



GERONIMO Energy – Best Management Practices

Contents

<u>Construction</u>	1
<i>Minimizing Temporary Disturbance</i>	1
<i>Site Maintenance</i>	2
<i>Nest Management</i>	2
<i>Training</i>	2
<i>Wildlife Concerns</i>	3
<i>Avian Species</i>	3
<i>Bat Species</i>	4
<i>General Wildlife Resources</i>	4
<i>Road Minimization and Traffic</i>	4
<u>Operations and Maintenance</u>	5
<i>Minimize Lighting</i>	5
<i>Overhead Utilities Maintenance</i>	5
<i>Safe Meteorological Towers</i>	5
<i>Minimize Fire Risk</i>	5
<i>Proper Hazmat Handling</i>	6
<i>Tier 4 – Post-Construction Avian and Bat Monitoring</i>	6
<u>Quality Control and Adaptive Management</u>	6



Geronimo Energy – Best Management Practices

Geronimo Energy develops its renewable energy projects in an environmentally responsible manner. Part of Geronimo’s commitment to responsible project development includes the implementation of a suite of Best Management Practices (BMPs) on its wind energy projects. Geronimo endeavors to implement these ‘standard’ BMPs on every wind energy project to the extent practicable, but will adjust and include other BMPs that may be necessary given a project’s specific environmental concerns. The following list of BMPs represents those BMPs that Geronimo typically implements on its wind energy projects.

Construction

Minimizing Temporary Disturbance

- Areas of construction and temporary ground-disturbance activities will be minimized to the extent practicable.
- Clearing of perennial vegetation and any potential avian nesting cover will be avoided to the extent practicable.
- Management measures will be implemented to restore areas that are impacted due to temporary construction activities.
- Construction teams will be made aware of, and attempt to prevent spreading of, invasive species via the movement of people, materials and equipment into and out of the site to prevent the spread and colonization of any new populations of invasive species.
- During construction, the project will follow regulations set forth by the applicable state or federal agency to comply with National Pollution Discharge Elimination System (NPDES) guidelines. These rules are reflected in the construction erosion and sediment control BMPs described below. A Stormwater Pollution Prevent Plan (SWPPP) will be prepared prior to construction and will, as necessary, incorporate the following BMPs:
 - Disturbed areas will be minimized and silt fence will be installed at the down gradient edge of disturbed area, prior to disturbance, to limit sediment flow and pollution to natural areas outside the construction zone.
 - Erosion and sediment control devices require weekly inspections to ensure that they are staying effective.
 - If failures are found, any discharge associated with said failure must be cleaned up as soon as possible.
 - Any track out from vehicles traveling through the site onto roadways must be cleaned up as soon as practicable.
 - Upon construction completion, disturbed areas must be stabilized within 14 days.
 - Material stockpiling will be kept to specified areas and will be surrounded with silt fence at least 2.4 m (8 ft) from the edge of the stockpile to provide a barrier for potential erosion and



sediment run-off from the stockpile yard. Hazardous material will be handled per the individual material guidelines as well as on-site spill kits.

Site Maintenance

- Proper caution and safety measures will be exercised to minimize risks to avian and bat populations near and at the site. To minimize the risk of wildfire that could destroy bird and bat habitat, or be injurious to construction personnel, the contractor will be responsible for maintaining a clean and orderly site. Flammable chemicals, petroleum and other materials with the potential for combustion will be handled and stored in a safe manner. Accumulation of outdoor storage or waste will be addressed immediately so as not to attract birds and bats. The site manager will be responsible for enforcement of BMPs.

Nest Management

- Geronimo Energy implements procedures for nest management for the life of the project on operational areas and on project structures. These procedures will be explained to project employees during training to ensure uniform treatment of avian nest issues among personnel. Many bird species build nests on transmission and generation facilities, as well as on the adjacent maintenance pads, roads and other ground cover. Depending on where nests are located, they may pose fire, safety, power outage, bird electrocution, and bird collision risks. Nest management may include trimming nest material, removing nests, or relocating nests to areas of less risk. In some instances nesting platforms can be constructed in locations that reduce the risk to birds using the area and to equipment.
- State and federal laws and regulations prohibit removal of a regulated species' nest at certain times of the year without first obtaining authorization from state and federal wildlife agencies. It is unlawful to destroy nests when eggs or young birds are in them. Project employees will be trained to understand that no impacts to occupied nests can occur unless there is an immediate safety threat, in which case, coordination with the USFWS and state agency will need to occur.
- While some nests are benign and need no management, others may need to be managed to reduce the risk of equipment failure, bird collisions, and electrocution.

Training

The contractor will be the lead entity for construction management and will be responsible for providing training to all construction staff working on the project. Training, both formal and informal, will be provided for all construction staff, depending on the work responsibilities of personnel. A variety of formats will be employed to present information to those receiving training, such as department or group meetings and discussions, one-on-one training, presentations, posters, and handouts. Copies of any training materials distributed will also be kept at the construction trailer/field office, and the hours and attendees of training sessions will be documented by the appropriate designee.



