures would include preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention.

Prostrate vernal pool navarretia (*Navarretia prostrata*). This California Rare Plant Rank of 1B.1 species may potentially occur within the annual grassland and alkali wetland habitats on the GH North Project property. The closest known population is approximately 11 miles west of the project in a vernal wetland (CDFW, 2015). This spring to summer blooming species was not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). The potential for prostrate vernal pool navarretia was not identified in the approved Golden Hills Project and therefore potential impacts to this species were not assessed in the APWRA Repowering PEIR. However, Mitigation Measures BIO-1a through BIO-1e and BIO-2 outlined in the APWRA Repowering PEIR for special-status plants would reduce potential impacts to a less-than-significant level for the prostrate vernal pool navarretia. Mitigation measures would include preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention.

Saline clover (*Trifolium hydrophilum*). As described in the APWRA Repowering PEIR, this species is associated with salt marsh, mesic alkaline areas in grasslands, and vernal pools and may occur in suitable habitat within the GH North property. The nearest known population of saline clover is approximately 5.5 miles southwest of the project area (CDFW, 2015). This spring to summer blooming species was not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). The potential for saline clover was not identified in the approved Golden Hills Project and therefore potential impacts to this species were not assessed in the APWRA Repowering PEIR. However, Mitigation Measures BIO-1a through BIO-1e and BIO-2 outlined in the APWRA Repowering PEIR for special-status plants would reduce potential impacts to a less-than-significant level for saline clover. Mitigation measures would include preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention.

Large-flowered fiddleneck (*Amsinckia grandiflora*), big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Lemmon's jewelflower (*Caulanthus lemmonii*), Congon's spikeweed (*Centromadia parryi* ssp. *congdonii*), Diamond-petaled California poppy (*Eschscholzia rhombipetala*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), rayless ragwort (*Senecio aphanactis*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*). As described in the APWRA Repowering PEIR, suitable annual grassland habitat for these species occurs on the GH North Project property. These species were not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). Potential impacts to these species would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures noted herein, including preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention (Mitigation Measures BIO-1a through BIO-1e and BIO-2), potential impacts to these species would be reduced to less-than-significant levels.

Brittlescale (*Atriplex depressa*), San Joaquin spearscale (*Atriplex joaquinana*), lesser saltscale (*Atriplex minuscula*), and recurved larkspur (*Delphinium recurvatum*). As described in the APWRA Repowering PEIR, suitable alkali wetland habitat for these species occurs on the GH North Project property. These species were not detected during the fall and spring rare plant surveys conducted in 2014-2015 (Sycamore Environmental Consultants, 2015). Potential impacts to these species would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures noted herein, preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention (Mitigation Measures BIO-1a through BIO-1e and BIO-2), potential impacts to these species would be reduced to less-than-significant levels.

Impact BIO-2: Adverse effects on special-status plants and natural communities resulting from the introduction and spread of invasive plant species (less than significant with mitigation)

During the fall and spring rare plant surveys, eight special-status species were found, none of which are federal- or state-listed as threatened or endangered. The eight species observed during the surveys include California androsace (*Androsace elongata* ssp. *acuta*; CNPS 4.2), San Joaquin spearscale (*Atriplex joaquiniana*; CNPS 1B.2), Lost Hills crownscale (*Atriplex coronata* var. *vallicola*; CNPS 1B.2), round-leaved filaree (*California macrophylla*; CNPS 1B.1), small-flowered morning glory (*Convolvulus simulans*; CNPS 4.2), stinkbells (*Fritillaria agrestis*; CNPS 4.2), hogwallow starfish (*Hesperovax caulescens*; CNPS 4.2), and shining navarretia (*Navarretia nigelliformis* ssp. *radians*; CNPS 1B.2). A botanical inventory report has been prepared for the project summarizing the results of each survey (Sycamore Environmental Consultants, 2015; Appendix A). The report includes a summary list from the CNDDDB of special-status plant species potentially occurring in the Midway, Altamont, Clifton Court Forebay, Byron Hot Springs, and adjacent U.S. Geological Survey quadrangles, and the list obtained from the USFWS. A map of the locations of all special-status species observed during the surveys is also included in the final report.

Potential impacts to these species would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures noted herein, preconstruction clearance surveys, recovery and relocation, biological monitoring, potential compensatory mitigation, and invasive plant species prevention (Mitigation Measures BIO-1a through BIO-1e and BIO-2), potential impacts to these species would be reduced to less-than-significant levels.

As described in the APWRA Repowering PEIR, construction activities have the potential to facilitate the introduction and spread of invasive nonnative plant species by removing vegetation and disturbing soils. Construction vehicles and machinery are primary vectors for the spread of such species. Invasive species compete with native species for resources and can alter natural communities by influencing fire regimes, hydrology (e.g., sedimentation and erosion), light availability, nutrient cycling, and soil chemistry (Randall and Hoshovsky, 2000). The introduction and spread of invasive nonnative plant species as a result of activities associated with the proposed GH North Project would constitute a significant indirect impact.

However, as described in the APWRA Repowering PEIR, implementation of Mitigation Measure BIO-2 would reduce this impact to a less-than-significant level.

3.3.2.2 Special-status Wildlife Species

Impact BIO-3: Potential mortality of or loss of habitat for vernal pool branchiopods and curved-footed hygrotus diving beetle (*Hygrotus curvipes*) (less than significant with mitigation)

As described in the APWRA Repowering PEIR, suitable seasonal wetland and pond habitats for vernal pool branchiopods and curved-footed hygrotus diving beetle occur on the GH North Project property. These species were not detected during wildlife surveys of the site conducted by CH2M HILL biologists in fall 2014 and winter 2015. Potential impacts to these species would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including preconstruction clearance surveys, biological monitoring, and potential compensatory mitigation (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, and BIO-3b), potential impacts to these species would be reduced to less-than-significant levels.

Impact BIO-4: Potential disturbance or mortality of and loss of suitable habitat for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (less than significant with mitigation)

As described in the APWRA Repowering PEIR, elderberry trees are limited in the Golden Hills Project area. Elderberry trees suitable for the valley elderberry longhorn beetle were not detected during the rare plant surveys of the GH North Project property (Sycamore Environmental Consultants, 2015) or during the fall 2014 and winter 2015 wildlife surveys conducted by CH2M HILL biologists on the site and the species is not known to be present within the GH North property (CDFW, 2015). Therefore, potential impacts to valley elderberry longhorn beetle would be the less than what was identified in the certified APWRA Repowering PEIR, as no habitat currently exists on site. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including preconstruction clearance surveys and biological monitoring (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-4a, and BIO-4b), there would be no impact to valley elderberry longhorn beetle.

Impact BIO-5: Potential disturbance or mortality of and loss of suitable habitat for California tiger salamander (*Ambystoma californiense*), western spadefoot (*Spea hammondi*), California red-legged frog (*Rana draytonii*), and foothill yellow-legged frog (*Rana boylei*) (less than significant with mitigation)

As described in the APWRA Repowering PEIR, suitable seasonal wetlands and ponds for California tiger salamander, western spadefoot, California red-legged frog, and foothill yellow-legged frog are found on the GH North Project property. California tiger salamander and California red-legged frog are known to be present within the GH North property (CDFW, 2015) and both species were detected during wildlife surveys conducted by CH2M HILL biologists in fall 2014 and winter 2015 of the site. In addition, the entire site is within designated critical habitat for California red-legged frog. Potential impacts to these species would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including preconstruction clearance surveys, biological monitoring, and potential compensatory mitigation (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5a, BIO-5b, and BIO-5c), potential impacts to these species would be reduced to less-than-significant levels.

Impact BIO-6: Potential disturbance or mortality of and loss of suitable habitat for western pond turtle (*Actinemys marmorata*) (less than significant with mitigation)

As described in the APWRA Repowering PEIR, suitable aquatic habitats for western pond turtle (i.e., creeks, streams, ponds) are found on the GH North Project property. This species was not detected during wildlife surveys of the site conducted by CH2M HILL biologists in fall 2014 and winter 2015. Potential impacts to this species would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including

preconstruction clearance surveys and biological monitoring (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, and BIO-6), potential impacts to western pond turtle would be reduced to a less-than-significant level.

Impact BIO-7: Potential disturbance or mortality of and loss of suitable habitat for Blainville’s horned lizard (*Phrynosoma blainvillii*), and San Joaquin coachwhip (*Masticophis flagellum ruddocki*) (less than significant with mitigation)

As described in the APWRA Repowering PEIR, suitable annual grassland habitats for Blainville’s horned lizard and San Joaquin coachwhip occur on the GH North Project property. These three reptile species were not detected during wildlife surveys of the site conducted by CH2M HILL biologists in fall 2014 and winter 2015. Potential impacts to Blainville’s horned lizard and San Joaquin coachwhip would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including preconstruction clearance surveys, biological monitoring, and potential compensatory mitigation (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5c, BIO-7a, and BIO-7b), potential impacts to Blainville’s horned lizard and San Joaquin coachwhip would be reduced to less-than-significant levels.

Impact BIO-8: Potential construction-related disturbance or mortality of special-status and non-special-status migratory birds (less than significant with mitigation)

As with the approved Golden Hills Project, construction at the GH North Project could result in construction-related disturbance or mortality to special-status migratory birds and non-special-status migratory birds within the GH North Project property. Similar to the Golden Hills Project, white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), bald eagle (*Haliaeetus leucocephalus*), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), western burrowing owl (*Athene cunicularia*), tricolored blackbird (*Agelaius tricolor*), and loggerhead shrike (*Lanius ludovicianus*) were detected during wildlife surveys of the GH North Project site conducted by CH2M HILL biologists in fall 2014 and winter 2015. In addition, California horned lark (*Eremophila alpestris*) is also expected to occur on site. Swainson’s hawk (*Buteo swainsoni*) is known from the region and may also occur on site. As described in the APWRA Repowering PEIR, construction-related disturbance or mortality to migratory birds as a result of construction at the GH North Project constitutes a significant impact. Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3, BIO-5c, BIO-8a, and BIO-8b would reduce this impact to a less-than-significant level.

Impact BIO-9: Permanent and temporary loss of occupied habitat for western burrowing owl and foraging habitat for tricolored blackbird and other special-status and non-special-status birds (less than significant with mitigation)

As described in the PEIR for the approved Golden Hills Project, construction of the GH North Project would result in similar temporary and permanent losses of grassland that provides suitable foraging habitat for burrowing owl, tricolored blackbird, and a number of other special-status and non-special-status migratory birds. The loss of grassland foraging habitat for special-status and non-special-status birds would be compensated through implementation of Mitigation Measure 5b (for special-status amphibians) and/or through the standardized mitigation ratios for non-listed species developed for the East Alameda County Conservation Strategy (EACCS). CDFW has determined that compensation is required for permanent loss of occupied burrowing owl habitat (i.e., where burrowing owls have been documented to occupy burrows in the preceding 3 years). Permanent loss of occupied habitat could affect the local population and would be a significant impact; however, implementation of Mitigation Measures BIO-5b, BIO-5c, and BIO-9 would reduce this impact to a less-than-significant level.

