



Quality

Commitment

Service

ENERGY PROJECTS **CAPABILITIES STATEMENT**



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WINDPOWER SERVICES



Zia has assisted with the siting, feasibility analysis and permitting process for more than a 30 electricity-generating projects, including wind power projects throughout the United States and in Oaxaca, Mexico. Our environmental, engineering and surveying experts can assist you with all aspects of the initial feasibility analyses, options analysis, permitting process, wetland delineation, permitting, sampling, air quality, mitigation, natural and cultural resource reviews, wildlife studies, noise assessments, storm water permitting, infrastructure design and layout, water rights and resource management, and community relations assistance.

To help with the site selection process, Zia provides desktop studies, preliminary investigations, and final investigations of proposed wind power sites. Our desktop studies involve the early gathering of information for use in planning, which allows us to identify potential hazards to the cost and viability of a project. We conduct preliminary investigations for siting, design and cost estimating, and we prepare final investigations of potential wind turbine sites, including roadway and electrical design.

AREAS OF EXPERTISE

- Environmental Permitting
- Wind-power Site Investigation
- Cultural Resources and Wildlife Studies
- Avian Risk Assessments
- Storm Water and Drainage Design/Management
- Risk Assessments
- Site Surveys
- Environmental Clearances
- Air Quality
- Civil and Infrastructure Design
- Resources Management (including water rights)
- Litigation Support
- Stakeholder Communication and Involvement Activities
- Multi-agency Coordination and Cooperation
- Presentations to Political, Regulatory, and Interest Group Representatives
- Zoning and Master Planning
- Land Descriptions for Legal Documents

SELECTED PROJECTS

Whispering Willow East and Whispering Willow Central Wind Farms –Franklin County, IA:

Zia conducted Avian and Bat Risk Assessments and pre-construction bird migration surveys for the proposed wind energy projects. The Whispering Willow East Wind Farm involved the construction of a 200 MW wind farm and associated infrastructure within approximately 48.5 square miles of rural farmland. The Whispering Willow Central Wind Farm involves the construction of a 100 MW wind farm and associated infrastructure within approximately 41 square miles of rural farmland. The projects consisted of evaluating and mitigating the impacts of the landscape changes that the windfarm will bring to the project site to improve the status of Iowa's declining species and unique, protected local wildlife habitat. Collected data could then be used to develop and implement operational strategies post-construction. Zia made recommendations relative to turbine micro-siting and additional studies and/or further mitigation surveys if state-protected or rare species or rare habitats were found during the project planning and construction phases. Zia also identified the possibility of habitat avoidance and possible bird and bat interactions with the turbines and supporting structures that would support comprehensive pre-construction and post-construction surveys to evaluate displacement, collisions, and mortality.

Columbia Wind Energy Avian Assessment - Columbia County, WI:

This project presented a Phase I Avian Risk Assessment for a proposed wind energy development north of Cambria in Columbia County, Wisconsin. The Columbia Community Wind Project involved the construction of an 80-megawatt (MW) wind project and associated infrastructure within approximately 5,100 acres (8 square miles) of rural farmland. Quantitative avian point count surveys were carried out to characterize the area's avifauna.

Morning Light Wind Farm Constraints Analysis – Adair and Cass Counties, IA:

Zia performed a biological review for federal and state listed species, a cultural resources review, and a review of land use and permitting for the proposed Morning Light wind project site. The Morning Light project involved the construction of a 300 MW wind field and associated infrastructure and access roads within approximately 200 square miles of rural land. The evaluation was for the purpose of determining if the proposed action may potentially impact resources protected by the Endangered Species Act of 1973, Section 106 of the National Historic Preservation Act, and/or Iowa state regulations and the Iowa Wildlife Action Plan. The assessment also served to identify permitting requirements and other procedural requirements that may be relevant to execution of the project.



Century Wind Farm (Wall Lake Expansion) – Hamilton County, IA:

Zia performed a biological review for federal and state listed species and a cultural resources review of the proposed Century (Wall Lake Expansion) site. The Century Wind Project (Wall Lake Wind Project expansion) (the “Project”) involves the construction of 35 wind turbines and associated infrastructure within approximately 7 square miles of rural, farmland in Hamilton County, Iowa. The evaluation was for the

purpose of determining if the proposed action would impact species protected by the Endangered Species Act of 1973, Section 106 of the National Historic Preservation Act or Iowa state regulations. The assessment also served to develop strategies to avoid impacts or mitigate their effects. As part of the work scope, Zia conducted a qualitative field reconnaissance of the site and surrounding area, review of relevant literature and other data sources, and agency consultation. Information was evaluated for the potential impact the project may have on listed species, designated critical habitat or potential suitable habitat for listed species and properties listed or eligible for listing on the National Register of Historic Places.

