4.0 Cumulative Impacts

4.1 CEQA Requirements

Cumulative impacts refer to two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. A cumulative impact is the change in the environment that results from the incremental impact of a project when added to other closely related past, present, or reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant impacts taking place over time. An Environmental Impact Report (EIR) must discuss the cumulative impacts of a project when the project's incremental impact is cumulatively considerable (California Environmental Quality Act [CEQA] Guidelines Section 15130[a]). "Cumulatively considerable" means that the incremental effects of the project are considerable when viewed in connection with the impacts of other related projects (CEQA Guidelines Section 15065[c]). In this analysis, if the incremental impacts of the Lompoc Wind Energy Project (Project) would be cumulatively considerable in combination with the impacts of other projects, the impact is identified as a "significant cumulative impact."

4.2 Cumulative Impact Analysis Methodology

Projects included in the cumulative impact analysis were identified by the County of Santa Barbara and the City of Lompoc, using a list approach (CEQA Guidelines Section 15130[b][1][A]), and are those that could result in impacts to the same resources as the Project, in the same geographic areas, and/or during the same timeframe. Individual projects were evaluated for cumulative impacts in combination with the impacts of the Project

4.3 Analysis of Cumulative Impacts

This section describes the projects included in the cumulative impact analysis and the potentially cumulative impacts of those projects in combination with the Project for each resource area.

The Project would result in less than significant impacts to Mineral Resources, Population and Housing, Public Services, Recreation, Utilities/Service Systems, and Energy/Electric Utilities; it also would result in beneficial impacts to the latter, because it would support renewable energy goals. The Project would not contribute to a cumulatively considerable impact to these resource areas, and they are not discussed further in this section. (Refer to Sections 3.7 and 3.16 for more discussion of the impacts to these resource areas.)

4.4 Projects Considered in the Cumulative Impact Analysis

A variety of development projects are under construction, approved and awaiting construction, or under review and pending approval in the vicinity of Lompoc area, within both the jurisdictional boundaries of the City and its surrounding unincorporated areas, within Santa Barbara County immediately adjacent to the City of Lompoc. Most of the projects included in the cumulative impact analysis are residential. The City of Lompoc population may increase by 21,000 by the year 2030 (Little et al, 2002). Over 7,000 new homes would be needed to house new residents. The projects that are expected to affect resources similar to the Project are listed in Table 4-1, which includes potential development projects that could be implemented in the unincorporated portions of the Lompoc Valley, and Table 4-2, which includes those that could be implemented in the City of Lompoc. The locations of these projects are shown in Figure 4-1 and Figure 4-2, respectively. The projects located within the geographic areas shown on these figures was determined to be adequate to conduct a cumulative impact analysis for all of the issues areas addressed in this EIR. This area is generally referred to as the Lompoc Valley.

TABLE 4-1
Relevant Cumulative Development in the Northern (Unincorporated) Lompoc Area

Project Name/Applicant	Description/Size/Status
Providence Landing/Capital Pacific Homes, Inc. (Figure 4-1 Key Site 1)	284 single-family dwellings and 72 low income units, 141 acres, under construction
Bluffs at Mesa Oaks/Martin Farrell Homes (Figure 4-1 Key Site 2)	72 single-family dwellings and 2 duplexes (4 units), 35 acres, under construction
Clubhouse Estates/Urban Planning Concepts, Inc. (Figure 4-1 Key Site 3)	53 lots, 1 open space lot, 162.31 acres, approved
Burton Ranch Specific Plan/Martin Farrell Homes, Inc. and the Towbes Group, Inc. (Figure 4-1 Key Site 4)	149 acres, annexation, under review
Fire Station 51/County of Santa Barbara (Figure 4-1 Key Site 5)	15.35 acres, 1 fire station, and 1 sheriff substation, under review
Oak Hills/Permit Planners, Inc. (Figure 4-1 Key Site 6)	21 homes, 5.5 acres, under review
Story Tentative Parcel Map/Fletcher Cross and Associates (Figure 4-1 Key Site 7)	4.55 acres, two way split into 1 parcel with 1 acre and another parcel with 3.55 acres, under review
Duckett Caretaker/Watchman Dwelling/Mike Duckett (owner) (Figure 4-1 Key Site 8)	Single-family home, 34,108-square-foot lot, under review
Hunter General Plan Amendment (Figure 4-1 Key Site 9)	Redesignate rural/recreation/AG II-100 to inner rural area, rural residential, 1,723 acres
Gaffaney General Plan Amendment (Figure 4-1 Key Site 10)	Redesignate existing rural neighborhood (EDRN); RR-10 and RR-20 (rural residential) to EDRN; RR-5, 150 acres.
Stoker General Plan Amendment (Figure 4-1 Key Site 11)	September 19, 2006, Planning Commission initiated a redesignation from recreation to residential for the 2.82-acre parcel
PXP Residential Development Annexation to the City of Lompoc (Figure 4-1 Key Site 12)	1,308 residential units (339 aces), streets (51 acres), open space (294 acres) and parks/trails (119 acres), homes, preliminary planning currently under way, no formal application has been filed
Courtney Recorded Map Modification/Fletcher Cross and Associates (Figure 4-1, Key Site 13)	Request to relocate designated building envelope of a 3.06-acre parcel, under review

