☞ 09hr_SC-CUER_sb0185_pt08c

Details:

(FORM UPDATED: 08/11/2010)

WISCONSIN STATE LEGISLATURE ...
PUBLIC HEARING - COMMITTEE RECORDS

2009-10

(session year)

Senate

(Assembly, Senate or Joint)

Committee on ... Commerce, Utilities, Energy, & Rail (SC-CUER)

COMMITTEE NOTICES ...

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)
  (**ab** = Assembly Bill) (**ar** = Assembly Resolution) (**ajr** = Assembly Joint Resolution)
  (**sb** = Senate Bill) (**sr** = Senate Resolution) (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

* Contents organized for archiving by: Gigi Godwin (LRB) (July/2011)

Electric expects that in many cases the excavations would be reasonably dry and would require no dewatering effort.

If foundations are constructed on bedrock, and no blasting occurs, it is our opinion that there would be no negative impact on private wells within close proximity to the sites. Furthermore, if blasting does occur, and over-blasted rock remains below the foundations, the over-blasted rock should be well sealed with the new concrete mat from a vertical infiltration standpoint. Any horizontal penetration into the over-blasted rock also is expected to be very small due to the limited extent of the blasting beyond the outer perimeter of the foundations (i.e. 4 to 5 feet).

5.2 TOPOGRAPHY

5.2.1 Describe the general topography of the project area

The topography of the project area is gently rolling land, primarily in agricultural use for crop production and livestock grazing. The area is interspersed with forests, woodlots, waterways and wetlands. The elevation varies from 824 feet above sea level on the far western edge of the project to 1076 feet on an isolated hill top in the NE quarter of Section 35, Township 13N, Range 11E. In general, the topography varies with features formed by glacial deposition and erosion.

The Fox River flows outside the western edge of the Project, however, within the boundary the only hydrological features of significance are Sand Spring Creek and the North Branch of Duck Creek flowing through the northern and southern areas, respectively. Several small lakes, ponds, streams and drainage features are distributed throughout the area of interest.

5.2.2 Describe expected changes to site topography due to grading activities.

Construction activities will result in temporary changes to site topography. Stockpiling of soils may result in temporary diversions of surface water flow. For linear stockpiles, such as topsoil stockpiles along crane routes, stockpiles will have open areas or "breaks" along the stockpile. This will allow water to flow past the stockpile to avoid causing excessive ponding of water. Upon completion of construction, all excavated and graded areas will be returned to pre-construction topography, except that the immediate area around each turbine will be graded at an approximate 1% slope away from the turbine base to ensure ponding does not occur around the base. Access roads will be constructed as close to existing grade as possible to allow farm equipment to drive across roads during routine farming activities.

5.3 LAND COVER

The land cover within the project area is dominated by agricultural row crops and pasture, reflecting the overall farming economy of the region. It is interspersed with woodlands and small pockets of wetlands. The acreage of the various land cover types found within the project area are listed in table 5.3-2. A map depicting the land cover is provided in Appendix H, Project Maps.

Figure 5.3-1 Land Cover

5.3.1 Vegetative Communities in the Project Area

The following lists the predominant plants in each community. This information was gathered from various sources including the National Agricultural Statistics Service (NASS) crop data generated by USDA, aerial photography and field observations. A raster image in tiff format of the NASS dataset has been provided. (GlcrHls_NASS_2007.tif)

Table 5.3-1 Vegetative Communities in Project Area

Community	Predominant Vegetation
Agricultural	
Row crops	Corn
Hay/pasture/old fields	Hay, alfalfa, wheat
Other	Fallow land (grass and weedy species)
Non-Agricultural Upland	
Prairie/Grasslands	None present
Upland Woods	Oak, maple and pine trees
Wetlands	
Wooded Wetlands	Ash, elm, Cedar and oak trees
Marshes	Cattails, reed canary grass and sedge species
Bogs	None present
Fens	None present

5.3.2 Acres of Land Cover Categories in Project Area

Table 5.3-2 lists land cover categories, along with the respective acreage within the project area. The land cover dataset was compiled utilizing a combination of available data including:

- National Land Cover Data (NLCD) from the Multi Resolution Land Characteristics Consortium (MRLC)
- NASS Crop Dataset
- WDNR Wetland Inventory (WWI) and hydrology data
- Columbia County hydrology, road centerlines, 2007 orthophotos
- Digital delineations of forests, buildings and crops (STS)
- Review of field observations (STS)

A shapefile of the final dataset is provided: GlcrHls_LandCover_VarSrcs.shp.

Table 5.3-2 Land Cover in Project Area

Land Cover Classification	Acres
Agricultural	**14,140**
Row crops	12,595
Hay/pasture/old field	1,469
Other	76
Non-Agricultural Upland	**1,730**
Prairie/Grasslands	0
Upland Woods	1,730
Wetlands/Water	**737**
Wooded Wetlands	88
Marshes	575
Bogs	0
Fens	0
Water: Lake and Streams	74
Developed Land	**741**
Residential	326
Commercial/Industrial (Including roads)	415
Total Acreage	**17,348**

5.3.3 Land Cover Impacts

The Land Cover impact analysis was performed by digitally intersecting the final land cover dataset (described in Section 5.3.2) with the GIS feature classes of project facilities and the appropriate buffers to represent the impacted area of the construction activities. It is further broken down to indicate whether an impact will be temporary versus permanent. Note that some temporary impacts are lessened by the fact that construction areas will be utilized for multiple purposes. For example, Crane Path impacts are calculated for those that travel cross country, and are not coincident with already disturbed access roads or collector system routes.

Table 5.3-3 Land Cover Impacts in Acres

	Turbines with Crane Pads		Collector Circuits		Access Roads		Cross-Country Crane Paths		Substation		O&M Building	
	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
Agricultural												
Row crops	128.71	11.69	126.29		92.84	33.86	42.92		20.00	10.00	20.00	5.00
Hay/pasture/old field	17.06	1.45	16.55		8.95	3.12	5.67					
Other			0.15		0.04							
Non-Agricultural Upland												
Prairie/Grasslands												
Upland Woods	0.25		4.77		2.83	0.87	1.25					
Wetlands												
Wooded Wetlands												
Marshes/Water			2.89				1.19					
Bogs												
Fens												
Developed Land												
Residential			1.20		0.94	0.26	0.12					
Commercial/Industrial (includes road ROW)			67.00	0.23	1.25	0.40	0.67					

Notes:
(1) Temporary impact for each turbine and crane pad includes the entire turbine site construction area, 1.6 acres.
(2) Permanent impact of each turbine and crane pad is 0.15 acres.
(3) Temporary access road disturbed area width will be approximately 50 ft.
(4) Permanent access road width will be approximately 16 ft.
(5) Collector circuit construction corridor width varies with number of circuits installed in the corridor
(6) Overhead collector installation is calculated as a temporary impact with the exception of 10x10 ft pole locations. Vegetative cover will be periodically trimmed beneath overhead lines.

5.3.3.1 Turbine Pads

During construction the turbine foundation, crane pad and laydown area will require approximately 1.6 acres of land around each proposed turbine. This will result in a total of 144 acres of temporary impacts to agricultural land. Temporary impacts include grading and stockpiling topsoil and subsoil, temporary placement of equipment and construction activity.

The turbine foundation and crane pad are permanent structures and will require a total of approximately 0.15 acres of land for each foundation and crane pad. This will result in a total project wide impact of 13.5 acres of permanent land surface impact. All foundations and pads will be installed in upland agricultural areas.

5.3.3.2 Collector Circuits

The collector system will be installed via trenching and directional boring methods. The corridor width is 50 feet, which allows sufficient room for both equipment accessibility and construction

of the trench. The collector system must connect each turbine with the substation. Most of the collector system will be installed in agricultural fields or road right-of-way. Some wetlands and waterways will be temporarily impacted during collector system installation. Wetland and waterway crossing methods are described in the Chapter 30 application in Appendix Z.

Trenching or plowing proposed for narrow wooded corridors, such as wood rows between agricultural fields, will require that trees and brush be removed for construction access and collector installation. Whenever reasonably possible, collector systems will follow existing farm lanes or other open gaps in wood rows. Woody vegetation will be allowed to re-vegetate the construction corridor upon completion.

There are two areas that Wisconsin Electric proposes to directionally bore collector system conduit to avoid surface impacts to large woodlots. This is the collector system between turbines 47 and 69 and the collector system between turbines 31 and 7. If it is not possible to reroute the collector system to avoid these large woodlots, the collector will be directionally bored beneath the woodlots. When directionally boring a collector circuit, a conduit is installed into the bore hole and the circuit threaded through the conduit. The conduit protects the cable from interference due to tree root growth, therefore trees and brush may remain in place. If a problem with the collector circuit is discovered in the future, the collector can be removed from the conduit and new cable installed without disturbing the trees.

Installation of the collector system along Vaughn Road is currently proposed to be an overhead system strung on utility poles placed in the road right-of-way. This will require removal of trees located beneath and immediately adjacent to the overhead lines in the road right-of-way. Tree trimming along this overhead line will be assessed on an ongoing basis to ensure the reliability of this segment of the collector system. If any, or all, of this segment of the collector system is installed via directional boring, trees may need to be trimmed or removed for staging of the bore equipment.

5.3.3.3 Access Roads

During construction, access road width will be approximately 40 ft. Turning radii of 150 feet at the junction with public roads will be necessary. These radii are temporary and will be removed upon completion of the project. If the access road includes a turn or bend, temporary turning radii may be necessary. All access roads will be in agricultural lands. Permanent width of access roads will be approximately 16 ft. A construction corridor of 50 ft in upland areas is required to accommodate soil stockpile. No wetlands or waterways will be impacted by access roads. The access road for turbine 81 is shown as routed through a woodlot. This road has been rerouted to the west to avoid the woodlot, although a few isolated trees may be removed. This change will be reflected in the final construction drawing.

5.3.3.4 Crane Routes

Most of the land used for crane routes is in agricultural use. Some routes cross waterways and wetlands; crossing of these resources is described in the Chapter 30 application in Appendix Z. All areas graded and compacted for crane route operation will be de-compacted and restored to

pre-construction elevations. Temporary bridges/timber mats may be necessary to cross waterways or wetlands. No grading will occur in wetlands or waterways. Bridges/mats will be removed upon completion of the crane walk. No long-term vegetation maintenance is necessary.

5.3.3.5 Substation

The 20 acre substation property will be purchased and owned by Wisconsin Electric. The proposed substation site is in agricultural use. Purchase of agricultural land for the substation requires an Agricultural Impact Statement, a copy is provided in Appendix Z.

5.3.3.6 O&M Building

There are two sites under consideration for an O&M building. One site is in the Village of Friesland and is currently used for commercial purposes. Most of the site is either vacant or used for outdoor equipment/material storage. There is an existing building on the site; this building would not be part of the property purchase. The second site is in agricultural use. Both sites are currently being assessed to determine suitability for construction and operation of this facility.

5.4 WILDLIFE

5.4.1 Existing wildlife resources and estimate expected impacts to plant and animal habitats and populations

A draft biological study was completed in 2004, updated in 2008 and is available in Appendix Z. Wildlife in the area would be typical of that found in agricultural communities in Wisconsin, such as white tailed deer, coyote, red fox, raccoon, red tailed hawk, kestrel, songbirds and waterfowl. There are small wetlands and waterways within the project area which may provide habitat for common amphibian species.

In summary, this project should not have a significant impact on wildlife populations or wildlife habitat. There are no significant topographic or habitat features within the project area that would concentrate wildlife resources. The turbines and access roads will not create habitat fragmentation. Nearly all construction activities will occur in agricultural fields, which will be restored to original topography and agricultural use upon construction completion.

The turbines and 16 foot wide access roads, the O&M building, substation, and utility poles will be the only permanent structures in the landscape. During the day, noise from human activity and equipment operation may cause wildlife to avoid the active construction areas. Wildlife will, however, cross through construction areas throughout the night and during periods of construction inactivity. Installation of collector systems and crane routes may result in temporary wetland or waterway impacts. Wildlife will likely avoid the active construction areas. Installation of permanent access roads may require installation of culverts and/or bridges in navigable waterways.

Birds

The USFWS enforces the Migratory Bird Treaty Act (MBTA) and Endangered Species Act (ESA). The only state and/or federally listed bird species for this county is the whooping crane, and this is listed as a "non-essential experimental population". Correspondence with the USFWS and the DNR Endangered Resources staff are available in Appendix Z.

Potential Impacts on Birds — Summary of Literature

An environmental issue associated with wind energy development that is frequently raised by environmental groups and regulatory agencies is the potential impacts of wind turbines on migratory birds. Impacts to birds can be generalized into three categories: death through collision with turbine blades; direct habitat removal or fragmentation through construction of wind turbines and facility infrastructure; and displacement through indirect removal of habitat if birds avoid a wind facility site and its surrounding area due to turbine operation and maintenance. Displacement can include barrier effects in which birds are deterred from using normal routes to feeding or roosting sites. For each of these potential issues, knowledge of bird distribution, abundance, and activity is necessary in order to quantify the risk.

Bird mortality due to wind farm construction and operation has a minimal impact on bird populations especially when compared to other causes of mortality. The USFWS (2002) has estimated that the breeding bird population in the United States is on the order of 10 billion birds, with a fall migration of 20 billion birds. The various causes of avian mortality have been examined by many agencies and organizations. Annual mortality from birds flying into windows, communication towers, vehicles, hunting, pesticides, and power lines has been estimated at between 162 million and 1.2 billion per year. Bird fatalities of 60-80 million/year from vehicles, 98-980 million for buildings and windows, tens of thousands to 174 million/year for power lines, and 4-50 million/year for communication towers were estimated by Erickson et al. (2001). This does not include the estimates of fatalities caused by cats, which vary from a few million/year up to one billion/year. Comparatively most wind farms have bird fatalities on the order of a few hundred birds per year.

Of the nine project studies reviewed by Erickson et al. (2001), all documented bird fatalities. Data from these studies indicate that there was an average of 2.19 fatalities/turbine/year for all birds (0.033 are raptors). If projects in California, which have unusually high fatalities not seen at other project in the United States, are removed the result is 1.83 fatalities/turbine/year for all birds (0.006 are raptors). Total annual mortality from all wind farms, calculated in 2001, was 10,000-40,000 birds.

