National Wind Coordinating Committee

Wind Power Facility Siting Case Studies: Community Response

Prepared June 2005 by

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Executive Summary

Background
The National Wind Coordinating Committee (NWCC) Siting Workgroup studied communities’ reactions to local wind development projects, with the intent of identifying circumstances that distinguish welcomed projects from projects that were not accepted by communities. The NWCC Siting Workgroup was also interested in examining the changes in community perceptions before, during and after project construction, as well as in recognizing what wind project developers can do to address the concerns that often recur at wind project sites.

Methodology
A case study approach was used to analyze wind projects. In all, the research team examined nine successfully developed wind energy projects in order to:

- Identify the local issues raised about specific wind development projects;
- Evaluate why the issues were raised and became viewed as significant hurdles to development by the various constituencies;
- Determine efforts made during the siting process to identify, solicit and address issues, concerns, and opportunities;
- Learn whether or not the issues were resolved and, if so, how; and
- Identify instances where a particular issue was not raised and evaluate why no opposition arose.

The case study analysis was conducted in two phases. During Phase I, background information about each site was gathered and a limited number of interviews conducted. This process allowed the research team to understand the overall siting process, relative level of controversy, and any key issues that arose for the nine sites listed below:

- Blue Canyon — South Central/Western Oklahoma;
- Chanarambie — Southwestern Minnesota;
- Colorado Green — Eastern Colorado;
- Combine Hills — North Central Oregon;
- Desert Sky — Western Texas;
- Fenner — Central New York;
- Nine Canyon — South Central Washington;
- Rock River I — Southeastern Wyoming; and
- Whitewater Hill — Southern California.

The NWCC Siting Workgroup then selected three of these sites for further research into specific issues (Phase II). The three sites, Chanarambie, Fenner, and Blue Canyon, were selected for further investigation based upon the community concerns, potential issues at each site, and a desire for geographic diversity. The focus of this research phase was to obtain a deeper understanding of local concerns, as well as the processes taken by developers to address and assuage these concerns. For the in-depth case studies, 11-13 people were interviewed and for the other case studies 2-5 people participated in an interview. Parties interviewed included landowners, project developers, electric cooperative members, chamber of commerce members, academics, reporters, county zoning administrators, environmental quality representatives, consultants, engineers, economic development offices, planning boards, tourism bureaus, historical societies, and town managers, among others.
These case studies are only representative of successfully developed projects. The Siting Workgroup recognizes that these cases only sample projects where community concerns could be acceptably addressed. The case studies do not attempt to cover sites where development concerns could not be satisfactorily dealt with in order to permit wind site construction.

**Concerns**
- The case studies used an issue-comparison technique to identify common public concerns. These included:
  - Bird impacts and other biological concerns
  - Visual impacts
  - Noise
  - Roads and traffic concerns

Construction impacts during development and occasional communication problems between contractors, landowners, and others were also cited as concerns in the local communities surrounding the case study sites.

**Conclusions**
The interviews and background research conducted during this research work identified many keys to molding a successful partnership between wind energy developers, local communities, governments, and other concerned parties. These findings will be useful to these parties as new wind energy projects are constructed. Through this research, the following approaches were used by developers to successfully deal with community concerns:

- Listen carefully to community concerns and gather information as needed.
- Educate the public using techniques that meaningfully communicate the results of developing the site.
- Communicate early and often with landowners and other stakeholders; and
- Remain open to unorthodox solutions to potential concerns: many can be mitigated with effort and flexibility.

Collaboration between developers and local government in attending to concerns of the local community helps in creating wind energy facilities that generate a valuable commodity to energy consumers with minimal impact on the region. In some cases, such partnerships foster not just tolerance by the public but celebration of wind energy projects in their community.
SECTION I.
Introduction

The National Wind Coordinating Committee (NWCC) Siting Workgroup studied community reactions to siting wind development projects. The intent of this study was to identify potential factors that lead to a positive community response to the siting of new wind energy projects. The Siting Workgroup also collected information to assist in understanding community perceptions before and during construction, as well as after operation begins. The Siting Workgroup was particularly interested in identifying variables that successful siting processes hold in common, such as characteristics of the location or demography.

A case study approach was used in order to analyze wind projects located across the nation. In all, the Siting Workgroup examined nine successfully developed wind energy projects in order to:

- Identify local issues raised about specific wind development projects;
- Evaluate why issues were raised and became viewed as significant hurdles to development by the various constituencies;
- Determine efforts made during the siting process to identify, solicit and address issues, concerns, and opportunities;
- Learn whether or not issues were resolved and, if so, how; and
- Identify instances where a particular issue was not raised, and in these instances, evaluate why no opposition arose.

After the case studies were conducted and documented, the results were then synthesized into overall findings and a final draft of these reports was produced (see Section III).

Case study analysis was conducted in two phases. During Phase I, background information was gathered and a limited number of interviews were conducted to establish the overall siting process, relative level of controversy and any key issues that arose for each of nine sites. Members of the NWCC Siting Workgroup and RESOLVE NWCC staff selected these nine sites (see Appendix B for further explanation of Methodology). The Siting Workgroup then selected three of these sites for further research into specific issues (Phase II). Sites were selected for Phase II based upon the community concerns, potential issues at each site, and a desire for geographic diversity.

Recommendations For Study

By design, this analysis was based on case studies of nine wind power projects developed in various parts of the U.S. The focus on projects that were completed and are now operational provided an opportunity to examine potential issues and community reactions at all stages of the development process.

None of the sites examined faced organized opposition (where people met beforehand, discussed a strategy to oppose the project and acted in unison to achieve that objective). In the cases considered, opposition tended to take the form of individuals raising concerns in public forums such as public meetings organized by the developer or regulators. Because none of the sites examined had this type of organized opposition, it is difficult to draw any links between concerns raised by organized opposition and actions taken in response. Wind power facilities have been proposed in other locations that ultimately could not be developed because of strong community or stakeholder opposition. Further study of these unsuccessful projects, and comparison with the successful case studies described in this report, might yield further information useful to wind-interested stakeholders.
SECTION II.
Issue Based Comparative Analysis

This section uses an issue-based perspective to place information gathered during both phases into a broader context. Additional information may be found in Appendix A, which identifies the issues and concerns identified before, during and after development at each of the nine sites studied. The appendix also provides a brief description of each issue and how it was, or was not, resolved.

Findings
A number of findings can be drawn from the issue-based comparison:

- Often at least a few perceived issues are raised before development, even at sites that subsequently are brought online.
- The most common perceived issues among the public, in order of the frequency encountered among the nine successful sites, were:
  - Bird impacts and other biological concerns
  - Visual impacts
  - Noise
  - Roads and traffic concerns

The most common concerns arising during development related to construction impacts; as well as occasional communication problems between contractors, landowners, and others.

There appear to be several keys to alleviating perceived issues among the local community and mitigating concerns that may arise during development. These keys are described on the following pages.

Alleviating Perceived Issues

Educate the public using techniques that meaningfully communicate the results of developing the site. Public education may be especially important in reducing perceived issues about visual impacts. At two sites - the Blue Canyon location and the Fenner location - techniques such as simulating photographs of the developed project and using weather balloons to demonstrate the locations and height of future turbines were effective in reducing perceived community issues.

Listen carefully to community concerns and gather information as needed to respond to these concerns. Most of the thriving sites have employed outside experts to study specific issues raised by the community. These studies help reassure stakeholders about what impacts, if any, may materialize or identify ways to mitigate potential impacts. Third-party consultants conducted environmental/wildlife studies at Blue Canyon, Chanarambie, Fenner, and Rock River. Cultural resource studies were conducted at many of the sites. A road impact study at Fenner County led to specific agreements to reduce and mitigate impacts on the local road network. Other studies included a property value study at Nine Canyon and a weed control study at Combine Hills.

Avoiding or Mitigating Potential Concerns During and After Development

Communicate early and often with landowners and other parties. Early and ongoing notification and communication with landowners and other stakeholders was a common denominator at the successful
sites. While each of the sites studied in Phase I qualifies as a success story in terms of community reaction, several sites encountered some difficulties with the local community because of communication failures. At Chanarambie, there were problems when roads were relocated, with tiles cut and fences removed without adequately notifying landowners. At Colorado Green, fences were also cut without adequate notification to landowners when developers deviated from the initially proposed transmission line route. The route modification was made in response to landowners who opposed the initial route in a public hearing. At Fenner, school districts did not understand how to participate in payments in lieu of taxes from the project, creating a controversy and hard feelings when they were unable to receive this benefit.

**Most concerns can be mitigated with some effort and flexibility on the part of the developer.** The successful case studies demonstrate a wide range of mitigation measures to reduce community concerns. Developers were sincere in their concern and took community suggestions seriously. For example, desert tortoise areas were carefully avoided during construction of Whitewater Hill. Road watering was used to suppress dust during construction of several sites. Setback agreements at Chanarambie reduced noise and visual impact issues and turbines were relocated in response to local resident concerns. The developer agreed to provide ongoing road maintenance and weed control at Combine Hills. Community concerns about site security prompted one developer to erect signs and gates.
SECTION III.
Case Studies

The NWCC Siting Workgroup chose nine sites for the case study analysis. In-depth interviews and background research were completed for three sites:

- Blue Canyon — South Central/Western Oklahoma;
- Chanarambie — Southwestern Minnesota; and
- Fenner — Central New York.