TABLE 4-1
Relevant Cumulative Development in the Northern (Unincorporated) Lompoc Area

Project Name/Applicant	Description/Size/Status
Mission Oaks/Burton Mesa Partners, LLC (Figure 4-1, Key Site 14)	Subdivision of 3.65-acre site into 15 lots for development of 27 residential units, under review
Tranquillon Ridge Oil and Gas Development Project/ Plains Exploration and Production Company (PXP) (Figure 4-1, Key Site 15)	Development of offshore oil and gas wells and pipeline from Platform Irene to the Lompoc Oil and Gas Plant, under review

TABLE 4-2
Relevant Cumulative Development Project in the City of Lompoc (Incorporated Area)

Project Name/Applicant	Description/Size/Status
Lompoc Historical Museum (Carnegie Library) Rehabilitation/City of Lompoc (Figure 4-2 Key Site 1)	Interior and exterior building renovations, approved
14-Unit Residential Development/The Olson Company (Figure 4-2, Key Site 2)	14 detached single-family residential units, 1.36 acres, approved
60-Unit Residential Development/The Olson Company (Figure 4-2, Key Site 3)	60 detached single-family residential units, 5.13 acres, approved
Chestnut Crossing Mixed-Use Infill Project/ Martin Farrell Homes, Inc. (Figure 4-2, Key Site 4)	New development and redevelopment for residential units and commercial space, 5.5 acres (80,595 square feet), approved
Coastal Meadows Residential Infill Project/Coastal Vision, Inc. (Figure 4-2, Key Site 5)	42 units, 3.09 acres, approved
Lompoc Regional Wastewater Reclamation Plant Master Plan and Plant Upgrade/City of Lompoc (Figure 4-2, Key Site 6)	Master Plan Revision and Plant Upgrade for the Lompoc Regional Wastewater Reclamation Plant to meet discharge requirements of the Regional Water Quality Control Board, no additional acreage outside existing property boundaries, approved
Transitions Extended Stay Facility/ Santa Barbara Housing Assistance Corporation (Figure 4-2, Key Site 7)	Community counseling and advocacy office and 39-unit independent living facility, approved
Lompoc Hospital Relocation/Lompoc Hospital District (Figure 4-2, Key Site 8)	60-bed hospital facility, 111,000 square feet on 8 acres, under construction
Crown Laurel Mixed Use Project/ JM Development, Inc. (Figure 4-2, Key Site 9)	73 residential units on 9.53 acres and planned manufacturing space (1.36 acres), approved
Riverbend Park and Trail Master Plan/ City of Lompoc (Figure 4-2, Key Site 10)	Recreation and educational facilities, multiuse trails, public parking, habitat enhancement, 95 acres, in review/development
River Terrace Residential Development/ Coastal Vision, Inc. (Figure 4-2, Key Site 11)	308 residential units, 17,666 square feet of commercial floor area, 9,110-square-foot community recreation center, private park and recreational amenities, 26.22 acres, approved
Dixon Industrial Building/Applicant unknown (Figure 4-2, Key Site 12)	1,150-square-foot industrial building, under construction

TABLE 4-2
Relevant Cumulative Development Project in the City of Lompoc (Incorporated Area)

Project Name/Applicant	Description/Size/Status
Fast Pass Car Wash/Applicant unknown (Figure 4-2, Key Site 13)	2,800-square-foot commercial facility (car wash), under construction
4-Unit Residential Development/Lompoc Housing Community Development Corp. (Figure 4-2, Key Site 14)	10,500-square-foot, 4-unit residential development and childcare facility, under construction
Warehouse/Barto Heating and Air (Figure 4-2, Key Site 15)	12,580-square-foot office and warehouse building, under construction
Commercial Development/Yanez Electric (Figure 4-2, Key Site 16)	3 commercial buildings, 6,600 square feet, under construction
Industrial Development/Hotwire Foam Factory (Figure 4-2, Key Site 17)	3,318-square-foot industrial building, under construction
Optometry Center/Shepard Eye Clinic (Figure 4-2, Key Site 18)	18,600-square-foot medical (optometry) building, under construction
Commercial/Community Bank of Lompoc (Figure 4-2, Key Site 19)	4,875-square-foot commercial bank, under construction
The Gardens at Briar Creek/Centex Homes (Figure 4-2, Key Site 20)	150 single-family residential units, under construction
Mixed Use Residential and Office Development/Coastal Vision, Inc. (Figure 4-2, Key Site 21)	10,500-square-foot office and residential development, approved, grading permit issued.
8-Unit Residential Development/Wolfberg (Figure 4-2, Key Site 22)	7,712-square-foot, 8-unit residential development, approved
The Courtyards at Briar Creek/Centex Homes (Figure 4-2, Key Site 23)	145 single-family residential units and community park, 37.8 acres, approved
5-Unit Apartment Complex/Applicant unknown (Figure 4-2, Key Site 24)	4,770-square-foot, 5-unit residential development, approved
5-Unit Residential Development/Applicant unknown (Figure 4-4, Key Site 25)	5-unit residential development, 0.24 acres, approved
35-Unit Affordable Housing Residential Development/Lompoc Housing Community Development Corp. (Figure 4-2, Key Site 26)	35-unit residential development and daycare facility, 2.2 acres, approved
Lompoc Indoor Market/Applicant unknown (Figure 4-2, Key Site 27)	20-vendor indoor market renovations and addition, 21,000 square feet, approved
Industrial Development/Wilco Distributors (Figure 4-2, Key Site 28)	18,000-square-foot industrial building, approved
Lompoc Hospital Training Center/ Lompoc Hospital District (Figure 4-2, Key Site 29)	2,000-square-foot training center, approved
Lompoc Valley Vet Clinic/Applicant unknown (Figure 4-2, Key Site 30)	6,800-square-foot office building, approved
Good Samaritan Shelter/Applicant unknown (Figure 4-2, Key Site 31)	Drug and alcohol recovery shelter and thrift store, 0.64 acres, approved

