

The Global Nuclear Energy Partnership and the YIMBY Syndrome

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ABSTRACT

On January 30, 2007, the Department for Energy awarded 11 grants to Community Organizations and private companies for the investigation of sites for two Global Energy Nuclear Partnership (GENP) facilities. One of the 11 sites, the Eddy-Lea Energy Alliance (ELEA) site, is located in Lea County, New Mexico, about halfway between Carlsbad and Hobbs, New Mexico. This 1,000 plus acre site is centrally located in an area that is rapidly developing a reputation as New Mexico's "Nuclear Corridor".

As a greenfield, non-Department of Energy site, site-specific data had to be developed, although due to the proximity to the Waste Isolation Pilot Plant (WIPP) and the National Enrichment Facility (NEF), a significant body of high-quality regional data existed.

The study documents that there were no deficiencies in using the site and that its location among other active and proposed nuclear projects, as well as strong community and regional support, were significant assets. Favorable characteristics are the site's remoteness, low population density, lack of surface or shallow groundwater, and absence of sensitive ecological habitats.

As a capstone to the study effort, one requirement was to conduct at least three public meetings. The meetings were to discuss the GENP program and the specifics of the proposed site. The response to the ELEA site was overwhelmingly: "Yes, in my backyard" or "YIMBY". Several hundred citizens from the two-state region of New Mexico and Texas gathered at four meetings to express their support.

The effort reinforced the prospects for the state of New Mexico and its southeastern constituents as a leading center and supporter for the future of nuclear power in the U.S., while serving as a model for communities and countries worldwide struggling and striving to meet a strong and growing demand for energy for years to come.

INTRODUCTION

The Global Nuclear Energy Partnership (GNEP) is President Bush's comprehensive strategy to [1]:

- Increase U.S. and global energy security,
- Reduce risk of nuclear proliferation,
- Encourage clean energy development around the world, and
- Improve the environment by reducing greenhouse gases and nuclear waste volume.

The Department of Energy (DOE) has asked for "volunteers" to host the facilities [2]. The DOE asked communities and community-based organizations to express interest in participating. They published a Funding Opportunity Announcement [3] making up to \$20 million in grants available for organizations that had sites meeting 8 basic siting criteria:

- **Size:** The proposed site must not be less than 1.21 contiguous square kilometers (km^2) (300 acres) for siting one facility and 2.02 contiguous km^2 (500 acres) for siting both facilities.
- **Hydrology:** The site must be sufficient to allow siting of the anticipated facilities above the 100 year flood plain.
- **Electricity Capability:** There must be an electrical transmission line able to provide 13kV available within 16.1 km (10 mi) of the proposed site.
- **Population:** The population density, including weighted transient population, averaged over any radial distance out to 32.2 km (20 mi) (cumulative population at a distance divided by the area at that distance), does not exceed 193 persons per km^2 (500 persons per mi^2).
- **Zoning:** If zoning regulations apply to the proposed site, the site must be zoned for heavy industrial/industrial use.
- **Road Access:** The proposed site must be within 8 km (5 mi) of a highway capable of supporting a load of 36.3 MT (80,000 lbs) Gross Vehicle Weight.
- **Seismic Stability:** The proposed site must be free of risk from significant seismic events.
- **Water Availability:** The proposed site must have access to reliable supplies of water.

Eleven grants were issued for siting studies at five private sites and six federal sites [4]. The grant required that the siting reports be prepared in 90 days, that all the scope elements in the grant be addressed, that three public meetings be held in the vicinity of the site and that the public meetings be documented in a separate report. The results of the site studies are to support a Programmatic Environmental Impact Statement [5].

BACKGROUND

The Eddy-Lea Energy Alliance (ELEA) was created for the expressed purpose of pursuing and securing the GNEP projects at a site halfway between Carlsbad and Hobbs in Lea County, New Mexico (Fig. 1). The ELEA is a limited liability corporation that consists of elected and appointed public officials from local governments in southeastern New Mexico, concerned private citizens and representatives of the business and academic communities from Eddy and Lea Counties. The very structure and composition of the ELEA is, in and of itself, a form of very

specialized public participation in support of the GNEP and a local site. The ELEA invested a significant amount of money to conduct a pre-award site selection process, and to secure the most suitable site.

ELEA selected two sub grantees to enhance their capabilities and experience in siting the GNEP facilities: AREVA and Washington Group International. Both corporations are world recognized leaders in the DOE, nuclear, and construction markets. This group of companies, under the leadership of Dr. Mark Turnbough, the siting study Principal Investigator, provided ELEA with the local knowledge and technical expertise required to perform the work under the siting study in the 90-day period.