Howe et al. (2002) conducted mortality monitoring surveys as part of their investigation at the wind farms in Kewaunee County, Wisconsin. When adjusted for sample area, scavenging, and searcher efficiency, Howe et al. (2002) estimated that there were 1.29 fatalities/turbine/year. This is slightly less than the rates calculated by Erickson et al. (2001) for wind farms across the country. All but four of the fatalities documented by Howe et al. (2002) were during the spring and fall migration periods. This could be due to migration events or because croplands were more conducive for searching for carcasses in the spring and fall when tall crops are not present.

Johnson et al. (2000) estimated that there were 2.8 fatalities/turbine/year at Buffalo Ridge, Minnesota. Erickson (2003) standardized bird fatality estimates on a Megawatt (MW) basis for several wind farms in the United States, including the Buffalo Ridge and Kewaunee County projects. The estimated fatalities per MW for Buffalo Ridge was 4.7 fatalities/MW/year, and for Kewaunee County the estimate was 2.0 fatalities/MW/year.

Mortality may be expressed as number of fatalities per turbine per year or as number of fatalities per MW per year. Using both metrics provides a good comparison of fatality data among wind projects, especially between modern wind projects (built in 1998 or later) and older wind projects. Per-turbine fatality rate comparisons between older and newer wind projects may be misleading because older turbines are much smaller in size and their per-turbine fatality rates will appear lower for that reason. Both metrics are provided for comparative purposes (NWCC Consensus Document, 2004).

When comparing various studies as shown in the table below, fatality ranges between 0.9 and 11.7 birds/MW/year with an average of 3.1 birds/MW/year. This was also expressed as a range of 0.6 to 7.7 bird fatalities/turbine/year with an average of 2.3 birds/MW year. (NWCC Consensus Document, 2004). These numbers include the Altamont Pass project in California, which has an unusually high mortality rate not seen in other projects.

# birds/turbine/year			# birds/MW/year		
Minimum	Average	Maximum (includes Altamont data)	Minimum	Average	Maximum (includes Altamont data)
0.6	2.3	7.7	0.9	3.1	11.7

The Altamont Wind Farm in California has had exceptionally high fatality of raptors. Singling out specific causes for the high fatalities continue and include obsolete lattice tower designs and layouts, project location within heavily used raptor habitat and migratory corridors, and raptor behaviors that increase the potential of impacts. Wind projects in other parts of the nation have not seen avian fatality on that high of a scale. The Glacier Hills pre-construction avian survey indicates that bird numbers and bird species includes listed species, are typical for this region and are what would be expected for an agricultural dominated landscape in this area of Wisconsin. Therefore, caution should be used when considering the maximum fatalities shown above.

Assessment of Potential Impacts on Birds in the Project Area

Assuming this project has a total of 90 turbines that are operating at peak performance all year, if one were to extrapolate using the numbers generated by the NWCC Consensus Document, as shown in the table below, the Project has a large range of potential avian mortality (54 – 2738 birds/year). The maximum end of the range would assume that the Project has the same unusually high mortality rate seen at Altamont. Wisconsin Electric expects the fatalities to be at the lower end of this range, similar to numbers found at other Midwestern wind farms; approximately 200 - 250 birds/year. This estimate is based on the biological study and pre-construction avian study completed for the project area, and the likelihood that all turbines will not operate at peak performance throughout the entire year.

The avian survey did not indicate unusually high numbers or concentrations of birds within the project area. Numbers of birds moving through the area during spring and fall migration were typical for agricultural areas in Wisconsin and did not indicate that the project area has any features that would cause greater concentrations of birds during migration. Of the bird species observed in the project area, there were not high numbers or concentrations of species that are listed as noted in the avian study. The expectation of 200-250 bird fatalities per year for the Glacier Hills Wind Park also is in line with the number of bird fatalities observed at the Blue Sky Green Field wind project in Fond du Lac County, Wisconsin, during fall 2008 (Cutright, pers. obs.).

Glacier Hills Wind Park # birds/year (assumption of 90 turbines)			Glacier Hills Wind Park # birds/year (assumption of 207 MW)		
Minimum	Average	Maximum (includes Altamont data)	Minimum	Average	Maximum (includes Altamont data)
54	207	639	211	725	2738

Wisconsin Electric General Mitigation Measures – Migratory Birds
Wisconsin Electric has or will implement the following mitigation measures that should help decrease potential impacts to birds resulting from the Project:

- Constructing turbines in cultivated agriculture lands, and not placing turbines in woodlots and / or wetlands;
- Not placing the project within the tributary river/woodland complex of the Fox River
- Avoid placing turbines in documented locations of any species of wildlife, fish, or plant protected under the Federal Endangered Species Act.
- Avoid locating turbines in known local bird migration pathways or in areas where birds are highly concentrated
- Configure turbine locations to avoid areas or features of the landscape known to attract raptors.
- Avoid fragmenting large, contiguous tracts of wildlife habitat. Where practical, place turbines on lands already altered or cultivated, and away from areas of intact and healthy native habitats. If not practical, select fragmented or degraded habitats over relatively intact areas.
- Avoid placing turbines in habitat known to be occupied by bird species that exhibit extreme avoidance of vertical features and/or structural habitat fragmentation. Minimize roads, fences, and other infrastructure.

These mitigation methods would also apply to alternative turbine location selection should it be required as substitute for any Wisconsin Electric preferred turbine location.

Bats

Bats in Wisconsin

There are eight species of bats found in Wisconsin. The most common species include the big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionyceris noctivigans*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and little brown bat (*Myotis lucifugus*), all of which may be found in the Project Area. The eastern pipistrelle (*Pipistrellus subflavus*) and the northern myotis (*Myotis septentrionalis*) are two state species of special concern that also may occasionally occur in the Project Area. The Indiana bat (*Myotis sodalis*) is a federally-listed endangered bat that occurs in Wisconsin. The occurrence in Grant County is a small (1-49 individuals) winter hibernaculum that is considered to be a low-priority site by USFWS (USFWS 2007), and which has not held Indiana bats since 1995 (USFWS 2007). There are no known summer populations in Wisconsin (USFWS 2007). Because this species' distribution seems to be limited to Grant County in the southwestern corner of the state, it is not expected to occur in the Project Area. Most Wisconsin bat species hibernate locally during the winter, except for the silver-haired, red, and hoary bats, which migrate south for the winter months.

All of the bats in Wisconsin are insectivorous and typically occur near rivers, lakes, or marshes as well as within wooded areas. Potential bat roost habitat in the Project Area includes mature trees in woodlots, abandoned buildings, and barns. No large bat hibernacula or roost sites are known in the Project Area. Other potential bat habitat exists west of the Project Area, where there are tributaries to the Wisconsin River that have adjacent woodlands. Horicon marsh is located more than 24 km east of the project site. The nearest State Wildlife Area is the Springvale Wildlife Area, located approximately 3 km south of the project site.

Relatively little is known about bat migration; however, it is likely that individuals may be killed while migrating through the Project Area (Howe *et al.*, 2002; Johnson *et al.*, 2003; Arnett et al., 2008). The Niagara Escarpment, which may be a migratory corridor used by bats, is more than 16 km west of the project site and the Neda mine bat hibernaculum is more than 40 km to the southeast of the project site.

Potential Impacts on Bats – Summary of Literature

Bat mortality has been documented at most wind farms across the United States (NWCC 2004). Erickson *et al.* (2002) concluded that bat collision mortality during the spring breeding season was virtually non-existent, even though bat numbers in close proximity to wind farms can be relatively high. Apart from fatalities of free-tailed bats in Oklahoma during May and June (Piorkowski 2006), it appears that most of the bat mortality at United States wind farms involves migrant or dispersing bats in the late summer and fall (Erickson *et al.* 2002, Arnett *et al.*, 2008). Although the highest rates of bat kills have been reported at Appalachian Mountain ridge-top turbines (mean = 46.3 bats / per turbine / per year), studies in the Upper Midwest have shown a much lower average, 1.7 bats / turbine / year (NWCC 2004).

A multi-year study conducted at Buffalo Ridge in southwestern Minnesota examined bat interactions with wind turbines (Johnson *et al.*, 2003). Overall, bat collision mortalities at Buffalo Ridge were low, ranging from 0.07 bats / turbine / year to 2.04 bats / turbine / year. Results indicated that there was not a statistical relationship between bat activity near turbines

and the level of bat mortality. Those bats that were killed were primarily tree roosting, migrating bats such as the hoary bat (*Lasiurus cinereus*).

At the Top of Iowa wind farm in north-central Iowa, Jain (2005) estimated higher bat mortality than at other Midwestern sites, ranging from 6.44 bats / turbine / year in 2003 to 9.24 bats in 2004. It is possible that bat activity at this location was affected by better bat habitat nearby. Three species were predominantly found, the hoary, eastern red, and little brown bat.

Howe *et al.* (2002) investigated bat / wind turbine interactions at wind farms in Kewaunee County, Wisconsin. This investigation examined mortality surveys at 31 turbines in Kewaunee County between 1998 and 2001. Sixty five of the 72 bat carcasses, were tree-roosting, migratory species, either the hoary bat, eastern red bat, or silver-haired bat (*Lasionycteris noctivagans*). After adjusting for search efficiency and carcass removal, Howe *et al.* (2002) estimated that 4.26 bats / turbine / year were killed.

In Wisconsin, Redell *et al.* (2003) investigated the potential impacts of wind power development near the Neda Mine bat hibernaculum. This hibernaculum is the largest known bat roost in the Midwest and is approximately 40 km southeast of the Glacier Hills Wind Park site. Most bat species at the Neda Mine are *Myotis* species. Redell *et al.* (2003) state that most bats departing the Neda Mine fly directly along the Niagara Escarpment, and the largest number fly south. The study also found that bat activity declined significantly at distances greater than 200 m from the Escarpment. In general, bats leaving the mine appeared to be flying low across the landscape and traveling along tree lines or forest edges. It is unknown if bats that utilize the Neda hibernaculum migrate across the Glacier Hills site.

Assessment of Potential Impacts on Bats in Project Area

Bat mortality at wind farms appears to have a correlation with different factors, including the presence of hibernacula, large communal roost sites, migratory routes, and habitat types associated with those routes. There are no known hibernacula or large colonial roosting locations near the Project Area. The cliff of the Niagara Escarpment, a potential migratory route for migrating bats, does not occur within the Project Area.

Based on information from other wind energy sites (Howe, *et al.* 2002, Jain, 2005, Johnson, *et al.* 2003, NWCC, 2004) one can theorize that the impacts on bats from the proposed Glacier Hills Wind Park may be similar to the Buffalo Ridge wind farm (2.2 bats / per turbine / per year) and Kewaunee County wind farms (4.26 bats / turbine / year). Similar to the proposed site, these existing facilities in Minnesota and Wisconsin are dominated by cultivated agricultural land with scattered woodlots, wetlands, and pasture/Conservation Reserve Program areas and are dominated by flat to gently rolling topography.. Based on existing research, these factors should lessen the risk of significant bat mortality at the project site.

Study Area	Bat Mortality (#/turbine/year)
Mountaineer, WV	38.0
Buffalo Mtn., TN	20.8
Top of Iowa	10.2
Kewaunee County, WI	4.3
Buffalo Ridge, MN	2.2
Foote Creek Rim, WY	1.3

Additional fatality studies are in progress throughout the United States. In Wisconsin, the Wisconsin Electric Blue Sky Green Field Wind Project began a fatality study in July 2008 (to be completed in May 2009). Fatality studies at additional wind farms in Wisconsin (not owned by Wisconsin Electric) are either proposed or in progress. These studies will provide data that will help assess probable fatalities at proposed wind farm projects in Wisconsin.

Wisconsin Electric understands that since utility-size wind projects are new in Wisconsin, a certain number of fatality studies may be necessary to properly assess the impact these projects may have to Wisconsin bird and bat populations. In order to provide additional data for this baseline knowledge, Wisconsin Electric proposes to complete a post construction fatality study and bat acoustic study. While the survey would be similar to the studies currently underway at the BSGF Wind Project, the Company is interested in working with the Commission staff to determine how the methodology of the study can be modified to develop a less expensive survey protocol. The draft survey protocol will be provided to PSC for review, discussion and approval prior to the issuance of an Order for the project.

Wisconsin Electric Mitigation Measures – Bats

There is currently a collaborative effort underway between the USFWS, Bat Conservation International, and members from the wind industry to investigate bat / turbine interactions and effective bat deterrent methods along with other potential mitigation measures. Wisconsin Electric has or will implement the following mitigation measures which should help decrease potential impacts to bats resulting from the Project:

- constructing turbines in cultivated agriculture lands;
- not placing turbines in woodlots and / or wetlands;
- not placing the project on the Niagara Escarpment; and
- not placing the project within the tributary river/woodland complex of the Wisconsin River.

These mitigation methods would also apply to alternative location selection should it be required as substitute for any Wisconsin Electric preferred turbine location.

References

Arnett, E.B, W.K. Brown, W.P. Erickson, J.K. Fiedler, B.L. Hamilton, T.H. Henry, A. Jain, G.D. Johnson, J. Kerns, R.R. Koford, C.P. Nicholson, T.J. O'Connell, M.D. Piorkowski, and R.D. Tankersely, Jr. 2008. Patterns of bat fatalities at wind energy facilities in North America. *Journal Of Wildlife Management* 72:61-78.

Cutright, N.J. 2008. Unpublished draft report. Pre-permitting Avian Survey for the FPL/Randolph Project, Columbia County.

Cutright, N.J. 2008 Personal observation. Blue Sky Green Field wind project.

Erickson, W. P., G. D. Johnson, M. D. Strickland, D. P. Young, Jr., K. J. Sernka, and R. E. Good. 2001. Avian collisions with wind turbines: A summary of existing studies and comparisons to other sources of avian collision mortality in the United States. National Wind Coordinating Committee (NWCC) Resource Document. NWCC, Washington, D.C., USA.

Erickson, W.P. 2003. Updated information regarding bird and bat mortality and risk at new generation wind projects in the West and Midwest. Presentation to the National Wind Coordinating Committee. http://www.nationalwind.org/events/wildlife/2003-2/ presentations/erickson.pdf

Howe, R.W., W. Evans, and A.T. Wolf. 2002. Effects of wind turbines on birds and bats in Northeastern Wisconsin. Technical report prepared for the Wisconsin Public Service Commission and Madison Gas and Electric Company. 104 pp.