TABLE 4-2
Relevant Cumulative Development Project in the City of Lompoc (Incorporated Area)

Project Name/Applicant	Description/Size/Status
George Ann Estates/Applicant unknown (Figure 4-2, Key Site 32)	8-unit residential development, 3.31 acres, approved
Wine Processing Facility/Loring/Pali Winery (Figure 4-2, Key Site 33)	30,000-square-foot wine processing facility, approved
5-Unit Residential Complex/Lompoc Housing Community Development Corp. (Figure 4-2, Key Site 34)	5,941-square-foot, 5-unit condominium complex, approved
Commercial Development/Applicant unknown (Figure 4-2, Key Site 35)	Commercial building renovation (6,250 square feet) and addition (3,736 square feet), approved
Mixed-Use Development Project/Lompoc Housing Development Corp. (Figure 4-2, Key Site 36)	34,332-square-foot retail, commercial, office and public plaza development, approved
City Park in OTC/Applicant unknown (Figure 4-2, Key Site 37)	0.16-acre park, approved
Commercial Development/Moore Mill & Lumber (Figure 4-2, Site 38)	2,363-square-foot renovation and addition to existing hardware store, approved

Tables 4-1 and 4-2 show that over 2,700 residential units are either currently under construction, about to begin construction, or are currently in the review and decision-making process within the incorporated and unincorporated areas of Lompoc. There are also multiple commercial, industrial, office, mixed-use and redevelopment projects that are either in construction or currently in the review and decision-making process. Additional potential development projects include parks and recreational facilities, construction of a fire station and a sheriff substation, relocation of the Lompoc Hospital, upgrades to the Lompoc Regional Wastewater Reclamation Plant, and an oil and gas pipeline. Also under review are three General Plan Amendments for residential redesignation and a proposed annexation/Sphere of Influence extension for a proposed 80-acre residential development west of Harris Grade Road and 2 miles north of the City of Lompoc for the construction of approximately 1,308 residential units.

4.5 Cumulative Impact Analysis

This section summarizes anticipated cumulative impacts by resource and identifies mitigation measures where appropriate (Public Resources Code Section 21102; CEQA Guidelines Sections 15002 and 15021).

4.5.1 Aesthetics/Visual Resources

The aesthetic context of the geographic area considered for this analysis is represented by one of the fastest growing areas of Santa Barbara County. Once characterized by agricultural operations with limited oil and gas production facilities and residential uses, the area is now more reflective of a growing residential community. Recently constructed residential and commercial development and pending future projects are converting the Lompoc Valley

area into a suburban area. In addition to the growing residential and commercial development, industrial development associated with Vandenberg Air Force Base (VAFB), oil and gas production, and diatomaceous earth mining have also expanded and are considered part of the aesthetic context.

Impact No.	Impact Description	Phase	Impact Classification
C-VIS-1	The Project would not contribute to aesthetic impacts from increased lighting.	N/A	N/A

Impact C-VIS-1: Lighting. A number of projects considered in the cumulative impact analysis would result in aesthetic impacts from increased lighting. The Project would not contribute to such an impact, because only minor amounts of lighting would be required at the Project site, which is several miles away from other planned development.

Impact No.	Impact Description	Phase	Impact Classification
C-VIS-2	The cumulative impact to views from coastal recreational areas and the scenic qualities of the Lompoc Valley would be significant; the cumulative impact associated with power line installation along SR-1 and the views of the WTGs from Jalama Beach would be significant and unavoidable.	Construction and Operations	Class I

Impact C-VIS-2: Visual Character/Quality. Most Project components would be located in remote areas, and facilities such as the Operations and Maintenance (O&M) facility and Project Substation would have limited visibility from areas accessible to the public. However, the wind turbine generators (WTGs) would be visible from a number of locations in the Lompoc Valley, as would the Pacific Gas and Electric Company (PG&E) power line. Most Project impacts would be adverse, but less than significant; but views of the WTGs from Jalama Beach and views of the power line from State Route 1 (SR-1), a scenic highway, would both be significant and unavoidable.[1] Some of the projects considered in the cumulative impact analysis, such as the Tranquillon Ridge and Riverbend projects, would result in significant, but mitigable impacts as a result of the extension of the life Platform Irene and power line installation. Others projects, such as the Centex and Burton Ranch projects, would adversely affect the rural character of the Lompoc Valley through impacts to scenic roads, including SR-1. The Tranquillon Ridge project also would result in significant, unavoidable impacts to views from the Surf Beach and Ocean Beach County Park areas.