- Training will include but is not limited to:
 - environmental compliance
 - threatened & endangered species, and species of concern
 - avian and bat issues
 - sediment and erosion control BMPs
 - vegetation management and noxious weeds
 - wetland and water resources
 - hazardous materials
 - water crossings
 - cultural and historic resources
- Formal training opportunities may include:
 - preconstruction meeting with contractor and construction managers
 - preconstruction meeting with relevant agencies
 - training in a Wildlife Incident Reporting System (WIRS)
 - regular status meetings as determined by contractor
 - regular field meetings with construction personnel
- Wildlife Concerns. The contractor and subcontractors will work to implement BMPs to construct the project in a way that minimizes impacts to avian and bat species on site. This includes maintaining flexibility in the construction of components where feasible, as well as encouraging the education of construction teams on site-specific environmental and faunal concerns. Education may also include training in the identification of different types of birds and bats, which may be accomplished by using posters that identify sensitive species, and which are posted at the construction trailer facility.
 - The contractor will be required to have a proper safety program in place and to ensure that construction and operations crews have been adequately trained to that effect. To minimize the risk of wildfire that could destroy bird and bat habitat, or that could be injurious to construction personnel, construction crews will exercise proper caution and safety measures while handling and storing flammable chemicals, petroleum, and other materials with the potential for combustion.
 - In the event of permit noncompliance issues, the contractor will take the measures necessary to correct the situation and maintain compliance. A stop work order may be issued if an emergency occurs, or if a violation is not corrected in a reasonable time. The contractor will designate a project representative responsible for notifying and documenting issues of noncompliance with the permit.
- Avian Species. The primary concern for avian species during the construction phase is related to disturbance of special concern species during the nesting period. Construction personnel will be trained to identify potential nesting habitat in grasslands and wetlands and to contact the site manager prior to disturbance. The site manager will coordinate any necessary special avoidance



methods with the environmental inspector, and will notify the construction personnel when construction can continue.

- Bat Species. The primary concern for bats during the construction phase will be the destruction of occupied roosting and breeding habitat (e.g., large trees, old buildings). If construction will remove large trees, old buildings, or directly impact potential roosting or breeding habitat, construction personnel will be directed to halt activities and a trained biologist will search the area to ensure no bats are present. This searching may consist of visual inspection of trees, bridges, old buildings, and cavities where bats may exist, or of watching for bats departing these areas at dusk or returning at dawn. Construction personnel will be trained to identify potential habitat and required to contact the site manager prior to disturbance. The site manager will coordinate the searches with the environmental inspector and will notify the construction personnel when construction can continue. If areas are disturbed before April 1 or after September 30, these measures are not necessary.
- General Wildlife Resources. Construction personnel will be trained to identify and avoid impacts to wildlife in general. Training in general wildlife awareness will be required of all construction personnel.

Road Minimization and Traffic

- During the construction period, heavy trucks, light trucks, and other construction equipment will access construction sites via existing county and gravel roads. New access roads will be built only as necessary to reach the turbines. Road widening will be limited to the extent feasible during the construction phase of the project. Erosion and sediment control requirements apply to any road construction activities.
- Construction vehicle travel will be reduced by requiring all construction workers to park their personal vehicles at a central location on the project site. All construction and construction-related activities will be confined to the minimum area necessary to safely construct generation, transportation, transmission and maintenance facilities as depicted in the final site design and engineering plans. Approved work space limits will be marked and maintained throughout the construction period.



Operations and Maintenance

During operations and maintenance, the following measures will be implemented:

Minimize Lighting

- All unnecessary lighting, except those required for safety by the FAA and other lights needed for safety and security purposes, will be turned off when not in use. USFWS's Guidelines recommend that wind turbine lighting be designed such that the blinking lights illuminate simultaneously to prevent disorientation of birds and bats. This measure is less likely to attract insects to a constant light source, and thus the birds and bats that feed on them. Further, the USFWS recommends the use of minimum intensity, maximum off-phased strobe lights where necessary. Constantly-lighted sources, such as L-810 obstruction lights, are not recommended. The FAA recommends synchronized flashing or blinking red lights (L864), and generally recommends lighting only the perimeter of the wind farm project with lighting gaps of no more than 0.5 mile between lights, and no more than one mile across turbine clusters, as well as lighting turbines that are isolated from strings or clusters of other turbines. Minimizing the duration of the flash and maximizing the time between flashes is also beneficial. Turbines within the project site will be lighted in compliance with FAA minimum standards. In keeping with the USFWS's Guidelines, the use of motion- or infrared-activated lights on building facilities will be investigated as a method to reduce attraction of insects, birds and bats. The use of high-intensity lights such as spotlights, steadily-burning bright lights, and sodium vapor lights will be minimized. To avoid attracting or disorienting birds flying near or within the project area, project substation(s) would be outfitted with downward facing shields on all lights.

Overhead Utilities Maintenance

- APLIC (2006) guidelines for overhead utilities maintenance will be followed where possible.

Safe Meteorological Towers

- Temporary met towers will be removed and replaced with a non-guyed permanent lattice tower for meteorological monitoring. In the event that temporary towers are installed as part of an operational assessment of the project their guy wires will be marked with marker balls to improve visibility to birds and reduce collision risk.

Minimize Fire Risk

- Fire risk will be minimized by utilizing spark arrestors on all electrical equipment, and by restricting smoking to designated areas.



- Hazardous materials will be handled in accordance with federal and state regulations.

Tier 4 – Post-Construction Avian and Bat Monitoring

- Post-construction avian and bat fatality monitoring will be performed in compliance with permit conditions and Geronimo Energy will hire a third party to conduct a portion of these fatality searches. Reports will be made available to project partners and utilized for decision-making purposes.

Quality Control and Adaptive Management

- Geronimo Energy will periodically review existing best management practices and ensure quality control. For instance, independent assessments of the avian reporting system may be conducted to ensure effectiveness, or there may be research on the effectiveness of different techniques and technologies used to prevent collisions, seasonal fatality, problem sites, areas where electrocutions occur on frequent or periodic basis, and problem nests.