Attachment 3

Beacon Photovoltaic Solar Energy Project
Focused Golden Eagle Survey Results
Introduction

Beacon Solar, LLC a subsidiary of NextEra Energy Resources, LLC (NextEra) proposes to develop the Beacon Photovoltaic (PV) Project on approximately 2,300 acres of land located in southeastern Kern County, California, approximately 8.4 miles northwest of California City, and 15 miles northeast of Mojave, California (Figure 1). For the purpose of this memorandum, the “project site” or “solar facility site” is defined as the area encompassing the photovoltaic energy-generating facility and associated infrastructure, located to the east of SR 14. The transmission line route (the generation tie-line), plus a buffer on either side of the generation-tie line centerline is located west of SR 14.

The solar facility site is located on lands wholly owned by Beacon Solar, LLC. Lands within a 10-mile radius include those administered by the Bureau of Land Management (BLM) Ridgecrest Field Office, California Department of Parks and Recreation and private lands.

In April 2011, NextEra requested CH2M HILL conduct aerial raptor nest surveys within a 10-mile radius of the project site. CH2M HILL conducted these surveys and submitted the Final Raptor Nest Inventory Technical Memorandum to NextEra, reporting the results of the surveys, in August 2011 (Attachment A). Pursuant to NextEra’s request, CH2M HILL delivered an electronic copy of the August 2011 Memorandum to U.S. Fish and Wildlife Services (USFWS) in January 2012.

Subsequent to the delivery of the technical memorandum to USFWS in January 2012 and following the receipt of public and agency comments on the Kern County Notice of Preparation for an Environmental Impact Report for the project, NextEra requested CH2M HILL to develop and implement a study plan for collecting additional data regarding
golden eagle use in the vicinity of the solar facility site. The additional data collection would address public and agency concerns regarding the existing golden eagle nests located in the vicinity of the solar facility site and eagle use of the project site for foraging and nesting.

To address these concerns, CH2M HILL implemented a golden eagle focused ground-based data collection program over a 30-day period between May 23 and June 16, 2012. The timing of these surveys coincided with the most active period for golden eagles when fledglings are feeding and the eagle pairs are foraging.

**Regulatory Context**

At the federal level, all raptors are protected by the Migratory Bird Treaty Act (MBTA) (16 United States Code [U.S.C.] 703-712). Additional federal protection is afforded to bald (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) under the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d) by prohibiting—except under certain specified conditions—the taking, possession, and commerce of such birds. Threatened and endangered species, if present, are also protected by the federal Endangered Species Act (ESA) (7 U.S.C. 136, 16 U.S.C. 1531 et seq.) that protects threatened and endangered species and the habitats on which they depend. In essence, these acts collectively prohibit killing or harming migratory birds, including raptors, active nests, and/or eggs.

At the state level, nesting and wintering golden eagles are fully protected California Species of Special Concern (SSC) and are subject to a higher level of protection than other SSC species (California Department of Fish and Game [CDFG], 2010). Specifically, as stated in Fish and Game Code §3511, fully protected SSC “may not be taken or possessed at any time. No provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected” species.

**Study Area**

The proposed Beacon PV project site is located in southeastern Kern County at the western edge of the Mojave Desert and just east of the extreme southern end of the Sierra Nevada Mountains (Figure 1). Within the proposed solar facility site, the majority of the habitat form and function has been significantly disturbed by past agricultural practices which ended in the mid 1980’s. These disturbed areas are dominated by desert salt brush (*atriplex*) species with the remainder of the project site comprised of a mix of Mojave Desert wash scrub and mixed desert shrub, with the dominant plant community being creosote bush. The solar facility site is relatively flat and ranges from approximately 2,024 to 2,263 feet above mean sea level. Pine Tree Creek, a dry desert wash, bisects the project site in a north-northeast direction.

Within a 10-mile radius of the solar facility site there are varied habitats that range from the steep oak and pine covered mountains of the Tehachapi Range to the arid badlands of Red Rocks Canyon State Recreation Area, and the desert wash scrub and mixed desert shrub habitats of the valley floor.
Methodology

The objective of the surveys was to observe and collect golden eagle use data at the documented active nest location closest to the solar facility site (identified in the August 2011 Technical Memorandum as CH2M HILL Nest No. 34) as well as document golden eagle foraging activity use on the project site.

As part of the 2011 aerial raptor surveys conducted by CH2M HILL for NextEra Energy Resources, fifteen golden eagle nests (2 productive, 1 occupied, and 12 unoccupied) were documented within 10-miles of the solar facility. Details about these nests are included in Attachment A, Table 1. The two nearest golden eagle nests documented as occupied-productive in 2011 were CH2M HILL Nest ID numbers 31 and 34. The attributes of these nests are listed in Attachment A, Table 1 and shown on Figure 2. In 2011, 2 fledglings were observed in nest 31 located 6.25 miles from the project site boundary. Because the nest is situated on a cliff approximately 200 feet above ground level with a north aspect and no direct line of sight to the project site, and it was not possible to access a safe observation point to view activity, this nest was not included in the study. At the time, it was determined that the aspect and safe observation access to Nest 34 would provide adequate data to access whether eagle territories in close proximity to the project site use the site for foraging.

Initial Survey Methodology

The survey protocol included two avian specialists concurrently providing ground-level observations of the active golden eagle nest (confirmed as occupied on February 29, 2012 during aerial surveys conducted for NextEra’s North Sky River Project) closest to the solar facility site as well as landscape-level observations to record the frequency and behavior of eagles using the project site. One specialist observed and documented nest activity and the other observed a landscape view of the solar facility site and documenting eagle use. The observation points are provided on Figure 1. It was intended that flight paths and perch locations would be digitized and used to create maps of golden eagle use within the vicinity of the solar facility site to support an ongoing raptor management plan.

