



October 20, 2011

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OCT 25 2011

North Dakota Public Service Commission  
Darrell Nitschke  
Executive Secretary  
600 E. Boulevard Avenue Dept. 408  
Bismarck, ND 58505-0489

**PUBLIC SERVICE COMMISSION**

Re: Case No. PU-05-205 Contract No. PU-599-10  
FPL Energy Burleigh County Wind, LLC Collection Substation and  
Central Power Electric Cooperative 230 kV Transmission Line in Burleigh County

Dear Mr. Nitschke,

The State of North Dakota, acting through its North Dakota Public Service Commission (NDPSC), Division of Public Utilities, has engaged Keitu Engineers & Consultants, Inc. to perform consulting services for post-construction siting inspections. A final report was sent to you electronically via email. Enclosed is an original and copy of the final report for the post-construction inspection of Case No. PU-05-205.

The Executive Summary identifies items that still need attention by the Commission staff and siting applicant to ensure that the facilities for the project have been constructed in compliance with items identified by the ND Public Service Commission. Once these items are addressed, the Commission can act on final closeout of the construction phase of the project.

Should Commission staff or the NDPSC have any questions, please contact me for assistance.

Sincerely,

Timothy Spilman  
Project Manager

Enclosures

**183 PU-05-205** Filed: 10/25/2011 Pages: 17  
**Final report for post-construction inspection**



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## **FPL Energy Burleigh County Wind, LLC Collection Substation and Central Power Electric Cooperative 230 kV Transmission Line (Burleigh County, ND)**

Prepared by Timothy Spilman, Project Manager, Keitu Engineering & Consultants, Inc.  
Final Report

### **Executive Summary**

This is an Amended Application for a Certificate of Corridor Compatibility filed jointly by FPL Energy Burleigh County Wind, LLC (Burleigh County Wind) and Central Power Electric Cooperative Inc. (Central Power) (collectively Burleigh County Wind and Central Power). A 4.4 mile 230 kV transmission was constructed by Central Power Electric Cooperative and a wind turbine collection substation was built by FPL Energy Burleigh County Wind, LLC due to this Siting Application and Orders.

Exhibit 3d of the Amended Application (Docket #20) was to provide landowner waivers of 500 feet exclusion area requirements and signed easements. In Exhibit 3d only the Jeff Spitzer waiver in Section 18 T142N R79W was provided. FPL/Central Power needs to provide the Commission a waiver letter for the second landowner with a resident within 500 feet. This resident is in the SW corner of Section 14. Once FPL/Central Power provides this waiver letter, all requirements to complete Order #7 will be accomplished.

A final correspondence that crash mitigation devices were installed for structures 26 & 27 is required. In a July 06, 2006 email from Mark Sherman of Central Power to the Commission employees (Docket # 172), he stated that Ecklund township road supervisor, John Spitzer, and Mr. Schuler requested and Central Power agreed to install crash barrels at these structures. Mark said he would report back to the Commission's employees when they were installed. No record was found in the case file that the crash barrels were installed. The PSC post construction field inspection of October 17, 2011 verified that three 2100 lb. barrel crash mitigation devices were installed at each structure # 26 & 27. Central Power should provide correspondence to the Commission that they installed crash barrels as agreed to complete the update of the construction activities. Once this item is completed, Order # 8 will be complete.

The transmission line and substation were energized on December 5, 2005. Wind towers were brought on line after this date. Based on WAPA allowing the connection of the transmission line and collection substation to their system, the construction and operation of the facilities are in accordance with all safety requirements. FPL should provide a substation as built drawing or drawings for Commission's file. Central Power and FPL should provide a letter to the Commission that the transmission line and the substation were constructed and operate in accordance with the National Electric Safety Code Standards for assurance Order #9 is completed.



Once the substation as built drawings and the letters that design and operation follow NESC standards, Order # 9 will be complete.

Planting occurred in 2006. The Order specified that FPL/Central Power shall inspect tree replacement once a year for three years and send a report to the Commission. The Commission only has two years of inspection reports. A third year report is required before for completion of Order #17 can occur.