Intrepid Wind Project Expansion – Buena Vista and Sac Counties, IA:

Zia conducted an Avian Risk Assessment as well as a review of the *County Distributions of Federally Listed Species in Iowa* and *Endangered and Threatened Plant and Animal Species*, for listed state and federal threatened and endangered species that may occur in Buena Vista or Sac County. Species-specific habitat requirements (suitable habitat) and designated critical habitat were also reviewed.



Argonaut Wind Power Project- Mountain Pass, San Bernardino County, CA:

The Argonaut Wind Power Project involved the establishment of an approximate 50 MW wind generator field in San Bernardino County, California. The Project site, while a relatively undisturbed setting, did not provide a suitable habitat for a large number of sensitive and non-sensitive avian species. Findings have suggested, however, that some use of the site by raptors and sensitive species is likely to exist.

The land is federally owned and managed by the BLM. The proposed project consisted of the installation of 29 wind turbines, the construction of approximately 10.5 to 11 miles of improved

roadways, and the construction of an electric substation. The total acreage of disturbed land was estimated to be approximately 320 acres. The site is bordered by the MolyCorp Mountain Pass Mine, Interstate 15 the Mojave Natural Preserve, Antimony Gulch and Clark Mountain Range. The MolyCorp Mine site was a concern from the standpoint of airborne contamination of the proposed wind-energy generation site due to windblown dust. This effort included analysis of multiple prior EA and EIS documents for adjacent existing and planned projects. These projects included: mining, other windpower projects, BLM Resource Management Plans, electrical transmission projects and community projects such as airports, and highway and utility expansions; cultural and natural resources surveys in support of the project NEPA-EA including wetlands review and avian risks; and civil layout of roadways and pad areas including delineation of construction easements and extents.

Smokey Hill Wind Energy Site - Ellsworth and Lincoln Counties, KS:

A trained Zia avian biologist conducted a field reconnaissance of the Smokey Hill Wind Energy Site and surrounding area. Observations included visual and aural sightings of avifauna and examination of local habitat and topography. Zia conducted a quantitative avian survey of the site along accessible public roads where rangeland and agricultural fields predominate. One additional point-count was conducted within a habitat of special interest, a riparian woodland.

Desktop Fatal Flaws Analysis Proposed Wind Energy Facility- Union County, NM:

This proposed action was intended for the use of wind power to generate electrical energy within the state of New Mexico. The project was to develop the immediate vicinity of Des Moines in Union County, New Mexico, an area of constant wind, which is optimal for electrical energy generation. The electricity will then be transmitted via underground 34.5 kilovolt (kv) transmission lines from the proposed wind farm to an existing 230 kv transmission line near the western edge of the project area. Implementation of this project will increase New Mexico's production of electricity using renewable energy sources.

Fossil Fuel Energy Projects

Application for Site Certificate and Air Emissions Permitting / 600 MW Generation Facility- OR:

The Calpine Corporation contracted Zia to conduct all necessary environmental reviews and develop an application for site certificate for submittal to the energy facility siting council along with air emissions modeling, BACT analysis and permit application development for a 600 MW natural gas fired electrical generation facility in Oregon.

Air permitting work included detailed emissions inventories, review of applicable regulations, review of control technologies (best available control), development and approval of air modeling protocols, air emissions modeling, development of monitoring strategies and protocols and negotiation of operating conditions with the regulatory agency. Air emissions modeling has included analysis of Class I area impacts utilizing Calpuff model and depositional impacts utilizing methods developed by the Interagency Workgroup on Air Quality Modeling (IWAQM) committee and Grand Canyon visibility study group. Six Class I and one Class II areas are included in the impacts analysis.



Texaco Power and Gasification / Air Emission Permitting for Proposed Peaker Plant Installations- CA and WA:

Zia conducted air-permitting permit for the proposed installation of electrical peaker units at two sites in California and Washington. The work included detailed emissions inventories, review of applicable regulations and of control technologies (best available control), development and approval of air modeling protocols, air emissions modeling, development of monitoring strategies/protocols and negotiation of operating conditions with the regulatory agency.

Statement of Qualifications



Nevada Cogeneration Associates / Air Emission Permitting for Peaker Plant Installations- Clark County, NV:

Zia conducted air permitting for proposed installation of electrical peaker units at both Nevada Cogenerations Black Mountain and Garnet Valley facilities. Work included coordination with EPA – Region IX relative to impacts on a current consent decree, air emissions modeling (including ammonia emissions) of proposed emissions, and development and coordination through approval of the permit applications. The base approach resulted in no net emissions increase by netting out the emissions through the cogeneration hosts (wallboard manufacturing facilities).