Surveys occurred for 14 days within a 30-day window between May 23 and June 16, 2012. The 30-day survey window was necessary to accommodate dynamic weather conditions with periods not suitable for focused monitoring and to coincide with the most active period for golden eagles when fledglings are feeding and the eagle pair is foraging.

Each survey location was surveyed for a continuous 4-hour period, for up to 14 days within a 30 day survey window. Surveys were scheduled such that observation periods rotated to cover most daylight hours (approximately 9:00 am to 4:00 pm). Observations were recorded on data sheets (Attachment B).

Revised Survey Methodology

Prior to initiation of the 2012 focused ground-based surveys, CH2M HILL confirmed that the previously active Nest 34, nearest the solar facility site, had failed since it was observed as occupied on February 29, 2012. In addition, because of the following factors related to Nest 31: a) access to a safe viewing location; b) north-facing nest orientation barring line of sight towards the project site; it was not possible to observe the nest status from a ground-
based location. As a result, to account for this change, the survey methodology was revised to include only the landscape observations of the project site.

**Potential Impacts Discussion**

Potential direct and indirect impacts to golden eagles from the development of a solar PV facility include removal of foraging habitat, introduction of perching structures (utility poles, PV panels, and ancillary equipment), and disturbance to nesting eagles during construction. Golden eagles’ diet consists primarily of small mammals, with a key prey species throughout much of their range being black-tailed jackrabbits (*Lepus californicus*) (Kochert et al., 2002). Black-tailed jackrabbits occupy a diverse range of habitats that may include grasses, forbs, and shrubs. Creosote bush (*Larrea tridentata*) is a primary browse species for black-tailed jackrabbit. The project site has been disturbed by historic agricultural practices and is currently dominated by desert salt brush (*atriplex*) species. These factors, confirmed by ongoing data collection efforts since 2006 further document low habitat quality over the majority of the solar facility site. While the remainder of the solar facility site is comprised of Mojave Desert wash scrub, mixed desert shrub and creosote bush, this combination of desert vegetation is a less preferable food source and therefore, black-tailed jackrabbit abundance is expected to be low, subsequently reducing foraging opportunities for golden eagles.

In addition to low quality habitat value, terrestrial wildlife movement is impaired because:

- Site is fenced, deterring potential wildlife movement
- Pine Tree Creek Wash, located west of the site, is unvegetated and rarely holds water, reducing its value as a movement corridor since it provides no cover
- SR 14, located west of the site, also forms a wildlife movement barrier.

As a result, wildlife movement is expected avoid the site and use other open areas (Kern County, 2012) to get around the site. While it appears that the site could support rodents and small birds, potential prey base for raptors and other wildlife, limited observations of wildlife have been recorded over the last 6 years.

The solar facility site is comprised of approximately 2,300 acres make up 0.75% of nearly 268,000 acres of the total land area within a 10-mile radius of the project site (Figure 1). This constitutes a small fraction of the overall foraging habitat for golden eagles in this area. Perching structures, in the form of utility poles, would be introduced and the attraction of these poles to could be a fatal risk to golden eagles from electrocution. However, this risk can be managed and minimized by adhering to APLIC (2006) construction standards that discourage perching. Further, due to large-scale renewable energy, industrial, and military development in the area, implementation of the project could result in an incremental significant and unavoidable contribution to cumulative loss of low-quality foraging habitat for golden eagles and other special-status raptors and use of the site as a wildlife corridor.

**Focused Golden Eagle Survey Results**

Data collected during these focused surveys was used to qualify golden eagle behavior and estimate potential impacts to suitable nesting and foraging habitat in the area of the solar facility site. During 14 days of observations between May 23 and June 16, 2012 at the locations shown on Figure 1, no golden eagles were observed. Data sheets for each survey
day are included in Attachment B. Furthermore, Nest 31, at 6.25 miles from the project site is at such a distance and without a line of site, that nest disturbance from construction and operation activity is presumed to be low and less than significant.

Incidental observations of other wildlife during this survey window were minimal. In addition, incidental wildlife observations over the last four years of data collection to support the Beacon Solar and Beacon Solar PV Projects indicate that the project site does not support suitable foraging habitat or prey base for golden eagles. As described in greater detail in Kern County, 2012, the low quality of onsite habitat suggests that prey base, breeding, and foraging for raptor species and other wildlife is limited.

References


Figure 1
Observation Locations
Beacon Solar PV
Focused Golden Eagle Survey Results
June 2012
Attachment A: Beacon PV Solar Energy Project
Final Raptor Nest Inventory (dated August 23, 2011)
Beacon Photovoltaic Project Raptor Nest Inventory Aerial Survey Results – June 2011

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DATE: August 23, 2011

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Introduction

Beacon Solar, LLC a subsidiary of NextEra Energy Resources, LLC (NextEra) proposes to develop the Beacon Photovoltaic (PV) Project (Beacon PV) on approximately 2,000 acres of land located in eastern Kern County, California, approximately 8.4 miles northwest of California City, and 15 miles northeast of Mojave, California (Figure 1). The proposed Project is located on lands wholly owned by Beacon Solar, LLC. Lands within a 10-mile radius include those administered by the Bureau of Land Management (BLM) Ridgecrest Field Office, California Department of Parks and Recreation and private lands. Aerial surveys for golden eagles (Aquila chrysaetos) were conducted by B.J. Lukins, a CH2M HILL biologist, between June 2 and 7, 2011, to verify BLM provided nest locations, document new nest locations, collect nest attribute data, and identify nesting status for 2011.