The Amended Application Exhibit 2e was to give FPL collection substation design and drawings. No design specifications for construction were found in this exhibit. Found in this exhibit is a site location on a topographic map where the substation was to be constructed. FPL also provided the Commission with an access road location map (Docket #53) to the collection substation as its only other design specification. No as built drawings of the collection substation were found in the Commission's case file. FPL should provide design specifications for the station and an as built substation site diagram with fence dimensions in order to complete Order # 18.

FPL and Central Power complied with all other Order requests of the Commission.

### **Preliminary Statement**

FPL Energy Burleigh County Wind, LLC (FPL) constructed a Burleigh County Wind Energy Center near the City of Wilton, North Dakota. They and Central Power Cooperative, Inc. (Central Power) jointly filed on June 24, 2005, an amended application for a certificate of corridor compatibility and a route permit seeking authorization to construct a collection substation and 4.4 miles of 230 kV single pole steel structure, three-phase alternating current electric transmission line to interconnect with WAPA transmission system. FPL owns and operates the associated collection substation where the transmission line interconnects with a wind farm constructed by FPL. Central Power Electric Cooperative, Inc owns and operates the transmission line. The amended route and corridor is entirely within Burleigh County, North Dakota. This Siting application and Orders are for the construction of the 4.4 miles of transmission line and the collection substation.

The proposed facility is a 230 kV transmission line that will extend approximately 4.4 miles between the proposed Burleigh County Wind Energy Center and Western Area Power Administration's (Western) existing Garrison to Bismarck transmission line and a collection substation located on the Burleigh County Wind Energy Center site. The point of interconnection with Western's transmission line would be located west of Highway 83, about 3-miles south of the town of Wilton, North Dakota. The proposed radial electric transmission line will allow the Burleigh County Wind Energy Center to supply a maximum of 49.5 megawatts (MW) of renewable energy to the power grid. Construction started in August of 2005 with the transmission line and substation being energized in December of 2005. A highway and railroad crossing were part of the transmission line route.



The State of North Dakota, acting through its North Dakota Public Service Commission (NDPSC), Division of Public Utilities, has engaged Keitu Engineers & Consultants, Inc. to perform consulting services for post-construction siting inspections. This report addresses the Orders established by the NDPSC and issues established in case File No. PU-05-205.

## **The Commission orders:**

### **1. FPL and Central Power's Amended Application for Waiver of Procedures and Time Schedules is granted.**

In a June 29, 2005 motion (Docket #24), Annette M. Bendish moved the Commission issue a Notice of Amended Application and Notice of Hearing in the amended application of FPL Energy Burleigh County Wind, LLC and Central Power Electric Cooperative, Inc. for a waiver of procedures and time schedules, and consolidated application for a corridor certificate and a route permit authorizing construction of a 230 kV Transmission Line in Burleigh County, North Dakota, Case No. PU-05-205 and assess a filing fee of \$16,000, due July 15, 2005 for the amended consolidated application. Motion passed. Order # 1 is complete.

### **2. Certificate of Corridor Compatibility for Transmission Facility Corridor No. 87 is issued to Central Power Electric Cooperative, Inc.**

On August 10, 2005, the Commission designated a transmission facility corridor for Central Electric Power Cooperative, Inc.'s 230 kV transmission line described as: A corridor approximately three miles wide extending generally around and along a center line beginning in the SE ¼ of Section 17, T142N, R79W and extending westerly along Burleigh County Highway #279 for approximately 4.4 miles to the SE ¼ of Section 15, T142N, R80W. The certificate (Docket #57) was issued in accordance with the Order of the Commission in Case No. PU-05-205 dated August 10, 2005, and was subject to the conditions and limitations noted in the order. Order # 2 is complete.

### **3. Certificate of Corridor Compatibility for Transmission Facility Corridor No. 88 is issued to FPL Energy Burleigh County Wind, LLC.**

On August 10, 2005, the Commission designated a transmission facility corridor for FPL Energy Burleigh County Wind, LLC's collection substation described as: A corridor approximately three miles wide extending generally around and along a center line beginning in the SE ¼ of Section 17, T142N, R79W and extending westerly along Burleigh County Highway #279 for approximately 4.4 miles to the SE ¼ of Section 15, T142N, R80W. The certificate (Docket #56)



was issued in accordance with the Order of the Commission in Case No. PU-05-205 dated August 10, 2005, and is subject to the conditions and limitations noted in the order. Order # 3 is complete.

