

FINAL ENVIRONMENTAL IMPACT REPORT

# Humboldt Wind Energy Project

SCH No. (201872076)

NOVEMBER 2019



PREPARED FOR



Humboldt County Planning and Building Department  
3015 H Street  
Eureka, CA 95501

WITH ASSISTANCE FROM

**AECOM**

FINAL ENVIRONMENTAL IMPACT REPORT

# Humboldt Wind Energy Project

SCH No. 201872076

*Prepared by:*

Humboldt County  
Planning and Building Department  
3015 H Street  
Eureka, CA 95501

Contact:

Steve Werner, Supervising Planner

*With Assistance from*

AECOM  
2020 L Street, Suite 400  
Sacramento, CA 95811

Contact:

Petra Unger, Project Director

**AECOM**

NOVEMBER 2019

# TABLE OF CONTENTS

Section	Page
<b>1 INTRODUCTION.....</b>	<b>1-1</b>
1.1 Refinements to the Project Description Since Circulation of the DEIR.....	1-2
1.2 Supplemental Technical Studies Conducted Since Circulation of the DEIR.....	1-4
1.3 Changes to the Impacts Conclusions in the DEIR as a Result of Project Revisions and Supplemental Technical Studies and Analyses .....	1-6
<b>2 MASTER RESPONSES .....</b>	<b>2.0-1</b>
Introduction to Responses .....	2.0-1
2.1 Master Response 1: Site Planning and Avoidance Measures.....	2.1-1
2.2 Master Response 2: Marbled Murrelet .....	2.2-1
2.3 Master Response 3: Northern Spotted Owl.....	2.3-1
2.4 Master Response 4: Bats .....	2.4-1
2.5 Master Response 5: Migratory and Special-Status Birds .....	2.5-1
2.6 Master Response 6: Eagles and Other Raptors .....	2.6-1
2.7 Master Response 7: Special Status Plants and Sensitive Natural Communities .....	2.7-1
2.8 Master Response 8: Conflict with Adopted HCP.....	2.8-1
2.9 Master Response 9: Adequacy of Greenhouse Gas Analysis.....	2.9-1
2.10 Master Response 10: Wildfire Risk and Project Gen Tie.....	2.10-1
2.11 Master Response 11: Alternatives .....	2.11-1
<b>3 FEDERAL COMMENT RESPONSES .....</b>	<b>3.0-1</b>
Introduction .....	3.0-1
3.1 F1 – U.S. Dept. of Interior (Humboldt National Wildlife Refuge) .....	3.1-1
3.2 F2 – U.S. Fish and Wildlife Service (Migratory Bird Office).....	3.2-1
<b>4 STATE COMMENT RESPONSES .....</b>	<b>4.0-1</b>
Introduction .....	4.0-1
4.1 S1 – California Department of Conservation .....	4.1-1
4.2 S2 – California Department of Fish and Wildlife (email only).....	4.2-1
4.3 S3 – California State Lands Commission.....	4.3-1
4.4 S4 – California Department of Fish and Wildlife (full letter) .....	4.4-1
4.5 S5 – California Coastal Commission .....	4.5-1
<b>5 REGIONAL AND LOCAL AGENCY COMMENT RESPONSES.....</b>	<b>5.0-1</b>
Introduction .....	5.0-1
5.1 R1 – City of Rio Dell .....	5.1-1
5.2 R2 – Pacific Gas & Electric Company .....	5.2-1
5.3 R3 – Town of Scotia.....	5.3-1
<b>6 TRIBAL COMMENT RESPONSES .....</b>	<b>6.0-1</b>
Introduction .....	6.0-1
6.1 T1 – Yurok .....	6.1-1
6.2 T2 – Wiyot .....	6.1-2