Regulatory Context

At the federal level, all raptors are protected by the Migratory Bird Treaty Act (MBTA) (16 United States Code [U.S.C.] 703-712). Additional federal protection is afforded to bald (Haliaeetus leucocephalus) and golden eagles (Aquila chrysaetos) under the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d) by prohibiting—except under certain specified conditions—the taking, possession, and commerce of such birds. Threatened and endangered species, if present, are also protected by the federal Endangered Species Act (ESA) (7 U.S.C. 136, 16 U.S.C. 1531 et seq.) that protects threatened and endangered species and the habitats on which they depend. In essence, these acts collectively prohibit killing or harming migratory birds, including raptors, active nests, and/or eggs.
At the state level, nesting and wintering golden eagles are fully protected California Species of Special Concern (SSC) and are subject to a higher level of protection than other SSC species (California Department of Fish and Game [CDFG], 2010). Specifically, as stated in Fish and Game Code §3511, fully protected SSC “may not be taken or possessed at any time. No provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected” species.

**Study Area**

The proposed Beacon PV Project is located in eastern Kern County at the western edge of the Mojave Desert and just east of the extreme southern end of the Sierra Nevada Mountains (Figure 1). Within the proposed Project site, the majority of the habitat form and function has been significantly disturbed by past agricultural practices which ended in the mid 1980’s. These disturbed areas are dominated by desert salt brush (*atriplex*) species with the remainder of the site comprised of a mix of Mojave Desert wash scrub and mixed desert shrub, with the dominant plant community being creosote bush. The distribution of these vegetation types is shown in photographs 1 and 2, included at the end of this memorandum. The site is relatively flat and ranges from approximately 2,024 to 2,263 feet above mean sea level. Pine Tree Creek, a dry desert wash, bisects the proposed Project site in a north-northeast direction.

Within a 10-mile radius of the Project site there are varied habitats that range from the steep oak and pine covered mountains of the Tehachapi Mountains to the arid badlands of Red Rocks Canyon State Recreation Area, and the desert wash scrub and mixed desert shrub habitats of the valley floor.

**Methodology**

Aerial surveys conducted for the Beacon PV Project followed guidance’s provided in the United States Fish and Wildlife Service (USFWS) Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al., 2010).

Raptor nest inventories and nesting status analyses were conducted via aerial surveys over 252,304 acres between June 2 and 7, 2011 to document nest locations and nesting status of golden eagles and to document nest locations of all other raptor species (Figure 2). In addition to surveying known nest locations, observations of new or previously unrecorded nest locations were documented and nest attribute data was recorded. All documented nests were assigned a CH2M HILL Nest Identification (ID) number, and nest locations provided by the BLM were assigned a BLM Nest ID number (Table 1).

Nest locations were recorded using resource-grade Trimble Geo XT handheld global positioning system (GPS) units running TerraSync 2.4 mobile application geographic information system (GIS) software. All spatial analysis were performed and cartographic products were created using ArcGIS 10.0 (Environmental Systems Research Institute, Inc; Redlands, California). SRT Helicopter Services, LLC was contracted to provide air support for the CH2M HILL biologist conducting aerial surveys.
A Robinson 44 helicopter was used to conduct surveys. The survey area included the Project site and a 10-mile radius around the Project boundary and proposed gen-tie line. Map grids, each measuring approximately 5 by 4-miles, were established and overlaid on the survey map to assist in tracking aerial survey effort (Figure 2). All areas within a 10-mile radius were surveyed.

Transects between 0.25 and 0.5 mile apart were flown across each map grid with greater focus in areas of suitable golden eagle nesting habitat and structure (rock outcrops, cliffs, large trees, transmission line towers). When a nest was located, the helicopter pilot was instructed to hover at a safe distance from the nest, putting the biologist at eye level with the nest when possible. This methodology helped to minimize impacts to the nest by keeping the downdraft of the rotor from washing over the nest. The biologist recorded nest attribute data including; species, nest type, nest status, nest condition, nest height, substrate, substrate height, nest aspect, and GPS accuracy. Two photographs were taken at each nest location when possible, including a landscape photograph showing the substrate in which the nest was located and a close-up photograph of the nest (Appendix A).

**Terminology**

Nest type is used to describe the size and material used for nesting (Table 1). The term is somewhat subjective and will vary between observers. Defining the nest type allows nest use and trends to be monitored over time. Small stick nests are typically bowl shapes with circumferences of roughly 8 to 10 inches, made up of small sticks, grasses, mud, and other material. Small stick nests are typical of nests used by accipiter species, including sharp-shinned and cooper's hawk. Medium stick nests are typically bowl shapes 10 to 20 inches in diameter and are typical of nests used by buteo species, including red-tailed hawk. Large stick nests are flat and deep, built using large sticks or roots from trees, sagebrush, or other scrub species, intertwined to form a large bowl or platform. Large stick nests are the type typically seen used by golden eagles.

Because eagles nest on a variety of substrates (cliff ledges, rock out crops, tree tops, utility structures, and occasionally the ground), and because some nests are maintained over many generations, eagle nests can become very large over time. Nests built into the crack of a cliff ledge typically get very tall or deep. Scrapes are not necessarily nests, but shallow depressions used for egg laying found on the ground or on cliff ledges. Scrapes used by ground-nesting species can be hard to detect; those that are found on cliff ledges can be identified by the presence of heavy whitewash and are typically used by species such as prairie falcons or great horned owls. In some instances, the scrape will be lined with grass, mud, or even small sticks.