**4. Route Permit for Construction of a Transmission Facility No. 97 is issued to Central Power Electric Cooperative, Inc., granting authority to construct the proposed transmission line.**

On August 10, 2005 the Commission designated a transmission facility route for Central Electric Power Cooperative, Inc.'s 230 kV transmission line and described as: A transmission facility route beginning at a collection substation site in the SE  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of Section 17, T142N, R79W and extending westerly along the north side of Burleigh County Highway #279 for approximately one mile before crossing to the south side of the road and extending approximately 3.4 miles to interconnect with the Western Area Power Administration's Garrison to Bismarck 230 kV Transmission line in the SE  $\frac{1}{4}$  of Section 15, T142N, R80W. The certificate (Docket # 55) was issued in accordance with the Order of the Commission in Case No. PU-05-205 dated August 10, 2005, and is subject to the conditions and limitations noted in the order. Order # 4 was complete.

**5. Route Permit for Construction of a Transmission Facility No. 98 is issued to FPL Energy Burleigh County Wind, LLC, granting authority to construct the associated collection substation.**

On August 10, 2005 the Commission designated a transmission facility route for FPL Energy Burleigh County Wind, LLC's collection substation described as: A transmission facility collection substation site consisting of approximately 17 acres in the SE  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of Section 17, T142N, R79W. The certificate was issued in accordance with the Order of the Commission in Case No. PU-05-205 dated August 10, 2005, and is subject to the conditions and limitations noted in the order. Order # 5 is complete.

**6. FPL and Central Power shall conduct preconstruction conferences prior to commencement of any construction, which must include a company representative, construction supervisor, and a representative of the Commission staff in order to ensure that FPL and Central Power fully understand the conditions set forth in this Order.**

Three preconstruction meetings were held to ensure all contractors fully understand the conditions set forth in the Order.

The 1st pre-construction meeting (Docket # 61) was held on Wednesday August 17<sup>th</sup>, 2005. In attendance were Annette Bendish and Jerry Lein of the PSC; Kurt Beichel, Joe Marchese, Kenneth Stein, Jim Sissions, and Shannon Lord of FPL Energy; Martin Daly, Terry Zacher, Dave Knain, Rush Waite of Wanzek Construction; and Larry Lacher of Ventus Energy.



On August 30<sup>th</sup>, 2005 the second construction meeting (Docket #74) was held. In attendance were Annette Bendish and Jerry Lien of the PSC, Mark Sherman and Jerry Zainhofsky of Central Power, and Gordy Parisien of Parisien's Tree Service.

On September 13, 2005 a third preconstruction meeting was held. This meeting was with Central Power, their engineering firm KBM, Inc, their concrete testing firm Braun Intertec, their construction contractor Brink Constructors, Inc., and Brink's subcontractor Evergreen Caissons Inc.. Those in attendance were Annette Bendish of the PSC; Mark Sherman and Jerry Zainhofsky of Central Power; Dave Martian and Larry Adsem of KBM; Tim Hughes, Tyson Heiss, and Merlin Hughes of Evergreen; Mark Kvas of Braun Intertec; and Les Mahin and Zane Brink of Brink.

The conferences included a review of the order's findings of fact and ordering clauses, a review of penal provisions in the siting statute, and a question and answer period. Permits, tree clearing, reseeding, cultural issues, landowner relations, and safety requirements were also discussed. Order # 6 was complete.

**7. FPL and Central Power shall comply with the rules and regulations of all agencies having jurisdiction over any phase of the proposed transmission line and associated collection substation, and shall obtain all other necessary licenses and permits; and shall provide copies of all licenses and permits to the Commission prior to the construction of the transmission line and associated collection substation. These submittals must include any environmental assessment prepared by WAPA and any findings made by WAPA with regard to the environmental assessment. If FPL/Central Power have obtained all other necessary licenses and permits except for road or railroad crossing permits then they may commence construction, but shall not construct such road or railroad crossing until the necessary permit have been acquired and copies filed with the Commission.**

North Dakota Administrative Code 69-06-01-05 lists 21 state agencies that are entitled to notice of the FPL and Central Power's Siting Application. Federal agencies also require notification. The application and response to the notice of hearing identified the following state and federal agencies with regulatory concerns or responses: US Army Corp of Engineers (USACE), US Fish and Wildlife Service (USFWS), North Dakota Sate Water Commission (NDSWC), North Dakota Game and Fish Department (NDGFD), North Dakota State Historic Preservation Office (SHPO), North Dakota Department of Health; ND DOT, Indian Affairs Commission, Land Department, Aeronautics Commission, ND Parks and Recreation Department. The application, exhibits, and Docket items had copies of the responses from these agencies.