Impact BIO-10: Potential injury or mortality of and loss of habitat for San Joaquin kit fox (*Vulpes macrotis mutica*) and American badger (*Taxidea taxus*) (less than significant with mitigation)

As described in the APWRA Repowering PEIR, suitable habitats for San Joaquin kit fox and American badger such as grassland communities occur on the GH North Project property. The San Joaquin kit fox has been

reported from the GH North Project property (CDFW, 2015) and American badger was detected during wildlife surveys of the site conducted by CH2M HILL biologists in fall 2014 and winter 2015. Potential impacts to these species would be the same as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including preconstruction clearance surveys, biological monitoring, and potential compensatory mitigation (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5c, BIO-10a, and BIO-10b), potential impacts to American badger and San Joaquin kit fox would be reduced to less-than-significant levels.

Impact BIO-11: Avian mortality resulting from interaction with wind energy facilities (significant and unavoidable)

The approved Golden Hills Project was determined to have significant and unavoidable impacts in relation to avian mortality resulting from interaction with the proposed wind energy facilities on special-status avian species that cannot be reduced to below the level of significance through the incorporation of mitigation measures. Similar to the Golden Hills Project, white-tailed kite, northern harrier, bald eagle, red-tailed hawk, golden eagle, ferruginous hawk, American kestrel, western burrowing owl, tricolored blackbird, and loggerhead shrike were detected during wildlife surveys of the GH North Project site conducted by CH2M HILL biologists in fall 2014 and winter 2015. The California horned lark is also expected to occur on site. Swainson's hawk is known from the region and may also occur on site. Mitigation measures would be the same as those specified in the certified APWRA Repowering PEIR to reduce impacts during and after construction (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5b, BIO-5c, BIO-8a, BIO-8b, and BIO-9) including measures to reduce avian mortality through collision with turbines (Mitigation Measures BIO-11a through BIO-11i). However as with the Golden Hills Project, post-construction impacts related to wind energy facility operations to special-status birds at the GH North Project would remain significant and unavoidable.

Impact BIO-12: Potential mortality or disturbance of bats from roost removal or disturbance (less than significant with mitigation)

As with the approved Golden Hills Project, construction could result in potential mortality or disturbance of bats from roost removal within the GH North Project property. Similar to the Golden Hills Project, the hoary bat (*Lasiurus cinereus*), Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus*), and western mastiff bat (*Eumops perotis*) have the potential to occur within the GH North Project area. As described in the APWRA Repowering PEIR, mortality or disturbance of bats from roost removal as a result of construction at the GH North Project constitutes a significant impact. Implementation of Mitigation Measures BIO-1b, BIO-3a, BIO-12a, and BIO-12b would reduce this impact to a less-than-significant level.

Impact BIO-13: Potential for construction activities to temporarily remove or alter bat foraging habitat (less than significant)

Construction of the GH North Project could degrade bat foraging habitat by replacing vegetation with non-vegetated land cover types, similar to the approved Golden Hills Project. Construction would create a temporary increase in traffic, noise, and artificial night lighting in the program area, reducing the extent of landscape available for foraging. However, the amount of landscape returned to foraging habitat in the process of decommissioning the first- and second-generation turbines would offset the amount of foraging habitat lost to repowering activities. As with the approved Golden Hills Project, this impact would be less than significant. No mitigation is required.

Impact BIO-14: Turbine-related fatalities of special-status and other bats (significant and unavoidable)

The approved Golden Hills Project was determined to have significant and unavoidable impacts in relation to bat mortality resulting from interaction with the proposed wind energy facilities on special-status bat species that cannot be reduced to below the level of significance through the incorporation of mitigation measures. Similar to the Golden Hills Project, the hoary bat, Townsend's big-eared bat, pallid bat, and western mastiff bat have the potential to occur in the GH North Project property. Mitigation measures

would be the same as those specified in the certified APWRA Repowering PEIR to reduce impacts during and after construction (Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-5b, BIO-5c, BIO-12a, and BIO-12b) including measures to reduce bat mortality through collision with turbines (Mitigation Measures BIO-14a through BIO-14e). However as with the Golden Hills Project, post-construction impacts related to wind energy facility operations to special-status bats would remain significant and unavoidable.

3.3.2.3 Riparian Habitat and Other Sensitive Communities

Terrestrial vegetation communities and habitats were evaluated and characterized within the GH North Project area during the fall 2014 and winter 2015 field surveys. Vegetation communities for the GH North Project property were mapped in order to be consistent with the existing vegetation mapping detailed in the approved APWRA Repowering PEIR. Six habitat and land cover types were mapped, including annual grassland, alkali and seasonal wetlands, ponds, drainages, and developed areas. Descriptions of the vegetation communities are provided in the certified APWRA Repowering PEIR. Vegetation communities and land cover types are depicted on Figure 3.3-1. Potential impacts to sensitive communities including alkali and seasonal wetlands would be similar as those identified in the certified APWRA Repowering PEIR. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including compensatory mitigation (Mitigation Measures BIO-15, BIO-16, and BIO-18), potential impacts to sensitive communities would be reduced to less-than-significant levels.

Impact BIO-15: Potential for road infrastructure upgrades to result in adverse effects on alkali meadow (less than significant with mitigation)

Road infrastructure upgrades that could affect this habitat would include grading, widening, and re-gravelling of existing roads and construction of new roads to accommodate decommission and repowering activities. Culverts would be upgraded for existing roads, and new culverts would be installed for new roads. Direct effects would consist of fill of alkali meadow at locations where roads crossing the habitat would be widened. Indirect effects could involve altered hydrology or runoff of sediment and other substances during road construction activities. Some effects, such as those due to runoff, would be avoided and minimized through implementation of erosion control BMPs and post-construction reclamation. Installation of new and upgraded culverts would maintain existing hydrology. However, loss of alkali meadow habitat as a result of direct fill would be a substantial adverse effect on a sensitive natural community. Because specific designs have not been developed for the GH North Project, it is not possible to quantify this effect. However, if alkali meadow is affected by road infrastructure upgrades, it would be a significant impact. As described in the approved PEIR for the Golden Hills Project, implementation of Mitigation Measure BIO-15 would reduce this impact to a level less-than-significant level.

Impact BIO-16: Potential for road infrastructure upgrades to result in adverse effects on riparian habitat (less than significant with mitigation)

Road infrastructure upgrades would include grading, widening, and re-gravelling of existing roads and construction of new roads to accommodate decommissioning and repowering activities. Culverts would be upgraded for existing roads, and new culverts would be installed for new roads. Loss of riparian habitat as a result of direct fill would be a substantial adverse effect on a sensitive natural community. Because specific designs have not been developed for the GH North Project, it is not possible to quantify this effect. However, if riparian habitat is affected by road infrastructure upgrades, it would be a significant impact. As described in the approved PEIR for the Golden Hills Project, implementation of Mitigation Measure BIO-16 would reduce this impact to a level less-than-significant level.

Impact BIO-17: Potential for ground-disturbing activities to result in direct adverse effects on common habitats (less than significant)

As described in the APWRA Repowering PEIR, ground-disturbing activities would result in the permanent loss of common habitats as a result of constructing new permanent facilities and the temporary loss of common habitats as a result of constructing temporary facilities and landscape reclamation. These activities

would create minor changes in total acreage of common habitats in the project area, primarily in the annual grassland plant community. All lands disturbed by infrastructure installation or removal would be returned to pre-project conditions. At each reclamation site, the topography would be contour graded (if necessary and if environmentally beneficial), stabilized, and reseeded with an appropriate seed mixture to maintain slope stability. Reclamation activities would be guided by a Reclamation Plan developed in coordination with the County and other applicable agencies.

As approved under the Golden Hills Project, this proposed impact for the GH North Project would be less than significant. No mitigation is required.

3.3.2.4 Federally Protected Wetlands

Impact BIO-18: Potential for road infrastructure upgrades to result in adverse effects on wetlands (less than significant with mitigation)

As described in the APWRA Repowering PEIR, wetlands subject to federal jurisdiction are expected to occur within the GH North Project property and may be affected as a result of proposed road infrastructure upgrades. Therefore, impacts to federally protected wetlands would occur and would require that the Project Proponent apply for a Nationwide Permit and Water Quality Certification under Sections 404 and 401 of the Clean Water Act, respectively. In addition, drainages that fall under the jurisdiction of CDFW are also present on the GH North Project property. Activities that result in the diversion or obstruction of the natural flow of a stream, or which substantially change its bed, channel or bank, or which utilize any materials (including vegetation) from the streambed, may require that the Project Proponent enter into a Streambed Alteration Agreement with the CDFW. The Project Proponent would provide documentation of all applicable water quality permits to the County upon their approval by the appropriate entity. With the implementation of the mitigation measures outlined in the APWRA Repowering PEIR, including compensatory mitigation (Mitigation Measure BIO-18), potential impacts to federally protected wetlands would be reduced to less-than-significant levels.

3.3.2.5 Interference with Wildlife Movements, Migration Corridors, or Nursery Sites

Impact BIO-19: Potential impact on the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites (significant and unavoidable)

Many common wildlife species (e.g., ground squirrels, voles, deer, coyote, raccoon, skunk) and special-status wildlife species (e.g., California red-legged frog, California tiger salamander, American badger) are likely to occur in and move through the GH North Project property. Construction activities associated with the GH North Project and fencing of work areas may temporarily impede wildlife movement through the work area or cause animals to travel longer distances to avoid the work area. Upon completion of project construction, the new wind turbines would be spaced apart and would not be a barrier to on-the-ground wildlife movement. Additionally, there would be fewer turbines on the ground, and a net increase in the amount of natural area would result from the restoration of decommissioned turbine pads and foundations. This removal of turbines and increase of natural area would partially compensate for this impact. As discussed in the certified APWRA Repowering PEIR, the GH North Project has the potential to affect native wildlife nursery sites (i.e., breeding areas). Because common species may also use these breeding areas, they may also be affected by the project. Implementation of Mitigation Measures BIO-1b, BIO-1e, BIO-3a, BIO-4a, BIO-5a, BIO-5c, BIO-7a, BIO- 8a, BIO-8b, and BIO-10a would avoid and minimize potential impacts on wildlife nursery areas for special-status and common wildlife species known from the GH North Project.

As discussed above, the operation of wind turbines after repowering would adversely affect raptors, other birds, and bats migrating through and wintering in the project area because they could be injured or killed if they fly through the rotor plane of operating wind turbines. This would be a significant and unavoidable impact. Implementation of Mitigation Measures BIO-11b, BIO-11c, BIO- 11d, BIO-11e, BIO-11i, BIO-12a, BIO-12b, BIO-14a, and BIO-14d would reduce this impact, but not to a less-than-significant level.