SITE INVESTIGATIONS

To fulfill its responsibilities under the grant within the 90-day grant period, the ELEA team collected and reviewed over 200 references which contained existing information about the site and performed sufficient field work to ground-truth the published information. Existing information was extensive as the result of site investigations conducted for the Waste Isolation Pilot Plant (WIPP) and the National Enrichment Facility (NEF). The ELEA team relied heavily on these existing data and supplemental site-specific field investigation (Fig. 2) to confirm what is generally known about the region of interest. Topics covered in the siting study included:

- Site location and description for a 10 km (6 mi) radius and a 80 km (50 mi) radius,
- Aquatic and riparian communities,
- Surface water and groundwater resources,
- Critical and important habitats,
- Endangered and threatened species status,
- Demographic information,
- Historic and cultural resources,
- Site and Regional geology,
- Regional Climatology,



Fig. 1. ELEA GNEP Site location



Fig. 2. ELEA GNEP site study activity.

- Site and Regional Meteorology,
- Flood plain potential,
- Federal, state, and local regulatory and permitting requirements,
- Visual resources,
- Noise impacts, and
- National Priorities List (NPL) listing and Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) database items.

The ELEA team consisted of geologists, hydrologists, geographic information system specialists, land management professionals, biologists, geophysicists, botanists, archeologists, economists, regulatory specialists, meteorologists, chemists, and demographers from the member organizations and subcontractors including the Bureau for Business and Economic Research, Golder Associates, Gordon Environmental, Battelle Memorial Institute, Metric Corporation, Quivira Research Center, and Hall Environmental Analytical Laboratory . In order to facilitate the research and field work, the ELEA team established offices in Carlsbad and Hobbs, New Mexico. In addition, Sandia National Laboratories-Carlsbad Operations participated as a Peer Reviewer. Work was conducted under a Project Execution Plan that laid out all responsibilities and milestones. A kick-off meeting initiated the siting study at which time the entire team was assembled in Carlsbad. Kickoff activities included discussions of data acquisition, data quality, reporting structure, and individual responsibilities. A Project Health and Safety Plan that covered field work was distributed.

RESULTS

The outcome of the effort was the preparation of a detailed siting report [6] that provided a description of a site that meets or exceeds the technical needs for the GNEP facilities. The results are summarized in Table I.

Table I. Summary of ELEA GNEP Site Characterization Activity

Characterization Area	Summary of Findings
Aquatic and Riparian Ecological Communities	No aquatic or riparian habitat is situated within the site. Therefore, there are no licensing or permitting issues associated with these types of ecological communities.
Water Resources	No important surface water or groundwater features are located at the site.
Critical and Important Terrestrial (Plant and Animal) Habitats	No important or unique terrestrial habitats are situated within the site. Therefore, there are no licensing or permitting issues associated with critical and important terrestrial habitats.
Threatened or Endangered and Special Concern Species	No threatened or endangered species or their critical habitats were identified within the site. Therefore, there are no licensing or permitting issues associated with threatened or endangered species.

Characterization Area	Summary of Findings
Regional Demography	Based on the demographic information, the local and regional demographics support the suitability of the site for licensing and permitting purposes.
Historical, Archaeological, and Cultural Resources	Information on historic, archaeological, and cultural resources is provided. Any cultural sites that are eligible for listing on the National Registry of Historic Places will be avoided or data recovery will be performed.
Future Projects/Cumulative Environmental Impacts	There are no known future projects for the site vicinity that could add additional impacts to constructing, operating and decommissioning the proposed facilities.
Geology/Seismology	The site and regional geology and seismology information supports the suitability of the site from both a geologic and seismologic standpoint for the facilities.
Weather/Climatology	Information on the site climatology and severe weather supports the suitability of the site for this type of facility.
Hydrology/Flooding	The conclusion is that the potential for flooding at the site is extremely minimal.
Cleanup/Remediation	The portion of the property used for oil-field brine and oil-field solids (drill cuttings, mud and tank bottoms) disposal is avoided by the proposed facilities construction zone.
Visual Resources	Because of the remote location and the classification of the land, the proposed facilities will not adversely impact the visual resources.
Noise	The proposed facilities will not be constrained by noise restrictions.

SIGNIFICANT CHALLENGES

The ELEA team faced several significant challenges that had to be addressed for the site to qualify for the GNEP facilities. These included the availability of water, the possibility of impacting species covered by the endangered species act, and environmental justice.