Jain, A.A. 2005 Bird and bat behavior and mortality at a northern Iowa wind farm. Thesis. Iowa State University, Ames, USA.

Johnson, G.D., W.P. Erickson, M.D. Strickland, M.F. Shepherd and D.A. Shepherd. 2000. Avian Monitoring Studies at the Buffalo Ridge, Minnesota Wind Resource Area: Results of a 4-year study. Tech. Rept. Prepared for Northern States Power Co., Minneapolis, MN. 262pp.

Johnson, G, M. Perlik, W. Erickson, M. Strickland, D. Shepherd, P. Sutherland, Jr. 2003. Bat interactions with wind turbines at Buffalo Ridge, Minnesota Wind Resource Area: an assessment of bat activity, species composition, and collision mortality, EPRI, Palo Alto, CA and Xcel Energy, Minneapolis, MN: 2003. 1009178

Piorkowsi, M.D. 2006. Breeding bird habitat use and turbine collisions of birds and bats located at a wind farm in Oklahoma mixed-grass prairie. M.S. Thesis, Oklahoma State University, Stillwater, OK.

National Wind Coordinating Committee Consensus Document. 2004. Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions. National Wind Coordinating Committee (NWCC) Resource Document. NWCC, Washington, D.C., USA

Redell, D., M. Rowe, S.D. Gehrt, and G.A. Bartelt. 2003. Development of guidelines to prevent excessive mortality to bats using the largest known bat hibernaculumin the Midwest – Neda Mine

U.S Department of Energy. Energy Efficiency and Renewable Energy. 2008. 20% Wind Energy by 2030. Increasing Wind Energy's Contribution to U.S. Electricity Supply. Washington D.C., USA. http://www.20percentwind.org/Final_DOE_Executive_Summary.pdf

U.S. Fish and Wildlife Service. 2002. Migratory Bird Mortality. Fact Sheet. Washington D.C, U.S.A. http://birds.fws.gov/mortality-fact-sheet.pdf

U.S. Fish and Wildlife Service (USFWS). 2007. Indian Bat (Myotis sodalis) draft recovery plan: first revision. U.S. Fish and Wildlife Service, Fort Snelling, MN.

5.4.2 Avian and bat pre-construction surveys

5.4.2.1 Pre-application consultation meetings held with DNR

A copy of agency correspondence is available in Appendix Z. The previous owner of the wind farm, Florida Power and Light, commenced a pre-construction avian study in 2007, which was designed and completed by Dr. Noel Cutright. Wisconsin Electric obtained permission from the previous owner to utilize existing meterological towers to conduct a bat acoustic study in 2007, similar to that completed at the Blue Sky Green Field Wind Project.

5.4.2.2 Avian and bat pre-construction studies

5.4.2.2.1 Survey methodology and data collected for pre-construction avian studies

A copy of the survey protocol for the Pre-Construction Avian Point County survey is in Appendix Z, Environmental Information. A final draft of the Avian Survey is in development and the completed report will be submitted to agency staff.

Wisconsin Electric Pre-Construction Avian Study – Summary of Methodology
The avian survey protocol was designed by Dr. Noel J. Cutright and is fully described in the "Pre-Permitting Avian Survey - FPL Randolph Project" in Appendix Z. Using a point count method, a list of bird species was generated and provided numbers of birds in the study areas over an extended period of time using standardized procedures. This survey serves as a standardized method of surveying birds and provides thorough coverage of the study areas and the habitats within them. It describes the species and numbers of birds present in the project area and the extent and importance to bird populations of the general area from which they may be displaced, either through habitat loss or disturbance; and level of flight activity and types of flight behavior that can be useful in assessing collision risks (i.e. fatalities).

Fifty-one roadside points were chosen based on the need to distribute points throughout the study area while choosing locations near proposed turbine locations as known in early 2007. At 40 of the points on each of the 26 survey dates, a 3-minute count of the numbers of each bird species identified (seen within a 0.25 mile radius around the point or heard) was made. At 11 of the points, a 15-minute count was made. Data were recorded on a standard form by point number. The bird's behavior (e.g., actively hunting, displaying, perching, flying, vocalizing, etc.) at the time of first sighting was recorded. If the bird was flying, the height or range in height of flight above the ground during the period of observation was estimated and recorded as well as the direction of flight. Three common, introduced bird species were ignored during the study: Rock Pigeon, European Starling, and House Sparrow.

Roads on which point count surveys were made were driven slowly on 4 occasions (once in January and February and twice in March) to determine presence of flocking winter birds and raptors.

Point counts were conducted on 26 dates from mid-June to early November, 2007 and from early April to mid-June, 2008. The 3-minute and 15-minute counts were conducted concurrently. The order of the counts was rotated to reduce potential sampling bias based on time of day. At the beginning and end of each count, the time, temperature, wind speed, cloud cover, visibility, and precipitation were recorded.

Typically, avian surveys are completed in spring and fall during migratory seasons when the greatest number and diversity of species is present. In order to gather additional data, winter point counts were included in the study proposal but were cancelled from December into March. Severe winter weather and deep snow resulted in few areas to safely park on the road shoulder to take point counts. In order to gather some data on overwintering birds, roads on which point counts were located were driven slowly on 4 occasions, one in mid-January, once in early February, and twice in March to record raptors, flocking species, and any other species of note. These observations were incorporated into the results and a discussion.

Pre-Construction Avian Study – Results

The avian study is being drafted and will be submitted as part of the CPCN application. Initial data analysis has been completed. A total of 150 avian species were identified in the Glacier Hills area. In general, the landscape and vegetation of the Glacier Hills study area is very similar to the landscape and vegetation at the Blue Sky Green Field, Kewaunee County wind farms, and the Buffalo Ridge site in Minnesota; cultivated agricultural lands with scattered woodlots, shelterbelts, and wetlands. Based on the similar landscape, vegetation types, and bird species present, it is reasonable to expect similar minimal avian impacts at the proposed Glacier Hills Wind Park site as those experienced at the Kewaunee County and Buffalo Ridge wind farms.

No unique or "special" habitats from either a removal or fragmentation perspective will be impacted during construction or operation of the project. There also are no bird species from the study areas that have a high degree of habitat specificity for those habitats that will be removed or fragmented as part of this project. The habitat changes expected are conversion of cropland to use for access roads, cleared areas surrounding turbines, an electrical substation and an O&M Building. Therefore, this change in habitat in the project area should not have a significant impact to avian populations.

As with any type of facility construction, temporary impacts may occur when workers are present during active construction activities. This may create a temporary displacement of some birds, especially those using agricultural habitats, the primary habitat that is being used for access roads and the turbine footprint. When construction is complete, these birds will resume their normal activity and use of the area.

Overall, based upon the knowledge of the life history of the species identified using the study area and the habitats in the vicinity of the turbines, the potential impact of displacement is

expected to have very little, if any, adverse impact to any bird species. This will not cause a significant impact to local or migratory bird populations especially when considering the other existing sources of avian mortality in Wisconsin. As Wisconsin Electric will be completing a bat fatality study at this project site, avian fatalities will also be collected and analyzed as part of that study.

Wisconsin Electric completed a pre-construction avian point count survey in order to determine the species and numbers of birds present in the project area and the extent and importance to bird populations of the general area from which they may be displaced, either through habitat loss or disturbance and level of flight activity and types of flight behavior that could be useful in assessing potential fatality risks and overall project siting. This type of survey data provides an assessment of the probable impact of the project on bird populations. We do not propose to conduct a post-construction avian point count survey as is currently underway at the Blue Sky Green Field Wind Project site. Initial results of this survey indicate that it does not produce relevant data regarding bird avoidance behavior and is not useful in assessing possible impacts of the operating facility on avians (Cutright, pers.obs).

5.4.2.2.2 Survey methodology and data collected for pre-construction bat studies

A copy of the survey protocol for the Pre-Construction Bat Acoustic Survey is in Appendix Z, Environmental Information.

Wisconsin Electric Pre-Construction Bat Acoustic Study – Summary of Methodology
The protocol for the bat acoustic study is similar to protocols used at numerous other wind power developments throughout the U.S. and follows closely the study design implemented during pre-construction surveys at the Wisconsin Electric Blue Sky Green Field Wind Project in Fond du Lac County, Wisconsin. The primary objectives of this study will be to compare levels of bat activity with wind speed, wind direction, and temperature. Western Ecosystems Technologies, Inc ("WEST"), will incorporate these data into analyses of bat activity, particularly analyses of temporal variation in activity by bats.

An "Anabat acoustic device was used to record the calls made by bats during each night of the study. The number of calls made by bats represents the level of bat activity rather than numbers of individuals; this will not provide the absolute abundance or numbers of bats in the project area. The number of bat passes recorded will be used as an index of bat activity in the project area and compared to similar studies at other wind farm sites...

A final draft of the pre-construction bat acoustic survey report is in development and the completed report will be submitted as part of the CPCN application.

These data may also be used to assess correlation between levels of bat activity and fatality rates of bats from wind turbines similar to the assessment that will be completed at the Blue Sky Green Field Wind Project site.

5.5 PUBLIC LANDS

The following public lands and parks have been identified within 10 miles of the project area using the following data sources:

- USGS Gap Analysis
- US Fish and Wildlife
- Wisconsin DNR Digital Data (various sources and departments)
- County Websites
    - Columbia County
    - Dodge County
    - Green Lake County
    - Marquette County
    - Fond du Lac County

Table 5.5-1 lists the state and federal lands identified from the above sources and the agency responsible for its management. Table 5.5-2 lists the local parks identified through county websites. The municipality where the park is located is included. See Figure 4.1-5 for a map of public lands and local/county parks found within 2 miles of the Project boundary. A map displaying the public lands and local/county parks found within 10 miles of the Project boundary is provided in Appendix H, Project Maps.

Figure 5.5-1 Public Lands (10 Mile Radius)

Table 5.5-1 State and Federal Public Lands within 10 Miles

Name	Gov't	Manager	Management Type
Heart Lake Rearing Station	State	Wisconsin DNR	Fisheries Management
Puckaway Rough Fish Station	State	Wisconsin DNR	Fisheries Management
Rem-Beaver Dam Lake	State	Wisconsin DNR	Fisheries Management
Rem-Little Green Lake	State	Wisconsin DNR	Fisheries Management
Rem-Roelke Creek	State	Wisconsin DNR	Fisheries Management
Rocky Run Creek Fishery A	State	Wisconsin DNR	Fisheries Management
Statewide Habitat Areas	State	Wisconsin DNR	Fisheries Management
Statewide Public Access	State	Wisconsin DNR	Fisheries Management
Becker Waterfowl Production Area	Federal	U.S. Fish and Wildlife Service	Leopold Wetland Management District
Doylestown Waterfowl Production Area	Federal	U.S. Fish and Wildlife Service	Leopold Wetland Management District
Ludwig Waterfowl Production Area	Federal	U.S. Fish and Wildlife Service	Leopold Wetland Management District
Manthey Waterfowl Production Area	Federal	U.S. Fish and Wildlife Service	Leopold Wetland Management District
Statewide Natural Area	State	Wisconsin DNR	Natural Area
Extensive WI Habitat	State	Wisconsin DNR	Wildlife Management
French Creek Wildlife Area	State	Wisconsin DNR	Wildlife Management
Glacial Habitat Restoration	State	Wisconsin DNR	Wildlife Management
Grand River Marsh Wildlife Area	State	Wisconsin DNR	Wildlife Management
Grassy Lake Wildlife Area	State	Wisconsin DNR	Wildlife Management
Jennings Creek Wildlife Area	State	Wisconsin DNR	Wildlife Management
Mud Lake Wildlife Area-Columbia	State	Wisconsin DNR	Wildlife Management
Paradise Marsh Wildlife Area	State	Wisconsin DNR	Wildlife Management
Peter Helland Wildlife Area	State	Wisconsin DNR	Wildlife Management
Rogers Memorial Habitat Presv	State	Wisconsin DNR	Wildlife Management
Scattered Wildlife	State	Wisconsin DNR	Wildlife Management
Swan Lake Wildlife Area	State	Wisconsin DNR	Wildlife Management

Table 5.5-2 Local and County Parks within 10 Miles

Park Name	Municipality
Friesland Village Park	Village of Friesland
Lake George Park	Town of Pacific
Park Lake Park	Village of Pardeeville
Wyona Park	Village of Wyocena
Derge Park	Town of Westford
Hein Park	City of Markesan
Kiwanis Park	City of Markesan
Markesan High School	City of Markesan
Soldiers and Sailors	Town of Green Lake

5.6 LOCAL ZONING

Wisconsin Electric has reviewed the potential zoning authority of local governments within the project area as well as the neighboring local governments outside the project area up to a distance of 2 miles.

Based upon review of local zoning ordinances and discussions with County Planning, there are 3 local governments with potential zoning authority within their own jurisdictions: Columbia County, the Town of Randolph and the Town of Scott. Of these, only Columbia County has adopted a zoning ordinance. In addition, the Villages of Friesland, Randolph and Cambria are located within 1½ miles of Project facilities. These villages have the potential to adopt extraterritorial zoning that might affect the Project, but none of them has extraterritorial zoning in effect.

If a land division is required for either the substation or for the O&M facility, that land division would be subject to approval under the subdivision ordinances of Columbia County (Title 16, Ch 2), the town within which any new parcel is located, and the closest village within 1½ miles of the new parcel.

The Village of Cambria does not have a wind ordinance. The Villages of Friesland and Randolph have wind ordinances that apply only to lands within the corporate limits of each village (see Table 5.6-2 for citations).

5.6.1 Copies of zoning ordinances

The specific application of the Codes to the Project is presented in the following sections. Table 5.6-1 provides a listing of potentially applicable codes or ordinances.

Table 5.6-1 Applicable Zoning Ordinances

Government	Topic	Code Reference
Columbia Co.	Land division	Title 16, Ch 2
Village of Friesland	Business District	Article C, Sec 13-1-25
Village of Friesland	Industrial District	Article C, Sec 13-1-28
Village of Friesland	Zoning change process	Article M, Secs. 13-1-160 thru 163
Village of Friesland	Conditional use process	Article E, Secs. 13-1-60 thru 70

The relevant zoning code and/or ordinance excerpts are provided in Appendix L.