3.3.2.6 Conflict with Local Policies or Ordinances Protecting Biological Resources

Impact BIO-20: Conflict with local plans or policies (less than significant with mitigation)

The ECAP encourages the preservation of areas known to support special-status species, no net loss of riparian and seasonal wetlands, and protection of existing riparian woodland habitat. Additionally, the ECAP has several policies related to wind energy facilities, including establishing a mitigation program to minimize the impacts of wind turbine operations on bird populations. As discussed in the certified APWRA Repowering PEIR, loss of special-status species and their habitat, loss of alkali wetlands, loss of riparian habitats, and loss of existing wetlands as a result of implementing the GH North Project would be in conflict with these policies. Implementation of Mitigation Measures BIO-1a through BIO-1e, BIO- 3a, BIO-4a, BIO-4b, BIO 5a through 5c, BIO-7a, BIO-7b, BIO-8a, BIO-8b, BIO-9, BIO 10a, BIO-10b, and BIO-15, BIO-16, and BIO-18 would reduce this impact to a less-than-significant level because these measures require the project applicant to minimize impacts on habitat for special-status species and compensate for the permanent loss of suitable habitat, as well as ensure that any impacts on riparian and wetlands are compensated for to ensure no net loss of habitat functions and values. The mitigation measures for the impacts of wind turbine operations on bird populations from the APWRA Repowering PEIR are consistent with the establishment of a mitigation program recommended by the ECAP.

3.3.2.7 Conflict with an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan

Impact BIO-21: Conflict with provisions of an adopted HCP/NCCP or other approved local, regional, or state habitat conservation plan (no impact)

No adopted habitat conservation plans (HCP) or natural community conservation plans (NCCP) are applicable to the approved Golden Hills Project or the GH North Project. The EACCS, while not a formal HCP, provides guidance for the project planning and permitting process to ensure that impacts are offset in a biologically effective manner. As discussed in the APWRA Repowering PEIR, the mitigation measures established in the PEIR are based on measures from the EACCS, with some modifications and additions. Because there are no adopted HCP/NCCPs for the project area and the GH North Project would not conflict with the EACCS, there would be no impact.

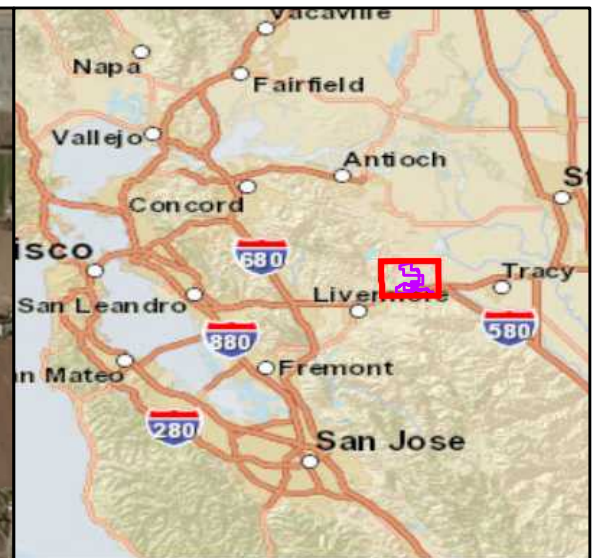
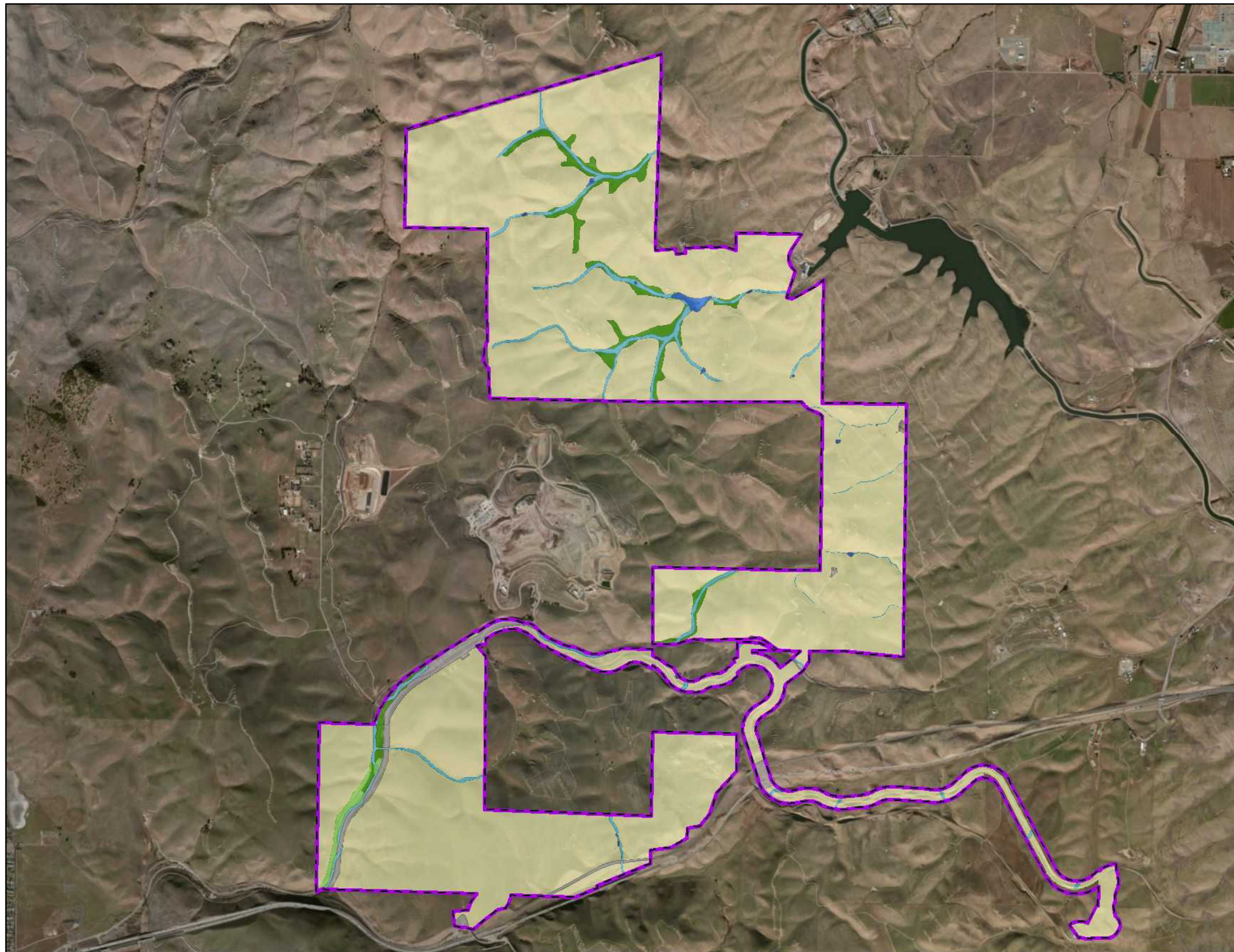
3.3.3 Contribute to Cumulative Biological Resources Impacts

Although the GH North Project was not specifically analyzed by the certified APWRA Repowering PEIR, it constitutes as a reasonably foreseeable future action (State CEQA Guidelines Section 15355[b]) within the program area. Therefore, the cumulative impacts on biological resources from GH North Project would be comparable to the analysis of impacts presented for the approved Golden Hills Project in the certified APWRA Repowering PEIR. This analysis is summarized below.


Construction of the proposed project could result in the injury, mortality, or disturbance of special-status and common wildlife species during construction, with the potential to affect local populations. Implementation of biological mitigation measures identified in this analysis would minimize or avoid injury, mortality, or disturbance of special-status and common species during construction, and would avoid or reduce the project's contribution to cumulative effects on local populations.

The proposed project would result in the permanent and temporary losses of land cover types that provide suitable habitat for special-status and common wildlife species. The loss of these habitats would contribute to impacts of other projects that remove these habitats in the project region. However, permanent disturbance of undeveloped land would be offset by restoration of habitat when existing roads and turbine pads and foundations are restored to natural conditions. With this offset, and with implementation of biological mitigation measures identified in this analysis that require restoration of temporarily affected habitat and compensation for the permanent loss of habitats, the project's contribution to cumulative impacts would be reduced to a less-than-significant level.







Avian and bat mortality associated with turbine collisions has been identified as a significant and unavoidable impact. By definition, and considered with other sources of avian mortality (e.g., the Contra Costa County portion of the APWRA and the neighboring Montezuma Hills Wind Resource Area), this would constitute a considerable contribution to a significant cumulative impact.



LEGEND

-  Project Boundary (4,389 Acres)

Habitat Types

-  Annual Grassland
-  Ponds
-  Alkali Wetland
-  Seasonal Wetland
-  Drainage
-  Developed

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
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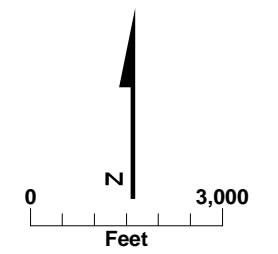


FIGURE 3.3-1
Land Cover Types in the Project Area
Golden Hills North Wind Energy Center Repowering Project

3.4 Cultural Resources

This section discusses the effects on cultural resources from the proposed GH North Project. This analysis relies on and incorporates by reference the project setting and regulatory setting as described in the APWRA PEIR (Alameda County Community Development Agency, 2014). Potential impacts to cultural resources from the project are discussed relative to conclusions in the APWRA PEIR for the Golden Hills Project. Consistent with the APWRA PEIR, cultural resources for the GH North Project were evaluated with regard to the Alameda East County Area Plan; National Register of Historic Places, California Register of Historical Resources, California Historical Landmarks, California Points of Historical Interest, and California Native American Heritage Commission (NAHC).

3.4.1 Setting

As described above, the GH North environmental and regulatory setting for cultural resources is the same as that considered in the APWRA PEIR.

3.4.2 Impact Analysis

The potential for the project to result in new or substantially more adverse significant impacts to cultural resources was evaluated in relation to four questions recommended for consideration by the CEQA Guidelines.

Impact CUL-1: Cause a substantial adverse change in the significance of a historic resource (less than significant with mitigation)

A cultural resources records search was conducted in December 2014 and in April 2015 at the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC), Sonoma State University. Six previously recorded resources (P-01-000163, P-01-000164, P-01-000172, P-01-000173, P-01-010671, and P-01-011506) are located within the GH North Project study area. A pedestrian survey was completed in April 2015. Appendix B contains the results of the literature search and pedestrian survey. One previously recorded resource, P-01-000172, appears to have been removed and is no longer extant. In addition to the five previously recorded cultural resources which were located during the survey, ten new cultural resources were identified and recorded. Four of these resources, P-01-000173, and Temporary Site Nos. S-1, S-2, and S-3 are recommended as eligible for the NRHP. All of these will be avoided during project implementation. Based on research and evaluation, the eleven remaining resources do not retain sufficient integrity or meet any of the NRHP criteria to be recommended eligible. Consultation with the NAHC previously showed that no reported Native American sacred sites are located within the GH North Project study area.

In the event that a historical resource is present within the project area, or should a significant resource be encountered during construction, the implementation of Mitigation Measures CUL-1a through CUL-3 of the certified APWRA PEIR would reduce impacts to less-than-significant levels.

Based on these records results, the ongoing pedestrian surveys, and implementation of the APWRA PEIR mitigation measures, the GH North Project would not be expected to result in new significant impacts or substantially more adverse significant impacts to cultural resources related to a substantial adverse change in the significance of a historical resource than that disclosed for the Golden Hills Project in the certified APWRA PEIR.

Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource (less than significant with mitigation)

As described above, four resources, P-01-000173, and Temporary Site Nos. S-1, S-2, and S-3 are recommended as eligible for the NRHP. All of these will be avoided during project implementation. None of the eleven remaining resources retain sufficient integrity or meet any of the NRHP criteria to be recommended eligible. In the unanticipated event that the final project is unable to avoid impacts to a

significant archaeological resource through project re-design, or in the event that a resource determined to be significant is unexpectedly encountered during construction, the implementation of Mitigation Measures CUL-1a through CUL-3 of the certified APWRA PEIR would reduce impacts to significant archaeological resources to less-than-significant levels.

Based on these records results, the ongoing pedestrian surveys, and implementation of the APWRA PEIR mitigation measures, GH North would not be expected to result in new significant impacts or more substantially adverse significant impacts to archaeological resources pursuant to Section 15064.5 than that disclosed for the Golden Hills Project in the certified APWRA PEIR.

Impact CUL-3b: Disturb any human remains, including those interred outside of formal cemeteries (less than significant with mitigation)

Based on records searches, no human remains, including those interred outside of formal cemeteries, are known to exist within the GH North Project site. In the unanticipated event that buried human remains are encountered during project construction, implementation of Mitigation Measure CUL-3 would reduce potential impacts to human remains to less than significant. Therefore, there are no expected new or substantially more adverse impacts related to disturbing any human remains, including those interred outside of formal cemeteries, than those evaluated in the certified APWRA PEIR.

3.5 Greenhouse Gas Emissions

This section discusses the effects on greenhouse gas (GHG) emissions from the proposed GH North Project, Phase 2 of the Golden Hills Project. This analysis relies on and incorporates by reference the environmental setting and regulatory setting as described in the APWRA Repowering PEIR (Alameda County Community Development Agency, 2014). Potential impacts associated with GHG emissions from the GH North Project are discussed relative to conclusions stated for the Golden Hills Project in the APWRA Repowering PEIR. The APWRA Repowering PEIR conclusion stated that the Golden Hills Project would result in less than significant impacts to GHG emissions with the incorporation of Mitigation Measures GHG-2a through 2d.

Consistent with the APWRA Repowering PEIR, GHG emissions impacts for the GH North Project were evaluated with regard to the Alameda County Climate Action Plan (CCAP) (Alameda County Community Development Agency, 2011), the BAAQMD significance thresholds (BAAQMD, 2011), and state and federal rules and regulations. A review of available records and literature determined that no new air quality information has become available since the certification of the APWRA Repowering PEIR, with the exception of recently released national and state GHG emission inventory results which are provided in Table 3.5-1 below.

3.5.1 Setting

3.5.1.1 Regulatory Setting

The regulatory framework pertaining to GHG emissions (including federal, state, and local regulations) has not changed since the preparation of the certified APWRA Repowering PEIR.

3.5.1.2 Environmental Setting

The environmental setting for GHG emissions, including the principal GHGs of concern (namely, carbon dioxide [CO₂], methane [CH₄], nitrous oxide [N₂O], and sulfur hexafluoride [SF₆]) and the impacts of climate change are functionally the same as described for the Golden Hills Project in the certified APWRA Repowering PEIR, with the exception of the most recent global, national, state, and local GHG emissions inventory data provided in Table 3.7-2 of the PEIR. Updated data is provided in Table 3.5-1 below.

TABLE 3.5-1
Global, National, State, and Local GHG Emissions Inventories

Emissions Inventory	CO ₂ e (metric tons)
2004 IPCC Global GHG Emissions Inventory	49,000,000,000
2012 EPA National GHG Emissions Inventory	6,525,600,000
2012 ARB State GHG Emissions Inventory	458,680,000
2010 SFBAAB GHG Emissions Inventory	95,800,000
2005 Unincorporated Alameda County GHG Emissions Inventory	930,000

Sources: IPCC, 2007; EPA, 2014; CARB, 2014; BAAQMD, 2010; Alameda County Community Development Agency, 2011.

CO₂e = carbon dioxide equivalent

IPCC = Intergovernmental Panel on Climate Change

3.5.2 Impact Analysis

3.5.2.1 Methods for Analysis

GHG emissions were estimated for construction and operational activities in the APWRA Repowering PEIR at a programmatic level, with additional detail given to the Golden Hills Project. In the absence of final project design data, GHG emissions were calculated for a typical 80 MW repowering project using project data from the *Vasco Winds Repowering Project Draft Environmental Impact Report* (Contra Costa County, 2010). Because the Vasco example provides a comprehensive analysis of typical construction activity for

repowering, it was used to estimate total and daily GHG emissions for the proposed projects, as it is considered representative of a typical project associated with the program. Total GHG emissions from the Vasco example were scaled to the Golden Hills Project based on the nameplate capacity of the program area. A scaling factor of 1.11 was used for total construction emissions for the Golden Hills Project (88.4 MW nameplate capacity ÷ 80 MW metric nameplate capacity).

In order to maintain consistency with the estimation of construction and operational GHG emissions for the Golden Hills project, this analysis of GH North incorporates by reference the baseline year, methods, models, emission factors, global warming potential factors, significance thresholds, and assumptions used in the APWRA PEIR to calculate and assess GHG emissions, per standard federal, state, and local rules and regulations. GHG emissions were then estimated for the construction and operational activities of the GH North Project using an expansion of the PEIR's scaling methodology. To accurately assess project GHG emissions while maintaining consistency with the PEIR, scaling factors were determined for each major construction activity for which GHG emissions were estimated in the PEIR based on a unit of significance for the GHG emissions produced by each activity. A separate overall scaling factor was determined for operational activities based on the proposed number of new turbines. Table 3.5-2 describes the major construction activities, specific units of significance, and the calculated scaling factor for each.

TABLE 3.5-2
Construction GHG Emissions Scaling Factors

Construction Activity	Unit of Significance	Golden Hills	GH North	Scaling Factor
Decommissioning and foundation removal	Number of decommissioned turbines	775	324	0.42
Staging areas, laydown yards and substations	Approximate acres of disturbance	26.4	23.5	0.89
Road construction	Linear feet of new roads	104,000	100,000	0.96
Turbine foundations and batch plant*	Number of new turbines	52	24	0.46
Turbine delivery and installation	Number of new turbines	52	24	0.46
Utility collector line installation	Number of new turbines	52	24	0.46
Site restoration	Number of decommissioned turbines	775	324	0.42
Offsite truck trips	Total project truck trips	33,026	16,514	0.50
Offsite worker trips	Average daily workers	200	200	1.00
Electricity Use	Approximate construction duration (in months)	10	10	1.00
Water use (indirect emissions from dust suppression)	Linear feet of new roads	104,000	100,000	0.96
Operational Activity	Number of new turbines	52	24	0.46

*Includes construction activities along with fugitive dust emissions from the concrete batch plant.

The potential for the GH North Project to result in new or substantially more adverse significant impacts related to GHG emissions than those evaluated for the Golden Hills Project was evaluated in relation the two questions recommended for consideration by the CEQA Guidelines.

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (less than significant)

The GH North Project would not create a new or substantially more adverse significant impact related to generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impacts on the environment than those disclosed in the certified APWRA Repowering PEIR.

The GH North Project would be constructed in the same manner over approximately the same duration, and would use the same equipment as outlined for the Golden Hills Project in the certified APWRA PEIR. As described in the certified APWRA PEIR for the Golden Hills Project, construction of the GH North Project would result in emissions of CO₂, CH₄, and N₂O, from fuel combustion and exhaust from construction equipment and vehicle trips, water usage for dust control and concrete, cement production, and electricity consumption. Construction and operation of GH North would result in no additional SF₆ emissions, associated with the operation and maintenance of circuit breakers, because the project proposes to connect to the existing offsite Midway substation.

Total GHG emissions associated with construction of the GH North Project have been estimated and are presented in Table 3.5-3.

TABLE 3.5-3
Project Construction and Operation GHG Emissions for the Bay Area

Project Activity	Estimated Total Emissions (metric tons)				
	CO ₂	CH ₄	N ₂ O	SF ₆	CO ₂ e
Construction Activity (all years)					
Decommissioning and foundation removal	161.42	0.01	<0.01	0.00	162.88
Staging areas, laydown yards and substations	221.89	0.02	0.01	0.00	224.99
Road construction	342.87	0.02	0.01	0.00	346.21
Turbine foundations and batch plant*	730.24	0.03	<0.01	0.00	732.30
Turbine delivery and installation	112.66	<0.01	<0.01	0.00	114.15
Utility collector line installation	78.98	<0.01	0.00	0.00	79.09
Site restoration	52.51	<0.01	0.00	0.00	52.61
Offsite truck trips	1,391.77	0.02	0.07	0.00	1,413.00
Offsite worker trips	187.77	0.00	0.01	0.00	190.75
Electricity Use	0.89	0.00	0.00	0.00	0.89
Water use (indirect emissions from dust suppression)	9.00	0.00	0.00	0.00	9.00
Total	3,290.00	0.10	0.11	0.00	3,325.88
Amortized (per year for 30 years)	110.86				
Operational Activity (per year)	94.63	0.00	0.00	0.00	43.64
Total construction and operation emissions (per year)	153.9154.51				
Annual GHG reductions from offsetting grid electricity	-5,395.43				
Annual net GHG emissions	-5,241.92				
BAAQMD significance threshold (annual)	1,100				
Significant impact?	No				

*Includes direct emissions from construction activities for the construction phase along with indirect stationary CO₂ emissions associated with the manufacture of the concrete (offsite) used at the batch plants (onsite). Indirect emissions include fuel combustion emissions and calcination emissions.

As shown in Table 3.5-3, total GHG construction emissions in the form of CO₂e would be approximately 3,309 metric tons. These emissions amortized over a 30-year period equal approximately 110 metric tons per year. Adding to that the operation emissions of approximately 44 metric tons CO₂e per year, total GH North Project GHG emissions would be approximately 155 metric tons CO₂e per year, which would be less than the BAAQMD's significance threshold of 1,100 metric tons CO₂e per year for non-stationary sources.

Consistent with the APWRA PEIR, it also should be noted that total GH North GHG emissions would be immaterial compared to the GHG emissions that would be avoided by the increased production of wind energy under the GH North Project. By replacing older-model turbines with new, more efficient ones, the GH North Project would reduce energy-production-related contributions to climate change overall, relative to the existing facility, because it would contribute approximately 150 percent more power to the grid by installing turbines that are 50 percent more efficient than the existing turbines. The project would contribute approximately 36,000 megawatt-hours (MWh) of additional wind-generated energy per year to the power grid compared to baseline conditions,² and would therefore replace the same amount of conventional (carbon-based) energy production. Using an emission factor of 329.9 pounds of CO₂e per MWh developed by PG&E for its current energy production portfolio (Climate Registry 2013), it can be estimated that the GH North Project would result in an annual GHG emissions reduction of approximately 5,395 metric tons CO₂e. Therefore, operation of the GH North Project would result in a net reduction of approximately 5,241.92 metric tons CO₂e per year and there would be no long-term impacts associated with project-generated GHG emissions.