Availability of Water

The High Plains Aquifer which is north of the ELEA GNEP site contains 4×10^{15} liters (3.270 billion acre-feet) of water and underlies $450,790 \text{ km}^2$ ($174,050 \text{ mi}^2$) in parts of eight states [7]. In eastern New Mexico the aquifer underlies $24,480 \text{ km}^2$ ($9,450 \text{ mi}^2$) or 8 percent of the state. The volume of recoverable water in the New Mexico portion of the aquifer is on the order of 61.1×10^{12} liters (50 million acre feet). [8]

The City of Carlsbad owns and operates Double Eagle Water System, located near Maljamar in northwestern Lea County. The Double Eagle Water System is supplied by groundwater pumped from 11 wells completed in the Ogallala Formation. The first 25.7 km (16 mi) segment of the pipeline carrying water from these wells to the WIPP facility has a 61 cm (24 in.) diameter and

runs to Highway 62/180, 4.8 km (3 mi) west of the site. The ELEA GNEP facilities will be able to tap into the Double Eagle Water System. This source of water is adequate to supply the water needs of analogous operating facilities. The City of Carlsbad has indicated that the Double Eagle water line near the site is capable of delivering 22,700 l (6,000 gal) per minute. This equates to over 30,283,300 l (8,000,000 gal) of water per day. The City of Carlsbad is in the process of modeling the Double Eagle system to determine what upgrades are needed for future users. The water superintendent offered to include the GNEP facilities in the modeling if water requirements are known. [9]

Species Protected by the Endangered Species Act

There are three species considered “Species of Concern” within the habitat near the site. These include the Lesser Prairie Chicken (*Tympanuchus pallidicinctus*), the Sand Dune Lizard (*Sceloporus aerinicolus*), and Gypsum wild-buckwheat (*Eriogonum gypsophilum*). [10] These species have not been located within the site and regulatory reviews and field inspections do not support the belief that they are present within the site.

The site is privately owned and, as a result, has been used extensively for grazing which tends to suppress favorable habitat for these species. Using the site for the GNEP facilities may, in fact improve the habitat for these and other species.

Environmental Justice

One significant analysis performed for the site was an examination of the potential for environmental justice issues to arise. The purpose of this analysis is to determine if the construction, operation, or decommissioning of the proposed facilities present a disproportionate risk to a low-income or minority population.. The preliminary conclusion is that although there are census tracts within the 80 km (50 mi) radius that have minority percentages exceeding 64 percent, they are confined to the urban areas which are at least 48 km (30 mi) from the site. Consequently, minority inhabitants share the same hypothetical risks as their non-minority neighbors, irrespective of concentric geographic distance from the site. The analysis was performed to satisfy Federal Executive Order 12898 [11] which instructs federal agencies to systematically study and address significant and adverse environmental or health effects associated with their policies, decisions, programs, or activities that have disproportionate impact on low income or minority populations and New Mexico Executive Order 2005-056 [12] requiring that state agencies provide similar considerations in their decision-making process.

PUBLIC PARTICIPATION

The DOE mandated that each grantee conduct three public meetings during the course of the grant and document the meetings in separate reports to be submitted within ten days of the meeting (Fig. 3). The agendas and formats for the public participation meetings were structured to provide information on the GNEP and to solicit public participation and comment from the communities primarily located in the study area of the proposed ELEA site. The meetings were each organized to provide the public with basic information regarding the GNEP, the history, experience, corporate structure and operations, the respective roles of the Alliance partners, and

the site characterization process. In addition, the need for additional nuclear power for electricity and a closed fuel system was highlighted. Videos were also presented depicting the analogous operations of the AREVA La Hague fuel reprocessing plant.

The public participation meetings were heavily publicized and well attended. The topical areas discussed at the meetings included:

- Strength of ELEA Site and Corporate Partnership
- Community Knowledge and Experience with Local Nuclear Energy Projects, e.g. WIPP, NEF Uranium Enrichment Facility and Waste Control Specialists
- Safety of the GNEP Proposal and the Suitability of the ELEA Site
- Work Force Development
- Academic Involvement and Readiness
- Existing Infrastructure Availability and Growth Potential
- Acceptance of Nuclear Energy for Industrial Purposes



Fig. 3. Carlsbad public participation meeting

The results of the Public Meetings are published in a separate report [13]. The public comment, without exception, can be characterized as overwhelmingly positive at every Public Meeting. The substance of the comments was also indicative that the individuals were making informed statements based on their personal and professional experiences and knowledge of the community and the nuclear industry. The message was and continues to be “Yes, in my back yard.”

CONCLUSION

There are numerous factors that make the ELEA site ideal for the GNEP facilities or for other nuclear developments that a user may identify. Specifically:

- This land has access to an abundant supply of groundwater,
- Based on the public participation meetings and other facilities sited in this area, there is overwhelming public support for GNEP,
- Through WIPP and the LES facility, there is a growing nuclear infrastructure in this area with directly transferable skills to build and operate GNEP-type facilities,
- There is an established nuclear transportation structure in the area by virtue of the efforts of the WIPP to open transportation routes throughout the country, and
- There is land adjacent to the south of the site that is owned by the Federal Government, Bureau of Land Management which could be released.

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