5.6.2 Zoning changes needed for the project

Substation property:
All the proposed substation sites are located in the Town of Scott. No zoning change or permits are required to construct a substation in the Town of Scott. One proposed site falls within the 1½ mile extraterritorial jurisdiction of the Village of Cambria, and the Village's extraterritorial land

division authority would apply. Thus, the substation property would require land division approvals by Columbia County and (for one possible site) the Village of Cambria.

O&M facility:
The proposed O&M facility will be located at one of two available sites; one in the Town of Randolph the other in Village of Friesland. The location in the Town of Randolph falls within the 1½ mile extraterritorial jurisdiction of the Village of Friesland.

If the O&M facility is located in the Town of Randolph, no zoning changes or permits are required to construct the facility. The O&M facility property would require land division approvals by Columbia County, and also require land division approval by the Village of Friesland since the site is within 1½ miles of the Village.

If the O&M facility is located in the Village of Friesland, the location is currently zoned B-1 Business District. Based upon review of the Village's zoning ordinance and conversation with the officials, a utility building with offices, including garage space and outside utility storage space, will require a conditional use permit in the B-1 Business District. Alternatively, the Village may require rezoning to the I-1 Industrial District and all uses in the I-1 Industrial District are conditional uses that require conditional use permits. The O&M facility would require land division approval by the Village of Friesland.

Temporary lease of land for construction staging and laydown space:
The proposed location for this use will be located adjacent to the O & M facility either in the Town of Randolph or the Village of Friesland. If located in the town of Randolph, no permits are required by Columbia County or the Town of Randolph for construction staging and laydown space. If located in the Village of Friesland, the Village may require the site to be rezoned I-1 Industrial District, in which case a conditional use permit will be required.

Wind Turbines:
For preferred and alternate turbine sites, no permits or zoning changes are required by Columbia County, the Towns of Randolph and Scott.

Since no land divisions or zoning changes are required for turbine sites, no approvals are required by the Villages of Cambria, Friesland or Randolph.

5.6.3 Zoning changes requested

Wisconsin Electric has been approached by landowners who are encouraging Wisconsin Electric to locate the substation and O&M facility on their properties under either sale or lease agreements (sale for permanent facilities, sale or lease for temporary areas). Multiple locations are available for these facilities, and all are feasible and achievable Wisconsin Electric, in discussions with Columbia County, the Towns Randolph and Scott and Villages of Cambria and Friesland, and has no reason to conclude that any required zoning change or land division approval, will not be granted.

No applications for zoning changes or land divisions have been made at this time. Once the locations of the substation, O&M facility and construction staging and laydown space are finalized, Wisconsin Electric will proceed to apply for permits that may be required, as defined above. The names of the entities responsible for granting the potential changes or approvals are provided in Table 1.8-1.

5.6.4 Neighboring government zoning

The following are the neighboring local governments outside the project area located up to a distance of 2 miles from the project boundary:

Green Lake County
Dodge County
Town of Courtland
Town of Fox Lake
Town of Kingston
Town of Manchester
Town of Marcellon
Town of Springvale
Town of Westford
Town of Wyocena
Village of Cambria
Village of Friesland[46]
Village of Randolph

Zoning ordinances for each of these local governments were reviewed to identify any ordinance that may apply to the construction and operation of a wind farm. Table 5.6-2 contains the results of this review.

[46] Village of Friesland is within the Project area.

Table 5.6-2 Neighboring Government Zoning Ordinances

Government	Wind Energy System	Noise	Lighting
Columbia Co. [47]	Conditional Use may apply[48]	None	None
Village of Cambria	Conditional Use may apply	Article I, Sec. 10-1-121	Article I, Sec. 10-1-123
Village of Friesland	Article J, Sec. 13-1-131 thru 133	Article I, Sec. 13-1-121	None
Village of Randolph	Article D, 13-1-74	Article H, Sec. 13-1-121	None
Towns of Cortland, Marcellon, Springvale and Wyocena	Follow Columbia Co. ordinance. (Conditional Use may apply)	Follow Columbia Co. ordinance. (None)	Follow Columbia Co. ordinance. (None)
Green Lake Co.	Conditional Use may apply	Conditional Use may apply	Conditional Use may apply
Town of Kingston	None	None	None
Town of Manchester	Adopts Green Lake Co. ordinance.	Adopts Green Lake Co. ordinance.	Adopts Green Lake Co. ordinance.
Dodge Co.	Land Use Code, Ch. 4, Sec. 4.11	Land Use Code, Ch. 4, Sec. 4.11 & 8.5.3	Land Use Code, Ch. 4, Sec. 4.11
Town of Fox Lake	Conditional Use may apply	Conditional Use may apply	Conditional Use may apply
Town Westford	Adopts Dodge Co. ordinance.	Adopts Dodge Co. ordinance.	Adopts Dodge Co. ordinance.

The relevant zoning code and/or ordinance excerpts are provided in Appendix M. Sections of the various codes that describe the Conditional Use process have not been included.

5.7 LAND USE PLANS

Wisconsin Electric has searched for development and land use plans of local governments touched by the project area which include Columbia County, the Towns of Randolph and Scott, and the Village of Friesland. Meetings with county's, towns' and village's officials gave no indication that the Project is at odds with local plans.

Wisconsin Electric has searched for development and land use plans of neighboring local governments outside the project area to a distance of 2 miles. Within that band are Green Lake and Dodge Counties, the Towns of Courtland, Fox Lake, Kingston, Manchester, Marcellon, Springvale, Westford and Wyocena, and the Villages of Cambria, and Randolph.

[47] Columbia County Zoning is noted here since some towns have adopted the county code.

[48] Where "Conditional Use may apply" is noted, it is to indicate governments with zoning codes but no code specific to Wind Energy Systems.

None of the entities are members of regional planning commissions.

Best efforts were applied to identify all plans that might conflict with, restrain or endorse the construction and operation of a wind farm project. Table 5.7-1 provides an accounting of all such plans identified.

Table 5.7-1 Relevant Development and Land Use Plans

Government	Comprehensive Plan[49]	Other Development Plans
Columbia Co.	Columbia County Comprehensive Plan 2030	Land and Water Management Plan
Town of Randolph	Town of Randolph Comprehensive Plan 2030	None
Town of Scott	Partnering with County	None
Village of Cambria	None	None
Village of Friesland	None	None
Town of Cortland	2002 Town of Courtland Comprehensive Plan	None
Town of Marcellon	Partnering with County	None
Town of Springvale	Town of Springvale Comprehensive Plan 2030	None
Town of Wyocena	Partnering with County	None
Green Lake Co.	Comprehensive Plan	Farmland Preservation Plan
Town of Kingston	Part of County Plan	None
Town of Manchester	Part of County Plan	None
Dodge Co.	Recommendations Report – Dodge Co. Year 2030 Comprehensive Plan	None
Town of Fox Lake	Adopted County Plan	None
Village of Randolph	None	None
Town Westford	None	None

For the Project area, the Comprehensive Plans of the Town of Randolph and Columbia County express a desire to work on a Wind Energy System ordinance. In neighboring communities, only the Plans for the Towns of Cortland and Springvale mention Wind Energy Systems. The relevant plan excerpts are provided in Appendices L and M.

5.8 ARCHAEOLOGICAL AND HISTORIC RESOURCES

5.8.1 Historic and archeological sites potentially affected

Wisconsin Electric reviewed the State Historical Society database which lists know historic sites, including buildings and structures, archaeological and burial sites. This list is provided in Appendix Z.

[49] Source: WDOT Comprehensive Plan Database, 01/06/2008. www.dot.wisconsin.gov/localgov/land

5.8.2 For each proposed site, list the county, town, range, section and ¼, ¼ section in which construction would occur

A list of known sites with TRS information and a map identifying their location within the project area is provided in Appendix Z

5.8.3 Archeological or historical resources

There are four cemeteries listed and located within the project boundary (BCO-0068, BCO-0069, BCO-0081 and BCO-0082). All four cemeteries have defined property boundaries. No construction activities will occur within the property boundaries of these four cemeteries. To further protect the integrity of these sites, Wisconsin Electric will maintain a 100 foot construction buffer from the property boundary of each cemetery and will avoid any and all earth disturbing activities in the road right-of-way on the same side of the road adjacent to these cemeteries.

There is one unmarked burial site within the project boundary (BCO-0204) on the north side of Vaughn Road This site is located on property not under easement with Wisconsin Electric, so field confirmation was not completed. The State Historical Society confirmed that this site is well to the north of the Vaughn Road right-of-way. Installation of collector circuits in the right-of-way along Vaughn Road will be a significant distance from the burial site. Construction of the collector circuits will not impact this burial site. A map indicating the location of the burial site and a copy of the SHS confirmation is included in Appendix Z.

There are two listed archaeological sites within the project boundary that are close to land under easement. These sites (CO-0134 and CO-0135) are located to the southwest of Turbine 49 and are shown on a map of known cultural sites included in Appendix Z. Wisconsin Electric retained the Great Lakes Archaeological Resource Center (GLARC) to complete a Phase One field investigation of land under easement to the east of these two sites, as well as a buffer area south of Turbine 49. The Phase One field inspection for the non-agricultural area was completed in August 2008 and a second inspection in October 2008 (after the corn crop was removed). Ms. Jennifer Harvey of GLARC has verbally indicated that no cultural artifacts were collected during the field inspections; a final Phase One report is being developed and will be submitted to the PSC for inclusion in the CPCN. Data files containing the known locations of cultural resources and historic sites are available upon request. (GlcrHls_CulturalResources.shp and GlcrHls_Historic_Sites.shp, respectively)

5.9 ER Review - Endangered, Threatened, and Special Concern Species and Communities

Wisconsin Electric has completed a review of the DNR Natural Heritage Inventory (NHI) database. The database review indicated that no threatened, endangered or special concern plant species are known to be located within the wind project boundary. Natural communities were noted to exist in within the one and two mile buffer areas, but not within the project area. Three animal species were listed as having occurred within the project area or buffer area. There is one animal listed as occurring in habitat outside the project area, and an historical record from 1919

of an animal species within the project boundary. Wisconsin Electric believes that both these species are highly unlikely to occur within the project area and will not be affected by the project. A copy of this review has been submitted to DNR in July 2008 requesting concurrence with the above assessment.

Wisconsin Electric met with DNR and PSC staff in May 2008 for a pre-application meeting to discuss the proposed wind project. At that meeting, DNR indicated that a state endangered animal species was listed in the NHI database as a species that may potentially occur within the project area. DNR recommended that a habitat assessment be completed for this species. A copy of this assessment, which includes a desktop review, a field investigation and maps is in Appendix Z.

The assessment reviews the habitat requirements for the species and defined four categories of habitat: high suitability, moderate suitability, low suitability and unsuitable. The categories are based on soil types, forested areas, herbaceous vegetation and agricultural use. The assessment determined that the project area is predominately composed of unsuitable habitat for the species. No representatives of this species were observed by the scientist during the field investigation.

There are three locations associated with proposed turbines that are considered to have habitat of low suitability for the species. While these sites do have potentially suitable soils and vegetation, they are fragmented sites that do not connect to other suitable habitat lands and are currently used for agriculture. The likelihood of a relict population being present at any of these sites is small. Based on this assessment Wisconsin Electric believes there is little to no chance of impact to this species during construction. A copy of the assessment has been provided to the WDNR – Office of Energy for their review and concurrence.

A review of the federal list of Endangered, Threatened, Proposed, and Candidate species list was completed. The review indicated that in Columbia County there are two listed species; a non-essential experimental population of the Whooping Crane (bird) and Mead's Milkweed (plant). The Mead's Milkweed population in Columbia County is a reintroduced population on protected lands. There are two candidate species in the county; the Eastern massasauga (snake) and the Sheepnose (fish). An inquiry was submitted to the United States Fish and Wildlife Service as to whether any additional studies may be required. The FWS concurred that the project will likely not impact any federally listed species; therefore a federal incidental take permit is not required. The FWS noted that under the Migratory Bird Act, they were interested in "proactively avoiding the mortality of migratory birds whenever possible". The FWS recommends that a pre-construction avian survey be conducted (which has been completed) and a post-construction fatality study be conducted. Additional discussion about avian impacts is described in Section 5.4.1. A copy of the correspondence with FWS is in Appendix Z.

6.0 WATERWAY/WETLAND PERMITTING ACTIVITIES

6.1 WATERWAY PERMITTING ACTIVITIES,

6.2 WETLANDS,

6.3 MAPPING WETLAND AND WATERWAY CROSSINGS, AND

6.4 WATERWAY/WETLAND CONSTRUCTION METHODS

Wisconsin Electric completed wetland and waterway assessments of the entire project area in spring/summer 2008. These assessments were used to develop siting plans for proposed structures, including turbines, access roads, the collector system, crane routes, the substation and O&M building. Whenever possible, structure locations were planned to avoid impacts to waterways and wetlands. All turbines and access road locations as well as the substation and O&M building will avoid impacts to wetlands and waterways, therefore, DNR and Army Corps of Engineers waterway/wetland permits are not required for those structures.

For installation of the collector system and crane routes, there are some temporary construction impacts to wetlands and waterways that cannot be practicably avoided. Approximately 3.3 acres of temporary waterway and wetland impacts will require DNR and ACOE permits. Wisconsin Electric proposes to place one temporary clear span bridge over a waterway, place timber matting on the surface of 4 wetlands for crane access, and to install collector cables via open cut trench through 12 wetland and/or waterways for a total of approximately 3.3 acres of temporary wetland impact. The clear span bridge and timber mats will be removed upon completion of construction. Upon completion of collector system installation, the wetlands will be restored to preconstruction conditions. Construction will not result in the permanent placement of fill in any wetland or waterway.

Wetland and waterway crossings are shown on Figure 4.1-3 in Appendix H. Appendix Z, Environmental Information includes a copy of the DNR/ACOE application which details the location of each proposed crossing site and construction methods that would be used for installation and restoration. The wetland delineation reports are also included in this appendix. The waterway and wetland application was submitted to the DNR and ACOE on Oct 1, 2008.