The USACE coordinated with other agencies in review any of the US Army Corps of Engineers Nationwide Permit 12 and its approval. Nationwide Permit 12 was obtained and followed during the project.

The USFWS expressed an interest in sharptail grouse leks, bird collisions (migratory birds and raptors), native prairie and wetlands. FPL and Central Power performed additional studies and analysis before selecting a proposed route. The general study process included, but was not



limited to: (1) selection and general evaluation of the study area, (2) a Class I Archeological/Cultural records search, (3) open house with North Dakota tribal interests, (4) agency consultations, (5) collection and evaluation of criteria data, (6) Class III pedestrian survey, (7) Stick-Nest Surveys, and (8) Wetland Surveys. Bird collisions are not a factor during construction but are a problem when the wind turbines are operating. The transmission line and substation were not a factor in the bird collision issue. FPL and Central Power addressed the US Fish and Wildlife issues. The USFWS also recommended construction in or near wetlands be deferred until after July 15 as not to disrupt waterfowl or other wildlife during nesting season. FPL and Central Power started construction on August 30<sup>th</sup> and completed construction of the transmission line and substation by December 5<sup>th</sup>, 2011. The site applicants followed USFWS July 15 request.

The ND Water Commission's authority includes the Missouri River up to the ordinary high water mark, waters which were meandered out of homestead parcels, wetland with drainages greater than 80 acres, and other designated waters of statewide significance. None of these areas were located along the proposed route. The ND Water Commissions jurisdiction was not triggered.

The ND Game and Fish Department were interested in ensuring that impacts to woody habitats, native prairies habitats, avian collisions with line and towers and impacts to sharptail grouse lek sites are minimized. There were 1.28 acres of woodland on the route and 2.62 acres of wetlands according to the amended application. ND Game and Fish authored a letter found in Exhibit 3 of the Amend Application. The route required the removal of only 135 trees and shrubs. The route was located along 279<sup>th</sup> Avenue NE road with 39 transmission structures and a substation fenced in a 300' x 200' area. One small wetland slightly was impacted by one transmission structure. A structure was relocated during the construction to stay further away from the wetland. FPL and Central Power changed their route from 28 miles to a 4.4 mile route. Using a route along a busy road area reduces the adverse impact to the environment and wildlife. Reducing the route distance also reduces impact. FPL/Central Power and Commission insured the construction did not disrupt waterfowl or other wildlife during nesting season as requested by the ND Game and Fish Department.

FPL/Central Power initiated cultural resources investigations along the proposed project transmission line and wind energy center facilities. FPL/Central Power completed both Class I files and record search, and also a Class III pedestrian survey of the entire proposed route and collection substation for archeological and cultural resources. The North Dakota State Historic Preservation Office (SHPO) provided a conditional approval to construct. North Dakota SHPO concur with the recommendation of "No Historic Properties Affected" (Docket # 65) and "No Significant Sites Affected", provided that the project is of the nature specified and the work takes place in the mapped location provided. No obvious issues were identified during the surveys, WAPA Environmental Assessment, and during construction. ND SHPO commented (Docket #66) on the WAPA Environmental Assessment and found it acceptable. FPL/Central Power addressed SHPO concerns.

The North Dakota Department of Health believed that the environmental impacts from the proposed construction would be minor and could be controlled with proper construction methods.