<b>7</b>	<b>ORGANIZATIONAL COMMENT RESPONSES .....</b>	<b>7.0-1</b>
	Introduction .....	7.0-1
7.1	O1 – American Bird Conservancy .....	7.1-1
7.2	O2 – North Coast Bat Working Group.....	7.2-1
7.3	O3 – Californians for Alternatives to Toxics .....	7.3-1
7.4	O4 – The Lost Coast League .....	7.4-1
7.5	O5 – Adams Broadwell Joseph & Cardozo.....	7.5-1
7.6	O6 – Friends of the Eel River.....	7.6-1
7.7	O7 – MR Wolfe & Associates.....	7.7-1
7.8	O8 – Siskiyou Land Conservancy .....	7.8-1
7.9	O9 – EPIC .....	7.9-1
7.10	O10 – Friends of the Marbled Murrelet .....	7.10-1
7.11	O11 – Defenders of Wildlife .....	7.11-1
7.12	O12 – Bay Area Coalition for Headwaters.....	7.12-1
7.13	O13 – The Wildlife Society.....	7.13-1
7.14	O14 – Calvary Community Church.....	7.14-1
7.15	O15 – Environmental & Statistical Consultants.....	7.15-1
7.16	O16 – Redwood Region Audubon Society .....	7.16-1
<b>8</b>	<b>INDIVIDUAL COMMENTS.....</b>	<b>8.a-1</b>
8a	Individual Comments .....	8.a-1
	Introduction .....	8.a-1
8.1	8A – Individual Comment Letters I1 to I224 .....	8.A-1
8b	Form Letter A Comments and Responses .....	8.b-1
	Introduction .....	8.b-1
8.2	8B – Form Letters .....	8.B-1
<b>9</b>	<b>REVISIONS TO THE DEIR .....</b>	<b>9-1</b>
	Revisions by DEIR Chapter .....	9-1
	Revisions to DEIR Section 1, “Introduction” .....	9-1
	Revisions to DEIR Section 2, “Project Description” .....	9-1
	Revisions to DEIR Section 3.0, “Approach to the Environmental Analysis, and Section 3.1 “Impacts Found Not to be Significant” .....	9-45
	Revisions to DEIR Section 3.2, “Aesthetics” .....	9-45
	Revisions to DEIR Section 3.3, “Agriculture and Forestry Resources” .....	9-45
	Revisions to DEIR Section 3.4, “Air Quality” .....	9-46
	Revisions to DEIR Section 3.5a, “Biological Resources – Environmental Setting and Regulatory Setting” .....	9-46
	Revised DEIR Section 3.5.b, “Biological Resources – Environmental Impacts and Mitigation Measures” .....	9-74
	Revisions to DEIR Section 3.6, “Cultural Resources, including Tribal cultural resources” ....	9-205
	Revisions to DEIR Section 3.7, “Geology and Soils” .....	9-207
	Revisions to DEIR Section 3.8, “Greenhouse Gas emissions” .....	9-208
	Revisions to DEIR Section 3.9, “Hazards and Hazardous Materials” .....	9-210
	Revisions to DEIR Section 3.10, “Hydrology and Water Quality” .....	9-211
	Revisions to DEIR Section 3.11, “Noise” .....	9-213
	Revisions to DEIR Section 3.12, “Transportation and Traffic” .....	9-213

	Revisions to DEIR Section 3.13, “Wildfire” .....	9-214
	Revisions to DEIR Section 4, “Cumulative Impact” .....	9-216
	Revisions to DEIR Section 5, “Other CEQA Requirements” .....	9-216
	Revisions to the DEIR Chapter 6, “Alternatives” .....	9-216
	Alternative 2: Realigned Gen-Tie and Access Road .....	9-216
	Alternative 5: Reduced Turbine Footprint—Bear River Ridge.....	9-217
	Revisions to DEIR Chapter 7, “References” .....	9-217
<b>10</b>	<b>REFERENCES .....</b>	<b>10-1</b>
<b>11</b>	<b>PREPARERS .....</b>	<b>11-1</b>

## Appendices

Appendix A	Comment Letters
Appendix B	Updated Technical Information
Appendix C	Updated Project Maps