6.5 EROSION CONTROL AND STORM WATER MANAGEMENT PLAN

A Construction Project Consolidated Permit application (formerly known as a Notice of Intent) for coverage under NR216 Wis. Admin. Code, has been submitted to the DNR. This application contains the materials requested under Section 6.5 of the PSCs Wind Farm Application Filing Requirements document. A copy of the application package is provided in Appendix Z. This application includes a copy of the Project Stormwater Management and Erosion Control Plan and typical drawings which have been designed to meet or exceed compliance with the DNR Stormwater and Erosion Control Technical Standards. Site specific erosion control plans will be developed as the CPCN application process defines the final locations of structures. The final site specific plans will be provided to the DNR for review and approval prior to commencement of construction.

6.6 MATERIALS MANAGEMENT PLAN

6.6.1 Haul Routes

Sections 2.3.5 and 2.3.6 describe how and where construction materials are hauled and routed.

6.6.2 Stockpile Areas

Equipment, vehicles, and construction materials will be stockpiled at the laydown yard, or at the individual turbine site. Topsoil and subsoil will be stockpiled as it is removed from graded or excavated areas.

Soils will be stockpiled immediately adjacent to areas that are graded, such as collector system trenches, crane routes and access roads. Excavated areas such as the foundations will have soils stockpiled adjacent to the foundation, but outside the immediate work area. All soils will be used for backfill and restoration at the same location that they were removed. If excess soil is available from excavation, it will be used on site for crane pad and access road construction. Each turbine site will have an area of approximately 1.6 acres around the turbine base that will be used for laydown and construction of the turbine.

Stormwater and erosion control measures and associated typical drawings are presented in the Construction Stormwater Application in Appendix Z. Site specific plans will be provided at a later date as described in Section 6.5.

6.6.3 Equipment Staging Areas

Equipment staging areas are described in Sections 2.4.2, Turbine Site Construction Area and 2.4.5, General Construction Areas.

Spill control kits will be kept with construction vehicles and at the laydown/staging sites. Additional spill control information is described in the Spill Prevention, Containment and Countermeasure Plan in Appendix Z.

6.6.4 Field Screening Protocol for Contaminant Testing

If contaminated materials are encountered during construction, an environmental consulting firm experienced and licensed (if required) in diagnosis, analysis, treatment, collection and disposal of contaminated materials will be brought to the project site if contamination is suspected at a specific location. The environmental consulting firm will determine the appropriate testing location and testing protocol, based on type of materials collected and statutory requirements. Appropriate DNR staff in solid and/or hazardous waste will be contacted as required under state statutes. PSC environmental staff will also be notified if this situation occurs.

Work activities may or may not be affected should contaminated materials be encountered during construction (based on the level and type of contamination encountered). It may be as minimal as requiring extra time for removal of materials or as complex as halting work and leaving a job task site while an environmental consulting firm accesses the site to analyze and

remove the material. If contamination is found at a specific site, workers and equipment may be relocated and mobilized to begin work at a different job site to minimize construction timeline impacts.

6.6.5 Types, Concentrations and Volumes of Contaminated Materials

A Phase One Environmental Review for the entire project area indicated that there are known sites of concern within the project boundary. The review identified and described 12 sites with documented environmental conditions within or adjacent to the project area. Seven of the sites have been closed without restriction. Five sites are either conditionally closed or active. None of these 12 sites will be impacted or disturbed by construction activities. A copy of the Phase One Report with maps showing the location of these sites is included in Appendix Z.

6.6.6 Methods for Dewatering Excavated Materials

Excavation of topsoil and subsoil will occur during construction of the turbine foundation and installation of portions of the collector system. Topsoil will be stripped and stockpiled for construction of access roads, the laydown area, the substation, and crane routes. If soils are saturated during excavation or while they are stockpiled, erosion control methods such as silt fences or hay bales will be installed to prevent sediment from being transported off the construction site to a surface water or wetland. If a significant volume of water must be removed from stockpile areas, dewatering methods may include the use of filter bags and/or dewatering structures as described in the Stormwater and Erosion Control Plan in Appendix Z

Dewatering of excavated materials will occur on an as-needed basis throughout the construction site. Whenever possible, dewatering will occur within areas already impacted by construction. Dewatering will not take place within, or directly discharge to, wetlands or waterways.

6.6.7 Volumes of In-channel and Upland Excavated Materials And Re-use of Materials

6.6.7.1 Reuse of Dredged Materials

Collector system installation will require trenching in some waterways and uplands as described in the DNR Ch. 30/NR103 application in Appendix Z. Soils will generally be stockpiled adjacent to the trench location in an upland location. Upon installation of the cable, all materials removed will be replaced into the trench in the same strata. If the waterway has standing or flowing water, the top foot of the trench will be backfilled with rock/gravel as described in the Ch. 30 application (Appendix Z) and the excess material used for construction of crane pads or access roads.

The total of collector system crossings of navigable waterways and adjacent wetlands is estimated to be up to 2900 linear feet. The circuit cables will be installed at a depth of between 4-5 feet in an approximately 2 foot wide trench. Cable will be installed using the trench method, for a total of approximately 2700 cubic yards. These numbers include an assumption that trenching will be used along Vaughn Road, rather than overhead via poles or underground bores. All materials will be reused to refill the collector system trench. If the waterway has standing or flowing water, the top foot of the trench will be backfilled with rock/gravel as described in the

Ch. 30 application (Appendix Z) and the excess material used for construction of crane pads or access roads.

All excavated dredged materials will be reused to refill the collector system trench from which it was removed. All excavated materials will be used as backfill and replaced in their original strata. Excess material will be used for construction of crane pads or access roads.

6.6.7.2 Reuse of Upland Materials

Excavated materials will be replaced into the trench or foundation excavation from which it was originally removed and in the appropriate soil horizons as described in the Wisconsin Electric Agricultural Mitigation Plan (Appendix Z). If excess soil is available after backfilling, it will be used for construction of the crane pad and access roads. Materials will not be placed in a waterway, wetland or floodplain unless appropriate permits have been issued by local, state and/or federal agencies.

The total linear feet of collector system that will be installed underground is estimated to be between 40 and 50 miles or approximately 212,000 – 264,000 linear feet. Assuming a 5 foot deep by 2 foot wide trench, there will be approximately 78,000 – 98,000 cubic yards of excavated material. The final number will depend on the final approved collector system routes. Each turbine foundation will require an excavation of approximately 5,500 cubic yards, or 495,000 cubic yards for 90 turbine sites.

All excavated materials will be used as backfill and replaced in their original strata. If material is not required for backfill, it will be used for construction of access roads and crane pads as close to the stockpile site as possible.

The purpose is to either refill trenches or excavations. Excess soils will be used to construct access roads and crane pads.

6.6.8 Off-site Disposal Plans for Contaminated Materials and Non-contaminated Materials

Wisconsin Electric anticipates there will be no need to dispose of dredged materials off-site. All suitable dredged materials will be re-used to backfill the collector trench. If material is deemed unsuitable for backfill, it will be disposed of in an upland location in compliance with applicable regulations.

We do not anticipate there will be excess upland materials that would require disposal off-site. All suitable upland material will be re-used on site for construction purposes. If material is deemed unsuitable for backfill, or excess remains after construction, it will be used for construction of crane pads and access roads. If material is deemed unsuitable for backfill or construction purposes, such as contaminated materials, it will be disposed of in an upland location in compliance with applicable regulations.

6.7 DEWATERING PLAN

6.7.1 Dewatering/Diversion of Flow

See the Stormwater and Erosion Control Plan in Appendix Z

6.7.2 Downstream Impact Minimization

No construction activities will take place on the banks of or within a waterway during high flow conditions. This applies to both navigable and non-navigable channels. The weather forecast will be consulted prior to initiating construction activities in waterways. Construction will not occur in a waterway if weather conditions indicate a reasonable possibility of rain. The proper installation and maintenance of erosion control devices as described in Appendix Z will minimize the potential for any in-stream impacts.

6.7.3 Analysis of Possible System Overload Scenarios

A risk analysis for overload scenarios was not performed. Wisconsin Electric did not initiate this analysis due to the size of the project area and because the proposed activities within waterways are limited to minor impacts of very short duration, specifically, trenching for collector system installation and temporary bridge/timber matting for crane access. These activities are typically completed in one to two days. Monitoring weather forecasts will ensure that these activities are not initiated when rain events may be anticipated.

If a waterway is approaching or at bank-full conditions, or heavy rainfall is predicted, no construction activity will be initiated within or immediately adjacent to that waterway until water levels drop.

6.7.4 Impacts of System Overload on Construction Activities and Water Quality

Based on other construction projects it is reasonable to expect an average of 2-3 days each month may be lost or shortened (half day of work) due to weather which may include such conditions as rain, snow or high winds.

Wisconsin Electric expects that properly maintained stormwater and erosion controls measures as described in the Stormwater and Erosion Control Plan will help avoid and minimize any water quality impacts during overflow conditions. If a waterway becomes overloaded due to extreme rainfall, stormwater runoff or excess water from bank full conditions could result in construction sediment runoff into a waterway. Potential environmental impacts of discharge of sediment into waterways have been well documented by regulatory agencies and can include impacts to water quality, aquatic animals and aquatic vegetation.

Following the Stormwater and Erosion Control Plan throughout construction and ensuring measures in the field are routinely inspected, maintained, replaced or improved as needed, will minimize the potential for sediment runoff and therefore deterring adverse changes in water quality.

6.7.5 Water Discharge Locations

As excavation will be required at each turbine foundation and for much of the collector system, dewatering structures may be required throughout the project area, generally during or after rain events. If dewatering is necessary, the methods in the Stormwater and Erosion Control Plan will be utilized to ensure compliance with the state technical standards. Water will not be discharged directly into wetlands or waterways.

Whenever possible, water will be discharged into grassed upland locations outside the construction area to allow infiltration. A variety of devices, such as filter socks, sediment bags, and secondary containment may be used as necessary to ensure that discharge meets state standards. Additional information is available in the Stormwater and Erosion Control Plan (Appendix Z).

6.7.6 Details of a Back-up System

A gasoline powered pump is used for dewatering. In the event a pump fails, an additional gasoline powered pump or portable gasoline powered generator will be brought to the site. In the case of an exceptionally large rain event, a vacuum truck may be required.

A back-up system will only be necessary when the primary pump fails or a second pump is necessary due to the volume of water at a specific location. The back-up system will be essentially identical to the primary system, in which a gasoline powered pump is used to draw water from a ponded area and discharges the water into an appropriate location to ensure compliance with state standards. A vacuum truck would draw water from ponded areas into a storage unit on the truck. When the tank is full or all ponded water has been removed, the tank will be discharged into an appropriate upland location.

All equipment will be housed at the laydown area for the project and brought to specific job sites as needed.

6.7.7 High Flow Plan

6.7.7.1 How water will be removed from the site

Standing water in construction areas will be removed via pumping the water from the construction area to a grassy upland location for infiltration. A variety of devices, such as filter socks, sediment bags, and secondary containment may be used as necessary to ensure that discharge meets state standards. Additional information is available in the Stormwater and Erosion Control Plan (Appendix Z).

6.7.7.2 Methods of water removal

Typically a gasoline power pump is used to remove standing water within a construction area and pump the water into appropriate dewatering structures.

6.7.7.3 Methods of minimizing water contamination

A variety of devices, such as filter socks, sediment bags, and secondary containment may be used as necessary to ensure that discharge meets state standards. Additional information is available in the Stormwater and Erosion Control Plan (Appendix Z).

6.7.7.4 Protocol for evacuating materials from the flood conveyance channel

Wisconsin Electric does not propose storage of materials or equipment in any flood conveyance channel. Storage of materials in upland locations will provide adequate protection from flows within the flood conveyance channel. If any materials are stored within a mapped 100 year floodplain, they may be relocated during periods of high flow. However, If any materials must be relocated, they will be taken to the laydown area for storage via the access roads and public roads using trucks or other appropriately sized vehicles. The location of the laydown area is shown on maps included in Appendix H.

6.7.7.5 Protocol for evacuating machinery from the flood conveyance channel

Machines used on the site may include backhoes, bulldozers, directional bore equipment, trucks and cranes. No construction activities in waterways will commence when rainfall is predicted or imminent. Upon the start of any rain event, or visual increase in water flows, if machinery is within a flood conveyance channel, it will be immediately driven to an upland location. All machinery will be stored either at the laydown area or at an upland location within a construction site in the project area. The laydown area and proposed construction locations are shown on maps included in Appendix H.

6.7.8 Contaminated Water

There are no known contaminated waterways in the project area. During construction, there is the potential for a spill of a petroleum product into a waterway. Reporting of the spill, containment, cleaning and disposal procedures are described in Appendix Z. A variety of methods may be used to isolate a spill in a waterway. Absorbent booms or pads are typically used to isolate the site. Please see Appendix Z for additional information.

Testing or analysis of petroleum contaminated water is not required. Contaminated water will be pumped into watertight barrels or a watertight truck and disposed of at a licensed disposal facility.

7.0 AGRICULTURAL IMPACTS

7.1 INFORMATION ON ONGOING FARMING ACTIVITIES WHERE CONSTRUCTION ACTIVITIES WILL OCCUR

Wisconsin Electric has committed to using an Agricultural Mitigation Plan (AMP) to ensure that construction activities and restoration of all agricultural lands is completed in a consistent manner and will ensure suitable restoration of soils for future agricultural productivity. A copy of the Agricultural Mitigation Plan has been provided to the Department of Agriculture, Trade and Consumer Protection (DATCP) for their review and comments. Their comments were incorporated in the final Plan presented in Appendix Z.

DATCP determined that an Agricultural Impact Statement (AIS) is required for the purchase of land for construction of a substation. An Agricultural Impact Notice was submitted to DATCP

and the AIS subsequently published. A copy is in Appendix Z along with the DATCP correspondence.

DATCP also determined that an AIS was not required for the easement acquisition of lands for turbine sites and associated structures, and construction activities. Easement acquisition was initially completed by the previous owner of the Project. Correspondence between Wisconsin Electric and DATCP regarding this determination is in Appendix Z.

7.1.1 Current cropping patterns

The actual cropping pattern of individual fields is not available, however, the usual cropping rotation in this area is corn, soybeans and hay, or may occasionally include oats or winter wheat. The spatial orientation of row crops is generally perpendicular to slopes, with cover crops such as hay, wheat or oats having variable patterning. Wisconsin Electric will be working with participating landowners within construction areas to minimize impacts on agricultural fields and inconvenience to cultivation patterns.