Limited information and several interviews were collected for the remaining six sites:

- Colorado Green — Eastern Colorado;
- Combine Hills — North Central Oregon;
- Desert Sky — Western Texas;
- Nine Canyon — South Central Washington;
- Rock River I — Southeastern Wyoming; and
- Whitewater Hill — Southern California.

This section provides background information on each site, a description of the development process, and discussion of the community reaction before, during and after development. It also discusses what worked well about the development process and what could have been improved.

In-Depth Case Studies

The next three case studies reflect the use of Phase I and Phase II analysis. As noted earlier, the Phase I analysis included the gathering of background information and a limited number of site interviews, while Phase II involved investigating specific issues at a site.

1. Blue Canyon — Comanche County, Oklahoma

A. Background. The Blue Canyon Wind Facility is currently a 45-turbine project that might be expanded in the future. It was constructed in 2003 and began commercial operations December 2003. The project has a 74.25-MW nameplate capacity using 1.65-MW turbines. Each tower/turbine is approximately 230 feet (70.1 meters) tall with three blades.

The site is located approximately 15 miles northwest of Lawton, Oklahoma, in Comanche County. Comanche County has a population of about 113,900 people and a land area of 1,069 square miles. Exhibit III-1 in Appendix E shows a map of the region.

The site is located on the rugged Slick Hills that rise 300 feet (91.5 meters) above the surrounding plains. The area is rural; only one family lives in the area. Exposed bedrock and a thin layer of soil cover the terrain. Since this terrain is not conducive to growing crops, the land is used primarily for animal grazing.

B. Process. The wind farm took approximately 2 years from planning to operation. The facility was built in partnership between Zilkha Renewable Energy and Kirmart Corporation. Western Farmers
Energy Cooperative (WFEC) is buying all 74.25 MW of the electricity produced. The 20-year purchase agreement provides electricity to WFEC’s rural electric cooperative that serves farms, rural residences, towns, and commercial/industrial customers in approximately two-thirds of rural Oklahoma.

B1. Site selection. Southwestern Oklahoma has long been known for its good wind resources. The east-west orientation of the Slick Hills places the turbines directly perpendicular to the prevailing wind direction. Zilkha was responsible for locating the site.

B2. Permitting. Oklahoma does not have many state regulations that wind power developers are required to follow. Guidelines and regulations are typically determined by the county or local government offices.

There were two developers competing for the same site. The community formed a steering committee to decide which developer to choose. Both developers held community meetings to educate the community on the proposed wind power facilities. The community was informed about how turbines would look and sound and other questions were answered. This process took about one year. The community eventually chose Zilkha Renewable Energy to develop the wind farm.

Zilkha performed studies usually required in other states that were not required in Oklahoma (e.g., environmental and historical site studies). They had to meet FAA requirements of non-obstruction and the FAA’s lighting guidelines. They worked with the County Tax Commissioner to determine the tax structure for the project.

There was no required public notification process, although the landowners were involved in the process from the beginning.

B3. Construction. The project’s construction was managed by Zilkha. During construction, the project employed approximately 100 people.

B4. Operations. The Blue Canyon Wind Project is co-owned by and operated by Blue Canyon Windpower, LLC. The plant employs approximately six to eight full-time employees for operations and maintenance.

C. Community Reaction. Initially, there was more excitement about the project than negative comments, but there were a few residents that were concerned about noise and site aesthetics. Community meetings helped inform the community. The construction of the project brought jobs to the area and money to local restaurants and stores, improving the community’s perception of the project. The community reaction was very favorable after project completion. The people of the Lawton area saw themselves as progressive for promoting a renewable form of power and were proud of it. Over 2,500 tourists have visited the site. Tours are conducted by Western Farmers Electric Cooperative and are usually given for schools, community groups, and some private companies.

C1. Perceived Issues. Initially there was concern about noise and visual impact. The community meetings helped allay this concern and familiarized the community with wind power facilities.

Noise. This was addressed primarily through community outreach efforts. The only landowner living in the vicinity of the turbines (one-half mile away) was sent to a wind farm in Texas to observe
how an operational site looks and sounds, and he told the NWCC’s interviewer that he has no complaints about the noise and that he considered the turbines to be relatively quiet.

*Visual.* There was some initial concern about visual impacts. In response, the developer provided photo simulations of what the area would look like after development. An interviewee also appreciated how the operation centers for the wind turbines were built to look like barns so they would blend in with surrounding buildings.

*Birds, bats, and other environmental resources.* The developer performed several studies to examine potential environmental impacts. No significant environmental issues or impacts were identified. There was some local concern about how the project might affect wildlife and stock animals grazing in the area. Today, cattle and elk graze at the site without incident.

**C2. Potential concerns during and after development.** During the construction phase there was apprehension about additional wear on the highway, but according to interviewees, the builders were very professional. The construction process brought jobs to the area and local businesses benefited. Many locals stated that after development of the project, most people see the site as something positive. Those interviewed for this case study said that if there are any complaints about the site, they are from individuals wanting turbines on their own land. There are tours given of the facility and people drive long distances to see them.

**D. Process improvements.** The developer would have preferred to do the land agreements differently in order to better reflect the future phases of the project. A local environmentalist would have liked an environmental impact assessment to be required and completed.

**E. What worked well.** The community education process helped answer concerns and questions about the wind project. The increase in employment and local spending by these employees during the construction of the turbines made the community happy and excited about the project. Tours of the wind project are appreciated by the community for their educational and economic benefits. The majority of people in the local community are very satisfied with the wind project.

**2. Chanarambie — Murray County, Minnesota**

**A. Background.** The Chanarambie Wind Power Facility has 57 GE Wind Energy 1.5-MW turbines and was completed in November 2003. The project has an 85.5-MW nameplate capacity. The height of each tower is 213 feet (64.92 meters) and hub height is 235 feet (71.63 meters). Each turbine blade is 116 feet (35.36 meters) long.

The site is located on Buffalo Ridge in Murray County, Minnesota (including Cameron and Chanarambie townships), on a site of approximately 6,000 acres. Murray County has a population of about 9,000 people and a land area of 704 square miles. The area is located in southwestern Minnesota and is mostly rural. Exhibit III-2 in Appendix E provides a map of the project’s location.

Local land use is agricultural with intensive farming and grazing activities. There are few trees or structures in the area. The site is on an elevated plateau/ridge called Buffalo Ridge, which rises about 200 feet above the surrounding terrain. There are approximately 11 wind power projects that have been built...
in the vicinity since 1995.

The developer, enXco, formed Chanarambie Power Partners, LLC, and will own and operate the plant. Xcel Energy, Inc. is the purchaser of the power.

B. Process. The Chanarambie Wind Power Plant was completed in November 2003.

B1. Site selection. Terracon Consultants, Inc. performed the siting phase of the wind project.

B2. Permitting. It is Minnesota state policy to site Large Wind Energy Conversion Systems (systems over 5 MW) in "an orderly manner compatible with environmental preservation, sustainable development, and the efficient use of resources." The Minnesota Environmental Quality Board (MEQB) is the permitting body with authority to issue site permits for large projects. The State of Minnesota has a clear permitting process that those interviewed seemed to appreciate because it is predictable and reasonable.

The application permit must contain, among other things, an analysis of the potential environmental impacts, proposed mitigation measures, and any adverse environmental effects that cannot be avoided. Review and comment on this analysis constitutes environmental review.

As a requirement for the first permit issued for a Large Wind Energy Conversion System in 1995, the MEQB required Northern States Power Company (now Xcel Energy) to conduct an avian study to determine the effect of the turbines on avian mortality. These studies were evaluated by the MEQB in approving the project. After a four-year study, investigators reported no significant avian impacts in the Buffalo Ridge area from the turbines. An additional two-year study was required to determine the effect of the turbines on bats. The final report indicated migratory bats as the primary bat deaths occurring and a higher number of dead bats were found during July and August, when the turbines were least operational. The study was completed by Western Eco Systems Technology.

The Chair of the MEQB makes a decision to accept, conditionally accept, or reject an application. Within 45 days after acceptance of the application, the chair makes a preliminary determination whether a permit should be issued or denied. If the determination is to issue a permit, a draft site permit is prepared and made available for public review.

In March, 2001, the permit for the Chanarambie application was accepted. The permit application was made available to the public and then distributed to MEQB members, the Public Utilities Commission, the Minnesota Historical Society, the office of the Southwest Regional Development Commission, the auditors of Pipestone and Lincoln counties, and township clerks. Each landowner affected by the proposed project also received a copy of the application, the public notice, and a copy of the draft site permit.

The MEQB held a public information meeting on April 11, 2001, in Lake Wilson, Minnesota, to receive comments on the site permit application and draft site permit. Approximately 85 to 90 people attended the meeting. Representatives from enXco, Inc. were also present. enXco responded to questions about the project, which included inquiries about access roads, payment schedules, project timing, easement agreements and conditions, location of distribution and feeder lines, how to get more turbines, project decommissioning, and the need to place safety shields on guy wires. No significant issues or concerns were raised about the proposed project or conditions in the draft site permit at the public meeting.
The project was approved, a permit was issued with the conditions the board considered necessary to protect the environment, enhance sustainable development, and promote the efficient use of resources.