Although the determination of nest condition can be subjective and may vary between observers, it gives us a general sense of when a nest or nest site may have last been used. Nests in poor to fair condition are typically in disrepair, sloughing, or sagging heavily and require some level of effort to rebuild to be suitable for successful nesting. Nests in good to excellent condition are those that are observed to have been well maintained, have a defined bowl shape, are not sagging or sloughing, and appear to be suitable for nesting. Nest recorded as remnant are those that have deteriorated to the point that only there is little structure remaining on the substrate or the nest is observed on the ground below its former
location. Nests documented as did not locate (DNL) were those that the biologist was unable to locate during inventory surveys. It is possible that nest coordinates for these situations were not accurate, the nest has deteriorated beyond detection or the observer was simply unable to detect the nest. Golden eagle nests documented as previously undocumented (PU) were those nests that were not provided to NextEra by the BLM and assumed to be previously undocumented. These nests were recorded, assigned a CH2M HILL nest ID number, and associated attribute data collected by CH2M HILL biologist during aerial surveys conducted in June 2011.

Nesting status associated with golden eagles should be handled independently of other raptor species due to the fact that golden eagles typically have a high incidence of non-laying territorial pairs and floaters (Steenhof and Kochert, 1982). The term “active” for nesting status can be ambiguous and is avoided by some researchers. We use the term to describe a nest in which an adult is observed in the incubating position. Because nest status changes over the course of the nesting season, we have adopted the terms “occupied” and “unoccupied” to best describe territory occupancy and to eliminate confusion when a nest was observed to have gone from an “active” status to a “failed” or “undetermined” status. Evidence that a territory is occupied can be based on the observation of two birds that appear to be paired or one or more adults engaged in territorial defense, nest affinity, or other reproductive-related activity (Steenhof and Newton, 2007).

A similar definition of eagle territory is included in The Draft Eagle Conservation Plan Guidance which defines eagle territory as an area that contains, or historically contained, one or more nests within the home range of a mated pair of eagles. Home range is defined as the area traveled by an eagle in its normal activities of food gathering, mating, and caring for young. Breeding home range is the home range during the breeding season, and the non-breeding home range is the home range outside the breeding season. (USFWS January 2011).

Nests documented as unknown raptor species are defined as any stick nest that did not have an occupant associated with it at the time of survey. Many times nests will become abandoned or historic and are not used. An unknown number of stick nests are used by common raven (Corvus corax) and nesting species may not have been detected as such during aerial surveys based on nesting chronology timeframes. Unknown raptor nests are documented to populate a nest database and to ensure that future surveys will include these locations.

Local area population is defined as the population within the average natal dispersal distance of the nest or nests under consideration (43 miles for bald eagles, 140 miles for golden eagles). Effects to the local area population are considered in the evaluation of the direct, indirect, and cumulative effects of take, and the mitigation for such a take, under eagle take permits (USFWS February 2010).

Results of Aerial Surveys

The BLM Ridgecrest Field Office staff provided Beacon Solar, LLC with GPS coordinates for 9 previously documented golden eagle nest locations within 10-miles of the proposed
A CH2M HILL biologist attempted to locate each of these nests in order to verify nest location, populate a nest database, and to collect associated nest attribute data.

Although the accuracy and supporting nest attribute data of nest locations provided by the BLM was not provided with the nest coordinates, a CH2M HILL biologist surveyed for these nests. All but three of the 9 provided nest locations were located and associated nest attribute data was documented. Thorough searches for these nests were unsuccessful and it can be assumed that the biologist did not detect the nest due to nest deterioration, or the provided nest coordinates had some level of spatial error. Because there is a level of spatial error with all GPS coordinates, especially when collected by methods other than from the ground either directly below or at a nest, it can also be assumed that based on the quality of the GPS receiver (resource grade or recreational grade) there will be inherent differences in accuracy of GPS coordinates, in some instances having a spatial error of several hundred meters. Other factors that influence GPS accuracy are time of day, satellite configuration, and user knowledge.

(BLM nest ID 6) located in map unit 78 (Figure 3), was not located (DNL), there was no suitable eagle nesting structure observed at the given coordinates. The nest coordinates were located within creosote shrub habitat at the southwestern extent of the Rand Mountains. The given coordinate placed the nest on the northwest bank of a shallow desert wash where two small rock piles were observed, the remains of 2 woodrat nests were observed at this location (Photograph 3 and 4). On the ground inspection of the “nests” confirmed rat feces and no indication of use by any raptor species.

(BLM nest ID 9) located in map unit 74, is located just northeast of (CH2M HILL nest ID 31) (Figure 3), it is plausible that this nest is gone or historical and is no longer detectable, or due to spatial error is the same nest location as (CH2M HILL nest ID 31). This is steep terrain with various suitable nesting substrates available (large pine trees, rocky outcrops, cliffs).

In the case of (BLM nest ID 1) located in map unit 44 (Figure 3), it is plausible that the provided nest coordinates have some level of spatial error. Several previously undocumented nests were recorded to the west of this location and one of these may have been the intended BLM nest location. This area lies within Red Rock Canyon Recreation Area and is comprised of broken badlands with many suitable nesting ledges.

(BLM nest ID 2 and BLM nest ID 7) line up closely with (CH2M HILL nest ID 19 and CH2 nest ID 19A). Located within map units 63 and 64 (Figure 3), these are likely the same intended nest locations. These nests were documented as being in good to excellent condition however there was no indication of occupancy in 2011.