7.1.2 Location of drainage tile or irrigation systems

The locations of drain tiles and irrigation systems are based on land owner inquiries and contact with the Columbia County Farm Services Agency (FSA) Office. Published maps of drain tile locations are not available for the project area. As Wisconsin Electric presents land owners with the proposed project facility configuration, they are queried as to potential locations of drain tile or irrigation systems. The responses are recorded within the project GIS database, and updated as new information is available. Shapefile GlcrHls_DrainTiles.shp is provided.

7.1.3 Farmland Preservation Agreements (FPA) for proposed sites

Farmland preservation information is based on recorded documents from the Columbia County Register of Deeds Office. The original agreements are drawn between the individual landowners and the Wisconsin Department of Agriculture, Trade and Consumer Protection Agricultural Resource Management Division in Madison, Wisconsin. Known FPA lands within the project area are provided in shapefile GlcrHls_ProgramLands.shp.

7.1.4 Conservation Reserve Program (CRP) lands inside the project boundary and out to a distance of two miles

CRP information is based on a data request submitted to the local USDA FSA office. This information is not publicly available, and is released on an as-needed basis. The data acquired encompasses the area surrounding the project within Columbia County. Data for the neighboring counties of Dodge and Green Lake, which both lay more than one mile from the project border, were not available. The shapefile GlcrHls_ProgramLands.shp is provided containing the known CRP lands.

Identifiable cropping patterns, drain tile and irrigation system locations, areas under Farmland Preservation commitments and CRP commitments are graphically presented on the following map included in Appendix J.

Figure 7.1-1 Agricultural Characteristics

8.0 AIRPORTS AND LANDING STRIPS

8.1 PUBLIC AIRPORTS

There are nine registered airports within 10 miles of the project boundary. Figure 8.1 displays the locations of the FAA registered airports within a 10 mile radius of the project, as well as 2 private unregistered airstrips within 2 miles. The following table lists the airports and airstrips, distances to the nearest turbine and other pertinent data.

Table 8.1-1 Airports and Airstrips

Loc ID	Type	County	City	Facility Name	Owner-ship	Use	Owner	Near WTG	Dist (Ft) to Near WTG *	Dist (Mi) to Near WTG *
13WI	Airport	Green Lake	Markesan	Nowatzski Field	Private	Private	Walter Nowatzski	55	38,362	7.27
WS28	Airport	Columbia	Portage	Coleman	Private	Private	Thomas Coleman	70	48,317	9.15
1WI5	Seaplane Base	Dodge	Randolph	Beaver Dam Lake	Private	Private	Michael A. Burback	81	25,312	4.79
4WI1	Airport	Columbia	Rio	Bancroft East	Private	Private	M. James Bancroft	83	27,699	5.25
94C	Airport	Columbia	Rio	Cowgill/Gilbert Field	Private	Public	Rio Aero Club, Inc	14	43,321	8.20
7WI2	Airport	Columbia	Rio	Higgins	Private	Private	Frank & Patricia Higgins	83	42,282	8.01
WN39	Airport	Columbia	Wyocena	Knutson Field	Private	Private	Daniel P. Johnson	1	44,313	8.39
WS15	Airport	Columbia	Wyocena	Mill House Field	Private	Private	Blayde Elert	1	31,076	5.89
WS32	Airport	Columbia	Wyocena	Prescott Field	Private	Private	John Prescott	1	39,222	7.43
7WI6	Airport	Columbia	Wyocena	Weatherbee Field	Private	Private	N/A	1	54,831	10.38
N/A	Private Airstrip	Columbia	Randolph	Slinger Field	Private	Private	Charles & Sherry Slinger	81	3912	0.74
N/A	Private Airstrip	Columbia	Cambria	Swart Airstrip	Private	Private	Joe & Richard Swart	27	1025	0.19

** Distance to airport is calculated from the FAA center of airport to center of the proposed turbine location, with the exception of the 2 private airstrips within 2 miles of the project (Swart and Slinger), and Cowgill/Gilbert Field, noted as public usage.*

The following map is Showing all airports, runways and landing strips is provided in Appendix J, Community Maps.

Figure 8.1-1 Airports and Landing strips

There are no public airports within the project boundary.

There is one privately owned airport that is listed with the FAA as available for public usage. Cowgill (Gilbert Field) is owned by the Rio Aero Club, Inc.; the end of its east/west runway is 43,321 feet (8.20 miles) from WTG 14.

There are no public airports within 10,000 or 20,000 feet of any turbine.

Two shapefiles of airports/airstrips and runways are provided. Both include the public and private airport information discussed within Section 8.0.

- GlcrHls_Airports.shp
- GlcrHls_Runways.shp

8.2 PRIVATE AIRPORTS/GRASS LANDING STRIPS

There is one private landing strip located within the project boundary. It is owned by Charles and Joe Swart (Swart Airstrip) and located on the property owned by them in the Town of Randolph (T13N R12E S21). It is not registered with the FAA or the WDOT. Please see Figure 8.1-1 with an inset of the Swart property and the assumed location of the runway.

There is a private landing strip (Slinger Airstrip) approximately ½ mile northeast of the Village of Randolph located in the Town of Courtland (T12N R12E S01 & S02). It is not registered with the FAA or the WDOT. Please see Figure 8.1-1 with an inset of the Slinger property and the assumed location of the runway.

Distances from ends of assumed runways (as located per aerial images) to the nearest turbine are listed below.

Airstrip	Turbine ID	Distance (feet)
Swart Airstrip – Town of Randolph	WTG 27	1025
Slinger Airstrip – Town of Courtland	WTG 81	3912

Both the Swart and Slinger Airstrip are privately owned, and not registered with the FAA or WDOT. WTG 81 is approximately 0.74 miles northwest of the Slinger's east/west trending airstrip. No mitigation measures are needed for this private airstrip.

WTG 27 lies 1025 feet northwest of the assumed landing strip of the Swart Airstrip, however, it does not lie within the cone of ascent or descent. The alternate turbine 103A does possibly fall within the western cone of this airstrip. If it is determined desirable to build this alternate turbine, mitigation measures will be determined that are acceptable to both the Swarts and Wisconsin Electric.

8.3 COMMERCIAL AVIATION

There are several landowners within the project boundary that have indicated that they utilize commercial crop dusting services. Reabe Spraying Service (W7315 State Road 68, Waupun, WI

53963) was identified as an active crop duster in the area. During a conversation with Owner and President, Tom Reabe, he stated that while he utilizes the Swart Airstrip in the Town of Courtland for his services, he can relocate his take-offs and landings to one of the other nearby airstrips. He also indicated that he was uncomfortable spraying fields within the wind farm turbine arrays due to the turbulence generated by rotating blades.

Jim Kazmierczak of Kaz's Flying Service (319 Millston Ave, Lodi, WI 53555) also sprays within the Towns of Randolph and Scott. In an interview with Mr. Kazmierczak, he also stated that he will not fly within the turbine arrays, for safety reasons.

8.4 FEDERAL AVIATION ADMINISTRATION

For purposes of the flight path obstruction evaluation, turbines were assumed to be no taller than 460 feet. The turbines presently under consideration for the Glacier Hills Project are 415 feet or less.

Federal Aviation Administration (FAA) regulations on obstructions to navigable airspace (14CFR77.13(a)) require notification of the FAA Administrator of any proposed structure whose height; (1) is greater than 200 ft above ground level or (2) exceeds an imaginary surface extending 20,000 ft (3.79 miles) from the nearest airport[50] runway at a slope of 100:1 (horizontal: vertical). If the structure is within 10,000 ft (1.89 miles) of an airport whose longest runway does not exceed 3,200 ft, the slope is reduced to 50:1.[51]

Since the nearest public use airport is approximately 8.2 miles from the Project Area and all turbines under consideration by the Project will be higher than 200 ft, FAA notification is required under 77.13(a)(1).

8.4.1 Copies of all FAA determinations of hazard/no hazard

Correspondence with FAA is over the phone or via email; up to this point, no pertinent correspondence has been made. Obstruction determination requests are made by completing an on-line questionnaire.

Copies of correspondence with the FAA and obstruction determinations from the FAA are included in Appendix A. Wisconsin Electric will provide updates to this information as it becomes available.

8.4.2 Status of FAA determinations

Wisconsin Electric has notified the FAA of the proposed construction of turbines at 90 preferred locations. The FAA process is not designed to deal with hypothetical alternate turbine sites in a definitive manner. Obstruction determinations can be made however; the FAA concurrently specifies a lighting scheme for the full array, meaningless should the as-built array differ from

[50] Public use airports or airports operated by the armed forces [14CFR77.21(c)]

[51] 14CRF 77.13(a)(1) & (2).

the preferred turbine array. Therefore, Wisconsin Electric will notify the FAA of the 28 alternate locations once determinations have been made for the preferred turbine sites.

For the preferred turbine locations, the FAA has responded, determining none will pose a hazard to navigation provided the turbines meet obstruction lighting conditions.

8.4.3 Obstruction marking and lighting required by FAA

Following a review of the Glacier Hills Wind Park FAA determinations issued October 17, 2008; 48 turbines will require white paint and synchronized red lights. The FAA indicated that while these structures do not constitute a hazard to air navigation, they are located within or near a military training area.

8.5 Wisconsin Department of Transportation – Bureau of Aeronautics – High Structure Permits

Under Wisconsin statutes, the Wisconsin Department of Transportation (WDOT) has certain responsibilities concerning new construction of high structures near public airports [Section 114.135(7)]. WDOT requires a permit for new structures that would either extend to a height of more than 500 feet above the ground or surface of the water within one mile of the location of the structure or, above a height determined by a ratio of 40:1 measured from the nearest boundary of the nearest public airport. Due to the distance to the nearest airport, none of the turbines will exceed a slope ratio of 40:1. Wisconsin Electric anticipates, that the outcome of the WDOT analysis will reveal that permits are required for some turbines due to their height relative to lower lands near by. Wisconsin Electric is working closely with the WDOT and will apply for any necessary permits required by WDOT and has no reason to expect any delay in the issuance of these permits once applied for.

8.5.1 Turbine sites requiring WDOT high structure permits.

The list of turbines requiring WDOT High Structure Permits is generated by the Bureau of Aeronautics; once they've reviewed the FAA Determination of No Hazard to Air Navigation, they determine whether or not a WDOT High Structure Permit is required.

WDOT has reviewed information from the FAA for the preferred turbine sites and determined that 86 would require high structure permits.

8.5.2 Permit status and conditions for each turbine site requiring high structure permits

Wisconsin Electric applied for permits covering the 86 WDOT identified turbines on September 30, 2008.

Lists and permit status and copies of correspondence with and permits from the WDOT are included in Appendix B.

Wisconsin Electric will provide updates to this information as it becomes available.

9.0 EMF

9.1 COLLECTOR CIRCUITS

Wisconsin Electric retained the services of Matt Donnelly, PhD, and Farbod Jahanbakhsh, MSEE, of Quanta Technologies, to perform an analysis of the collector system electric and magnetic fields. At the Commission's request, the analysis was limited to areas outside the substation property. The full report is contained in Appendix W.

The report examines the magnitude of the electric (E) and magnetic (B) fields generated by each distinct collector circuit configuration, both underground and overhead, at distances of 0, 25, 50 and 100 feet from the centerline of the circuit. The analysis concludes that the maximum E field generated by the project, as proposed, is 1.8kV/m occurring under the worst-case conditions at the centerline of the overhead collector circuit. Similarly, the maximum B field generated by the proposed project is 5.6μT (56mG) under the worst-case conditions at the centerline of the overhead collector circuit.

Table 9.1-1 Collector Circuit EMF Profile

Electric and Magnetic Fields Various Collector Circuit Configurations				
	Centerline	25 Feet	50 Feet	100 Feet
Magnetic Fields, milligauss				
Double Circuit Overhead	56.0	36.1	17.5	5.7
Single Circuit Underground	15.3	1.2	0.3	0.1
Double Circuit Underground	27.5	2.4	0.6	0.2
Quad Circuit Underground	21.2	5.4	1.3	0.3
Electric Fields, kV per meter				
Double Circuit Overhead	1.8	0.2	0.3	0
Underground Circuits	0	0	0	0

The Quanta report concludes that these values are within the feasible realm of fields generally expected from state of the art power line design, that the values do not exceed the threshold values of any known jurisdiction that has set threshold values, that the values do not exceed the maximum recommendation of a manufacturer of pacemaker devices, and that the values are on the same order of magnitude as the electric and magnetic fields seen by a typical homeowner when using electrical appliances within the home.

9.2 TELECOMMUNICATIONS

Operation of wind turbines (and other structures) can impact various modes of telecommunication.

9.2.1 Summary of Communication Studies

Wisconsin Electric retained Comsearch, a communications consulting firm, to evaluate the impacts of the Project on various telecommunications modes. The full reports are provided separately to the PSC. Summaries from these reports and report conclusions are provided below.

Geo Planner – Microwave Beam Path Study: The wind turbine locations were selected so that they would not obstruct and interfere with any of the licensed commercial microwave stations in the area. To determine the location of the microwave beam paths in the area the Geo Planner Study was performed. The Geo Planner Study mapped all of the microwave paths that went through the Glacier Hills project area. With the results of this study the location of the wind turbines were selected to avoid obstructing any commercial microwave beam paths in the area. A shapefile containing microwave paths is provided in GlcrHls_MicrowavePaths.shp.

Federal Government Notification –NTIA Notification Letter and Response: The Geo Planner only covers commercial microwave systems. The federal government has a large number of departments and agencies that operate a separate set of communication systems that is not on any public databases. Because of this the location of pending wind energy facilities is sent to the National Telecommunication Information Agency (NTIA), which is the coordinator of the government communication systems for all departments and agencies. This is done so that any disruption of the government communication network can be avoided when the wind turbines are installed. The NTIA was notified that the Project was being developed on June 11, 2008. A response from the NTIA is expected by the end of 2008.