Therefore, consistent with the APWRA PEIR analysis, the GH North Project would result in less than significant impacts associated with greenhouse gas emissions generation and would not result in a significant impact on the environment.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (less than significant with mitigation)

The GH North Project would not create a new or substantially more adverse significant impact related to conflicting with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases than those disclosed in the certified APWRA Repowering PEIR.

Consistent with the analysis of the Golden Hills Project in the APWRA PEIR, the GH North Project could conflict with certain GHG reduction goals set forth in AB 32, including the 39 Recommended Actions identified by CARB in its Climate Change Scoping Plan (California Air Resources Board, 2008). These potential conflicts are the same as presented in the PEIR for Scoping Plan measures T-7 and E-3. Scoping Plan measure H-6 (SF₆ Leak Reduction) is also addressed in the analysis of the Golden Hills Project; it would, however, be inapplicable to the GH North Project, which proposes to connect to the existing Midway substation. Consistency of the GH North Project with these measures is comparable to the program's evaluation by each source-type measure as discussed in the PEIR. Implementation of Mitigation Measure GHG-2a would ensure that the GH North Project would not conflict with implementation of Measure T-7. Mitigation Measure GHG-2b in the PEIR is associated with SF₆ leak reduction and would therefore not apply to the project.

As described in the certified APWRA PEIR, the GH North Project could also conflict with certain GHG reduction goals set forth in the Alameda County Final Draft Climate Action Plan. These potential conflicts are the same as presented for the Golden Hills Project in the PEIR. Consistency of the GH North Project with these measures is comparable to the program's evaluation by each source-type measure as discussed in the PEIR. Implementation of Mitigation Measure GHG-2c would ensure that the GH North Project would not conflict with implementation of CCAP Measure E-10. Implementation of Mitigation Measure GHG-2d would ensure that the GH North Project would not conflict with implementation of CCAP Measure WS-2.

² Calculation: 41.16 MW * 20% capacity * 8,760 hours per year = 72,112 MWh (baseline); 41.16 MW * 30% capacity * 8,760 hours per year = 108,168 MWh (Repowering Program). Difference = 36,056 MWh.

Therefore, consistent with the APWRA PEIR analysis, this impact would be significant, but implementation of Mitigation Measures GHG-2a, GHG-2c, and GHG- 2d would reduce this impact to a less-than-significant level.

3.6 Hydrology and Water Quality

This section discusses the effects on hydrology and water quality from the proposed GH North Project, Phase 2 of the Golden Hills Project. This analysis relies on and incorporates by reference the project setting and regulatory setting as described in the APWRA Repowering PEIR (Alameda County Community Development Agency, 2014). Potential impacts to hydrology and water quality from the GH North Project are discussed relative to conclusions in the APWRA Repowering PEIR for the Golden Hills Project. The APWRA Repowering PEIR conclusion stated that the Golden Hills Project would result in significant but mitigable impacts to hydrology and water quality. Consistent with the APWRA Repowering PEIR, hydrology and water quality for the GH North Project were evaluated in relation to the ECAP, the Alameda County Clean Water Program's Stormwater Management Plan, the State of California Regional Water Quality Control Board Basin Plans for the San Francisco Bay Region and Central Valley Region (RWQCB, 2011), Sections 303, 305, 401, 402, and 404 of the Clean Water Act (33 USC 1251-13176), and the National Flood Insurance Program Flood Insurance Rate Maps for Alameda County (FEMA, 2014). Review of available records and literature determined that no new information of substantial importance was identified that was not known at the time of the certification of the APWRA Repowering PEIR.

3.6.1 Setting

The GH North Project is southwest of the San Joaquin-Sacramento Delta (Delta) in unincorporated northern Alameda County. Figure 3.6-1 shows the drainages in and around the project. The GH North Project spans five watersheds including: Clifton Court Forebay; Mountain House Creek; Upper Arroyo Las Positas; Brushy Creek; and Lower Old River. The majority of the site occurs in the Clifton Court Forebay watershed, which generally drains east toward the Central Valley.

The GH North Project is in the Tracy Subbasin (Basin Number 5-22.15), according to the California Department of Water Resources (DWR) Groundwater Bulletin 118. There are no published groundwater storage amounts for the entire basin; however, estimated groundwater storage capacity is approximately 4,404,000 acre-feet (DWR, 2006). Review of hydrographs for the Tracy Subbasin indicates that, except for some seasonal variation resulting from recharge and pumping, the majority of water levels in wells have remained relatively stable over at least the last 10 years (DWR, 2006).

The program site is not within a 100-year flood hazard area (see Figure 3.6-1), as identified on a Flood Insurance Rate Map delineated by the Federal Emergency Management Agency (FEMA, 2014).

3.6.2 Impact Analysis

The potential for the GH North Project to result in new or substantially more adverse significant impacts related to hydrology and water quality was evaluated in relation to 10 questions recommended for consideration by the CEQA Guidelines.

Impact WQ-1: Violate any water quality standards or waste discharge requirements (less than significant with mitigation)

The GH North Project would not create new or substantially more adverse significant impacts to hydrology and water quality in relation to water quality standards or waste discharge requirements from those disclosed in the certified APWRA Repowering PEIR.

The GH North Project would be consistent with the federal, state, and county policies discussed in the certified APWRA Repowering PEIR. As discussed in the certified PEIR, there may be localized and temporary impacts related to water quality during construction. To minimize impacts, measures to minimize and contain erosion and sedimentation would be implemented in accordance with the Alameda County Stormwater Management Program. Additionally, because the project would disturb more than 1 acre, compliance with the state's NPDES Construction General Permit would be required. As required by this permit, the Project Proponent would have to develop a SWPPP and comply with any regional requirements to meet state water quality objectives. The Project Proponent would select a combination of BMPs

(consistent with Section A of the Construction General Permit) that is expected to minimize runoff and remove contaminants from stormwater discharges. The final selection of BMPs would be subject to approval by the Central Valley RWQCB. Though localized and temporary water quality impacts are possible during construction, the Project Proponent would implement mitigation measures like those described (including NPDES compliance) that were designed to minimize and mitigate these potential impacts, as specified in the certified APWRA Repowering PEIR.

The GH North Project would not require construction-, operation-, or maintenance-related efforts that were not previously addressed in the certified APWRA Repowering PEIR. As with the approved Golden Hills Project, the GH North Project would use the existing network of private dirt roads to access the proposed turbine pad locations in the project property, to the greatest extent possible. The GH North Project may involve limited improvements to the existing roads during construction and may include widening roads or replacing existing culverts with larger culverts to allow for safe use by construction equipment. The project would not alter the construction scenario of the approved Golden Hills Project; therefore, the GH North Project would not create additional hydrology and water quality impacts as a result of construction.

As with the approved Golden Hills Project, impacts related to water quality standards or waste discharge requirements would be expected to be reduced to below the level of significance with incorporation of Mitigation Measure WQ-1. Mitigation Measure WQ-1 would require the Project Proponent to demonstrate compliance with all required water quality permits prior to commencement of any construction activities. In order to identify and properly implement any necessary BMPs to control erosion and/or sedimentation, and to identify and prevent of any potential disturbances to drainages and/or riparian areas, Mitigation Measure WQ-1 would require the Project Proponent to submit a road plan to Alameda County for approval at least 60 days prior to commencement of construction activities.

Additionally, Mitigation Measure WQ-1 would minimize the potential impacts of grading and would require implementation of specific BMPs to reduce the potential for water quality degradation through erosion and sedimentation, as specified in the Soil Erosion and Sedimentation Control Plan. Finally, implementation of Mitigation Measure WQ-1 would reduce potential impacts to water quality from the release of hazardous materials to a less-than-significant level. The GH North Project would incorporate the mitigation measures specified as conditions of approval for the Golden Hills Project and specified in the Mitigation Monitoring and Reporting Program adopted in conjunction with project approval.

The incorporation of Mitigation Measure WQ-1 would reduce cumulative impacts to below the level of significance. Therefore, the GH North Project would not be expected to result in new or substantially more adverse significant impacts related to water quality standards or waste discharge requirements.

Impact WQ-2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted) (less than significant)

The GH North Project would not be expected to create new or substantially more adverse significant impacts related to groundwater supplies or groundwater recharge during the construction and operation of the project than those disclosed in the certified APWRA Repowering PEIR. In accordance with the findings in the certified PEIR, water usage at the GH North property would be minimal, even during the peak of construction.

The amount of new impervious surface created by the GH North Project would be small and distributed (such as footings for turbines, concrete pads for transformers and collector system elements), and would not have a measurable effect on groundwater recharge. Any small increase in runoff would be localized and would not result in an appreciable impact to groundwater recharge. Also, no new wells would be required for construction of the GH North Project. Any water that is needed for construction (such as water for dust suppression) would likely be trucked in from nearby municipalities.

The GH North Project would not create a new or substantial increase in the demand of water usage because the project site would not require additional operations staff and the project site is adjacent to the approved Golden Hills Project boundaries. As such, there is minimal potential for depletion of groundwater supplies or substantial interference with groundwater recharge for the area of potential effect for the project. Because the GH North Project's impacts related to groundwater levels would be below the level of significance, the project would not contribute to a cumulative impact related to groundwater levels. Therefore, the project would not result in new or substantially more adverse significant impacts related to groundwater levels.

Impact WQ-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite (less than significant with mitigation)

The GH North Project would not be expected to create new or substantially more adverse significant impacts related to the alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation on- or offsite from those disclosed in the certified APWRA Repowering PEIR. Grading, leveling, and possibly excavation would be required for project access roads as well as at each turbine installation site, and substation site. These activities could result in changes to drainages across the project site. However, careful design of access road gradients and project construction sites would prevent substantial alteration of drainage patterns and/or erosion within the project area. Prior to commencement of construction activities, the Project Proponent would be required to submit a grading permit to Alameda County for approval. Any alteration of the bed or banks of jurisdictional water features, including through access road improvement and/or construction, would not be permitted to commence prior to development and implementation of a resource agency permits including but not limited to USACE, RWQCB, and CDFW. Project area surface water features are shown in Figure 3.6-1. In accordance with the certified APWRA Repowering PEIR, although there is the potential for construction of the approved Golden Hills Project to result in limited and temporary impacts, the GH North Project would not create new or substantially more adverse significant impacts to hydrology and water quality in relation to alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation on- or offsite. In addition, the GH North Project would be subject to BMPs through the design and implementation of a project-specific Soil Erosion and Sedimentation Control Plan and/or SWPPP in accordance with NPDES requirements (Mitigation Measure WQ-1). Because the GH North Project impacts related to existing drainage patterns would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to existing drainage patterns. Therefore, the GH North Project would not result in new or substantially more adverse significant impacts related to the alteration of existing drainage patterns in a manner that would result in substantial erosion or siltation on- or offsite.