(BLM nest ID 3, BLM nest ID 5, and BLM nest ID 8) line up closely with (CH2M HILL nest ID 21, CH2M HILL nest ID 21A, and CH2M HILL nest ID 21B). Located in map units 64 and 65 (Figure 3), It is likely that these are the same intended nest locations. These nests were documented as being in poor to good condition and were unoccupied in 2011.

In addition to the 9 known golden eagle nest locations provided by the BLM, an additional six previously undocumented nests were observed (CH2M HILL nest ID 85, 89, 90, 91, 92, and 98) (Figure 3 and Table 1). These nests were observed to be inactive, with no sign of
nesting activity in 2011. (CH2M HILL nest ID USFWS-1) was recently provided to NextEra from the USFWS. It was stated by USFWS biologist Ashleigh Blackford (USFWS Memo July 22, 2011) that this nest was Active in 2011 (Figure 3 and Table 1). These nests ranged in condition from poor to excellent, and although the determination of nest condition can be subjective, and may vary from observer, it gives us a general sense of when a nest may have last been utilized. Nests in poor condition are typically in great disrepair, sloughing or sagging heavily, and would require significant effort to rebuild. Nests in excellent condition are those that are observed to have been well maintained, have a good bowl shape, are not sagging or sloughing, and appear to be ready for use.

Aerial surveys conducted in November 2010 and Spring (February and June) of 2011 (CH2M HILL 2010 and 2011), for the proposed NextEra North Sky River Wind Energy (NSR) Project, located approximately eight miles northwest of the Beacon PV Project site boundary, collected nesting status of golden eagles with 10-miles of the NSR Project. Because there was significant overlap of the 10-mile radius of both the NSR and Beacon PV Projects, data collected for NSR was used to help support Beacon PV aerial survey efforts.

The NSR aerial survey results identified that (CH2M HILL nest ID 31) was observed to be active on February 28, 2011, with a female in the incubating position. Surveys of this nest on June 2, 2011 observed two fledglings in the nest (Photograph 5). The nesting status was recorded as productive for 2011.

(CH2M HILL nest ID 34) was observed to be active on February 28, 2011, with a female in the incubating position. An adult male was observed perched in a tree along a ridgeline just north of the nest location.

The remainder of golden eagle nests documented within the 10-mile radius of the proposed Beacon PV Project area were recorded as inactive in 2011 (Table 1). Previously documented nests and those documented during June 2011 aerial surveys were closely examined to determine nesting status (active, inactive, tended, failed, or productive). Sign such as heavy whitewash, fresh prey remains, egg shells, dead chicks, newly added nesting material and feathers were looked for to guide a determination of nesting status.

In total 39 nest locations were documented within the 10-mile radius of the proposed Beacon PV Project (Table 1). Fifteen golden eagle (2 productive, 1 occupied, and 12 unoccupied), two red-tailed hawk (2 occupied), two great-horned owl (2 productive), 4 prairie falcon (4 unoccupied), four common raven (3 occupied, and 1 unoccupied), 12 unknown raptor nests (12 unoccupied). Three of the BLM provided nest locations were not located and 6 of the BLM provided nest locations lined up closely with CH2M HILL nest locations and were assumed to be the same intended nest locations.

Activity status of the two red-tailed hawk nests were documented as occupied rather than productive based on the fact that chicks, not fledglings were observed in the nests during June surveys. The Four locations marked as prairie falcon nests, were locations in which heavy whitewash was observed and suitable scrape or nesting ledges were present. Prairie falcons have been observed at these locations, typically observed flying around, however no nesting activity observed. Common raven nests are documented because they are potential nest sites for raptor species.


**Discussion**

Direct and indirect impacts to golden eagles from the development of a solar photovoltaic (PV) facility include the removal of foraging habitat, the introduction of perching structures, and potential disturbances to nesting eagles during construction. The diet of golden eagles consists primarily of small mammals, with a key prey species throughout much of their range being black-tailed jackrabbits (*Lepus californicus*) (Kochert et al 2002). Black-tailed jackrabbits occupy a diverse range of habitats with the presence of grasses, forbs and shrubs. Creosote bush (*Larrea tridentata*) is known to be a principle browse species for black-tailed jackrabbit. The proposed Project site has been disturbed by past agricultural practices, and the 2,320 acre site is currently dominated by desert salt brush (*atriplex*) species. The remainder of the site is comprised of a mix of Mojave Desert wash scrub, mixed desert shrub and creosote bush. Black-tailed jackrabbit abundance is expected to be low within the Project boundary, subsequently reducing foraging opportunities for golden eagles. The Project area constitutes nearly 2,011 acres which makes up 0.75% of nearly 268,000 acres of the total land area within 10-miles of the Project site (Figure 2). This constitutes a small fraction of the overall foraging habitat for golden eagles in this area. Perching structures in the form of utility poles will likely be introduced. The attraction of utility poles to golden eagles would be a risk as electrocutions are often a leading cause of eagle mortality. However, this risk can be managed and minimized by adhering to APLIC (2006) construction standards that would discourage perching.

The nearest potentially occupied golden eagle nest (CH2M HILL nest ID 31) documented in 2011 as productive with 2 fledglings observed in the nest, is located 6.25 miles from the proposed Project boundary (Figure 3). The nest is situated on a cliff approximately 200 feet above ground level with a north aspect, and with no direct line of sight from the nest to the Project location. At such a distance and without a line of site, nest disturbance from construction activity is presumed to be extremely low. Impacts to golden eagles resulting from the Beacon PV Project would likely be limited to loss of poor quality foraging habitat and minimal risk of electrocution, mitigated by constructing utility poles to APLIC (2006) standards.