[1] However, visual impacts along SR-1 would be less than significant if Power Line Alternative 1 (as mitigated) were selected. In addition, visual impacts from Jalama Beach County Park would be less than significant if LWEF Alternative 1 or 2 were selected.

Impact No.	Impact Description	Phase	Impact Classification
C-VIS-3	Operation of the Project would contribute cumulatively significant impacts to the degradation of coastal scenic resources in the Lompoc Valley and northern Santa Barbara County.	Operations	Class I

Impact C-VIS-3: Cumulative Degradation of Coastal Scenic Resources. Operation of the Project would contribute to cumulatively significant and unavoidable (*Class I*) impacts related to the degradation of scenic resources in the coastal areas of the Lompoc Valley and northern Santa Barbara County (within this region, there are three County parks within the Coastal Zone – Jalama Beach, Ocean Beach, and Rancho Guadalupe Dunes). Other projects that would contribute to the degradation of coastal scenic resources in this region are required to contribute to funds such as the Coastal Resource Enhancement Fund (CREF) -- this fund applies to oil and gas facilities that support offshore oil and gas production -- or the payment of County park fees tied to the numbers of residential units or commercial square footage which are intended to improve recreational resources in the region. Since neither of these requirements applies to the Project, a new mitigation measure VIS-1 has been added to address the Project's cumulative contribution to the degradation of coastal scenic resources in the region. The cumulative impacts to coastal scenic resources would be reduced with the implementation of mitigation measures identified for the other projects considered in this analysis. The cumulative impact associated with views of the WTGs from Jalama Beach would remain significant and unavoidable (*Class I*). Combined with the mitigation requirements for other projects in the region (CREF and park fees), this additional mitigation measure will further mitigate these impacts to the maximum extent feasible under CEQA.

4.5.2 Agricultural Resources

The Lompoc Valley has extensive agricultural resources ranging from grazing land, the dry farming, row crops, orchards, vineyards, and flowers. Consistent with the land use in the County as a whole, there are presently more agricultural and open lands in the Lompoc Valley than lands developed with suburban and industrial uses. As development increases in the area, more agricultural land is expected to be converted to other uses.

Impact No.	Impact Description	Phase	Impact Classification
C-AG-1	The Project's incremental impact to agricultural resources would not be cumulatively considerable. No Important Farmland would be converted to nonagricultural use. Additionally, the Project would have a beneficial impact to agricultural resources by providing financial support to property owners.	Construction and Operations	Class III

Impact C-AG-1: Agricultural Resources. The Centex Homes and Riverbend Park projects would have significant unavoidable impacts from the conversion of agricultural land, and the Tranquillon Ridge project would have a significant but mitigable impact due to potential pipeline leaks in agricultural areas. The Project's incremental impact to agricultural

resources would not be cumulatively considerable because grazing would be able to continue during and after construction; and the permanent loss of up to 34 acres of Grazing Land as a result of the Project would not significantly impair agricultural productivity. No Important Farmland, defined by CEQA as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, would be converted to nonagricultural use as a result of the Project. Additionally, the Project would have a beneficial impact to agricultural resources by providing financial support to property owners, who could use the funding to enhance the viability of their agricultural operations, and by providing increased access to agricultural areas. Therefore, the cumulative impact to agricultural resources from Project implementation would be less than significant (*Class III*).

4.5.3 Air Quality

The air quality of Santa Barbara County is influenced by both local topography and meteorological conditions. The area is know to have warm, dry summers and relatively damp winters. Additionally, cool, humid, marine air causes frequent fog and low clouds along the coast, generally during the night and morning hours in the late spring and early summer. The fog and low clouds can persist for several days until broken up by a change in the weather pattern. The Lompoc Valley is known for prevailing winds that are usually strong and persistent. These winds can result in the dissipation of air pollution during the winter months and an increase in air pollution in the summer months. Air pollution in the area is generated from vehicle emissions, construction activities and agriculture, mining, VAFB, and oil and gas operations. These winds can also move pollutants that originate in other areas into the county. Frequent temperature inversions are also common and can result in trapping air pollution in the County. The County is currently in nonattainment status for ozone precursors and PM_{10}.

Impact No.	Impact Description	Phase	Impact Classification
C-AQ-1	The Project's cumulative contribution to air quality impacts in the Lompoc Valley would be adverse, but less than significant.	Construction and Operations	Class III

Impact C-AQ-1: NO_x and ROG Emissions. Due to the County's nonattainment status for ozone and the regional nature of the pollutant, if a project's total emissions of the ozone precursors, NO_x or ROG exceed the long-term threshold of 55 pounds per day, then the project's cumulative impacts would be considered significant (County, 2006). As shown in Tables 3.4-4 and 3.4-5, the Project's emissions would be less than this threshold; therefore, cumulative contribution to air quality impacts in the Lompoc Valley would be adverse, but less than significant (*Class III*).