**B3. Construction.** The wind farm was constructed by enXco, which dealt with any issues that arose during construction, such as construction dust and placement of roads.

**B4. Operations.** The Chanarambie Wind Power Project is owned and operated by enXco. The plant employs approximately five to six full time site technicians and a wind plant supervisor.

**C. Community Reaction.** People in the Buffalo Ridge area have been exposed to wind power facilities for the past 10 years and know what to expect. Most are supportive of the wind power facilities and problems have been worked out in the past. Local residents were more involved in the process when the facilities were first coming to the area and now the community is less actively involved. The state provides a toll-free number for people to call to make complaints or comments.

**C1. Perceived issues.** Given the familiarity of this area with wind power facilities, there were relatively few perceived issues prior to development of the Chanarambie project. Perceived issues that did arise included:

- **Noise.** This was a perceived issue for some property owners, but the interviewed parties said that setback requirements mitigated this problem.

- **Birds, bats and other environmental resources.** Bats are found in this area; however, studies were conducted to quantify impacts and no major concerns were found.

**C2. Potential concerns during and after development.** Some concerns arose during and after development among certain members of the community. The developer responded to those concerns where possible:

- **Visual.** One landowner did not like the placement of some turbines. Towers were moved so the landowners would not see them from his door.

- **Leases.** This may be a problem in the future in this area. Leases are set to expire next year and will have to be renegotiated. No one is certain what will happen in the area in the future and where people will place new turbines.

- **Construction impacts.** One landowner encountered issues with the contractor. A road was moved without his knowledge and contractors ended up cutting some tiles. The contractor also had to remove some fences that were not reinstalled correctly.

- **Cultural resources.** There was concern that a historical landmark was destroyed in the development of the site. A group of experts were brought to the site and determined nothing had actually been disturbed.

Another interviewee mentioned that the geographical prominence of Buffalo Ridge makes it a significant location for Native Americans, especially the Dakota Indians. A review of the Minnesota State Historic Preservation Office (SHPO) computer database indicated that there were no buildings
or structures within one mile of the project site listed on the State List or the National Register of Historic Places. The interviewee did suggest that wind sites be looked at not only from the state historical perspective but also by regional, local, and tribal historical experts.

**Landowner payments.** One landowner mentioned that while he has not had a problem with payments, he knows of some people who received payments late or who did not understand when their payments were coming.

D. **Process improvements.** The permitting process was not an issue for Chanarambie. Developers interviewed generally like the Minnesota permitting process, stating that it is very thorough, well defined and predictable. It also protects all interested parties and reduces uncertainty.

One individual interviewed mentioned they would like landowners to be notified when changes are made to the original plan and would like to see better communication between the developer and the landowners (possibly through letters or a monthly newsletter).

E. **What worked well.** The developer appreciated the certainty of the permitting process. The majority in the local community are very satisfied with the wind project.

3. **Fenner— Madison County, New York**

A. **Background.** The 30 MW Fenner Wind Power Project uses 20 1.5 MW turbines, and was opened on November 1, 2001. Each turbine tower extends 213 feet (64.92 meters) above the ground.

The project site is located on 12 acres of privately owned land in the town of Fenner in Madison County, New York. The county has a population of about 70,200 people and a land area of 656 square miles. The town of Fenner has a population of about 1,700 people and is located approximately 26 miles east of Syracuse, in central New York. Exhibit III-3 in Appendix E provides a map of the project’s location.

The area is mostly rural farmland, with animal grazing on the smaller farms. Since the wind facility utilizes only about 1.5 percent of the leased land, the land can still be used for farming and ranching. Another wind farm with a nameplate capacity of 11.5 MW is located nearby in the town of Madison, New York.

B. **Process.** The Fenner Wind Project took two-and-a-half years to go from planning to operations. Site development was aided by the motivation to meet the New York State renewable portfolio standard.

B1. **Site selection.** The New York State Energy Research and Development Authority (NYSERDA) issued a Request for Proposals to develop the wind power facility. Atlantic Renewable Energy was awarded a $5 million contract for the project. The developer submitted performance reports to NYSERDA and was responsible for performing all of the appropriate studies.

B2. **Permitting.** Wind power was relatively new to the State and Atlantic Renewable Energy, so it was not initially clear whom to involve in the process. The developer worked with Madison County, the town of Fenner and the local community during the permitting process. The developer performed community outreach and education, holding several open houses and community meetings. They spent time with the
local community:

- Describing how wind energy facilities work
- Showing what the site would look like (e.g., by using simulated pictures)
- Addressing local community concerns and questions

Atlantic Renewable also practiced a full disclosure policy with the community.

An environmental assessment of the site was completed. Several assessments of potential issues were undertaken, including an avian study, analysis of agriculture protection measures, cultural resources assessment, noise simulation, and a visual impact assessment.

The developer worked with the county and town to rezone the area with a wind overlay district to accommodate the town’s height restrictions. They also negotiated the tax structure and liability between all parties involved.

The Fenner Wind Project began with approval by the Fenner town officials for Atlantic Renewable Energy to place 8 to 12 wind turbines in the first phase of the project. Atlantic Renewable Energy then decided that it would be more economical to apply for and build both phases (for a total of 20 turbines) at the same time. The developer was involved with two permitting processes — one for the initial project and one for the modified project.

During the permitting process, landowners who were not initially involved became interested in having turbines on their property. Originally, the developer had informally discussed potential placement of the turbines with a few landowners and these landowners assumed they would be getting turbines. However, with the increased interest the developer decided to spread the turbines around to more landowners.

B3. Construction. The wind farm was constructed by M.A. Mortenson Company and employed approximately 30 people at peak construction.

B4. Operations. The facility is owned and operated by Enel North America. Niagara Mohawk Power Corporation is the power purchaser. The facility has an expected life of 25 years and will employ 3 to 5 people, not including security and maintenance personnel.

C. Community reaction. Meetings were held to answer questions and educate the community about the wind project. Some members of the local community were initially skeptical of the project. After the community learned more, almost everyone approved of the project. There was never any organized opposition to the project, just individual concerns addressed by the developer.

The current community level of acceptance is high. The town has seen an increase in the number of tourists as visitors come to see the wind turbines. There are no formal tours given by the town. However, the Greater Cazenovia Area Chamber of Commerce has a brochure available from GE (the supplier of the wind turbines) about the wind turbines, and the Chamber provides directions to the site.

C1. Perceived issues. Prior to project completion, certain members of the community expressed concerns about the project. Some perceived issues were anticipated by the developer, but those issues did not actually arise. The following were the primary perceived issues with the proposed project.
Visual impact. The local community was initially concerned about the visual appearance of the turbines, towers and blades. In response, the developer placed large weather balloons that approximated where the towers would be located. They also took pictures of the possible sites and superimposed images of the structures onto the pictures. This provided the community with visual examples of what the site would look like once construction was complete. Most of those who expressed concern are currently satisfied with how the area looks. People interviewed noted that they preferred the turbines to cell towers.

Roads. The county and town were initially concerned about the impacts construction and maintenance of the facility would have on the roads. The county performed studies about the increased road usage and engineers were hired to look at the placement of the new road entrances.

A previous wind project completed in the town of Madison, New York reportedly damaged the roads around the towers. The developer of the Madison project agreed to repair and/or replace the roads.

At Fenner, the town and county added the requirement that the developer repair and maintain the roads during construction.

Noise. This was thought to be a concern that would be raised by local residents, but it has not been a major issue.

Birds, bats and other environmental resources. The potential for bird deaths was brought up by the county. An avian impact study was conducted and no basis for concern was determined.

Public safety. There were concerns from the county and town about how the turbines would perform in the winter. The possibility of ice falling off the turbines was examined, along with other issues including snow removal requirements.

Fiscal impact. Some in the local community were initially skeptical that wind energy could be profitable without government subsidies given the first Madison County project was subsidized.

C2. Potential concerns during and after development. Some local community members expressed concerns during and after development. The developer has responded to those concerns, where possible.

Visual impact. Shadow flicker was a community concern and remains unresolved at this site. The night aviation safety lights were mentioned as a community concern, but no formal complaint has been made.

Fiscal Impact. The project provided a fiscal benefit to the Town of Fenner. The Town of Fenner created an overlay district for the wind turbines and the county had to approve the plan. A decision was also required as to how to tax the wind turbines. Payment in lieu of taxes was used.

There are three school districts in the Fenner area, and a problem occurred due to lack of communication between the districts and the developer. Two of the school districts receive no tax benefit from the turbines. The third district made a deal with the developer and is receiving some financial benefit from the project.

Land use. Most of the landowners in the Fenner area are small farmers, with a few landowners that
do not farm. One homeowner initially opposed the project. The developer negotiated with the homeowner and gave them a turbine on their property, which required the creation of a special setback for the homeowner.

The project provided a way to preserve open space. The surrounding area is primarily rural and is not suited for large farms. The project has been beneficial to local family farms because it provides extra income while having a small footprint. Animals are able to graze and crops can be cultivated right up to the towers.

Other. One interviewee mentioned that opposition was anticipated from a wealthier community approximately 6 miles from the site called Cazenovi, but it never happened. The interviewee thinks the community liked the “greenness” of the project.

D. Process improvements. The individuals interviewed that were involved with the process indicated that they did the best they could, since wind energy development is relatively new in New York. A member of the local government mentioned that the town would like to be able to control how the turbines are maintained. It was also mentioned that a plan for future maintenance and improvements should have been made, as the turbines are large and no one really knows what will happen to them.