Kayenta Coal Fired Power Project Navajo Nation, AZ:

The project consisted of a 450 - 500 MW coal-fired electric generator located in the northern portion of Black Mesa area of the Kayenta Chapter boundaries of the Navajo Nation in north-central Arizona. The project had readily available coal reserves on-site and is located in an area that had already been disturbed from past coal mining. Therefore, negative environmental impacts, which are typically associated with a project of this type and magnitude, were minimized. The project was to attract an electrical industry development partner for the project who will continue with project development, either in partnership with or after acquisition of development rights of the Kayenta Power Partners, and who will construct and operate the project in partnership with the Navajo Nation and in accord with the highest of environmental standards and cultural sensitivities.

Duke Energy Luna Power Project / Engineering and Environmental Services- Deming, NM:

Zia completed a preliminary field review of a portion of the proposed realignment of the gray water pipeline along the Rio Mimbres. The intent of this preliminary review was to determine if there may be biological, archaeological or wetlands issues associated with the proposed alignment for that portion of the alignment which bordered and crossed the Rio Mimbres (approximately 1.2 miles).

Zia has provided design services for the water evaporation basin for the proposed Luna Power Project. The work consisted of identification of current conditions in the Luna County area, analysis of evaporation rates and preliminary pond sizing for various operations conditions. The pond is proposed to be synthetically lined with a leachate collection system and groundwater monitoring. The pond, approximately 17 acres in surface area, and will have a design life of approximately 30 years.

Zia is providing ongoing assistance to Duke Engineering & Services for environmental permitting and agency coordination for anticipated activities associated with installation of the fresh water pipeline from the Red Mountain area west of Deming to the proposed Luna Power Project site north of Deming. The project will encompass approximately 25 miles of water lines and will involve one highway crossing, two rail crossings and a crossing of the Rio Mimbres.



Preliminary Facility Siting, Engineering Feasibility Analysis and Environmental Permitting- West Potrillo Power Project, NM:

The Calpine Corporation contracted Zia to identify a minimum of three potential sites for a 600 MW natural gas fired electrical generation facility in southern New Mexico. Zia identified three potential sites, conducted a feasibility analysis of these three sites relative to infrastructure needs (site access, transmission, natural gas, water, rail, site Soils) and also relative to regulatory and political constraints and provided recommendations for a site. Zia then conducted facility permitting (air emissions, water rights and preliminary water system design, pipeline corridor permitting through BLM, and groundwater discharge permit for evaporation pond).



Zia provided assistance with identification and study of water sources, assisted in negotiations for transfer of water rights, assisted in negotiations for purchase of the facility site and conducted environmental site assessments and preliminary natural and cultural resources reviews of the project site and pipeline corridor. Water system preliminary design included 12 wells, pumping and reservoir storage facilities, and a 24-mile, 24" diameter pipeline. Air emissions modeling included analysis of Class I area impacts utilizing Calpuff model and depositional impacts utilizing methods developed by the IWAQM committee and Grand Canyon visibility study group.

Tomlin Farms Phase I ESA- Luna County, NM:

Zia was prime consultant for analysis of potential water options for a proposed natural gas fired power project in southern New Mexico. As part of this work, Zia conducted a Phase I Environmental Site Investigation (ESA) of the former Tomlin Farms facilities in the Nutt-Hockett groundwater basin within Luna County. This farmland consisted of over 1800 acres with 18 well sites, two corral and maintenance areas, two houses and chemical storage areas. In addition to the Phase I ESA of Tomlin Farms, Zia also conducted a separate Phase I ESA of 320 acres along the Dona Ana and Luna County lines 25 miles to the south for potential location of the power plant facility.

Southwestern Power Administration, Biological Assessments for Transmission Line Maintenance, Operational and Construction Operations - OK:

Zia completed a Biological Assessment (BA) / Biological Evaluation (BE) for proposed aerial saw clearing of over 178 miles and a second project of over 250 miles of transmission line rights-of-way to provide an indication of potential risk for listed threatened and endangered species, raptors, and migratory birds. Additionally, Zia provided evaluation of special status species, critical habitat, and potential suitable habitat of listed species and developed strategies to avoid impacts or mitigate their effects. Zia coordinated state and federal agency review; incorporated agency recommendations; and delivered assessment on an expedited schedule to facilitate an accelerated project agenda. Zia also completed development of a BA/BE report for all of SWPA's maintenance, construction and operational activities that occur in the State of Oklahoma. The BA/BE was used to initiate a formal Programmatic Consultation between USFWS and Southwestern Power Administration under Section 7(a)(2) of the Endangered Species Act.