Impact No.	Impact Description	Phase	Impact Classification
C-AQ-2	The County is currently in nonattainment of state standards for PM_{10} emissions, and this situation would be exacerbated by new development projects; the cumulative impact would be significant, but mitigable.	Construction and Operations	Class II

Impact C-AQ-2: PM_{10} Emissions. The County's Environmental Thresholds and Guidelines Manual (County, 2006) indicates that a project's contribution to cumulative air quality impacts, either regional or localized, should be evaluated based on existing programs and plans, including the County's Air Quality Attainment Plan. The County is currently in nonattainment of state standards for PM_{10} emissions, and this situation would be exacerbated by new development projects. The control of fugitive dust emissions from construction of the Project would be mitigated to less than significant levels through the implementation of dust control measures during construction (Section 3.4.3). Further, mitigation measures have been identified for the other projects considered in this analysis, which would further reduce impacts; but the cumulative impact associated with the generation of these emissions would be significant, but mitigable (*Class II*) through the implementation of standard County Grading Ordinance and Santa Barbara Air Pollution Control District dust control measures.

4.5.3.1 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are defined as any gas that absorbs infrared radiation in the atmosphere. GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). GHGs lead to the trapping and buildup of heat in the atmosphere near the earth's surface. There is increasing evidence that a rising concentration of GHGs in the atmosphere is causing global warming and climate change. The primary source of GHGs in the United States is activities related to energy use, which include fuel combustion, as well as production, transmission, storage, and distribution of energy. Electric power generation accounts for over 22 percent of California's GHG emissions.[2]

One objective of recent state legislation is to reduce GHG emissions from power generation by increasing use of renewable energy sources. The new renewable projects would likely have a beneficial impact by actually lowering GHG emissions if the installation of additional renewable energy plants leads to a decrease in fossil fuel-based electrical generation. A recent report by the National Research Council concludes that "development of wind-powered electricity generation probably will contribute to offsets of about 4.5% in emissions of CO_2 from electricity generation sources in the United States by the year 2020."[3]

GHG emissions have not generally been analyzed in past EIRs. No standards or CEQA thresholds of significance for GHG emissions exist at this time. Although the California Air Resources Board has commenced preparation of significance thresholds regarding GHGs, there is currently no basis for determining whether the contributions by a given project to total atmospheric GHGs would be a significant contribution to the combined, cumulative environmental impacts.

GHG emissions from the Project would be very minor during operations, consisting of exhaust from two to three vehicles carrying service technicians around the site, operation of maintenance equipment, and commuting of up to 10 employees. GHG emissions during Project construction would be greater, comparable to other medium-sized construction projects in the County. The emissions would be mainly from construction equipment, as

[2] GHG emissions in 2004 from electric power generation are estimated to be 22.2 percent of California's total. (*Inventory of California Greenhouse Gas Emissions and Sinks: 1990 To 2004*, California Energy Commission, December 2006, Publication CEC-600-2006-013-SF.)

[3] National Research Council, *Environmental Impacts of Wind-Energy Projects*, National Academies Press, 2007 (prepublication copy), pp. 39-47.

well as workers' vehicles and trucks transporting equipment, parts, and materials. These emissions would be short-term, occurring during the 6 to 10 months of initial construction and shorter periods during subsequent construction phases, if built. Measures proposed in this EIR to mitigate Project-specific impacts would reduce GHG emissions to some extent. These measures include minimization of grading, transportation plan requirements, and emissions reduction measures. The GHG impacts from construction might or might not be considered cumulatively significant, depending on how future guidelines are formulated.

To accurately assess GHG emissions from renewable energy generation projects and to compare them with emissions from fossil fuel and other types of energy generation requires full life-cycle analysis of GHG emissions. Life-cycle analysis accounts for the environmental effects (in this case, GHG emissions) throughout the Project life, including fabrication of components (such as, wind turbines, steel towers, Project Substation, cables, etc.), Project construction, operation over the entire Project life, and eventual decommissioning. Life-cycle analyses have been done, comparing wind energy projects and other types of power plants, in terms of GHG emissions per Megawatt-hour of electricity produced over the Project life. Such comparisons confirm that wind power has among the lowest GHG emissions of all energy options, and far lower than any fossil fuel option.[4] Life-cycle analyses have also shown that wind energy projects can vary in GHG production by more than a factor of two, depending on factors including project design, construction materials, and project lifetime. While wind energy production does not produce zero GHG emissions, current estimates indicate they are only 1 to 2 percent of those from coal-fired plants.[5]

4.5.4 Biological Resources

The area surrounding the Lompoc Valley is located in a semiarid region where warm and cold ocean currents mix, and distributional ranges of a number of northern and southern wildlife species overlap. A high rate of endemism (vegetation and wildlife only known to occur within a certain area) also characterizes this region of varied topography, geology, and soils. The major vegetation communities include grazing lands, chaparral, evergreen woodlands, wetland and drainage vegetation and grasslands. Common wildlife species known to occur in the Lompoc Valley area include western fence lizard, California ground squirrel, Botta's pocket gopher, gray fox, coyote, mountain lion, southern alligator lizard, California striped racer, brush rabbit, mule deer, wild pigs, and dusky-footed woodrats. Additionally, small drainages may be occupied by Pacific treefrogs and western toads.