TV Baseline Measurements: Off-air TV baseline measurements were performed at 14 test locations in the areas within and around the Glacier Hills Project area. The purpose of the measurements was to determine the quality and signal strength of the off-air television signals in the area before the wind turbines are installed. It was found that broadcasters from Madison, Milwaukee/Kenosha, Maysville, Green Bay and Fond du Lac could be received in the area but many of the signals were of marginal levels because most of the stations were over 40 miles away. These weak signals may be attenuated even further at certain reception points once the wind turbines are installed. The results of the presence of the wind turbines may be the loss of some off-air TV channels at some locations due to signal attenuation or ghosting caused by the wind turbine blades and their motion. This usually happens where the wind turbine is in the line-of- sight path of the TV station and the reception point.

TV Reception Analysis: The number of off-air television stations within 40 miles to the local communities is very limited since there are only 2 full-power analog and 3 digital channels available. There are also two translators available but they are low power stations with limited coverage and programming. Based on the low number of stations in the area it is not expected that the off-air television stations available in the area are the only and primary mode of television service for the local communities. Because of this, TV Cable service, where available,

and/or direct satellite broadcast (DBS) are probably significant if not the dominant delivery mode of TV service to the proposed wind facility's surrounding communities. These services will be unaffected by the presence of the wind turbine facility.

AM/FM Broadcast Operations: No degradation of AM broadcast coverage will occur due to the presence of the wind turbines because the separation distance to the nearest wind turbine will be greater than 2 miles. Potential problems with broadcast coverage are only anticipated when AM broadcast stations with directive antennas are within 2 miles of turbine towers and AM broadcast stations with non-directive antennas are within 0.5 mile. Since all of the AM transmit antennas are outside the project area no problems with degradation is anticipated. All of the FM station antennas are located at distances greater than 7.51 miles from the center of the Project area and are outside the project boundary. At distances of 3 miles or more from the wind turbines, the effects to the FM coverage for all of the FM stations will be very minimal to non-existent.

Land Mobile Radio (LMR) Operations: There are 268 licensed LMR frequencies in the area in and around the Glacier Hills Wind Energy project. Thirty-two of the frequencies are licensed within the project boundaries. The frequencies of operation of the LMR repeaters are generally unaffected by the presence of wind turbines. Very little, if any, change in the coverage of the repeaters will occur when the wind turbines are installed. In the unlikely event that coverage is affected on a LMR network it can be rectified by the addition of a repeater, which can be placed on one of the many structures within the project area. The structures that can be utilized are buildings, MET, utility and even the lower parts of the wind turbine towers.

9.2.2 Mitigation Available to Reduce Interference

After construction of the wind turbines if there are reports of degraded off-air TV reception they will be investigated to determine if they are being caused by the presence of the wind turbines. If the investigation shows that they are, a number of mitigation strategies can be implemented that will restore the homes in the area to at least the same television coverage that existed prior to the installation of the wind turbine facility. The mitigation methods may involve any of the following, either singly or in combination.

- Installation of high-gain TV antenna on towers with rotors with preamplifier to boost the received signal level at individual homes.
- Where cable television exists, provide cable hookups to homes affected.
- Installation of a cable system to provide hookups to homes affected.
- Installation of a wireless TV distribution system, to provide TV channels to the cluster of homes affected.
- Provide satellite TV reception service to homes affected.
- Provide a satellite head end reception point with a cable distribution system to a cluster of homes near the head end.

In the event of a complaint, Wisconsin Electric will expeditiously work with the resident to implement reasonable and appropriate mitigation measures. Further, Wisconsin Electric has reinforced this commitment in its proposed JDAs with the Towns of Randolph and Scott.[52]

10.0NOISE

Wind turbines most commonly produce some broadband noise as their revolving rotor blades encounter turbulence in the passing air. Broadband noise is usually described as a "swishing" or "whooshing" sound.

Some wind turbines (usually older ones) can also produce tonal sounds (a "hum" or "whine" at a steady pitch). This can be caused by mechanical components or, less commonly, by unusual wind currents interacting with turbine parts. This problem has been nearly eliminated in modern turbine design. [53]

10.1 EXISTING MEASUREMENTS AND PROJECTED IMPACTS

Wisconsin Electric contracted Hessler & Associates, Inc to conduct a study existing ambient noise level and to project the additional noise associated with the planned Glacier Hills Wind Park. The study was conducted in accordance with PSC protocol with additional guidance provided by PSC Staff.

Hessler & Associates has been providing acoustical consulting services since 1976. All work on this project was carried out under the direction of the firm's founder, George Hessler. Mr. Hessler has over 40 years experience in power facility noise issues, is a registered Professional Engineer and is board certified by the Institute of Noise Control Engineers (INCE). A copy of the complete study and attachments is located in Appendix R, Sound Study.

In summary, the Sound Study concluded that all project noise requirements will be met including sleep interference recommendations and low frequency noise limitations. Based on the measurements and analyses, the Study concluded the planned project should not result in any material adverse noise impact for the residential communities. That said, it is noted that the wind turbine sounds will be perceptible outdoors during most operation and some individuals may perceive those sounds as annoying.

10.2 LOCAL NOISE ORDINANCE

There are no noise ordinances in the towns of Randolph and Scott. However, Wisconsin Electric in its proposed JDAs with the Towns of Randolph and Scott commits to a wind turbine-generated noise limit at Non-Participating residences (not-to-exceed 50 dBA) and commits to mitigating construction-generated noise.[54]

---

[52] Proposed JDA, Special Condition 13.

[53] Source: American Wind Energy Association: "Facts About Wind Energy and Noise" http://www.awea.org/pubs/factsheets/WE_Noise.pdf

[54] Proposed JDA, Special Condition 12.

10.3 NOISE ATTENUATING METHODS AND MATERIALS USED

Wind turbines generate noise from multiple mechanical and aerodynamic sources. As the technology has advanced, wind turbines have gotten much quieter, but noise from wind turbines is still a public concern. At the present time, the noise produced by wind turbines has diminished as the technology has improved. According to the American Wind Energy Association[55], the following technologies are used as noise attenuating methods.

The turbine manufacturers under consideration use a combination of the following methods to minimize noise:

Upwind rotor: A wind turbine can be either "upwind" (that is, where the rotor faces into the wind) or "downwind" (where the rotor faces away from the wind). A downwind design offers some engineering advantages, but when a rotor blade passes the "wind shadow" of the tower as the rotor revolves, it tends to produce an "impulsive" or thumping sound that can be annoying. Today, almost all of the commercial wind machines on the market are upwind designs.

Streamlined towers and nacelles: Streamlining (rounding or giving an aerodynamic shape to any protruding features and to the nacelle itself) reduces any noise that is created by the wind passing the turbine. Turbines also incorporate design features to reduce vibration and any associated noise.

Nacelle soundproofing: The generator, gears, and other moving parts located in the turbine nacelle produce mechanical noise. Soundproofing and mounting equipment on sound-dampening buffer pads helps to deal with this issue.

Advanced turbine blade design: As the wind energy industry and wind engineers gain more experience with wind turbine operations, turbine blades are constantly being redesigned to make them more efficient. The more efficient they are, the more the wind's energy is converted into rotational energy and the less aerodynamic noise is created.

Gearbox design: Wind turbines use special gearboxes, in which the gear wheels are designed to flex slightly and reduce mechanical noise. In addition, special sound-dampening buffer pads separate the gearboxes from the nacelle frame to minimize the possibility that any vibrations could become sound.

In addition to these design features, distance between a turbine and a residence can be considered to minimize the sound level at the residence. Through Wisconsin Electric's siting process, setbacks from residences generally perform this function.

10.4 POST-CONSTRUCTION NOISE MEASUREMENTS

Wisconsin Electric plans to perform a post construction noise assessment per PSC protocol in effect at the time.

[55] Source: American Wind Energy Association: "Facts About Wind Energy and Noise" http://www.awea.org/pubs/factsheets/WE_Noise.pdf

10.5 MITIGATION

In the event of a violation of the noise limit, mitigation measures to be taken may include installing insulation or sound deadening material in the offending wind turbine(s); installing landscaping, insulation, and sound deadening material at the residence; or, changing the operation of the Wind Turbine(s) to reduce noise output.[56]

11.0SHADOW FLICKER

Wisconsin Electric has performed a shadow flicker study for the Project. The full study report is provided in Appendix S. The analyses performed used both the WindFarm and WindPRO software. The report was used as the source of information in the following sections and also contains additional information Wisconsin Electric has found useful during discussions with inquisitive residents at our BSGF wind project, including possible effects on humans.

Shadow flicker caused by wind turbines is defined as alternating changes in light intensity due to the moving blade shadows cast on the ground and objects, including windows at residences. No flicker will occur when the turbine is not rotating or when the sun is obscured by clouds or fog.

Shadow-flicker can occur when the turbine is located near a home and is in a position where the blades interfere with very low-angle sunlight. The most typical effect is the visibility of an intermittent light reduction in the rooms of the home facing the wind turbines and subject to the shadow-flicker. Such locations are here referred to as shadow-flicker receptors. The influence of shadow flicker on residences depends on the length and direction of shadows cast by wind turbines and the relative location of wind turbines and windows at the residence.

Shadows become less sharp (more diffuse) as distance increases between the shadow-casting object and the observer. At a sufficient distance no noticeable shadow forms at all because the object does not significantly block the sun's light. Instead, light diffracts (or bends) around the edges of the object, and the object itself appears relatively small compared to the apparent size of the sun.

11.1 SHADOW FLICKER AT A TYPICAL WIND TURBINE SITE

Among the analyses and information provided in the full report is an analysis of shadow flicker at a typical wind turbine site using WindPRO.

Average monthly cloud data from the National Climatic Data Center for Milwaukee and Green Bay and were included in the shadow calculation. This model takes into account the average amount of time per year the turbine is operational and yawed in various directions. This shadow flicker model does take elevation differences into account, but does not account for obstructing objects such as trees, silos, or buildings.

[56] Ref. Wind Farm Easement Agreement, Sec. 4.7.

Figure 11.1-1 (Figure 2 in the report) shows shadow contours for a typical turbine (55). Lines represent equal number of hours per year of shadow perception. Calculations used to generate this figure take into consideration monthly cloud cover, average amount of time per year the turbine is operational and yawed in various directions and land contour.

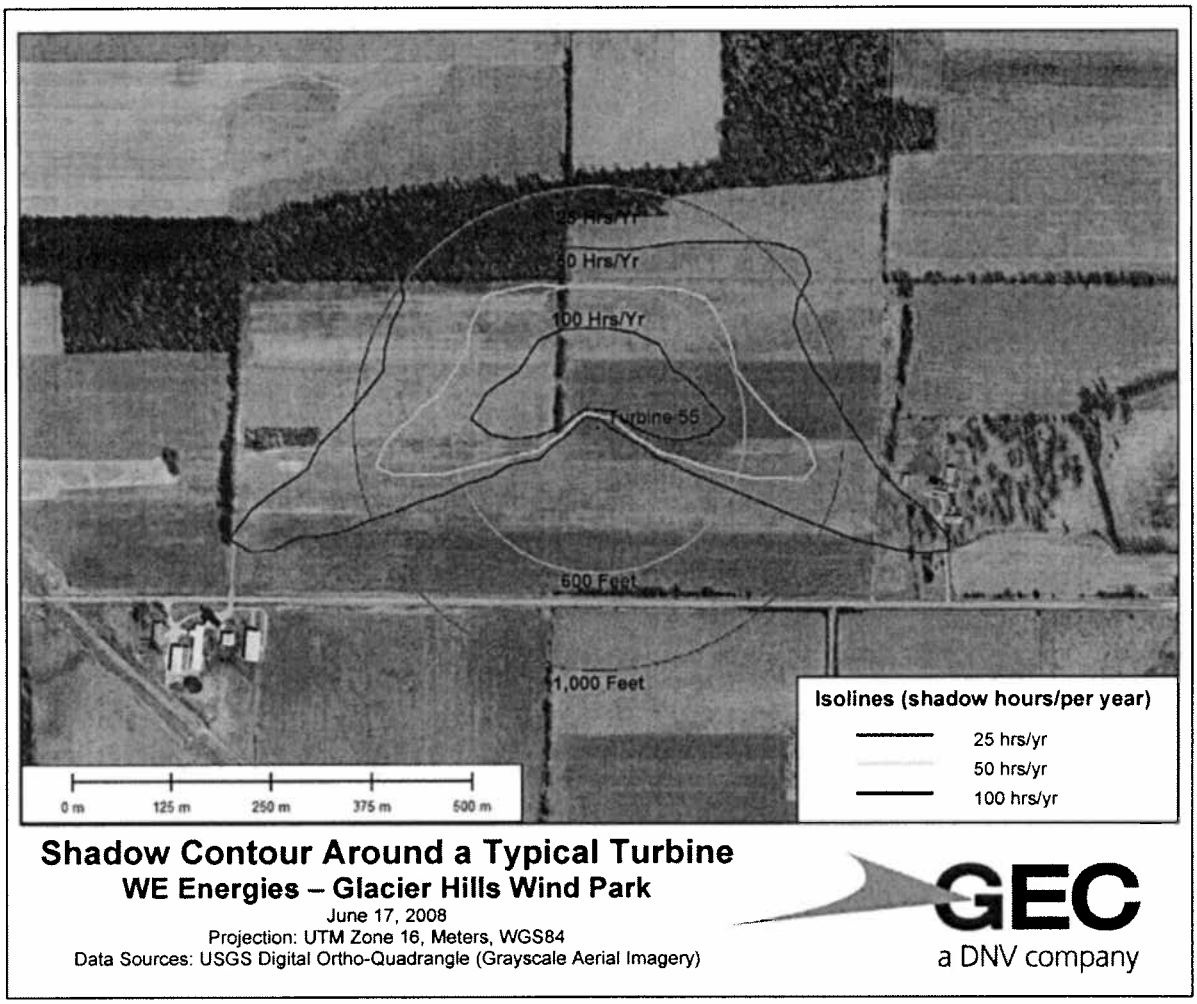

Figure 11.1-1 Shadow Contour Around a Typical Turbine

(Lines represent equal number of hours per year of shadows)

This example shows that a home inside the area of the blue line will have a shadow cast on it for 100 or more hours per year; a home located in the area between the blue and green lines will have a shadow cast on it for 100 or fewer hours per year; and a home located beyond the purple line will have a shadow cast on it for less than 25 hours per year.

All non-participating homes will be outside of the red line (1000 ft) and will generally have a shadow cast on them less than 25 hours per year, except for homes located to the NE, SE, SW, and NW which may have 25 to 50 hours per year.