The ND Department of Health issued the following comments and Keitu post construction discussion follows each comment as necessary:

- All necessary measures will be taken to minimize fugitive dust emissions during the construction process by wetting the project area or by other means. In reviewing the weekly progress reports, Construction occurred in the fall/winter months with damp conditions. Disturbed areas were minimal. A 20' x 20' area may have been disturbed around 39 structure locations and a 200' x 300' area at the substation. Usually dust control would be done by watering the construction area. Due to weather conditions watering was not necessary. FPL/Central Power also addressed this issue in the Amended Application.
- Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. The substation area had silt fence installed the first day of construction. This disturbed area was fenced and graveled. No water of the State was in the area of this project. Only one wetland was in the area. Documentation in the case file mentioned that a SPCC construction plan was to be in place to prevent erosion and spills of oil and grease from reaching waterways. FPL/Central Power also addressed this issue in the Amended Application.
- Projects disturbing five or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed. A ND Department of Health Storm Water Discharge Permit was granted. The transmission line ROW would be considered more than 5 acres. The Amended Application spelled out how FPL/Central Power would address any issues of the ND Dept. of Health.
- Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours. Noise issues were addressed in the siting application in Section B. Special Studies, item (2) (a) Noise sensitive land uses. Two houses that were with 500 feet of the transmission line would be the only location where noise was an issue. Road noise from the existing vehicle travel would be as loud as construction equipment. Noise was not a problem.

The ND Health Department also issued a one page correspondence about Construction and Environmental Disturbance Requirements. These issues were discussed with methods that were followed in the Amended Application for this project. The minimum requirements set by the Health Department were met for Soils, Surface Waters, and Fill Material.



FPL/Central Power gathered input from tribal representatives to help identify and avoid Traditional Cultural Properties potential located along the project route and within the wind energy center. The consultation was through the North Dakota Indian Affairs Commission. The tribes concern was to identify the sensitive cultural areas and avoid them was the best means of avoiding potential conflict. The Tribal Historic Preservation Office of the Standing Rock Sioux Tribe authored a July 8, 2005 letter (Docket #28) informing FPL/Central Power agents to preserve all stone circles and cairns if found during the project. In reviewing the case file, no stone circles and cairns were found during the project. FPL/Center Power followed recommendation of the tribal representatives.

The North Dakota Parks and Recreation Department (NDPRD) on April 8, 2005 reviewed the wind power generation farm project. The project as defined did not affect state park lands that they manage or Land and Water Conservation Fund recreation projects they coordinated. They checked the North Dakota Natural Heritage Inventory (NDNHI) records and identified animal species in the project area. NDPRD recommended that the project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the project area to help secure rare species conservation. Regarding reclamation efforts, they recommend that any impacted areas be revegetated with species native to the project area. Based on the post construction field inspection, FPL/Central Power followed NDPRD recommendations.

Other agencies had an opportunity to mandate any requirements to be follow by their agency but did not respond. None of the agencies had any objection to the FPL/Central Power Project.

Midwest ISO evaluates requests for transmission service, identifies the most effective means of serving the demand for energy in the region, and manages the reliable flow of electricity across 13 states in the Midwest including North Dakota. FPL and Central Power are not members of Midwest ISO. Therefore, the facilities in the siting application are not under the jurisdiction of Midwest ISO policies, procedures requirements, tariffs and rate requirements.

FPL/Central Power provided updates of permits (Docket #32, #61 & 74), informed the Commission staff that it had obtained all permits (Docket # 74), and provided permits prior to construction (Docket # 66) to the Commission. FPL/Central Power contacted all affected road authorities and the railroad to be crossed. The ND Department of Transportation issued a road crossing for Highway 83 and Canadian Pacific Railway approved a Rail Crossing Permit. The ND Department of Health issued a Storm Water Discharge Permit, and WAPA issued a Finding of No significant Impact (FONSI).

Exhibit 3d of the Amended Application (Docket #20) was to provide landowner waivers of 500 feet exclusion area requirements and signed easements. In Exhibit 3d only the Jeff Spitzer wavier in Section 18 T142N R79W was provided. FPL/Central Power needs to provide the Commission a wavier letter for the second landowner with a resident within 500 feet. This resident is in the SW corner of Section 14. Once FPL/Center Power provides this waiver letter, all requirements to complete Order #7 will be accomplished.



- 8. FPL and Central Power shall inform the Commission of their intent to start construction on the transmission line and associated collection substation prior to the commencement of construction, and, once construction has started, FPL and Central Power shall keep the Commission updated of construction activities on a weekly basis.**

FPL and Central Power informed the Commission of their intent to start at the preconstruction meetings prior to the commencement of construction. Once construction started, FPL submitted Daily Progress reports of construction to the Commission, and Central Power submitted weekly progress reports.