**References**


Photograph 1. Looking east across proposed Beacon PV Project, June 2011.

Photograph 2. Looking north across proposed Beacon PV Project, June 2011.

Photograph 5. (CH2M HILL nest ID 31) with two fledglings observed, June 2011.
FIGURE 2
Raptor Nest Locations
Beacon Solar Project
August 2011

Legend
- Eagle Nest Locations from BLM
- Golden Eagle-Occupied-Productive
- Golden Eagle-Unoccupied-Inactive
- Common Raven
- Great Horned Owl
- Prairie Falcon
- Red-tailed Hawk
- Unknown Raptor

Map Grids:
- 1:24,000 Map Grid
- Pine Tree Wind Development Project
- Sky River Boundary
- CA Department of Parks and Recreation
- Bureau Of Land Management
- USDA Forest Service
FIGURE 3
Eagle Nests
Beacon Solar Project
August 2011
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<td>Photographs</td>
<td>UTM NAD83</td>
<td>Township</td>
<td>Range</td>
<td>Section</td>
<td>Quad</td>
<td>Map</td>
<td></td>
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</tr>
<tr>
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<td>---------</td>
<td>------</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>Unknown Raptor</td>
<td>NS</td>
<td>Inactive</td>
<td>Unoccupied</td>
<td>Good</td>
<td>CLF</td>
<td>70</td>
<td>E</td>
<td>GPS Aerial</td>
<td>1684 1685</td>
<td>406332 41 39134240</td>
<td>30</td>
<td>37</td>
<td>E</td>
<td>4</td>
<td>NWNT</td>
<td>Cinco</td>
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<tr>
<td>99</td>
<td>Unknown Raptor</td>
<td>NS</td>
<td>Inactive</td>
<td>Unoccupied</td>
<td>Good</td>
<td>CLF</td>
<td>90</td>
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<td>GPS Aerial</td>
<td>1680 1691</td>
<td>406330 07 39131726</td>
<td>30</td>
<td>37</td>
<td>E</td>
<td>2</td>
<td>SWNW</td>
<td>Cantil</td>
</tr>
</tbody>
</table>

1 PU: Previously undocumented
2 NS: Nest not surveyed in 2010
3 DNL: Did not locate nest during aerial survey conducted in 2011

Active: Female in incubating position, or eggs or young in nest
Inactive: No eggs or chicks in nest
Production: Nest produced at least one chick to fledging age
Failed: Active nest that did not fledge young
Tended: Fresh material added to nest
Visited: Fresh food or bird at or near nest
Undetermined: Nest first documented outside of nesting season
NS: Nest not surveyed in 2010

CT: Cottonwood Live, CTD: Cottonwood Dead, JUN: Juniper, CLF: Cliff, ROK: Rock Outcrop, UTP: Utility Pole

Aspect: n/a not applicable: nest in tree crown, top of rock, or on utility pole
Attachment B: Focused Golden Eagle 2012 Survey Data Sheets
### Eagle Observation Survey Data Sheet

**Date:** 23 May 2016  
**Observer:** Morgan  
**Project:** Beacon Hills  
**Start Time:** 8 AM  
**End Time:** 12 PM  

#### Weather, Visibility
- Visibility: Cloud cover  
- Wind direction: N  
- Wind speed: 15 MPH  
- Precipitation: Light rain  

#### Observations

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Activity (做起)</th>
<th>Height (ft)</th>
<th>Low (Constant)</th>
<th>High (Constant)</th>
<th>Habitat</th>
<th>NOTES</th>
</tr>
</thead>
</table>
| 8/28/12 | OCEAN  
| BC | 100 | 100 | Boeing flight | 100 | 0 | 100 | Sea | 100 |

#### Activity Codes
- BO: boating  
- SH: skiing  
- TL: sleeping  
- TE: terminal flight  
- RN: resting  

#### Comments/Notes
- Area of interest: West Beach Area  
- Direct view possible from West Beach Area.
### Eagle Observation Survey Data Sheet

**Project:** Beacon Hills

**Date:**

**Observer:**

**Start Time:**

**End Time:**

**Weather:**

- Visibility (Circle One): [ ] Good  [ ] Fair  [ ] Poor
- Cloud Cover (%):
- Temp (°F):

**Wind Direction (Circle One):**

[ ] NE  [ ] E  [ ] SE  [ ] S  [ ] SW  [ ] W  [ ] NW  [ ] NW

**Precipitation (Circle One):**

- Light rain
- Snow
- Light snow
- Snowfall
- Other

### Incidental/Other Raptor Observations

<table>
<thead>
<tr>
<th>No.</th>
<th>Species</th>
<th>Time</th>
<th>Date</th>
<th>Location</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PE</td>
<td>123</td>
<td>4/5</td>
<td>Main Park</td>
<td>perched</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SW</td>
<td>234</td>
<td>4/6</td>
<td>Beacon</td>
<td>soaring</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MB</td>
<td>345</td>
<td>4/7</td>
<td>Hills</td>
<td>hunting</td>
<td></td>
</tr>
</tbody>
</table>

### Comments/Notes

- Additional observations or notes can be added here.