Impact No.	Impact Description	Phase	Impact Classification
C-BIO-1	The cumulative impacts of expanding growth in the Lompoc Valley would be significant, although with mitigation measures, most significant cumulative impacts would be reduced to less than significant levels. However, cumulative impacts to avian and bat species would be significant and unavoidable.	Construction and Operations	Class II Class I (avian and bat species)

[4] van de Vate, Joop F., *Comparison of energy sources in terms of their full energy chain emission factors of greenhouse gases*, Energy Policy, vol. 25, no. 1, 1997, pp. 1-6.

[5] White, S.W., and G.L. Kulcinski, *Net Energy Payback and CO2 Emissions from Wind-Generated Electricity in the Midwest*, Fusion Technology Institute, University of Wisconsin, Madison, Pub. #UWFDM-1092, Dec. 1998.

Impact C-BIO-1: Wildlife and Vegetation. The Project would result in significant impacts to wildlife during construction, including some special-status species and nesting birds, and significant and unavoidable impacts to avian and bat species during operations. It also could result in the loss of sensitive plants, including the state-listed endangered species, Gaviota tarplant, and some oak trees and eucalyptus. A number of the other development projects, such as the Tranquillon Ridge, Centex, Crown Laurel, Burton Ranch, Riverbend Park, and River Terrace projects also would result in significant impacts to biological resources, including impacts to nesting birds, wildlife injuries and fatalities, loss of oak trees, and loss of habitat and special-status species. The cumulative impacts of the expanding growth in the Lompoc Valley would be significant. With the implementation of the mitigation measures identified in Section 3.5 and those identified for other projects, most significant cumulative impacts (*Class II*) would be reduced to less than significant levels, but cumulative impacts to avian and bat species would be significant and unavoidable (*Class I*).

4.5.5 Cultural Resources

The creeks, river valleys, and floodplains in the Lompoc Valley area, including the fringing coastline, have supported a continuous cultural occupation for at least the last 9,000 years. An early Holocene occupation, which reflects the early emergence of nonagricultural, village-based groups in the region, has been identified in the archaeological record. Current archaeological evidence suggests that a relatively small population existed in these areas, but by 2,000 years before present (B.P.), populations appear to have expanded considerably into resource-rich coastal and near-shore, estuarine environments where the large, coastal villages were engaged in both terrestrial and maritime long-distance trade. Because of the moderate climate of the Lompoc Valley and the proximity to water and food sources, the area is known to have supported numerous communities that are well documented in studies performed in the area and documented in Section 3.6.

Impact No.	Impact Description	Phase	Impact Classification
C-CULT-1	Significant impacts to known or unknown cultural resources could occur during construction; cumulative impacts would be significant but mitigable,	Construction	Class II

Impact C-CULT-1: Archaeology Sites. Significant impacts to known or unknown cultural resources could occur during construction of the Project and other projects shown in Table 4-1. Cumulative impacts would be significant but mitigable (*Class II*) through the mitigation measures discussed in Section 3.6 and similar measures required for other projects.

4.5.6 Fire Protection and Emergency Services

The undeveloped areas of the Lompoc Valley are considered to be high fire areas due to the dense grasslands and vegetation. In the Lompoc Valley, the Santa Barbara County Fire Department (SBCFD) operates mutual aid agreements with the City of Lompoc Fire Department and VAFB Fire Department. These agreements enable the fire departments to share resources and respond to emergencies in a timely manner. In rural areas within the Lompoc Valley there is no required emergency response time; however, the combined

resources provide for the best response possible depending on the type and extent of an emergency situation. The provision of additional fire protection and emergency services are being expanded as part of the commercial and residential growth occurring in the Lompoc Valley.

Impact No.	Impact Description	Phase	Impact Classification
C-FPES-1	Both the Project and other projects would result in significant, but mitigable impacts to fire protection services.	Construction and Operations	Class II

Impact C-FPES-1: Fire Protection Services. Both the Project and other projects, such as the Burton Ranch Project, would result in significant, but mitigable impacts to fire protection services. Therefore, cumulative impact would be considered significant but mitigable (*Class II*) through the implementation of mitigation measures included Section 3.8 and other measures required for the Burton Ranch and other large projects.

4.5.7 Geology and Soils

The geologic features in the Lompoc Valley include mountains, hills, valleys, mesas, and terraces. The mountains of the lower Santa Ynez Range (westward extension of the Santa Ynez Mountains) represent the transverse ranges from Gaviota on the east to Points Arguello and Pedernales on the west. The Lompoc Valley area includes sedimentary and volcanic deposits, and while this area is geologically young, the landforms are mature relative to areas within the range to the east. As the Lompoc Valley continues to develop, the hillsides outside of the valley floor are being developed.