A landowner mentioned that he would like to see a shorter process for the developers. The process was long and the developers had to deal with a lot of “red tape.” Another interviewee suggested longer setbacks from non-participating houses. Some people would like to see the Fenner wind project used as an educational tool to show others going through the process or thinking about developing wind projects what such facilities are like. An education center was also suggested for the local community and visiting tourists.

E. What worked well. The community appreciated the full-disclosure policy practiced by the developer, in addition to the community outreach and education. It reportedly helped that the developer had good communication skills.
Cursory Case Studies

The following six case studies reflect the use of Phase I analysis only. This means that the analysis here is not as comprehensive and provides only background information and limited use of site interviews.

1. Colorado Green — Prowers County, Colorado

A. Background. The Colorado Green wind power facility has 108 turbines and became operational in December 2003. As of July 2004, this was the largest wind power project in the state of Colorado. Enron was the initial developer and GE Wind Energy (GE) finished the project. Xcel Energy is the power purchaser.

This site is located on rolling hills and prairie in Prowers County, Colorado. It is located 25 miles south of Lamar, Colorado, and about 175 southeast of Denver. Prowers County has a population of about 14,200 and a land area of 1,640 square miles. Exhibit III-4 in Appendix E shows the site’s location relative to towns and cities in Colorado.

The site covers 11,840 acres of land, used primarily for grazing. Although there are 14 landowners within the site’s boundaries, 98 of the 108 turbines are on a single landowner’s property. GE constructed approximately 40 miles of transmission lines to convey the power.

B. Process. Enron started the permitting process in March 2001 and the site went into operation in December 2003.

B1. Site selection. Meteorological equipment was placed on the site in the mid to late 1990s. The area proved to have relatively consistent wind velocities.

B2. Permitting. Colorado had no formal permitting process for wind facilities as of July 2004. The county with the proposed site handles permits. In Prowers County, a special use permit (SUP) was required since the county had no zoning classification for wind turbines. For this project, the Prowers County Land Use Office:

- Reviewed the permit application
- Examined the proposed site
- Prepared its recommendations
- Submitted its recommendations to the Planning Commission for review

Public meetings were held and notices were placed in the Lamar Daily News, the local newspaper. This process was repeated for permitting of the transmission lines.

Enron was the original site developer, but GE Wind (now GE Energy) purchased Enron’s wind division during the site’s permitting process. The project was eventually re-permitted under the name of Colorado Green Holdings, a wholly owned subsidiary of GE. Because of Enron’s bankruptcy, the permitting process took longer than anticipated.

GE conducted several environmental impact studies in addition to what the county required. Mary Root, of the Prowers County Land Use Office, felt that “GE [Wind Energy] was used to dealing with more
stringent environmental regulations in California, which went above and beyond what was required at the Colorado site.”

**B3. Construction.** During the construction phase there were between 300 and 400 construction workers at the site. Some of these jobs went to local residents.

Power cables between the towers and substation were buried underground and the topsoil was seeded with native grasses. Power transmission towers are 110 to 115 feet (33.5 to 35 meters) high and span about 40 miles.

**B4. Operations.** There are about 15 full-time employees performing operations and maintenance duties. Landowners receive a “minimum guarantee” royalty based upon a percentage of the value of the power produced.

**C. Community reaction.** Because of a severe drought, the area was in the midst of an economic downturn. The community welcomed the economic impact that occurred during the construction of the project and the increased tax base from the development of the site.

Members of the community expressed concerns and perceived issues during the development process for the site and the permitting process for the transmission lines.

A former Lamar utility manager initiated a deal with the Colorado Green project that resulted in Lamar Light and Power and Arkansas River Power Authority (Lamar/ARPA) owning and operating 5 turbines. By attaching this community project to the large wind farm development, it allowed Lamar/ARPA to save in capital and maintenance costs of the project as well as ensure local ownership of wind energy in the region. This boosted community appreciation for the wind farm’s economic contribution to the community.

One example of the community’s positive reaction to the project after completion is that they had a “Winds of Change Powering Our Future” theme during Lamar Days, held May 14, 2004. Interviewees indicated that a number of other landowners in the area want to be involved in future wind development.

**C1. Perceived issues:**

*Visual impact.* One landowner voiced concerned about the visual impact of wind turbines on a dude ranch he wanted to develop. He felt the turbines might spoil the western scene he wanted to maintain. A reporter for the local paper mentioned that this landowner “harassed” a surveyor that needed access to the land, but that the surveyor was eventually allowed onto the property. Other interviewees did not mention this landowner and his concerns.

**C2. Potential Concerns During and After Development.**

*Transmission line route.* GE originally proposed a route for the transmission lines that ran along the edge of several properties (within the county’s right-of-way). Most of this property was irrigated farmland and more densely populated than the rest of the project site. The landowners along this route felt that GE did not consult anyone regarding the path of the transmission lines, rather they just presented it at the public hearing. Opposition to this route arose at the public hearing because of
concern about the possibility of electromagnetic radiation, possible visual impacts, and interference with pivot irrigation systems. In response, GE reviewed studies on electromagnetic radiation and determined that they were inconclusive. They eventually purchased additional rights-of-way to relocate the transmission lines.

**Fencing.** One landowner expressed concern during the construction process because workers cut fence lines without notifying the landowner. Because landowners use this land for grazing, they worried that livestock might get out of the pasture. In response, GE increased communications with landowners and notified them when construction crews were going to be entering the property. Cut fencing and any other property impacts were rectified.

**D. Process improvements.** Of the individuals that were interviewed, only the reporter for the Lamar Daily News recommended a way to improve the process. He commented that “better communication regarding the transmission lines might have prevented the landowners’ negative response.”

**E. What worked well.** Interviewees all said that GE’s willingness to be a “good corporate neighbor,” demonstrated by their relocating the transmission line route and performing additional studies on whether birds would be adversely affected, left everyone very pleased with the outcome.

2. **Combine Hills — Umatilla County, Oregon**

**A. Background.** This facility has 41 turbines and was completed in December 2003. Combine Hills is located in Umatilla County, Oregon. The county has a population of about 72,000 and a land area of 3,215 square miles. The nearest town is Milton-Freewater and the site is about 200 miles east of Portland, Oregon. Exhibit III-5 in Appendix E is a map of the site location and surrounding area.

The site is located between two FPL Energy wind projects: Stateline and Vanscycle Ridge. The area is used for dry land wheat farming and is located along a ridgeline/hilltop.

**B. Process.** Don Bain, the consultant hired by Eurus Energy America Corp., was responsible for negotiating the lease with the landowner, working with county officials during the permitting process and being the primary contact with the public during outreach activities.

**B1. Site selection.** The site selection process was not discussed in the interviews.

**B2. Permitting.** In Oregon, if a proposed wind power facility has a nameplate capacity over 105 MW, it falls under the more stringent state approval process. This site has a nameplate capacity of about 50 MW, so an application for a Conditional Use Permit (CUP) was submitted. Mr. Bain did extensive work before submitting the application for the CUP, which included:

- Networking with the local landowners
- Working with the county staff
- Hiring consultants to perform avian studies and cultural/historical assessments

The permitting process took almost one year because of numerous questions asked by the Senior Planner in anticipation of a review by the County Commissioners. This was the first wind power facility
developed in Umatilla County, so the planner wanted to make sure it was done correctly.

**B3. Construction.** The topsoil in the area is susceptible to erosion. Any roads constructed in the area had to withstand potential flash floods, as well as hold up under multiple trips up the hills and ridgeways by long and heavy tractor-trailer vehicles. The constructed system is currently maintained by the developer, and is considered to be of very high quality.

**B4. Operations.** No mention of the operational phase was made in the interviews.

**C. Community reaction.** There was never any organized opposition to the project, just individual concerns. Three community outreach meetings were held to inform the public of the wind site development. Because of this involvement, the community was kept informed of the project and had a positive response to the site development throughout the process.

**C1. Perceived issues:**

*Weed control.* The farmers were concerned about weed control, particularly about the spread of noxious weeds to the orchards in the valley below the site. Studies were conducted to determine local weed types and how extensive the spread of weeds was in the area. Eurus addressed the concern by hiring a local contractor to control the weeds. In addition, an adjustment was made to the way roads were watered during construction.

*Site Security.* Local landowners were concerned about site security following construction of the project. In response, Eurus erected “No Trespassing” signs and built a gate by the road so that the site would be more secure. Many landowners had animals and were concerned about them getting loose.

*Roads.* Since the site is located on a hilltop, a good road system was built in order to handle the weight and length of the tractor/trailers needed during construction. The topsoil is very dry and the existing roads were primarily dirt filled with ruts. Soil erosion was a concern, but the new road system is better and more efficient than the previous roads. Eurus is responsible for the maintenance of these roads.

*Prior work.* About 10 years ago, a developer approached landowners in the area and expressed interest in building a wind farm on their land. The company eventually decided the project was not economically feasible. The impact of that earlier process, including the approach and challenging personality differences, remained in the minds of some residents and had to be overcome.

**C2. Potential concerns during and after development.**

*Workload.* Local government in these rural communities has limited staff and concern developed that this project might require more time and resources than were available.