Impact WQ-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite (less than significant with mitigation)

The GH North Project would not create new or substantially more adverse significant impacts related to altering the drainage patterns of the site or substantially increasing the rate or amount of surface runoff in a manner that would result in flooding on- or offsite from those disclosed in the certified APWRA Repowering PEIR. Project area surface water features are shown in Figure 3.6-1. As with the approved Golden Hills Project, the GH North Project would entail limited improvements and construction that might alter the existing drainage pattern of the site, specifically at access roads and crossings. In accordance with the approved Golden Hills Project, the GH North Project would incorporate the erosion and sediment control measures and BMPs as described previously that would mitigate potential impacts as listed in Mitigation Measure WQ-1. Any increase in surface water runoff resulting from permanent project features would be minor and location-specific, and would not influence surface runoff in a manner that would result in flooding on- or offsite. Because the GH North Project impacts related to existing drainage patterns would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to existing drainage patterns. Therefore, the GH North Project would not result in new or substantially more

adverse significant impacts related to alteration of existing drainage patterns of the site or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite.

Impact WQ-5: Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (less than significant with mitigation)

The GH North Project would not create new or substantially more adverse significant impacts related to exceeding the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff than those disclosed in the certified APWRA Repowering PEIR. Construction of the GH North Project would create a small amount of additional impervious surface and may require a small amount of imported water for dust suppression activities. However, these changes would not substantially increase the amount of stormwater runoff. The project area is drained by natural stream channels and does not rely on constructed stormwater drainage systems. As stated previously, the pattern and concentration of runoff could be altered by project activities, such as grading of access roads; however, the amount of runoff across the project site would not be substantially altered. Additionally, the GH North Project would be subject to the BMPs established for the approved Golden Hills Project. Therefore, the project would not overwhelm any stormwater drainage systems or create substantial additional sources of polluted runoff.

Because the GH North Project's impacts related to stormwater runoff would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to stormwater runoff. Therefore, the GH North Project would not result in new or substantially more adverse significant impacts related to exceeding the capacity of existing or planned stormwater drainage systems or providing substantial additional sources of polluted runoff.

Impact WQ-6: Otherwise substantially degrade water quality (less than significant with mitigation)

While the construction and operation of the GH North Project could result in impacts to water quality through the creation of erosion and sedimentation, or through the accidental release of potentially harmful or hazardous materials, the GH North Project would not create new or substantially more adverse significant impacts related to the degradation of water quality than those disclosed in the certified APWRA Repowering PEIR.

The construction, operation, and maintenance of the GH North Project would be consistent with the relevant federal, state, and local policies described in the certified PEIR for the approved Golden Hills Project. The GH North Project would further be consistent with the requirements of all of the measures related to water quality for the approved Golden Hills Project, including the BMPs and the requirements of the applicable NPDES permit (specifically Mitigation Measure WQ-1). These provisions would ensure that no substantial amount of polluted runoff would be generated during construction. Because the GH North Project impacts related to water quality would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to water quality. Therefore, the GH North Project would not result in new or substantially more adverse significant impacts related to substantial degradation of water quality.

While the construction and operation of the GH North Project could result in impacts to water quality resulting in an increase in pollutants for which a water body is listed as impaired under Section 303(d) of the Clean Water Act through the creation of erosion and sedimentation, or through the accidental release of potentially harmful or hazardous materials, the GH North Project would not create new or substantially more adverse significant impacts related to the degradation of water quality than those disclosed in the certified APWRA Repowering PEIR.

The construction, operation, and maintenance of the GH North Project would be consistent with the relevant federal, state, and local policies described in the certified PEIR for the approved Golden Hills Project. The GH North Project would further be consistent with the requirements of all of the measures related to water quality for the approved Golden Hills Project, including the BMPs and the requirements of

the applicable NPDES permit (specifically Mitigation Measure WQ-1). These provisions would ensure that no substantial amount of polluted runoff would be generated during construction. Because the GH North Project impacts related to water quality would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to water quality. Therefore, the GH North Project would not result in new or substantially more adverse significant impacts related to substantial degradation of water quality.

Impact WQ-7: Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map (no impact)

The GH North Project would not create new or substantially more adverse significant impacts related to placement of housing within a 100-year flood hazard area from those disclosed in the certified APWRA Repowering PEIR. As with the approved Golden Hills Project, the GH North Project does not include the construction of housing or result in the redirection of flood flows toward residential areas. Because the GH North Project would not have significant impacts related to placing housing within a 100-year flood hazard area (Figure 3.6-1), the GH North Project would not contribute to a cumulative impact related to placement of housing within a 100-year flood hazard area. Therefore, the GH North Project would not be expected to result in new or substantially more adverse significant impacts related to placement of housing within a 100-year flood hazard area.

Impact WQ-8: Place within a 100-year flood hazard area structures that would impede or redirect floodflows (no impact)

The GH North Project would not be expected to create new or substantially more adverse significant impacts related to placement of structures that would impede or redirect flood flows within a 100-year flood hazard area from those disclosed in the certified APWRA Repowering PEIR. Any construction that takes place within areas of special flood hazards, areas of flood-related erosion hazards, and areas of mudslide (i.e., mudflow) hazards within the jurisdiction of unincorporated Alameda County would comply with the requirements and construction design specifications of the Alameda County Grading Code and Stormwater Management Program. Construction and operation activities associated with the proposed project are not expected to impede or redirect flood flows within identified Flood Hazard Areas as shown in Figure 3.6-1.

As with the approved Golden Hills Project, impacts related to placing structures within a 100-year flood hazard area would be expected to be reduced to below the level of significance with incorporation of Mitigation Measure WQ-1. The GH North Project would incorporate this mitigation measure as a condition of approval. The incorporation of Mitigation Measure WQ-1 would reduce cumulative impacts to below the level of significance. Therefore, the GH North Project would not result in new or substantially more adverse significant impacts related to placement of non-residential structures within a 100-year flood hazard.

Impact WQ-9: Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam (less than significant)

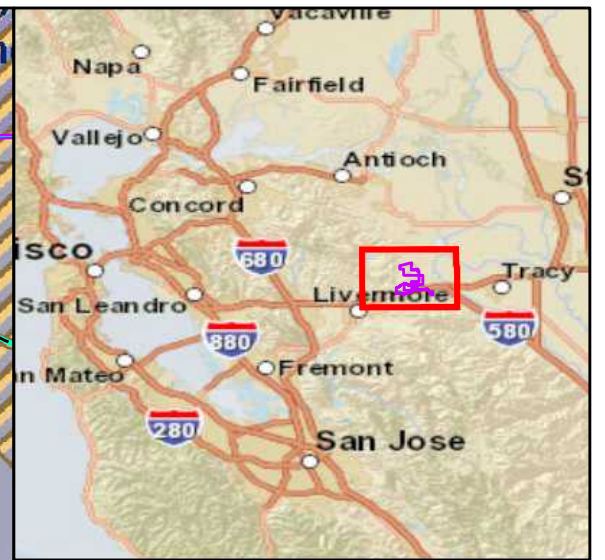
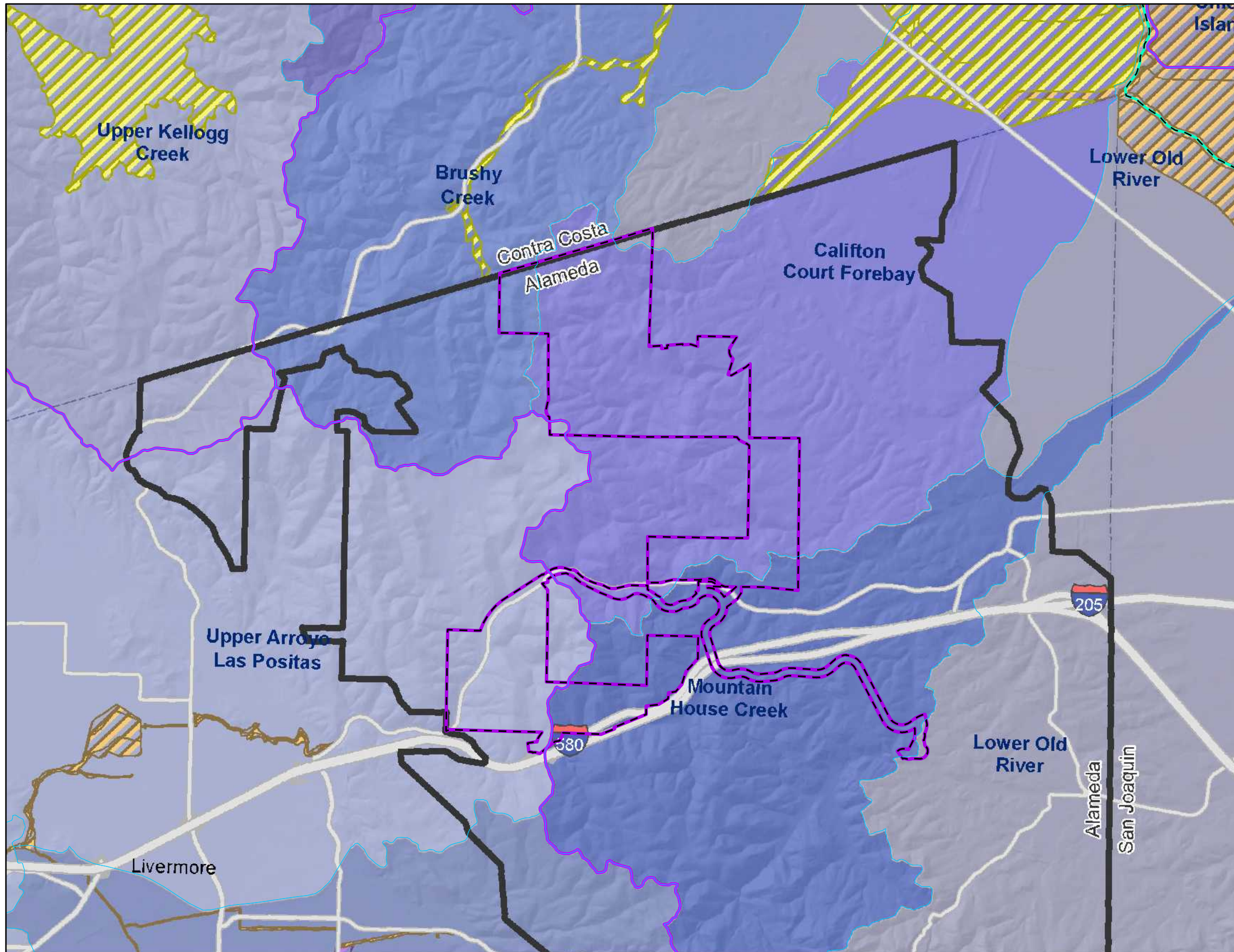
The GH North Project would not create new or substantially more adverse significant impacts related to exposing people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam than those disclosed in the certified APWRA Repowering PEIR. The proposed project is not located within a dam inundation area or within the inundation area for any other natural body of water.

Therefore, the GH North Project would not result in the placement of new structures, housing, or people in areas of increased flooding risk as a result of the failure of a levee or dam. The GH North Project would be constructed in accordance with applicable Alameda County requirements. Compliance with existing standards and requirements would ensure an adequate level of protection from flood hazards. Because the GH North Project's impacts related to flooding would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to flooding. Therefore, the GH North Project

would not result in new or substantially more adverse significant impacts related to failure of a levee or dam.