## Figures

Figure 1-1a	Comparison of Original (DEIR) and Refined (FEIR) Project Disturbance Limits .....	1-7
Figure 1-1b	Comparison of Original (DEIR) and Refined (FEIR) Project Disturbance Limits .....	1-9
Figure 2.11-1	Wind Speed Map Estimated at 80m @ 200m Resolution .....	2.11-4
Figure 2.11-2	Wind Rose .....	2-11-4
Figure 2.11-3	Locations Studied for Siting of Humboldt Wind Project .....	2.11-5
Figure 2-1	Regional Location .....	9-3
Figure 2-2	Project Site Boundaries and Surrounding Land .....	9-5
Figure 2-3	Typical Wind Turbine Generator .....	9-8
Figure 2-4	Typical Wind Turbine Generator Layout and Pad .....	9-12
Figure 2-5	Demonstration Forest Road Right .....	9-13
Figure 2-6	Typical Access Road Cross Sections .....	9-14
Figure 2-7	Typical Road Crossing at Drainage .....	9-15
Figure 2-8	On-site Substation and Collection Cable Trench .....	9-17
Figure 2-9	Gen-Tie Interconnection with the Pacific Gas and Electric Company Bridgeville Substation ..	9-18
Figure 2-10	Typical H-frame Transmission Pole .....	9-19
Figure 2-11	PG&E Bridgeville Substation .....	9-19
Figure 2-12	Typical Operations and Maintenance Building .....	9-20
Figure 2-13	Temporary Meteorological Tower .....	9-20
Figure 2-14	Fields Landing .....	9-21
Figure 2-15	Typical Series S-50 Spud Barge .....	9-22
Figure 2-16	Fields Landing Barge Offloading and Temporary Storage .....	9-24
Figure 2-17	Project Component Transportation Haul Route .....	9-25
Figure 2-18	Clearance for Blade Tip Swing-out .....	9-27
Figure 2-19	Hookton Road Off-Ramp Detour .....	9-28
Figure 2-20	12th Street Ramp Detour Modifications and Disturbance Area .....	9-29
Figure 2-21	Typical Site Plan for Staging Area and Batch Plant .....	9-33
Figure 2-22	Typical Mobile Batch Plant .....	9-34
Figure 3.5-8	Locations of Critical Habitat near the Project Area .....	9-103
Figure 3.5-9	Northern Spotted Owl Habitat Types and Proposed Project Components .....	9-105
Figure 3.5-10	Important Bird Areas .....	9-123
Figure 3.5-11a	California Horned Lark Population on Bear River Ridge, Humboldt County—2004–2007 and 2018 Survey Observations .....	9-125
Figure 3.5-11b	California Horned Lark Population on Bear River Ridge, Humboldt County—2018 Survey Observations during Part of the Breeding Season .....	9-127
Figure 3.5-12	Potential Impacts on Aquatic and Terrestrial Habitats for Special-Status Amphibians and Reptiles .....	9-163
Figure 3.5-13	Potential Impacts of the Proposed Project on Siskiyou Checkerbloom .....	9-181
Figure 3.5-14	Location of Humboldt Redwood Company Property Relative to the Project Area .....	9-203



## Tables

Table 3.5-11	Temporary, Permanent, and Fragmentation Impacts of the Proposed Project on Northern Spotted Owl Habitat .....	2.3-3
Table 2	Modeled Greenhouse Gas Emissions Summary for the Proposed Project.....	2.9-4
Table 3-1	List of Written Comments Received from Federal Agencies.....	3.0-1
Table 4-1	List of Written Comments Received from State Agencies.....	4.0-1
Table 5-1	List of Written Comments Received from Regional and Local Agencies .....	5.0-1
Table 6-1	List of Written Comments Received from Tribes .....	6.0-1
Table 7-1	List of Written Comments Received from Organizations .....	7.0-1
Table 8a-1	Individual Comments and Responses.....	8.a-1
Table 8b-1	Form Letter A Commenters .....	8.b-1
Table 2-1	Project Components and Associated Disturbance Areas.....	9-9
Table 2-2	Heavy Truck Trips.....	9-35
Table 2-3	Typical Hazardous Materials Associated with Wind Energy Projects.....	9-36
Table 2-4	Construction Workforce and Equipment Required for a Typical 155-Megawatt Wind Energy Project.....	9-38
Table 2-5	Typical Construction Equipment.....	9-38
Table 2-6	Anticipated Permits and Approvals.....	9-44
Table 3.5-9	Land Cover Types Mapped within the Project Site and Fields Landing, by Disturbance Type	9-76
Table 3.5-10	Acreage Amounts of Suitable Marbled Murrelet Nesting Habitat Potentially Affected by Construction Noise of Different Magnitudes .....	9-79
Table 3.5-11	Temporary, Permanent, and Fragmentation Impacts of the Proposed Project on Northern Spotted Owl Habitat .....	9-101
<del>Table 3.5-11</del>	<del>Temporary and Permanent Impacts of the Proposed Project on Northern Spotted Owl Habitat</del>	<del>9-101</del>
Table 3.5-11a	Mitigation Ratios and Acreages Required for Permanent Impacts on Northern Spotted Owl Habitat .....	9-111
Table 3.5-12	Acreages of Potential Raptor Nesting and Foraging Habitat that Would Be Affected by Project Construction .....	9-118
Table 3.5-13	Special-Status Plants Detected on the Project Site and in Transportation Improvement Areas—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed .....	9-176
Table 3.5-14	Noxious Weeds with Potential to Occur in the Siskiyou Checkerbloom Populations .....	9-177
Table 3.5-15	Sensitive Natural Communities Other than Riparian Habitats within the Project Site—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed.....	9-188
Table 3.5-16	Riparian Habitats within the Project Site—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed .....	9-190
Table 3.5-17	Wetlands and Other Waters on the Project Site and in Transportation Improvement Areas—Permanent vs. Temporary Impact Acreages and Total Acres Disturbed.....	9-194
Table 3.8-2	Modeled Greenhouse Gas Emissions Summary for the Proposed Project.....	9-210
Table 6-1	Comparison of Alternatives.....	9-217

## ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg/m <sup>3</sup>	micrograms per cubic meter
2007 SIP	<i>State Strategy for the State Implementation Plan for Federal PM<sub>2.5</sub> and 8-Hour Ozone Standards</i>
2014 Scoping Plan Update	<i>First Update to the Climate Change Scoping Plan: Building on the Framework</i>
2017 Scoping Plan Update	<i>California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target</i>
AB	Assembly Bill
ac	acre(s)
ADT	average daily traffic
AE	Agriculture Exclusive zoning designation
AEP	annual exceedance probability
afy	acre-feet per year
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
ALUCP	Airport Land Use Compatibility Plan
ANSI	American National Standards Institute
APCO	Air Pollution Control Officer
APE	Area of Potential Effect
applicant	Humboldt Wind, LLC
AQMP	air quality management plan
ARB	California Air Resources Board
AVWS	Audio Visual Warning System
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
basin plan	water quality control plan
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
Btu	British thermal unit(s)
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	California ambient air quality standards
cal B.C.	calibrated years B.C.
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emission Estimator Model
CALGreen Code	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CBC	California Building Code



CC&Rs	covenants, conditions, and restrictions
CCAA	California Clean Air Act
CCC	California Coastal Commission
CCR	California Code of Regulations
CCS	cryptocrystalline
CCS	cryptocrystalline
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act of 1970
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
cm	centimeter(s)
CNDDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
collection system	34.5-kilovolt collection lines
Construction General Permit	General Permit for Storm Water Discharges Associated with Construction Activity
County	Humboldt County
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CRPR	California Rare Plant Rank
CUP	conditional use permit
CWA	Clean Water Act
dB	decibel(s)
dBA	A-weighted decibel(s)
dBC	C-weighted decibel(s)
dbh	diameter at breast height
DEIR	draft environmental impact report
DEMO-left	Demonstration Forest Road–Left
DPM	diesel particulate matter
DPS	Distinct Population Segment
DTSC	California Department of Toxic Substances Control
DWQ	Division of Water Quality

EIR	environmental impact report
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ESA	environmental site assessment
ESU	Evolutionarily Significant Unit
EV	electric vehicle
FAA	Federal Aviation Administration
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
FEIR	final environmental impact report
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FHWA-RD-77-108	Federal Highway Administration Highway Noise Prediction Model
FIRM	Flood Insurance Rate Map
FMMP	California Farmland Mapping and Monitoring Program
FPA	Forest Practice Act
FSZ	Farmland Security Zone
FTA	Federal Transit Administration
General Permit	State Water Resources Control Board General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-Division of Water Quality)
General Plan	<i>Humboldt County General Plan</i>
gen-tie	generation transmission line
GHG	greenhouse gas
GIS	geographic information system
gpm	gallon(s) per minute
GWh	gigawatt-hour(s)
GWP	global warming potential
HAP	hazardous air pollutant
HCP	habitat conservation plan
HCP	<i>Habitat Conservation Plan for the Properties of the Pacific Lumber Company, Scotia Pacific Holding Company, and Salmon Creek Corporation</i>
HCWMA	Humboldt County Weed Management Area
HRC	Humboldt Redwood Company
HSC	Health and Safety Code
Humboldt Wind	Humboldt Wind, LLC
HVAC	heating, ventilation, and air conditioning
HWMA	Humboldt Waste Management Authority
Hz	hertz
in/sec	inch(es) per second
IPCC	Intergovernmental Panel on Climate Change
ITP	incidental take permit