*Federal Interests.* Some concern exists that the Federal government is looking to construct power lines across the site in the future.

*Archeological and Historical Concerns.* Upon the urging of Eurus’ consultant, an archeological assessment was done. Three separate locations of ancient cairns were identified and local tribes
were informed. These historically sacred artifacts were inventoried and protected.

D. Process Improvements. Some difficulty occurred with the planning commission and a more productive working relationship between the developer and the commission might have resulted in a quicker project timeline.

E. What worked well. According to Eurus’s consultant, it is very important to hire local contractors and consultants. Their local ties to the community make it less difficult to establish credibility. Also, the public outreach activities helped make this project transpire. Engaging all stakeholders and addressing their concerns helped develop and maintain community support.

3. Desert Sky — Pecos County, Texas

A. Background. The Desert Sky facility, located in Pecos County, Texas, is a very large wind power facility (107 turbines) located on top of a mesa. Construction was completed in December 2001. The county has a population of about 16,000 people with a land area of 656 square miles. The site is about 12 miles northwest of Iraan, Texas and about 200 miles northwest of San Antonio. Exhibit III6 in Appendix E shows a map of the site location and surrounding area.

The site is located on Indian Mesa, a flattop hill. This land is privately held and used primarily for grazing. The surrounding area also has a large amount of oil and gas production.

B. Process. There was no county permitting processes. Tax abatements were requested prior to construction. Those interviewed indicated that the community benefited economically from the development of this wind site.

B1. Site selection. The land utilized is privately held and owned by five brothers. The surrounding area was previously used for oil and gas production, as well as grazing.

B2. Permitting. The developer approached the Commissioners Court to request economic development-related tax abatements for ad valorem taxes. Each county has different criteria for evaluating such requests (e.g., number of jobs, industry, and capital investment). The original developer was Enron (later purchased by GE Wind Energy, now GE Energy). Notice of a public hearing regarding the approval of this tax abatement request was given. The developer was also required to create a Local Spending Plan that included posting jobs in the local paper and using local contractors when possible. GE Wind Energy conducted archeological and avian assessments.

B3. Construction. No comments were made about the construction phase of this project.

B4. Operations. American Electric Power is the power purchaser and has an operations and maintenance agreement with GE Wind Energy. The site employs 13 people to conduct maintenance on the turbines.

C. Community reaction. There were no organized objections to the development of this site. Landowners and the local community seem to appreciate the economic benefit of the project. At the public dedication, there were approximately 400 people who came to view the site, including the Governor of Texas. During the ceremony, awards were presented to participants in a poster contest (“You Make The Difference”), which involved six schools in the surrounding area.
The local community is concerned that there are not enough transmission lines to carry the existing power loads, much less proposed wind power development. There are plans to petition the PUC to run more lines in the area.

C1. **Perceived issues.** Due to the project’s isolated location, no perceived issues were raised regarding visual impacts or noise.

C2. **Potential concerns during and after development.**

   **Cultural resources.** The consultant identified some sensitive areas that were protected during construction.

D. **Process Improvements.** None of the interviewees had any suggestions about process improvement.

E. **What worked well.** The economic benefits to the local area helped create a positive reaction from the local community.

4. **Nine Canyon—Benton County, WA**

A. **Background.** This facility has 49 turbines in the combined project completed in two phases. The initial phase was completed December 2003. The Nine Canyon Wind Project is located in Benton County, Washington. The county has a population of about 153,700 and a land area of 1,703 square miles. The project is about 30 miles west of Walla Walla, Washington. Exhibit III-7 in Appendix E shows a map of the project location and surrounding area.

The immediate project area is not densely populated. Its primary use is dry land wheat farming.

B. **Process.** Area landowners were first approached in late 2000 and the project became operational in December 2003. This was the first wind site developed by Energy Northwest, a joint operating agency comprised of approximately 19 public power entities.

B1. **Site selection.** The developer approached several landowners in late 2000. One landowner was hesitant about the project because of the approach used by the previous developer. Evidently, problems with the first developer’s technique and character led to this reluctance.

B2. **Permitting.** The developer submitted an application for a Conditional Use Permit (CUP). State Environmental Policy Act (SEPA) policies were followed; since this was first wind power facility built in Benton County there were no existing wind ordinances. For the second phase, Benton County changed the required permit to a Building Permit. Energy Northwest conducted various assessments/studies (avian study, cultural resources study, and environmental assessments) and attached them to the CUP, which expedited the permitting process.

Energy Northwest held three public outreach meetings. These meetings were held in Finley, Washington (the closest town to the project site) prior to the Phase I construction. An additional public meeting was held as part of the Benton County permitting process. Members of the media attended at least two of the
meetings and public notices were placed in the local newspaper, the Tri-City Herald. Karl VanHoff of Energy Northwest also made a presentation before the Kennewick City Council. Energy Northwest did most of their assessments (e.g., avian and cultural resources studies) prior to applying for the permit. They created a working group, which included the U.S. Fish and Wildlife Service, to review the studies.

B3. Construction. No comments about the construction phase were mentioned during the interviews.

B4. Operations. No comments about the operations phase were mentioned during the interviews.

C. Community reaction. Organized opposition to the project never surfaced, just individual concerns. Some of the people at the public outreach meetings were landowners who wanted the turbines to be built on their property or job seekers. Currently, there are organized tours given of the site. Students from local elementary and high schools, community college, and the general public have come to visit the turbines. Community reaction appears to have been positive throughout the process.

C1. Perceived issues.

Property values. The public expressed concern over how the wind power facilities would affect property values. A study conducted by Renewable Energy Policy Project indicated no negative impact on values.

Avian study. An avian study was conducted as part of the permitting process. The Audubon Society issued an endorsement letter for this project.

Flicker effect (shadows from turning blades). There were some concerns about this phenomenon but no flicker effect issues actually materialized.

C2. Potential concerns during and after development.

View shed: Once the turbines were built, there were some concerns about view shed. This was mentioned at the public hearing for expansion of the project. The local newspaper carried the interview and the Associated Press picked up the story. According to one interviewee, Dave Kobus, door-to-door interviews were conducted but nothing further about this concern ever materialized.

D. Process Improvements. None of the interviewees offered any suggestions for process improvement.

E. What worked well. Tours of the site are available. The local community college also offers a class that includes a tour of the facility. This has contributed to the positive community response to the finished project.

5. Rock River I — Carbon County, WY

A. Background. Rock River I has 50 turbines and began operation in November 2001. This site is located in Carbon County, WY. The county has a population of about 15,300 people with a land area of 7,896 square miles. The Rock River I site is about 40 miles north of Laramie, WY, close to the Foote Creek Rim wind project. Exhibit III-8 in Appendix E shows a map of the project location and
The area is not densely populated. The land is primarily non-irrigated pasture and high desert with sagebrush.

**B. Process.** SeaWest was the project developer.

**B1. Site selection.** Interviewees did not discuss the site selection process.

**B2. Permitting.** The Carbon County Planning Commission had the authority to approve or reject the permit for this project. Once the County received the application it took about two months for the Planning Commission to issue an approval.

SeaWest submitted an application for a Special Use Permit (SUP). SeaWest was familiar with the process, as they had already been through a more rigorous procedure on the nearby Foote Creek Rim project. Attendance at the public hearings was “normal.” There was more attendance at the 1998 Land Use Plan hearings, where wind site development was originally discussed.

**B3. Construction.** Interviewees did not discuss the construction phase of the project.

**B4. Operations.** Interviewees did not discuss the operations phase of the project.

**C. Community reaction.** There was never any organized opposition to the project, just individual concerns. Wind power development is encouraged in the area, but has been restricted due to the lack of transmission lines out of the area, which creates a bottleneck. The community awareness of wind development was already heightened by prior developments in the area. One comment made on the project was that “the turbines are environmentally beneficial and help make good use of the grazing lands.” There have been few concerns since construction was completed.

**C1. Perceived issues.**

**Avian Deaths.** There were some concerns regarding avian deaths on site. The initial EIS study evidently predicted a high mortality rate of five to six Golden Eagles per year. Subsequent studies determined that the turbines were not as hazardous to birds as predicted: since the construction (2001) there have been less than five eagle deaths. Actual mortality rates were well below the initial projections.

The interviewed researcher indicated that after the initial EIS and follow up comparison, there was a two-year preconstruction survey conducted to identify the types birds that use the area. It was found that the area was heavily used by golden eagles. After observations of eagle use, it was determined that it would be safe for the eagles if the turbines were placed 75 meters from the rim. The area was also monitored for 5 years after construction to monitor bird kills. After 5 years an advisory group concluded that mortality rates were low and studies were no longer needed. Monitoring is ongoing at the site.

**C2. Potential concerns during and after development.** There were no potential concerns raised during the interviews.

**D. Process Improvements.** Interviewees did not have any recommendations about how the process might have been improved.
E. **What worked well.** The development process was very smooth because of the community’s familiarity with wind projects and the extensive avian and other research work SeaWest at the site and at the Foote Creek Rim wind project.

6. **Whitewater Hill — Riverside County, CA**

A. **Background.** This wind power facility has 41 turbines and began operation in December 2002. Riverside County, California, has a population of about 1.8 million people and a land area of 7,207 square miles. The Whitewater Hill site is near Palm Springs, California, and about 100 miles east of Los Angeles. Exhibit III-9 in Appendix E is a map of Southern California, showing the Whitewater Hill site location and surrounding area.