Impact WQ-10: Contribute to inundation by seiche, tsunami, or mudflow (less than significant with mitigation)

Because the GH North Project area is in rolling hills and far from the ocean, the likelihood of a seiche or tsunami occurring is considered minimal. In addition, a mudflow is also highly unlikely, but could be possible in rolling hills if proper BMPs are not used during the construction process. Implementation of Mitigation Measure WQ-1 would ensure that project-related stormwater runoff would be properly contained and drain appropriately as to not build up or cause rills and sedimentation resulting in the potential for a mudflow. As discussed in the certified APWRA Repowering PEIR, conditions at the GH North Project site limit any potential project-related or cumulative impacts related to the Project.



LEGEND

Project Boundary (4,389 Acres)

Designated 100-Year Flood Zones

- A
- AE
- AH

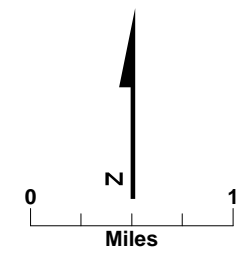


FIGURE 3.6-1
Watersheds and Floodplains
in the Project Vicinity
Golden Hills North Wind Energy Center
Repowering Project

3.7 Noise

This section discusses the effects on sensitive receptors from noise impacts from the proposed GH North Project. This analysis relies on and incorporates reference the project setting and regulatory setting as described in the APWRA PEIR (Alameda County Community Development Agency, 2014). Potential impacts to sensitive receptors from noise from the GH North Project are discussed relative to conclusions in the APWRA PEIR for the Golden Hills Project. Consistent with the APWRA PEIR, noise impacts for the GH North Project were evaluated with regard to the Alameda County thresholds summarized in the PEIR, specifically a day-night average sound level (L_{dn}) of 55 A-weighted decibels (dBA) where existing levels are less than 55 dBA L_{dn} or a 5 dBA increase where existing levels exceed 55 dBA L_{dn} .

3.7.1 Setting

The GH North Project is within the study area of the APWRA PEIR and the setting within the project area is consistent with that described in APWRA PEIR. That is, scattered single-family rural residences are located in the project vicinity. Existing sources of noise include I-580 and existing wind turbines. No unique acoustical features in the project area have been identified that indicate a substantially different setting than considered in the APWRA PEIR for the Golden Hills Project. The closest residences to the project boundary are identified in Figure 3.7-1 and it is anticipated that the closest residence (H19), which is located adjacent to I-580, would be over 1,800 feet from a project turbine.

3.7.2 Impact Analysis

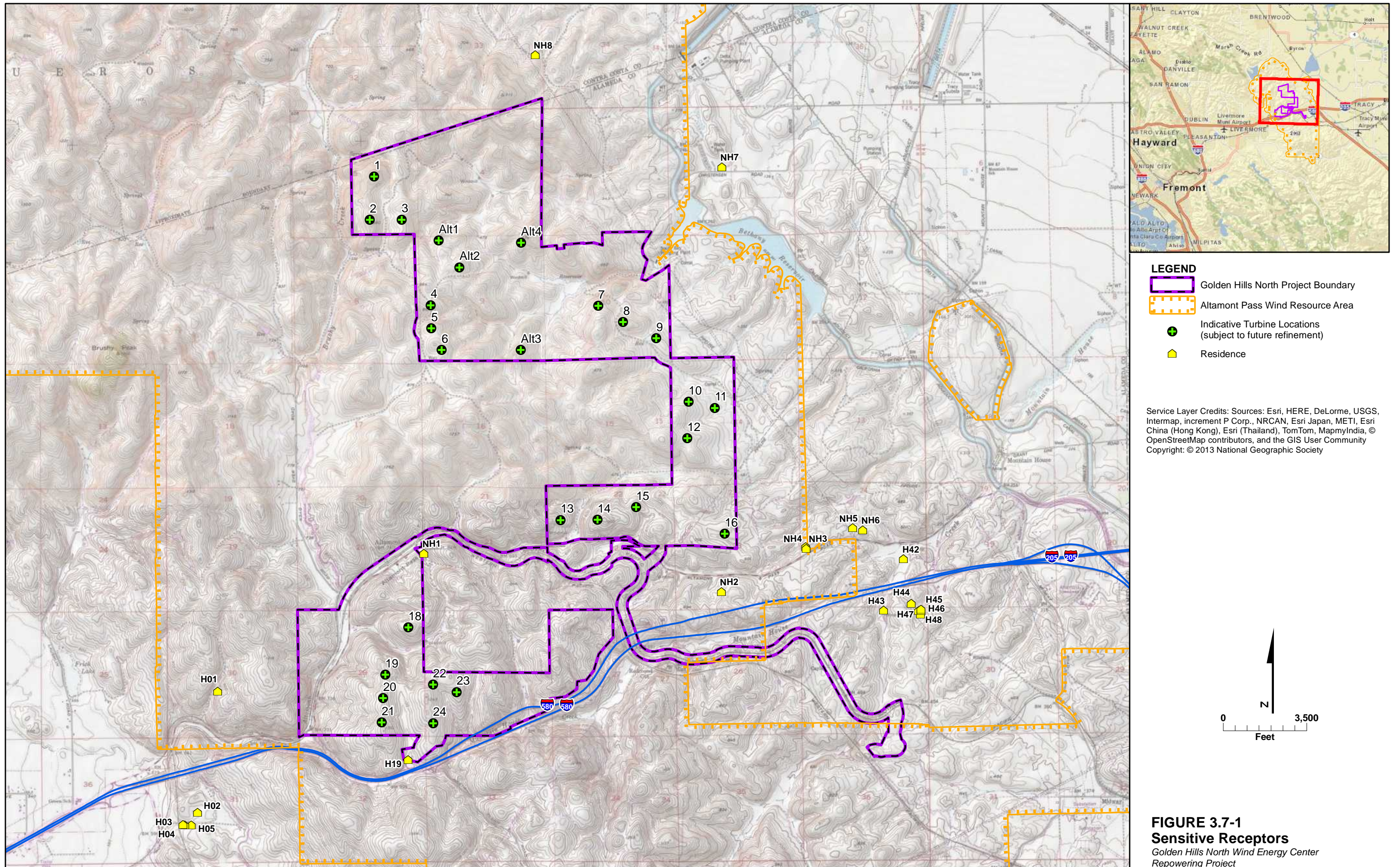
The potential noise-generating activities conducted as part of the GH North Project are consistent with those described in the APWRA PEIR for the Golden Hills Project. These activities include decommissioning of existing turbines and associated existing infrastructure, including roadways, as well as construction and operation of the new modern WTGs and associated infrastructure.

Impact NOI-1: Exposure of residences to noise from new wind turbines (less than significant with mitigation)

Up to 324 existing turbines would be removed within the project area and up to 24 larger, modern turbines would be installed. Figure 3.7-1 shows the layout of the existing and proposed turbines in the project area. As shown in Figure 3.7-1, the closest residence is over 1,800 feet away from the closest project WTG. Given this residence's proximity to I-580, the anticipated existing sound level is greater than 55 dBA L_{dn} and given it is 1,800 feet from the closest project WTG, the project is not expected to result in a 5 dBA increase in L_{dn} . Additional residences are located farther from proposed project WTGs. It is reasonable to expect that for the majority of the sensitive receptors in the GH North Project vicinity, the project would not result in substantial change above that which was analyzed in the APWRA PEIR. Mitigation Measure NOI-1 would be implemented and the project would not create new or substantially more adverse significant impacts to noise during operations than those disclosed in the APWRA PEIR for the Golden Hills Project.

Impact NOI-2: Exposure of residences to noise during decommissioning and new turbine construction (less than significant with mitigation)

Construction noise levels associated with anticipated construction phases and equipment for repowering projects are discussed in the APWRA PEIR under Impact NOI-2a. The nearest turbine would be located approximately 1,800 feet from existing residences. Nonetheless, Mitigation Measure NOI-2 would be implemented to reduce potential impacts. Therefore, the GH North Project would not create new or substantially more adverse significant impacts related to noise during decommissioning and new turbine construction than those disclosed in the APWRA PEIR for the Golden Hills Project.



LEGEND

- Golden Hills North Project Boundary
- Altamont Pass Wind Resource Area
- + Indicative Turbine Locations (subject to future refinement)
- 🏠 Residence

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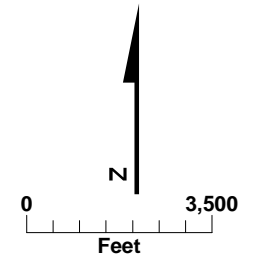


FIGURE 3.7-1
Sensitive Receptors
 Golden Hills North Wind Energy Center
 Repowering Project

3.8 Transportation and Traffic

This section discusses the effects on transportation and traffic from the proposed GH North Project, Phase 2 of the Golden Hills Project under the APWRA Repowering Program. The analysis relies on and incorporates by reference the environmental and regulatory setting as described in the APWRA PEIR (Alameda County Community Development Agency, 2014). Potential impacts to transportation and traffic from the GH North Project are discussed relative to conclusions in the APWRA PEIR for the Golden Hills Project. The APWRA PEIR conclusion stated that the Golden Hills Project would result in significant but mitigable impacts to traffic and transportation, with one exception: cumulative impacts on traffic operation, safety hazards, emergency access, and bicycle facilities could result from program and project construction activities if they take place concurrently with construction of the Sand Hill Repowering Project, which has been identified as resulting in a significant and unavoidable traffic impact. The Sand Hill Repowering Project is slated to be complete in 2015, therefore no overlap with the construction of the GH North Project is anticipated.

Consistent with the APWRA PEIR, traffic and transportation for the GH North Project were evaluated with regard to the East County Area Plan (Alameda County 2000: 43, 50-56), Alameda Countywide Transportation Plan (Alameda County Transportation Commission, 2012a), Alameda County Congestion Management Program (Alameda County Transportation Commission, 2013a), Level of Service Monitoring Report (Alameda County Transportation Commission, 2013b:12-16), Alameda County Bicycle and Pedestrian Master Plan (Alameda County Transportation Commission, 2012b), and Byron Airport Policies (Contra Costa County Airport Land Use Compatibility Plan, 2000).

Review of available records and literature determined that no new information of substantial importance was identified that was not known at the time of the certification of the APWRA PEIR.

3.8.1 Setting

As described above, the GH North Project environmental and regulatory setting for transportation and traffic is the same as that considered in the APWRA PEIR.

3.8.2 Impact Analysis

The potential for the GH North Project to result in new or substantially more adverse significant impacts related to transportation and traffic was evaluated in relation to six questions recommended for consideration by the CEQA Guidelines:

Would the GH North Project have any of the following effects:

Impact TRA-1: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit or conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways (less than significant with mitigation)

The GH North Project would not create new or substantially more adverse significant impacts than those disclosed for the Golden Hills Project in the certified APWRA PEIR, in relation to conflicting with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system.

Operations

The GH North Project involves construction, operation, and maintenance scenarios consistent with the approved Golden Hills Project. The GH North Project is not anticipated to result in a significant increase in traffic during operational activities because no additional employees, beyond those already anticipated for the approved Golden Hills Project would travel to the GH North Project property on a regular basis.