---

### Eagle Observation Survey Data Sheet

**Project:** Beacon Hills

**Date:**

**Observer:**

**Start Time:**

**End Time:**

**Weather:**

- Visibility (Circle One): [ ] Good  [ ] Fair  [ ] Poor
- Cloud Cover (%):
- Temp (°F):

**Wind Direction (Circle One):**

[ ] NE  [ ] E  [ ] SE  [ ] S  [ ] SW  [ ] W  [ ] NW  [ ] NW

**Precipitation (Circle One):**

- Light rain
- Snow
- Light snow
- Snowfall
- Other

### Incidental/Other Raptor Observations

<table>
<thead>
<tr>
<th>No.</th>
<th>Species</th>
<th>Time</th>
<th>Date</th>
<th>Location</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
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<tr>
<td>1</td>
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<td>123</td>
<td>4/5</td>
<td>Main Park</td>
<td>perched</td>
<td></td>
</tr>
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<td>2</td>
<td>SW</td>
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<td>Beacon</td>
<td>soaring</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MB</td>
<td>345</td>
<td>4/7</td>
<td>Hills</td>
<td>hunting</td>
<td></td>
</tr>
</tbody>
</table>

### Comments/Notes

- Additional observations or notes can be added here.
**EAGLE OBSERVATION SURVEY DATA SHEET**

**DATE:** 11/1/12  
**WEATHER:**  
**BEAUTY:** fair  
**CLOUD COVER:**  
**TEMP:**  
**WIND DIRECTION:**  
**SPEED (MPH):**  
**REMARKS:**  

<table>
<thead>
<tr>
<th>Obser.</th>
<th>Activity (circle)</th>
<th>Date/Time</th>
<th>Inci. Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments/Notes:**

---

**EAGLE OBSERVATION SURVEY DATA SHEET**

**DATE:** 11/1/12  
**WEATHER:**  
**BEAUTY:** fair  
**CLOUD COVER:**  
**TEMP:**  
**WIND DIRECTION:**  
**SPEED (MPH):**  
**REMARKS:**  

<table>
<thead>
<tr>
<th>Obser.</th>
<th>Activity (circle)</th>
<th>Date/Time</th>
<th>Inci. Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments/Notes:**

---

**Activity Codes:**

- **BO:** soaring flight  
- **FL:** flying-gliding  
- **GJ:** gliding  
- **HJ:** hunting, soaring, gliding  
- **ST:** standing/gliding at prey  
- **NS:** standing or gliding in an agonistic context with other birds or other prey species  
- **PS:** perched  
- **IN:** being mobbed  
- **UN:** undulating territorial flight  
- **AF:** other (explain in comments or notes)

---

**Update Information on GEESE:**

When a goose is observed, record the observation number, the time of the initial sighting, distance from observer in miles, altitude, and flight height in feet. At every minute after initial sighting, record the same information again. If the goose is out of sight for any reason, it is to be treated as if it were flying. The number of observations should be not less than the correct observation number.
### Eagle Observation Survey Data Sheet

**Project:** Beacon Hills

**Date:** 6/5/92

**Observer:** [Name]

**Start Time:** 08:00 AM

**End Time:** 10:00 AM

**Comments/Notes:**

#### Weather Information
- **Visibility (Circle 1):** Good
- **Wind Direction (Circle 1):** N NE E SE S SW
- **Temp (°F):** 75
- **Precipitation (Circle 1):** None

#### Incidental/Other Raptor Observations

<table>
<thead>
<tr>
<th>Date</th>
<th>No.</th>
<th>Sp.</th>
<th>Sex</th>
<th>Age</th>
<th>Weight</th>
<th>Lincoln</th>
<th>Activity (circle)</th>
<th>Flight Time (min)</th>
<th>Height</th>
<th>Low</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>6/5</td>
<td>2</td>
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<tr>
<td>6/5</td>
<td>3</td>
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</tr>
</tbody>
</table>

**Activity Codes:***

- J: soaring flight
- M: perched
- B: being handled
- T: territorial flight
- A: auditory
- O: other

---

**Update Information on OOBs and Eagle Survey Methods:***

Whenever an eagle is observed, record the observation number, the time of the initial sighting, distance from observer in meters, activity, and flight time in minutes. After every minute of initial sighting, record the same information again until the eagle is out of sight or the survey time ends. If more than one eagle is being tracked, be careful to record the correct observation number.
**DATE:** 1/17/2012  
**WEATHER:** Good  
**VISIBILITY (CIRCLE ONE):** Good  
**CLOUD COVER (%):** 30  
**TEMP (F):** 33  
**WIND DIRECTION (CIRCLE ONE):** NE  
**SPD (MPH):** Low  
**PRECIPITATION (CIRCLE ONE):** Light rain  

**Incidental/Other Raptor Observations**

<table>
<thead>
<tr>
<th>Obs. No.</th>
<th>Sp.</th>
<th>Age</th>
<th>Sex</th>
<th>Marked</th>
<th>Time seize</th>
<th>Distance from</th>
<th>Activity (code)</th>
<th>Flight Char (desc)</th>
<th>Height</th>
<th>Inc. H</th>
<th>Inc. W</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07:00 AM</td>
<td>5 mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07:30 AM</td>
<td>3 mi</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments/Notes:**

- NO EAGLES

---

**DATE:** 6/14/22  
**WEATHER:** Good  
**VISIBILITY (CIRCLE ONE):** Good  
**CLOUD COVER (%):** 30  
**TEMP (F):** 70  
**WIND DIRECTION (CIRCLE ONE):** NE  
**SPD (MPH):** Low  
**PRECIPITATION (CIRCLE ONE):** Light rain  