The site is located in a mountain pass, San Gorgonio Pass, along with many other previously developed wind power projects.

B. **Process.** The Whitewater Hill wind project was developed by Cannon Power Corporation and is owned by Shell Wind Energy. The project has a 61.5-MW nameplate capacity using 1.5-MW GE Wind Energy (now GE Energy) turbines. The electricity is purchased by the California Department of Water Resources.

B1. **Site selection.** The project was initially planned by Whitewater Energy Corporation. The Cannon Power Corporation took over the project after the site selection was completed.

B2. **Permitting.** To get the project permitted, the developer worked with the Bureau of Land Management (BLM) and Riverside County (since the site was on both BLM property and property in the jurisdiction of the County). Those interviewed stated that they felt the BLM’s process was reasonable and quickly executed. It typically takes 5 to 6 months to complete. The County’s process took longer (2 to 2 ½ years) and involved more issues.

B3. **Construction.** The interviewees had no comments about the construction process.

B4. **Operations.** The project is owned by Shell Wind Energy. The California Department of Water Resources is the power purchaser.

C. **Community Reaction.** Most of the local community was supportive of the project. Three people were known to be against it. One woman’s house was bought from her to solve this problem and some turbines were moved to resolve other issues.

C1. **Perceived Issues.**

   **Birds.** The site location is on the outer edge of the Pacific Flyway. Avian studies performed found that the proposed site would not negatively impact birds. To reduce the threat of birds getting killed in the blades, tubular towers were used, eliminating opportunities for birds to perch or nest.

   **Public safety.** There was some public concern about parts coming loose and the towers falling over.
Noise. Those interviewed indicated that the noise from the turbines is well regulated and was not perceived as an issue with the newer turbines.

C2. Potential concerns during and after development.

Tortoises. Desert tortoises live in the area and their protection is required. Two biologists were on site during construction and they placed fences around holes to prevent tortoises from falling in.

Visual. There are thousands of turbines of different age and size in the area. Some local residents do not like their appearance. There is also local concern about light pollution. The light pollution matter was addressed by changing the lights to red lights.

Dust. During construction there was a lot of dust from the dirt roads. In response, the construction crews watered the roads.

D. Process improvements. The county’s approval process was perceived as difficult, so this is an area for possible improvement.

E. What worked well. The BLM’s permitting process was perceived as efficient and the BLM people were reportedly professional and knowledgeable.
SECTION IV.
Concluding Remarks

Positive community reaction and lack of organized opposition. In seven of the nine cases, the initial community reaction to the proposed wind facilities was positive. In eight of the nine cases initial reaction from elected officials was also positive. Moreover, there was little organized opposition to the wind developments studied. Although community reaction was supportive overall across the cases, there were individuals who voiced concerns. Most concerns were addressed via public information sharing, with some individual concerns directly addressed by the developer. Even in cases where some skepticism existed early in the development process, residents across all cases developed acceptance of the facilities by the end of the construction phase. Also, in several cases, landowners who were not initially attracted to wind power became interested in hosting turbines on their property.

Low population density areas. The population densities of each of the nine sites studied was relatively low. The population densities associated with each site were:

<table>
<thead>
<tr>
<th>Site</th>
<th>Population Density of Site County (People/Mile(^2))</th>
<th>Average Population Density of State as of 2000 (People/Mile(^2))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock River I, Carbon County, Wyoming</td>
<td>2</td>
<td>5.1</td>
</tr>
<tr>
<td>Desert Sky, Pecos County, Texas</td>
<td>3.5</td>
<td>79.6</td>
</tr>
<tr>
<td>Colorado Green, Prowers County, Colorado</td>
<td>8.8</td>
<td>41.5</td>
</tr>
<tr>
<td>Chanarambie, Murray County, Minnesota</td>
<td>13</td>
<td>61.8</td>
</tr>
<tr>
<td>Combine Hills, Umatilla County, Oregon</td>
<td>21.9</td>
<td>35.6</td>
</tr>
<tr>
<td>Nine Canyon, Benton County, Washington</td>
<td>83.7</td>
<td>88.6</td>
</tr>
<tr>
<td>Fenner Wind Project, Madison County, New York</td>
<td>105.9</td>
<td>401.9</td>
</tr>
<tr>
<td>Blue Canyon Wind Farm, Comanche County, Oklahoma</td>
<td>107.5</td>
<td>50.3</td>
</tr>
<tr>
<td>Whitewater Hill, Riverside, California</td>
<td>214.4</td>
<td>217.2</td>
</tr>
</tbody>
</table>


Generally speaking these projects were all developed in areas that have fairly low population densities. At Whitewater Hill, which had the highest population density of all sites studied, the population density of the county was very near the average density for the state. In one case, Oklahoma, the density was higher than the state average but the average population density for the entire state is relatively low. In five of the nine counties studied (located in Wyoming, Texas, Colorado, Minnesota, and Oregon), population density was very low. It is tempting to draw a connection between the success the sites enjoyed in siting the wind energy facilities and the low population density of the communities in which these were sited; however, without any high-density or unsuccessful sites studied for comparison, this
cannot be conclusively argued. One area for future study would be to compare the population density of unsuccessful sites, to determine whether it may be advantageous for developers to seek out potential wind power development sites in areas of low population density.

Proactivity and transparency during permitting process. Construction of six of the nine selected sites took place in locations with minimal permitting requirements for wind power facilities. In the cases where no clear permitting process existed, developers were careful to work closely with local governments and communities to address their concerns and meet their demands. In several cases this effort took the form of community outreach and education as well as conducting environmental impact assessments (especially on bird and bat species) that in some cases went above and beyond what was required. In Minnesota, enXco went through a clear permitting process to develop the Chanarambie project and the process was appreciated by the developer and public alike because it was predictable and transparent. The Bureau of Land Management process employed in the development of the Whitewater Hill development was considered reasonable and expeditious. In all cases, developers expressed a preference for clear communication of the permitting process by the permitting authority.

Economic benefits and community pride. Generation of local economic benefits including jobs during and after construction, spending by construction crews, and especially an increase in visitors/tourism were identified as positive effects of wind facility development in several of the cases studied. In addition to positive economic impacts, several of the communities developed a sense of prides associated with the wind facilities they accepted into their towns. Residents of the Lawton, Oklahoma (Blue Canyon) area demonstrated pride in the fact that they supported a renewable power project. The Blue Canyon site has received more than 2,500 tourists since the facility was completed, with the Western Farmers Electric Cooperative providing tours for schools, community groups and some private companies. At the Fenner Wind Power Project in upstate New York, the town of Fenner has seen an increase in tourism as people come to see the wind turbines. Although there are no formal tours give of the Fenner site, the Chamber of Commerce has a brochure about wind turbines provided by General Electric and provides directions to the site. The community is considering developing an education center to help inform people who are thinking about developing wind projects. In Lamar, Colorado, the community incorporated a “Winds of Change Powering our Future” theme into a community event held on May 14, 2004, shortly after the project was completed. There are organized tours given of the Nine Canyon site in Benton County, Washington and students from local elementary and high schools, community college and the general public have demonstrated their support and pride by visiting the site.

Commonly perceived issues. Whether they materialize as true concerns or not, there are several issues that wind developers and communities alike should consider. The concerns arising most often in the case studies here include visual impacts, effects on wildlife and the surrounding ecosystems, construction impacts, and transmission issues. Other topics that may arise include noise, economic benefits, cultural resources, landowner impacts, and public safety. In many cases there are steps that can be taken to minimize potential impacts; however, the sooner issues of concern can be addressed, the more likely it becomes that a favorable outcome will develop.
Appendix A.
Issue and Resolution Tables (by location)

Appendix A.
Description of Issue and Resolution by Location.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Location and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds, Bats and Other Environmental</td>
<td></td>
</tr>
<tr>
<td><strong>Perceived Issues -- Pre-development</strong></td>
<td></td>
</tr>
<tr>
<td>Blue Canyon*</td>
<td>General concern</td>
</tr>
<tr>
<td></td>
<td>Environmental studies performed - concerns addressed</td>
</tr>
<tr>
<td>Chanarambie, MN*</td>
<td>Known bat area</td>
</tr>
<tr>
<td></td>
<td>Several impact studies done to evaluate and alleviate concerns.</td>
</tr>
<tr>
<td>Fenner Project, NY*</td>
<td>General concern re impacts on birds.</td>
</tr>
<tr>
<td></td>
<td>Avian impact study done, found no cause for concern.</td>
</tr>
<tr>
<td>Rock River I, WY</td>
<td>General concern re impacts on birds.</td>
</tr>
<tr>
<td></td>
<td>Avian impact study done. Tubular towers used to eliminate nesting. Desert tortoises protected</td>
</tr>
<tr>
<td>Whitewater Hill, CA</td>
<td>Concern re birds and desert tortoises.</td>
</tr>
<tr>
<td><strong>Potential Concerns -- During/post development</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>None</td>
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<tr>
<td></td>
<td>None</td>
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<td></td>
<td>None</td>
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<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Construction Impacts</td>
<td></td>
</tr>
<tr>
<td><strong>Perceived Issues -- Pre-development</strong></td>
<td></td>
</tr>
<tr>
<td>Chanarambie, MN*</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Colorado Green, CO</td>
<td>Substantial dust potential. Road watering used to mitigate.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Whitewater Hill, CA</td>
<td>None</td>
</tr>
<tr>
<td><strong>Potential Concerns -- During/post development</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction communication issue. Land owner notification concerning changes in road placement lacking. Some tiles cut, and fencing issues.</td>
</tr>
<tr>
<td></td>
<td>Fence lines initially cut without notification. Notification process improved, all fencing and impacts repaired.</td>
</tr>
<tr>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td></td>
</tr>
<tr>
<td><strong>Perceived Issues -- Pre-development</strong></td>
<td></td>
</tr>
<tr>
<td>Chanarambie, MN*</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Potential issue identified early.</td>
</tr>
<tr>
<td></td>
<td>Consultant identified sensitive areas in advance of construction.</td>
</tr>
<tr>
<td>Desert Sky, TX</td>
<td>Standard requirement to investigate.</td>
</tr>
<tr>
<td></td>
<td>State agency review and monitoring.</td>
</tr>
<tr>
<td>Fenner Project, NY*</td>
<td>Potential issue identified early.</td>
</tr>
<tr>
<td></td>
<td>Studied, no cause for concern.</td>
</tr>
<tr>
<td>Whitewater Hill, CA</td>
<td>None</td>
</tr>
<tr>
<td><strong>Potential Concerns -- During/post development</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alleged destruction of historical site. Experts disturbed this rumor.</td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