11.2 MITIGATION AVAILABLE TO REDUCE SHADOW FLICKER

Relative location (distance and direction) of a turbine and a residence can be considered at the planning stage to minimize the number of potential shadow flicker receptors. Through Wisconsin Electric's siting process, setbacks from residences generally perform this function at the preliminary design stage. As the design is finalized through interaction with each land owner, shadow effects as indicated by a typical shadow contour, or more detailed information as described in Section 11.3, can be considered in the final siting decision.

In the event there is a need or desire to mitigate shadow flicker effects within a residence, simple steps such as drawing shades during the hours of impact or applying exterior visual blocking techniques can be taken.

11.3 INQUIRIES OR COMPLAINTS

In the event of an inquiry by a resident within or near the project area, specific information will be provided as appropriate to the circumstance. The analytical tools available include the WindFarm and WindPRO computer programs.

First, Wisconsin Electric would determine whether the residence could potentially be subject to shadow flicker. If the answer is yes then Wisconsin Electric would offer a specific evaluation for the residence similar to the evaluation described in Section 11.1 but including site-specific features such as land contour, orientation of the residence, existing visual barriers and location of all turbines affecting the residence. The product would be specific shadow contour similar to Figure 11.1-1.

If further detail is requested, additional information would be provided. This information would be an estimate of total hours a year shadow flicker is expected at the residence, as well as a summary of the duration, time of year and time of day the shadow flicker is expected to occur. A graphical calendar detailing the shadow on the residence by time of day and month of the year for each turbine will also be presented.[57]

All information provided in response to the inquiry would be presented by a knowledgeable Wisconsin Electric representative.

In the event of a complaint, Wisconsin Electric will expeditiously work with the resident to implement reasonable and appropriate mitigation techniques.

[57] See Appendix S, Shadow Flicker Study.

12.0 LOCAL GOVERNMENT IMPACTS

12.1 JOINT DEVELOPMENT AND OTHER AGREEMENTS

The Project Area is contained entirely within the towns of Randolph and Scott, both being in northeastern Columbia County. The Company held introductory meetings with the town chairs of Randolph and Scott in early 2008. In spring of 2008, the Company shared draft Joint Development Agreements (JDA) with the towns and made presentations at their monthly town board meetings. Discussions began in earnest in September 2008 and negotiations are continuing and productive. The Company is optimistic about reaching agreement.

12.1.1 Copy of all agreements with local communities (e.g. Joint Development Agreements (JDA))

A copy of the draft JDA that has been provided to the Towns of Randolph and Scott is provided in Appendix E.

12.1.2 Summary of major agreement items

The proposed Joint Development Agreement is designed to establish a common understanding on a number of items that are important to both the Company and the towns. The following items are in the draft agreements under negotiation:

Performance Standards: Requires the Company to manage the design, construction, and operation of the project consistent with good utility practice.

Indemnification: The Company shall indemnify the town from third party claims raised as a result of the Project.

Compliance: The Company must design, construct, and operate the Project consistent with all state and federal standards, regulations, and permits.

Setbacks: Establishes the distances that must be maintained between turbines and homes, public buildings, roads, overhead utilities, etc.

Noise: Establishes a design limit that the turbines shall not exceed.

Signal Interference: Obligation to restore television and radio reception issues that arise from operation of the turbines.

Road Plan: Defines a process for a third party expert to determine road quality before construction and after construction and a requirement of the Company to compensate the towns for road degradation attributable to the Project.

Decommissioning and Site Restoration Plan: Defines the circumstances under-which the Project must be decommissioned and specifies what must be removed and restoration requirements.

12.1.2.1 Services provided during construction and operation

Fire and Medical Emergency Response Services
The Town of Scott is served by two fire departments and the Town of Randolph is served by three fire departments, based on the geographic fire response districts in place in Columbia County. The Town of Scott is served by the Village of Pardeeville Fire Department (western half of the Town) and the Village of Cambria Fire Department (eastern half of the Town). The Town of Randolph utilizes the services of the Village of Cambria Fire Department (west), the Village of Friesland Fire department (central) and the Village of Randolph Fire Department (east). Emergency medical response is provided by the same entities with the exception of the Village of Friesland. Friesland currently utilizes First Responders in concert with Randolph EMS for the northeast quadrant of the Town of Randolph. The entity responding to any emergencies would be determined by the County 911 dispatcher, based upon the location of the emergency.

Emergency services that may be needed are similar in nature for both construction and operation. However, during operation, the amount of potentially hazardous activity is much less than during construction. Construction would take place over a 12 month period. The number of workers at the site varies through the phases of construction as more fully discussed in Section 3.2. Construction would employ the use of heavy equipment such as back hoes, mobile cranes, etc. as described in Section 2.3.1. Worker safety is a high priority with Wisconsin Electric and safe work practices will be employed on this Project. Regardless, Wisconsin Electric has discussed the possibility of needing fire, police and emergency medical services with the local units of government. These communications indicate that the emergency services are in place and sufficient to meet possible needs. Final plans for emergency response coordination in the project area are being developed by Columbia County Emergency Management to ensure that all entities know their role and response times are minimized for any emergency issue related to the project.

Police (Law Enforcement)
Both towns use the services of the County Sheriff's office for patrols and emergencies. Response to any emergency would be initiated by the County 911 dispatcher.

Highway/ traffic control
Both towns use the County Sheriff's office for traffic control and heavy and oversize load escort. Wisconsin Electric has discussed the possibility of needing these services with the local units of government. These communications indicate that the services are already in place and sufficient to meet possible needs.

Water and Sanitary Services
Construction and operation of the facility will not require water or sewer service from the communities. Therefore, the project will have no impact on local community water and sanitary services. Should the O&M facility be located in the Village of Friesland water and sewer utilities would be used. The village's water and sanitary services are in place and sufficient to meet possible needs.

12.2 INFRASTRUCTURE AND SERVICE IMPROVEMENTS

12.2.1 Local government infrastructure and facility improvements required

In meetings with local government officials, no infrastructure or facility improvements were identified to support the construction or operation of the Project. It is anticipated that certain intersections (See Section 2.3.5) will need to be temporarily widened to accommodate oversized deliveries. These improvements are built of aggregate materials that are removed following construction and intersections are restored to their pre-construction condition.

12.2.2 Effects of the proposed project on city, village, town and/or county budgets

The effect on the communities' budgets during construction is expected to be neutral. During operation, the effect on communities' budget is expected to be positive due to shared revenue payments.

12.2.3 Estimate of revenue to the local community

State revenue sharing is funded by power companies through their license fee (gross receipts tax).

Shared revenue payments are tied to the MW capacity of power plants. If the power plant is located in a city or village, the municipality receives an annual payment equal to two-thirds of the plant's MW capacity multiplied by $2,000. The county receives an annual payment equal to one-third the plant's capacity multiplied by $2,000. The two-third/one-third relationship is reversed if the power plant is built in a town (rather than a city or village). The total dollar amount distributed can not annually exceed the municipality's population multiplied by $300 or the county's population multiplied by $100.

Shared revenue payments are not distributed during construction; the payments begin after the plant is operational. Under the current formula, the payments would continue at the same level until the facility is decommissioned.

In addition to the base payment described above, municipalities and counties can qualify for more than one of the following incentive payments:

- $600 annually multiplied by the plant's MW capacity to both the municipality and county for a non-nuclear plant that is built on or adjacent to an existing power plant site, a former plant site, or a brownfield site;
- $600 annually multiplied by the plant's MW capacity to both the municipality and county for a baseload plant that has a capacity of at least 50 MW;
- $1,000 annually multiplied by the plant's MW capacity to both the municipality and county for a plant that derives energy from an alternative energy source and the plant has a capacity of at least one MW; or
- $1,000 annually multiplied by the plant's MW capacity to both the municipality and county for a cogeneration plant that has a capacity of at least one MW.

Table 12.2-1 shows the maximum amount of shared revenue distribution that the Towns and County would receive under the current formula if the 90 preferred turbine locations are constructed.

Table 12.2-1 Projected Shared Revenue Payments

	Number of Turbines	Turbine Models				
		GE SLE	V82	V90	G87	S2.3
Turbine (MW)		1.5	1.65	1.8	2.0	2.3
Total (MW)		135	148.5	162	180	207
County	90	$ 315,000	$ 346,500	$ 378,000	$ 420,000	$483,000
Randolph	54	$ 135,000	$ 148,500	$ 162,000	$ 180,000	$207,000
Scott	36	$ 90,000	$ 99,000	$ 108,000	$ 120,000	$138,000
Total	90	$ 540,000	$ 594,000	$ 648,000	$ 720,000	$828,000

If alternate sites are utilized, shared revenue payments may be redistributed based on the installed capacity in each town.

If shared these revenue payments are revoked by the state legislature, the proposed Joint Development Agreements with the towns of Randolph and Scott require Wisconsin Electric replace these payments to the towns, to the extent such payments are approved by the PSCW for recovery in rates.[58]

For general structures and substations, the old rules still apply. That means shared revenue is 9 mills (0.9%) of net book value; 1/3 to towns, 2/3 to the county. If the facility is located in a village, the reverse would apply; 2/3 to the village and 1/3 to the county. The initial shared revenue for the O&M facility (estimated at $800,000) would total $7,200. For the substation (estimated at $7,000,000), the total initial shared revenue would be $63,000. These amounts will slowly diminish as the assets are depreciated.

Finally, if real property taxes increase due to installation of the wind power facilities, Wisconsin Electric will compensate the landowner for the increase as described in the Wind Farm Easement Agreement.[59] This indirectly would be a payment to the community.

12.2.4 Other benefits to the community

There are numerous benefits provided to the community as a result of the construction and/or operation of the Project. These benefits include:

Local/Regional Employment: Refer to Section 3.2, Workforce.

[58] Proposed Joint Development Agreements with the towns of Randolph and Scott, Special Conditions, par. 18.

[59] Wind Farm Easement agreement, sec. 11.2.

Services, Materials, Supplies: During both construction and operation the Company, contractors, and their employees will utilize the services of construction and office supply companies, local contractors, and service industry services such as restaurants and community halls.

Land Easement Payments: Payments made to landowners can reasonably be expected to be reinvested in their farming operations or spent on other goods and services.

In addition to specific business services required by the Company, the community will benefit from the financial and participative approach that Wisconsin Electric takes in the communities that host our generation facilities. Local construction and maintenance service providers will be identified and informed on how to submit proposals to Wisconsin Electric. Supplier information forms can be submitted online by visiting the web site at http://www.we-energies.com.

13.0 LANDOWNERS AFFECTED AND PUBLIC OUTREACH

13.1 LISTS

A list of all property owners and residents (including public property) within 1.0 miles of the Project boundary is provided in Appendix O. A list of all clerks of villages, townships, counties and planning commissions within 2.0 miles of the Project boundary is provided in Appendix P.

Spreadsheets of these lists are provided separately to the PSC.

13.2 PUBLIC OUTREACH

The following is a chronology of notable interactions with the "public." This discussion includes interactions with both participating landowners and those non-participating residents in the broader community.

Wisconsin Electric representatives began meeting one-on-one with project participants in late 2007 to introduce the company and explain the option agreement held with FPL. At that time, Wisconsin Electric also provided participants with a direct project phone number.

In June 2008, Wisconsin Electric held two meetings to provide project participants with information on the purchase agreement, regulatory approval process and site engineering and layout. At these meetings, project participants were given the first draft of the proposed layout with turbine locations and access roads for their review.

In August 2008, meetings were held over two days for the project participants to meet with our engineering and real estate staff to discuss the proposed layout, provide information on their land use and ask any questions.

Also in August, as a result of requests by the town officials, an open house was held for those residents living in the towns of Randolph and Scott and the village of Friesland. Approximately

100 people attended to obtain information. The majority of attendees were interested in turbine locations and timing.

On Sept. 17, 2008, a public open house was held for the residents living in the project area and those within one mile from the project area. More than 100 people were in attendance to learn more about the project and ask questions related to the project. Wisconsin Electric staff was on-hand to provide attendees with an overview of the Project, discuss the turbine layout, and seek reaction from residents. The majority of questions were about turbine locations, timing and local benefits and impacts. The comments expressed at both public open houses were generally neutral to positive regarding wind energy.

Wisconsin Electric has also met with local government officials in Columbia County, the towns of Randolph and Scott, and the villages of Friesland and Cambria. An overview of the project was provided and input was requested regarding local zoning and ordinances. Further discussion occurred regarding the public communication plan, setbacks, sound, town benefits and the joint development agreement.

In addition to meeting with the project participants and public, Wisconsin Electric has established a dedicated Project section on the Wisconsin Electric Web site and a "hotline" phone number used specifically for answering project-related questions. Wisconsin Electric is committed to providing various forums to inform and answer questions regarding the project.

Copies of public outreach materials are provided in Appendix Q.

13.3 PLANS AND SCHEDULES COMMUNICATING WITH THE PUBLIC

A multi-faceted communication outreach effort will be used to inform and educate those affected by the project. This will include some of the following activities:

- Meetings to inform and educate stakeholders
- Informational briefings and meetings with project participants
- One-on-one communication with landowners and area residents
- Community newsletters/updates
- Website dedicated to information regarding the project: www.we-energies.com

13.4 LOCAL MEDIA INFORMED ABOUT THE PROJECT

Name	**Contact Address**	**Media Type** (TV, Radio, Newspaper, etc.)
WTLX-FM 100.5	Box 902, Beaver Dam 53916 920-885-4442	Radio
WXRO-FM 95.3	Box 902, Beaver Dam 53916 920-885-4442	Radio
WBEV-AM 1430	Box 902, Beaver Dam 53916 920-885-4442	Radio
WFDL-AM 1170	609 Home Avenue, Waupun 53963 920-324-4441	Radio

	Wmrh1170@yahoo.com	
Beaver Dam Daily Citizen	920-887-0321 dc-news@capitalnewspapers.com	Newspaper
Portage Daily Register	Box 470, Portage 53901 608-745-3511 pdr-news@capitalnewspapers.com	Newspaper
Neighbors (Waupun)	Box 111, Waupun 53963 920-324-5555 Dmueller2@capialnewspapers.com	Newspaper Weekly - Saturday
The Columbus Journal	Box 188, Columbus 53925 920-623-3160 pscharf@capitalnewspapers.com	Newspaper Weekly - Saturday