**Incidental/Other Raptor Observations**

<table>
<thead>
<tr>
<th>Obs. No.</th>
<th>Sp.</th>
<th>Age</th>
<th>Sex</th>
<th>Marked</th>
<th>Time seize</th>
<th>Distance from</th>
<th>Activity (code)</th>
<th>Flight Char (desc)</th>
<th>Height</th>
<th>Inc. H</th>
<th>Inc. W</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td>07:00 AM</td>
<td>5 mi</td>
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<td></td>
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</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07:30 AM</td>
<td>3 mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments/Notes:**

- Update Information on SOCEAs and Habitat Features
- Record the observation number, the time of the initial sighting, distance from observer in meters, activity, and flight height in meters. At every minute after initial sighting, record the same information except until eagle is out of sight or the survey time ends. If more than one eagle is being tracked, be careful to record the correct observation number.
### EAGLE OBSERVATION SURVEY DATA SHEET

**Project:** Beacon Hills

**DATE:**

**Observer:**

**START TIME:**

**END TIME:**

**WEATHER, VISIBILITY (CIRCLE ONE):** Good, Fair, Poor

**CLOUD COVER (CIRCLE ONE):**

**TEMP (°F):**

**WIND DIRECTION (CIRCLE ONE):** N, NE, E, SE, S, SW, W, NW, NW

**SPEED (MPH):**

**PRECESSION (CIRCLE ONE):** Light rain, light snow, snow, light snow, snow, light snow, snow

---

#### Incidental/Other Raptors Observations

<table>
<thead>
<tr>
<th>Date</th>
<th>No.</th>
<th>Dist.</th>
<th>Time Observed</th>
<th>Activity</th>
<th>Height</th>
<th>Low</th>
<th>High</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D1</td>
<td>0.2</td>
<td>12:00</td>
<td>Flying</td>
<td>100</td>
<td>50</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>D2</td>
<td>0.5</td>
<td>13:30</td>
<td>Gliding</td>
<td>30</td>
<td>20</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>D3</td>
<td>0.8</td>
<td>14:00</td>
<td>Hunting</td>
<td>20</td>
<td>15</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>D4</td>
<td>1.2</td>
<td>15:00</td>
<td>Display</td>
<td>100</td>
<td>50</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

**Activity Codes:**
- PE: perched
- FL: flying
- GL: gliding
- HN: hunting, killing
- ST: stooping, gliding, et al
- ST: staying on ground or perched with others
- CT: circling

**Update Information on GSDAs and SADAs Every Minute:** Whenever an eagle is observed, record the observation number, the time of the initial sighting, distance from observer in meters, activity, and height in feet above the observer. At every minute after initial sighting, make the same information again until eagle is out of sight or the survey time ends. If more than one eagle is being tracked, be careful to record the correct observation number.

---

#### Comments/Notes

- Record any additional details or observations here.

---

**Incidental/Other Raptors Observations**

<table>
<thead>
<tr>
<th>Date</th>
<th>No.</th>
<th>Dist.</th>
<th>Time Observed</th>
<th>Activity</th>
<th>Height</th>
<th>Low</th>
<th>High</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D1</td>
<td>0.2</td>
<td>12:00</td>
<td>Flying</td>
<td>100</td>
<td>50</td>
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<tr>
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<td>D2</td>
<td>0.5</td>
<td>13:30</td>
<td>Gliding</td>
<td>30</td>
<td>20</td>
<td>40</td>
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</tr>
<tr>
<td>3</td>
<td>D3</td>
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<td>14:00</td>
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<td>100</td>
<td>50</td>
<td>150</td>
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</tr>
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**Update Information on GSDAs and SADAs Every Minute:** Whenever an eagle is observed, record the observation number, the time of the initial sighting, distance from observer in meters, activity, and height in feet above the observer. At every minute after initial sighting, make the same information again until eagle is out of sight or the survey time ends. If more than one eagle is being tracked, be careful to record the correct observation number.

---

#### Comments/Notes

- Record any additional details or observations here.

---
**DATE:** 6/21/12  
**OBSERVER:**  
**PROJECT:**  
**WEATHER, VISIBLEITY (CIRCLE ONE):** Fair  
**CLOUD COVER (CIRCLE ONE):** Light  
**TEMP (°F):** 71  
**WIND DIRECTION (CIRCLE ONE):** NE  
**SURF: SW W  
**SPEDD (MPH):** Low  
**PRECIPITATION (CIRCLE ONE):** Light  

<table>
<thead>
<tr>
<th>Distance from Observer</th>
<th>Height</th>
<th>Activity/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>01, FL, MU, SE, ST</td>
<td>AG</td>
<td>Bird, Sooty Blackbird</td>
</tr>
<tr>
<td>02, FL, MU, SE, ST</td>
<td>AG</td>
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</tr>
<tr>
<td>03, FL, MU, SE, ST</td>
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<tr>
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<td>05, FL, MU, SE, ST</td>
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<tr>
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</tr>
<tr>
<td>08, FL, MU, SE, ST</td>
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<td>09, FL, MU, SE, ST</td>
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<tr>
<td>10, FL, MU, SE, ST</td>
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</tr>
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<td>11, FL, MU, SE, ST</td>
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</tr>
<tr>
<td>25, FL, MU, SE, ST</td>
<td>AG</td>
<td>Bird, Sooty Blackbird</td>
</tr>
</tbody>
</table>

**Activity Codes:**  
- AG: Alighting or Diaying  
- PE: Perching  
- PL: Parenting  
- MOB: Moving  
- TER: Territorial  
- AUD: Auditory  
- OTR: Other (explain in comments or notes)