Notes: * Site examined in both phase one and phase two research.
### Appendix A. (continued)

#### Description of Issue and Resolution by Location.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Location and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Feasibility</strong></td>
<td></td>
</tr>
<tr>
<td>Perceived Issues -- Pre-development</td>
<td>Some local skepticism about profitability of project without subsidy.</td>
</tr>
<tr>
<td>Potential Concerns -- During/post development</td>
<td>None</td>
</tr>
<tr>
<td><strong>Fiscal Impact</strong></td>
<td></td>
</tr>
<tr>
<td>Perceived Issues -- Pre-development</td>
<td>None</td>
</tr>
<tr>
<td>Potential Concerns -- During/post development</td>
<td>Concern over distribution of fiscal benefits. Overlay district created and payments in lieu of lease benefit town. One school district did not act in time to participate.</td>
</tr>
<tr>
<td><strong>Flicker Effect</strong></td>
<td></td>
</tr>
<tr>
<td>Perceived Issues -- Pre-development</td>
<td>None</td>
</tr>
<tr>
<td>Potential Concerns -- During/post development</td>
<td>Some concern raised early in project development. Did not become a significant community concern.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue</th>
<th>Location and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fenner Project, NY</strong></td>
<td></td>
</tr>
<tr>
<td>Perceived Issues -- Pre-development</td>
<td>None</td>
</tr>
<tr>
<td>Potential Concerns -- During/post development</td>
<td>None</td>
</tr>
<tr>
<td><strong>Nine Canyon, WA</strong></td>
<td></td>
</tr>
<tr>
<td>Perceived Issues -- Pre-development</td>
<td>None</td>
</tr>
<tr>
<td>Potential Concerns -- During/post development</td>
<td>None</td>
</tr>
</tbody>
</table>

Notes: * Site examined in both phase one and phase two research.  
## Appendix A. (continued)
### Description of Issue and Resolution by Location.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Location and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Noise</strong></td>
<td></td>
</tr>
<tr>
<td>Perceived Issues – Pre-development</td>
<td>Blue Canyon*</td>
</tr>
<tr>
<td>Concern raised early on. Turbines found to be quiet. The only nearby resident is not concerned.</td>
<td>Concern raised. Setback requirements mitigated concern.</td>
</tr>
<tr>
<td>Potential Concerns – During/post development</td>
<td>None</td>
</tr>
<tr>
<td><strong>Property Values</strong></td>
<td>Nine Canyon, WA</td>
</tr>
<tr>
<td>Perceived Issues – Pre-development</td>
<td>Concern raised by local landowners. Study by REPP showed no impact.</td>
</tr>
<tr>
<td>Potential Concerns – During/post development</td>
<td>None</td>
</tr>
<tr>
<td><strong>Public Safety</strong></td>
<td>Fennor Project, NY*</td>
</tr>
<tr>
<td>Perceived Issues – Pre-development</td>
<td>Local government concerns about ice throw and winter issues. Officials looked into this, relieved their concerns.</td>
</tr>
<tr>
<td>Potential Concerns – During/post development</td>
<td>None</td>
</tr>
</tbody>
</table>

Notes: * Site examined in both phase one and phase two research.

### Appendix A. (continued)

**Description of Issue and Resolution by Location.**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Location and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads/Traffic</td>
<td></td>
</tr>
<tr>
<td>Perceived Issues — Pre-development</td>
<td>Chanarambie, MN*</td>
</tr>
<tr>
<td>Potential Concerns — During/post development</td>
<td>Some road placements had to be changed. There were issues with notification of property owners.</td>
</tr>
<tr>
<td>Site Security/Access</td>
<td></td>
</tr>
<tr>
<td>Perceived Issues — Pre-development</td>
<td>Combine Hills, OR</td>
</tr>
<tr>
<td>Potential Concerns — During/post development</td>
<td>None.</td>
</tr>
<tr>
<td>Transmission Lines</td>
<td></td>
</tr>
<tr>
<td>Perceived Issues — Pre-development</td>
<td>Colorado Green, CO</td>
</tr>
<tr>
<td>Potential Concerns — During/post development</td>
<td>None.</td>
</tr>
</tbody>
</table>

Notes: * Site examined in both phase one and phase two research.

Appendix A. (continued)
Description of Issue and Resolution by Location.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Location and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation/Weed Control</td>
<td>Combine Hills, OR</td>
</tr>
<tr>
<td>Perceived Issues — Pre-development</td>
<td>Concern raised by local farmers. Studies conducted. Contractor hired to control weeds.</td>
</tr>
<tr>
<td>Potential Concerns — During/post development</td>
<td>None.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Concerns — During/post development</td>
<td>Local landowner concern. Some turbine placements changed so landowner would not see them. None. None. None. Post construction concerns about view shed. May be an issue for possible site expansion in future. None.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wind Rights</th>
<th>Chanarambie, MN*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Issues — Pre-development</td>
<td>None.</td>
</tr>
<tr>
<td>Potential Concerns — During/post development</td>
<td>Potential future issue. Easements will expire soon and have to be renegotiated.</td>
</tr>
</tbody>
</table>

Notes: * Site examined in both phase one and phase two research.
Appendix B. Methodology

Background
This analysis used a case study approach to identify circumstances that distinguish welcomed wind projects from unaccepted ones in an effort to better understand changes in community perceptions before, during and after project development.

The Siting Workgroup developed a two-phased approach for the case studies. In Phase I, nine wind power sites were selected. The Workgroup employed a general set of criteria for narrowing down the number of potential sites to a representative set of nine for this investigation. The Siting Workgroup wanted to study sites where the siting process and impact was not well documented as well as places where it seemed that the development process could be replicated under a similar development setting and scenario. The Workgroup decided to choose a set of sites that were geographically distributed across the United States, both in terms of region and landscape type. They also wanted the case study sites to represent a range of wind power megawatt (MW) production capacities – the sites chosen range from 41 MW to 162 MW. Lastly, the sites selected were constructed by a range of developers with varying degrees of experience in wind power facility development (e.g. Atlantic Renewables, CHI Energy, enXco, PPM/Shell, AEP, Cannon Power, Zilkha, SeaWest, RES US, Eurus Energy).

Participants in the siting and development process were interviewed and their thoughts summarized. The goals of Phase I were to collect background information about the site, identify any potential issues or concerns that arose, and develop a list of further contacts for Phase II interviews. Three of the Phase I sites were selected for in the in-depth Phase II analysis. During Phase II, additional interviews were conducted and more information was collected about the site to better understand the perceived issues and concerns of the local community and how they were resolved.

Study Tasks
A seven-step process was used for this study:
1. Identify Phase I sites and collect background information;
2. Develop interview guide;
3. Conduct Phase I interviews and collect further data;
4. Select Phase II case studies and conduct additional interviews;
5. Synthesize information and document case studies;
6. Perform a comparative analysis and develop conclusions; and

Task 1 — Identify Phase I sites and collect background information. The NWCC Siting Workgroup selected sites to study for Phase I of this project. Two important principles were used in case study selection:
- Case studies would be conducted on recently developed sites, so that people would possess good recall of the siting process and development of the site
- The sample should reflect different regions of the country, as land use, planning, perceptions and politics all vary from state to state and region to region.

The NWCC Siting Workgroup identified six potential sites in the initial Request for Proposal (RFP). All of these sites were selected for Phase I. Members of the NWCC Siting Workgroup chose an additional three sites for a total of nine Phase I sites:
The Siting Workgroup assembled background information about these sites (including a matrix of potential siting issues). Other sources of background information included wind industry representatives and the websites for project developers, electric utilities, state and local government offices, and the American Wind Energy Association (AWEA). Additionally, various documents were obtained that described the local communities and areas in which the projects were located and, most importantly, identified key organizations and individuals to contact for interviews.