kBtu	thousand British thermal units
KOP	key observation point
kV	kilovolt(s)
kWh	kilowatt-hour
lb/day	pound(s) per day
LCP	local coastal program
LDL	Larson Davis Laboratories
L <sub>dn</sub>	day-night noise level
LEED	Leadership in Energy and Environmental Design
L <sub>eq</sub>	equivalent noise level
LID	Low Impact Development
L <sub>max</sub>	maximum noise level
L <sub>min</sub>	minimum noise level
L <sub>n</sub>	statistical descriptor of noise level
LOS	level of service
LRA	Local Responsibility Area
MACT	maximum available control technology
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MET	meteorological tower
mg/m <sup>3</sup>	milligrams per cubic meter
mgd	million gallons per day
MLD	Most Likely Descendent
MMBtu	one million British thermal units
MMCP	marbled murrelet conservation area
MMRP	mitigation monitoring and reporting program
MMT	million metric tons
MPO	metropolitan planning organization
MRZ	mineral resource zone
MS4	Municipal Separate Storm Sewer System
MT	metric ton(s)
MT CO <sub>2</sub> e	metric tons of carbon dioxide equivalent emissions
MTBE	methyl tertiary butyl ether
MTP	Metropolitan Transportation Plan
Municipal Code	Humboldt County Municipal Code
MW	megawatt(s)
NA	not applicable
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NCAB	North Coast Air Basin
NCRP	North Coast Resource Partnership

NCUAQMD	North Coast Unified Air Quality Management District
NEHRP	National Earthquake Hazards Reduction Program
NEHRPA	National Earthquake Hazards Reduction Program Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO <sub>2</sub>	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	notice of intent
NOP	notice of preparation
North Coast IRWMP	North Coast Integrated Regional Watershed Management Plan
NO <sub>x</sub>	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	U.S. Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSO	Northern Spotted Owl
NSR	New Source Review
NWIC	Northwest Information Center
O&M	operations and maintenance
O <sub>3</sub>	ozone
OPR	California Governor's Office of Planning and Research
OWTS	On-site Wastewater Treatment Systems
OWTS Policy	Water Quality Control Policy for Siting, Design, Operation, and Maintenance of On-site Wastewater Treatment Systems
PAH	polycyclic aromatic hydrocarbon
PALCO	Pacific Lumber Company
PCE	perchloroethene
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM <sub>10</sub>	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
PM <sub>2.5</sub>	fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRC	California Public Resources Code
project applicant	Humboldt Wind, LLC
project, proposed project	Humboldt Wind Energy Project

PSD	Prevention of Significant Deterioration
psi	pound(s) per square inch
PVC	polyvinyl chloride
RCEA	Redwood Coast Energy Authority
REC	recognized environmental condition
Reporting Rule	Greenhouse Gas Reporting Rule
RH	High Density Residential (zoning)
RMS	root-mean-square
ROG	reactive organic gases
RPM	revolutions per minute
RUCS	Rural-Urban Connection Strategy
R-Value	energy efficiency rating
RWQCB	regional water quality control board
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
Scoping Plan	<i>Climate Change Scoping Plan</i>
Scoping Plan Update	<i>First Update to the Climate Change Scoping Plan: Building on the Framework</i>
Scotia DRC	Scotia Design Review Committee
SCS	Sustainable Communities Strategy
SEL	sound equivalent level
SHPO	State Historic Preservation Officer
SIP	state implementation plan
SMA	Streamside Management Area
SMAQMD	Sacramento Air Quality Management District
SMARA	Surface Mining and Reclamation Act
SO <sub>2</sub>	sulfur dioxide
SOD	sudden oak death
SO <sub>x</sub>	oxides of sulfur
State SIP Strategy	Revised Proposed 2016 State Strategy for the State Implementation Plan
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TCP	Timber Conversion Permit
TCR	tribal cultural resource
THP	timber harvest plan
THPO	Tribal Historic Preservation Officer
TMDL	total maximum daily load
tpy	tons per year
TPZ	Timberland Production Zone zoning designation
U.S. 101	U.S. Highway 101

UBC	Uniform Building Code
UCCE	University of California Cooperative Extension
UCMP	University of California Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UWMP	urban water management plan
VdB	vibration decibel(s)
VMT	vehicle miles traveled
VOC	volatile organic compound
WBWG	Western Bat Working Group
WDR	waste discharge requirement
WTG	wind turbine generator