Impact No.	Impact Description	Phase	Impact Classification
C-GEO-1	Significant, but mitigable impacts would result from the Project; however, these would be localized and would not be a cumulatively considerable impact in combination with other projects.	Construction	Class III

Impact C-GEO-1: Geologic Hazards. Significant, but mitigable impacts associated with ground shaking and liquefaction, landslides, soil erosion, expansive soils, collapsible soils, and subsidence would result from implementation of the Project; however, these would be localized and would not be a cumulatively considerable impact in combination with impacts from other projects in the Lompoc Valley. Therefore, the cumulative impacts would be adverse, but less than significant (*Class III*).

4.5.8 Land Use and Planning

From a land use perspective, the Lompoc Valley is comprised of predominantly agricultural lands. However, it is one of the fastest growing areas of Santa Barbara County. Once characterized by agricultural operations with limited oil and gas production facilities and residential uses, the area is now more reflective of a growing residential community. Recently constructed residential and commercial development and pending future projects

are converting the Lompoc Valley area from an agricultural community into a suburban area. In addition to the growing residential and commercial development, industrial development associated with VAFB, oil and gas production, and diatomaceous earth mining have also expanded.

Impact No.	Impact Description	Phase	Impact Classification
C-LU-1	The Quality of Life impact associated with long-term noise would be highly localized and would not result in a considerably cumulative impact.	Operations	Class III

Impact C-LU-1: Land Use Changes. The Project would have a significant but mitigable Quality of Life impact associated with long-term noise generated by the WTGs. However, this impact would be highly localized and would not result in a considerably cumulative impact. The Project is a permitted use of the proposed site, and the cumulative impact from its development on rural land would be adverse, but less than significant (*Class III*).

4.5.9 Noise

Many areas of the Lompoc Valley are still rural with agricultural uses. These areas are considered to be relatively quiet. The Lompoc Valley is also very windy, which contributes to noise sources in the area. The growing residential and commercial areas are increasing the noise levels in the areas due to the increase in vehicle use. In addition to the roadway networks and VAFB operations contributing to noise in the Lompoc Valley, uses involving the operation of heavy equipment for agricultural, oil and gas, and mining activities also increase noise levels in the Lompoc Valley.

Impact No.	Impact Description	Phase	Impact Classification
C-NOI-1	The cumulative noise impact from construction would be adverse, but less than significant due to the distance from other projects. Noise from Project operations would be highly localized and would not contribute to a cumulative impact.	Construction	Class III

Impact C-NOI-1: Construction Noise. The Project would result in significant but mitigable short-term construction noise impacts, as would a number of the other projects. The cumulative noise impact would be adverse, but less than significant (*Class III*) because of the distance between the other projects and the Project. Although a small number of the other projects are located near the terminus of the Project's power line route, the Project would use an existing power line route, which would be expected to have minimal impacts associated with construction-related noise. Moreover, construction periods for the power line route and other projects in the Lompoc Valley may not overlap.

Noise from Project operations would be highly localized and would not contribute to a cumulative impact in combination with other projects in the Lompoc Valley.

4.5.10 Paleontology

The Lompoc Valley area is located within one of the most complex and diverse geological provinces in the United States. The geology is typified by marine sedimentary units that are typically fossil-rich; however, there has not been extensive documentation of paleontological resources in the past. Further documentation of paleontological resources is expected to occur as development continues in the Lompoc Valley and these resources are uncovered.

Impact No.	Impact Description	Phase	Impact Classification
C-PALEO-1	Significant impacts could occur during construction; the cumulative impact would be significant but mitigable.	Construction	Class II

Impact C-PALEO-1: Loss of Paleontological Resources. Significant impacts to paleontological resources could occur during construction of the Project and other projects. The cumulative impact would be significant due to the potential loss of paleontological resources in the Lompoc Valley, but mitigable (*Class II*), given the implementation of mitigation measures discussed in Section 3.12 and required for other projects.

4.5.11 Risk of Accidents, Hazardous Materials, and Safety

There are many risk factors in the Lompoc Valley. People and property are exposed to risks resulting from VAFB activities, the transportation of hazardous materials through the Lompoc Valley, and the presence of oil and gas facilities and other utility-related infrastructure, such as electrical lines, gas lines, sewer lines, and water lines.

Impact No.	Impact Description	Phase	Impact Classification
C-RISK-1	Construction risks would be short-term and localized; WTG operation risks would be localized, and impacts would not be cumulatively considerable. Significant cumulative, but mitigable, impacts would occur from implementation.	Operations	Class II

Impact C-RISK-1: Risk of Accidents, Hazardous Materials, and Safety. Risks resulting from Project construction would be short-term and localized and would not contribute to additional risks throughout the Lompoc Valley. Risks from operation of the turbines also would be localized, and impacts would not be cumulatively considerable. Significant cumulative impacts would occur from the implementation of the Project and certain other development projects. For example, both the Project and the River Terrace project would result in significant impacts associated with electromagnetic field (EMF) exposure, and both the Project and the Tranquillon Ridge project would result in increased potential for wildfires. These impacts would be cumulatively significant, but mitigable (*Class II*) through the implementation of mitigation measures included in Section 3.13 and identified for other projects.