Operations within the GH North Project property would use the existing main access and collector roads via existing gates to the north and south of the existing facility. Once the new turbines are installed and in operation, post-construction traffic generated by the maintenance activities would continue to be within the capacity of the local roadway system and would not differ substantially from the current maintenance traffic levels. In line with the approved Golden Hills Project, operation of the GH North Project would be consistent with the Alameda County General Plan, transportation plans, and regulations incorporating assumptions of build-out of the General Plan. Operation of the GH North Project would, therefore, result in less-than-significant impacts related to potential conflicts with applicable plans, ordinances and policies.

Construction

The Golden Hills Project will be constructed in 2015, while the GH North Project would be constructed in 2016, therefore, potential traffic impacts from the two projects would not overlap. Consistent with the approved Golden Hills Project, the GH North Project would be expected to result in temporary, short-term increases in local traffic as a result of construction activities. Construction vehicles carrying heavy or wide loads could create a noticeable increase in traffic on local county roads, including Altamont Pass Road and Vasco Road, compared to existing conditions, as these roads generally have low traffic volumes. Although the construction-related truck trips for the GH North Project would be approximately half of those anticipated for the approved Golden Hills Project (as summarized in Tables 3.15-4 and 3.15-5 of the APWRA PEIR), the increase in construction traffic would be considered a significant impact compared to existing conditions.

Consistent with the Golden Hills Project, Mitigation Measure TRA-1 would be incorporated to bring the construction traffic impact down to a less-than-significant level. Because the project impacts would be below the level of significance with the implementation of Mitigation Measure TRA-1, the GH North Project would not contribute to a cumulative impact related to traffic. Therefore, the GH North Project would not conflict with any applicable plans, ordinances, or policies establishing measures of effectiveness for the performance of the circulation system, and the impacts would be less than significant with mitigation.

Impact TRA-2: Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways (less than significant)

As described in the analysis of TRA-1 above, the GH North Project would not be expected to create new or substantially more adverse significant impacts to transportation and traffic in relation to conflicting with an applicable congestion management program, including, but not limited to level-of-service (LOS) standards and travel demand measures, or other standards established by the Alameda County congestion management agency for designated roads or highways than those disclosed in the certified APWRA PEIR (Alameda County Community Development Agency, 2014).

The APWRA PEIR incorporated I-580 as a Congestion Management Program-designated roadway, which extended through its program area (Alameda County Transportation Commission, 2012a). The I-580 roadway would also be used for regional access for the GH North Project. The only local roadway found within the GH North Project vicinity of local or countywide significance to Alameda County is Vasco Road, which is a Tier 2 arterial (Alameda County Transportation Commission, 2013b, Table 3.4, and 2013a, Figure A.5). Tier 2 designated roadways under Alameda County form a supplemental network that the Alameda County Transportation Commission monitors for data collection only and is not used in the traffic assessment process.

As discussed in Impact TRA-1, the Golden Hills Project will be constructed in 2015, while the GH North Project would be constructed in 2016, therefore, potential traffic impacts from the two projects would not overlap. As with the approved Golden Hills Project, the GH North Project would be expected to result in temporary, short-term increases in local traffic as a result of construction activities and is not expected to result in significant long-term exceedances in LOS standards. Therefore, GH North Project construction-

related traffic is not expected to exceed Alameda County LOS thresholds and would therefore be in compliance with established Alameda County General Plan LOS Standards. Likewise, construction of the GH North Project traffic is not expected to result in a substantial increase in congestion that would affect the existing LOS on state highways; based on the anticipated number of truck trips, the increase in construction traffic would be approximately half that included in Table 3.15-4 of the APWRA PEIR. Therefore, consistent with the Golden Hills Project analyzed in the APWRA PEIR, the traffic impact associated with project construction would be less than significant.

The GH North Project is not anticipated to result in a significant increase in traffic as a result of O&M activities; once the new turbines are installed and in operation, post-construction traffic generated by the maintenance activities would continue to be within the capacity of the local roadway system and would not differ substantially from the current maintenance traffic levels or affect existing LOS on arterial roadways. Therefore, consistent with the Golden Hills Project analyzed in the APWRA PEIR, the traffic impact associated with operation and maintenance of the project would be less than significant.

In conclusion, as with the approved Golden Hills Project, the increase in traffic as a result of the GH North Project would be less than significant. Because the GH North Project's impacts related to LOS standards would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to exceeding a LOS standard. Therefore, the GH North Project would not result in new or substantially more adverse significant impacts to transportation and traffic related to exceeding an LOS standard established by the Alameda County congestion management agency for designated roads or highways.

Impact TRA-3: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks (less than significant)

The GH North Project would not be expected to create new or substantially more adverse significant impacts to transportation and traffic in relation to a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks from those disclosed in the certified APWRA PEIR (Alameda County Community Development Agency, 2014).

The nearest public airport to the project area is Byron Airport, 2.55 miles north of the GH North Project, and the nearest private airport is Meadowlark Field Airport, 6.5 miles south of the project. Because the project area is located more than 2 miles from all public or private airports, the GH North Project would not result in a change in air traffic patterns, as analyzed for the Golden Hills Project in the APWRA PEIR. Consistent with the Golden Hills Project, the proposed GH North Project would be required to comply with FAA lighting requirements (see airport impact discussion and FAA lighting requirements discussion in Section 3.8 of the APWRA PEIR).

Because the GH North Project's impacts related to air traffic patterns would be below the level of significance, the GH North Project would not contribute to a cumulative impact related to air traffic patterns. Consistent with the approved Golden Hills Project, the GH North Project would have a less-than-significant impact with regard to creating a new or substantially more adverse significant impacts to transportation and traffic related to a change in air traffic patterns.

Impact TRA-4: Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) due to construction-generated traffic (less than significant with mitigation)

The GH North Project would not be expected to create new or substantially more adverse significant impacts to transportation and traffic in relation to substantially increasing hazards due to a design feature or incompatible uses from those disclosed in the certified PEIR (Alameda County Community Development Agency, 2014).

As with the approved Golden Hills Project, the GH North Project would involve the construction of new access roads and improvement of existing access roads within the project area. New project roads would be private and accessed via gates at local roadway intersections to prevent public access, and would be designed based on Alameda County protocol.

During construction, the proposed GH North Project would require the delivery of heavy construction equipment and large turbine components using local roadways. The use of oversized vehicles during construction can create a hazard to the public by decreasing motorist views on roadways and by the obstruction of roads. This scenario has the potential to create a significant impact. Mitigation Measure TRA-1 to develop and implement a construction traffic control plan would be implemented consistent with the APWRA PEIR in order to reduce potential impacts to a less-than-significant level.

Consistent with the approved Golden Hills Project, the GH North Project would also obtain special permits from Caltrans District 4 and Alameda County in order to move oversized or overweight materials and comply with limitations on vehicle sizes and weights (Alameda County Community Development Agency, 2014).

Therefore, with the implementation of Mitigation Measure TRA-1, the GH North Project would not be expected to result in new or substantially more adverse significant impacts to transportation and traffic related to substantially increasing hazards due to a design feature. The resulting impact from construction-generated traffic would be less than significant with mitigation.

Impact TRA-5: Result in inadequate emergency access due to construction-generated traffic (less than significant with mitigation)

The GH North Project would not be expected to create new or substantially more adverse significant impacts to transportation and traffic in relation to inadequate emergency access from those disclosed in the certified PEIR (Alameda County Community Development Agency, 2014).

The GH North Project would not change any existing emergency access routes, modify existing patterns of emergency access, or require closures of public roads. As with the approved Golden Hills Project, construction of the GH North Project would require use of slow-moving trucks carrying overweight or oversized loads. These activities could interfere with the emergency access system and would therefore have a potential significant impact on emergency access. With the implementation of Mitigation Measure TRA-1, a traffic control plan would be developed so project construction and demolition activities would avoid interruptions in any emergency services.

Because project impacts related to emergency access would be less than significant after implementation of Mitigation Measure TRA-1, the GH North Project would not contribute to a cumulative impact related to inadequate emergency access. Therefore, the GH North Project would not result in new or substantially more adverse significant impacts to transportation and traffic related to inadequate emergency access. The impact would be less than significant with mitigation.

Impact TRA-6: Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities (less than significant with mitigation)

The GH North Project would not be expected to create new or substantially more adverse significant impacts to transportation and traffic in relation to conflicting with adopted policies, plans, or programs supporting alternative transportation from those disclosed in the certified PEIR (Alameda County Community Development Agency, 2014).

As analyzed for the program area and Golden Hills Project in the APWRA PEIR, there are no public transportation or pedestrian facilities available within the GH North Project area and vicinity. The nearest public transportation service in the unincorporated area of Alameda County to the GH North Project site is the Vasco Altamont Commuter Express station, which is approximately 7 miles away. Therefore, the project

would not conflict with policies, plans, or programs regarding alternative transportation or degrade the performance of transit services and pedestrian facilities.

There is one classified bike route within the GH North Project area located along a portion of Altamont Pass Road. The span consists of approximately 0.85 mile of a Class III C Rural bike route, which continues east from the project area to Grant Line Road (Alameda County Transportation Commission, 2012b).

Consistent with the analysis for the Golden Hills Project in the APWRA PEIR, the minor volume of traffic associated with the operation and maintenance of the GH North Project would occur within the privately owned project boundary and would not result in the closure of travel lanes or roadway spans, permanently change the public access roadways, or generate new public roadways that could significantly change the travel commutes of vehicles and bicycles on the neighboring roadways or interfere with the policies and plans regarding bicycle routes.

However, during the construction phase, the GH North Project would involve the use of slow-moving construction trucks carrying overweight or oversized loads. These construction vehicles could interfere with the movement of bicycles on the shoulders along Altamont Pass Road and Vasco Road and increase potential safety concerns for bike riders who use the routes. The roadways are not County-classified bikeways, with the exception of the 0.85 mile of Class III C Rural bike route along Altamont Pass Road, but are used as recreational and inter-regional access paths. In addition, lane/road closures occurring during distribution of oversized loads near the WTG access points could temporarily interrupt the bicycle access on the roads. Therefore, construction would have the possibility of having a significant effect on bicycle access. Consistent with the analysis of the Golden Hills Project in the APWRA PEIR, implementation of Mitigation Measure TRA-1 would reduce this temporary impact to a less-than-significant level.

Because project impacts to alternative transportation would be less than significant after the implementation of Mitigation Measure TRA-1, the GH North Project would not contribute to a cumulative impact related to alternative transportation. Therefore, as with the approved Golden Hills Project, the GH North Project would have a less-than-significant impact on existing public transit, bicycle, or pedestrian facilities; and would not be expected to result in new or substantially more adverse significant impacts related to a conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

SECTION 4.0

4 **List of Preparers**

Lead Agency

Alameda County Planning Department
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Appendix A
Botanical Inventory Report, Fall 2014 and Spring
2015 for the Golden Hills North Project

Appendix B
Cultural Resources Inventory Report for the
Golden Hills North Wind Energy Center
Repowering Project

Please note: Appendix B, Cultural Resources Inventory Report, for the Golden Hills North Wind Energy Center Repowering Project is a confidential report, not for public distribution, and an electronic copy has been provided separately.