**Task 2 — Develop interview guide.** Next, a comprehensive interview guide was developed to facilitate consistency and comparability among the case studies. The interview guide was designed to be suitable for use with a wide range of different stakeholders and to cover the full range of potential siting concerns, examine the siting process, and elicit further contacts. Members of the NWCC Siting Workgroup reviewed this interview guide to ensure that all issues of key importance would be covered in the case studies. Appendix C provides the final version of the interview guide.

**Task 3 — Conduct Phase I interviews and collect further data.** During this task, the Siting Workgroup captured basic information about the siting process, including key stakeholders, level of controversy, key issues or perceived issues (if any), and resolution of issues (where applicable). Every site was treated as if it would be selected into Phase II, meaning that we also identified further contacts, where possible, using a snowball sampling technique.

Thirty-five interviews were conducted for the nine sites. These interviews were completed on July 21, 2004. An attempt was made to include an array of individuals who might have different viewpoints within each community. Where possible, individuals were contacted who might provide an unbiased description of the community’s reaction to the project, such as newspaper reporters and university professors. At a minimum, calls were placed to the project developer and local county government (typically the planning department).

The interviews were based on the interview guide developed in the previous task. Documentation was also collected regarding the siting process from sources such as state and local permitting studies and minutes from public meetings.

**Task 4 — Select Phase II case studies and conduct additional interviews.** Based on the results of the Phase I interviews, the NWCC Siting Workgroup selected the following three sites for more detailed research in Phase II:

- Blue Canyon — South Central/Western Oklahoma;
- Chanarambie — Southwestern Minnesota;
- Colorado Green — Eastern Colorado;
- Combine Hills — North Central Oregon;
- Desert Sky — Western Texas;
- Fenner — Central New York;
- Nine Canyon — South Central Washington;
- Rock River I — Southeastern Wyoming; and
- Whitewater Hill — Southern California.
• Blue Canyon, Oklahoma;
• Chanarambie, Minnesota; and
• Fenner, New York.

Additional interviews were conducted with those involved with the development of these three sites. Special care was taken to explore particular issues of interest for each site. In addition to the contacts interviewed in Phase I, Phase II interviews included employees of state government agencies, community groups and individuals, local landowners, environmental organizations and activists, and the power purchaser. In one instance, an attempt was made to interview members of a tribal government, but this effort was not successful.

Task 5 — Synthesize information and document case studies. The results of the research conducted in preceding tasks were then synthesized into a description of each case study. Section III of this report contains the case studies. Each of these case studies:

• Contains background information about the facility locations, surrounding communities and land uses
• Describes the siting process
• Identifies key concerns or perceived issues that arose and how these issues were or were not resolved
• Describes changes in perceptions that may have occurred before, during and after project development

Task 6 — Comparative analysis and conclusions. After each of the case studies was researched, analyzed and described, a comparative analysis of all case studies was conducted. The goal of this analysis was to develop broader findings and conclusions for use in considering future wind facility siting proposals. Special attention was paid to identify key similarities and differences among the case study experiences and why the case studies may have differed in terms of issues, process, resolution, and community acceptance. Section III of this report contains the comparative analysis and conclusions.

Task 7 — Reports and presentation. In the final task, the NWCC Siting Workgroup reviewed an initial draft report. The draft report was revised in response to the Workgroup’s comments and a second draft for review by the full NWCC membership was then re-submitted.

The results of this study will be presented at a future NWCC meeting.
Appendix C. Interview Guide

Site Name:

Site Location:

No. of Turbines: Size of Turbines: MW Generating: MW

Date Started: Date Completed:

Site/Land Use:

Developer: Operator:

Investor: Purchaser:

Contact Name:

Company:

Contact Phone No.: email address:

Date Contacted: Response:

1) ROLE in the siting process – how did they become involved? (formal process, brought in because of an issue, or other ways?)

2) PARTICIPANTS – who else were the primary organizations/individuals involved – (names/phone numbers/email address??)

3) PROCESS – Can you provide a step by step description of what happened from initial involvement/awareness of proposed wind development to either end of the process or present day?
   As an example, describe:
   Approval authority:
   Regulations covering the process:
   Length of permitting process:
   Amount of advanced planning:
   Level of public involvement at various stages:
   Appeal or protest process (both FOR and AGAINST):
   Compliance monitoring and other rules/regulations for operations:

4) COMMUNITY REACTION: What was initial community reaction to proposed wind facility (positive/negative/little interest)?
What was the source of these (positive/negative) reactions? If reaction was mixed, why? Who was opposed, why?

5) SPECIFIC ISSUES: What more specific issues or concerns arose during the siting process? For each issue, describe how it came up, what actions were taken to resolve/explain or mitigate the issues, if any? Is the issue still a concern?

   Land Use:
   Noise:
   Birds and other biological resources:
   Visual Impacts:
   Soil erosion and water quality:
   Public safety and public services:
   Cultural resources:

6) HOW TO IMPROVE THE PROCESS: (What could have been done better?)

7) WHAT WORKED WELL?:

8) OTHER SOURCES OF INFORMATION (Studies/meeting minutes/public documentation describing things that occurred during the siting process? How do we obtain them?):

9) PRESS COVERAGE: Was there any press coverage of the siting process? Which newspapers or other press did most of the coverage? How do we obtain these press clippings?

10) CURRENT LEVEL OF ACCEPTANCE: What is current community perception regarding this wind project (positive/negative/no reaction)? How do you gauge this perception?

OTHER CONTACTS: Any other individuals/organizations with whom we could speak?

CLOSING: Thank you so much for your time and valuable input. When the report is completed, NWCC will make it a public document – would you like to obtain a copy at that time/be notified when it becomes available?
Appendix D. Interviewees

Blue Canyon, OK

Randy Gilliand, Landowner and Chairman of the Board for Wichita Life Insurance, August 2004.
Steve Stadler, Coordinator for the Wind Power Initiative and Geology Professor at Oklahoma State University, 2004.
Susan Ulrich, Comanche County Commissioner, District 3, August 2004.

Chanarambie, MN

Caryl Busman, Murray County Historical Society, August 2004.
Fred and Fran Berreau, Landowners with three turbines on their land, July 2004.
Janet Timmerman, Southwest Minnesota State University, Society for the Study of Local and Regional History, August 2004.
Karen Onken, Murray County Zoning Administrator, August 2004.
Kevin Anderson, Murray County Commissioner and Vice President of Economic Development, August 2004.
Leroy Scotting, Landowner (turbines on his farm) and Sanitation Business Owner, September 2004.
Paul White, Development Consultant, enXco, July 2004.
Nancy Transgard and Kate Erkey, enXco, July 2004.
Ralph Knapp, President of Economic Development for Murray County, August 2004.
Randy Groves, Murray County Engineer, August 2004.

Colorado Green

LeRoy Mauch, Chair, Prowers County Commission, July 2004.
Mary Root, Prowers County Land Use Office, June 2004.

**Combine Hills**
Deston Nokes, External Communications Department, PacifiCorp, July 2004.
Don Bain, AeroTower Services (Consultant for Eurus Energy America Corporation), July 2004.
Steve Corey, Attorney at Law, June and July 2004.

**Desert Sky**
George Riggs, Commissioner, Pecos County Commission, July 2004.
Peter Main, Communications, American Electric Power (Power Purchaser), July 2004.

**Fenner, NY**
Bill Moore, Atlantic Renewable Energy (used to work for Fenner WindPower before it was sold to CHI Energy, July 2004.
Jennifer Harvey, New York State Energy Research and Development Administration, July 2004.
Carol Tools, Landowner (four turbines on her land), August 2004.
Donna Griffin, Landowner (turbines on her land) and Member of the Planning Board, August 2004.
Jack Miller, Madison County Planning Department, August 2004.
John Saintcross, New York State Energy Research and Development Administration, August 2004.
Jolene Walters and Danielle Elliott, Oneida Daily Dispatch, August 2004.
Russell Cary, Town of Fenner Supervisor/Manager, August 2004.
Scott Walter, Madison County Tourism, August 2004.

**Nine Canyon**
Dolly Richendrfer, Communications, Marketing and Member Services, Energy Northwest, July 2004.
Mike Shuttleworth, Planner, Benton County, July 2004.
Wally Erickson, Consultant (worked with Energy Northwest and Northwest Wildlife), Western Eco Systems Technology, July 2004.

**Rock River I**
Henry Hewitt, Chair, Carbon County Planning Commission, July 2004.
Ron Kilgore, Planning and Zoning Department, Rawlins, Wyoming (currently Rawlins Communications Director), July 2004.

**Whitewater Hill**
Appendix E. Project Location Maps

Exhibit III-1.
Blue Canyon Wind Project Location

Exhibit III-2.
Chanarambie Wind Project Location

Exhibit III-3.
Fenner Wind Project Location
Exhibit III-4.
Colorado Green Wind Project Location

Exhibit III-5.
Combine Hills Wind Project Location
Exhibit III-6.
Desert Sky Wind Project Location
Exhibit III-7.
Nine Canyon Wind Project Location
Exhibit III-8.
Rock River I Project Location
Exhibit III-9.
Whitewater Hill Wind Project Location
ACKNOWLEDGEMENTS

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Thanks to Ed Holt, Ed Holt & Associates, Laura Miner-Nordstrom, US Department of Energy, Tom Gray, American Wind Energy Association, Troy Gagliano, Renewable Northwest Project, and all the members of the NWCC Siting Workgroup, who provided input and review that informed the development of this document.