4.5.12 Transportation and Circulation

The Lompoc Valley transportation system includes two regional highways (SR-1 and SR-246) and one freeway (United States Highway 101), rural roads, agricultural and ranch unimproved roads, residential roads, and the road network on VAFB.

Impact No.	Impact Description	Phase	Impact Classification
C-TC-1	Cumulative impacts of short-term traffic impacts would be adverse, but less than significant.	Construction	Class III

Impact C-TC-1: Construction Traffic. A number of projects would have short-term, significant traffic impacts. Traffic from the Project would result in negligible changes to level of service in the Lompoc Valley, and given the varied locations and timing of proposed development, the cumulative impact would be adverse, but less than significant (*Class III*).

Impact No.	Impact Description	Phase	Impact Classification
C-TC-2	Impacts from oversized trucks during construction could be cumulatively significant, but mitigable.	Construction	Class II

Impact C-TC-2: Safety and Road Damage. The Project would require the use of oversized trucks, which could present a safety concern and cause damage to roadways. Impacts could be cumulatively significant, but mitigable (*Class II*) through the implementation of measures included in Section 3.14 and identified for other projects.

The Project would generate only minor amounts of traffic during operations (fewer than 10 trips per day) and would not contribute to a cumulatively considerable impact.

4.5.13 Water Resources

The Lompoc Valley is characterized by watersheds that come down from the coastal ridges of the Santa Ynez Mountains through creeks, rivers, and drainages that eventually enter the Pacific Ocean.

Impact No.	Impact Description	Phase	Impact Classification
C-WAT-1	Construction-related impacts to water resources would be short term, localized, and not cumulatively considerable.	Construction	Class III

Impact C-WAT-1: Water Quality. A number of projects, including the Project, would have significant, construction-related impacts to water resources. These impacts would be short-term, localized, and not cumulatively considerable. Impacts to water resources would be adverse, but less than significant (*Class III*).

The Project could result in the use of small amounts of groundwater, but other projects would not draw from the same source, and cumulative impacts would not occur.

4.6 Summary

The cumulative impact discussion in this section discloses the following:

- The Project would not contribute to cumulatively considerable impacts to the resource areas of Mineral Resources, Population and Housing, Public Services, Recreation, Utilities/Service Systems, and Energy/Electric Utilities.
- The Project would contribute to cumulatively considerable adverse, but less than significant impacts (*Class III*) in the resource areas of Agricultural Resources; Air Quality from the minimal contribution to ozone precursors; Geology and Soils from the development of previously undeveloped land; Land Use from impacts to the quality of life in the Lompoc Valley; Noise from short-term construction impacts; Traffic and Circulation from the minimal contribution of traffic to area roadways; and Water Resources from short-term construction impacts.
- The Project would contribute to cumulatively considerable significant, but mitigable impacts (*Class II*) in the resources areas of Air Quality from PM_{10} emission during construction activities; Biological Resources from impacts during construct resulting in impacts to nesting birds, wildlife injuries and fatalities, loss of oak trees, and loss of habitat and special-status species; Cultural Resources from the disturbance of known or unknown cultural resources uncovered during construction activities; Fire Protection Services from an increased demand on resources in the Lompoc Valley; Paleontological Resources from the disturbance of paleontological resources during construction activities; Risk of Accidents/Hazardous Materials/Safety from EMF exposure and the increased potential for wildfires; and Traffic and Circulation from roadway damage caused from the delivery of heavy or large loads and construction-related traffic.
- The Project would contribute to cumulatively significant and unavoidable impacts (*Class I*) in the resource area of Aesthetics/Visual Resources for the degradation of scenic resources from impacts to sensitive viewing locations: views of WTGs from Jalama Beach and views of the power line on the east-side of SR-1 entering the City of Lompoc. All of the cumulative projects considered in this analysis, except for the Project, include measures to mitigate these visual impacts to the maximum extent feasible under CEQA. The other projects that contribute to the degradation of scenic resources are required to contribute to funds such as the CREF, which applies to oil and gas facilities that support offshore oil and gas production or the payment of park fees tied to the numbers of residential units or commercial square footage to improve recreational resources in the Lompoc Valley and northern Santa Barbara County. Since these requirements do not apply to the Project, a new mitigation measure has been added to Section 3.2 to address the Project's cumulative contribution to the degradation of scenic values in the region. This new measure requires the Project's contribution to a fund that would be used to enhance recreational resources in areas of high scenic value within the region. Combined with the mitigation requirements for other projects in the region (CREF and park fees), this additional mitigation measure will further attempt to mitigate these impacts to the maximum extent feasible under CEQA, however, the residual cumulative impacts would remain significant and unavoidable.

- The Project would contribute to cumulatively considerable significant and unavoidable impacts (*Class I*) in the resource area of Biological Resources when combined with the other projects considered as part of this analysis (Tranquillon Ridge, Centex, Crown Laurel, Burton Ranch, Riverbend Park, and River Terrace) that would result in fatalities to bird and bat species. All of these projects include mitigation measures to mitigate these impacts to the maximum extent feasible under CEQA; however, the residual cumulative impacts remain significant and unavoidable.