Only one issue remains concerning a required update of construction activity. A final report that crash mitigation devices were installed for structures 26 & 27 is required. In a July 06, 2006 email from Mark Sherman of Central Power to the Commission employees (Docket # 172), he stated that Ecklund township road supervisor, John Spitzer, and Mr. Schuler requested and Central Power agreed to install crash barrels at these structures. Mark said he would report back to the Commission's employees when they were installed. No record was found in the Commission's case file that the crash barrels were installed. The post construction field inspection of October 17, 2011 verified that three 2100 lb. barrel crash mitigation devices were installed at each structure # 26 & 27. Central Power should provide correspondence to the Commission as agreed that they installed crash barrels to complete the update of the construction activities. Once this item is completed, Order # 8 will be complete.

- 9. FPL and Central Power shall construct and operate the transmission line and associated collection substation in the manner described in their Amended Application and at the hearing, and in accordance with all applicable safety requirements.**

Central Power constructed the transmission line in accordance with the application and NESC standards. The proposed Plan & Profile Drawings for the Burleigh Wind 230 kV Transmission matched as built drawings with the exception of the one construction reroute due to existing fiber optic cable. The structures are standard design of the USDA Rural Development's Electric Program. Based on transmission drawings, plan and profile drawings, and site inspection the transmission line was constructed as proposed to the Commission.

FPL Energy sent a proposed site topography map (Docket #53) with the access road and location of the collection substation. Daily Progress of the substation site was documented in the Electrical Construction area of the progress report. Daily safety construction meetings were held and no lost time injuries occurred during construct. On the December 5, 2005 Daily Progress Report was a picture of the collection substation when the transmission line conductor was being terminated at the substation. No Amended Application proposed substation drawings or final as built drawings were found in the Commission's file. The substation was to be constructed to the National Electric Safety Code Standards (NESC). Protective relaying, breakers, fusing, and control wiring were part of the project. Based on the topography map (Docket #53), a site visit, and the picture of the substation, the collection substation appears to be constructed in accordance with applicable safety requirements.



The transmission line and substation were energized on December 5, 2005. Wind towers were brought on line after this date. Based on WAPA allowing the connection of the transmission line and collection substation to their system, the construction and operation of the facilities are probably in accordance with all safety requirements. FPL should provide a substation as built drawing or drawings for Commission's file. Central Power and FPL should provide a letter to the Commission that the transmission line and the substation were constructed and operate in accordance with the National Electric Safety Code Standards for assurance Order #9 is completed. Once the substation as built drawings and the letters that design and operation follow NESC standards, Order # 9 will be complete.

**10. FPL/Central Power shall promptly report to the Commission the presence in the permit area of any critical habitat of threatened or endangered species, or of bald or golden eagles that FPL/Central Power becomes aware of and were not previously reported to the Commission.**

Due to the interconnection application required for this project, it triggered a National Environmental Policy Act (NEPA) review process of the project (Docket #34). WAPA was the lead agency for consultations with the USFWS under Section 7 Endangered Species Act and ND SHPO.

During construction the power lines are not energized. Therefore, electrocution of birds is not an issue during construction. Electrocution of birds by power lines is a concern mostly for raptor species, such as golden eagles and red-tailed hawks. Birds are electrocuted when they come in contact with more than one conductor wires at once. This can occur on smaller lines that have short distances between conductors (Olendorff et al. 1981 and Avian Power Line Interaction Committee 1996). The proposed facility has sufficient distance between conductors (about 15 to 20 feet) to make electrocution very unlikely once they are energized.

Impacts from construction included the displacement of wildlife near the project site and direct mortality of some individuals. Larger or more mobile wildlife, such as birds and large mammals, if in the area likely left the project area during construction and relocate to similar habitats nearby. Some smaller, less mobile wildlife, such as small mammals, reptiles, and amphibians could have been crushed by construction equipment or trapped in construction areas. These effects, however, would be minimal and wildlife could return to the adjacent, undisturbed habitats after construction is completed.

At the pre-construction conferences with the Commission's staff (Docket # 61,74), FPL and Central Power understood and agreed that it shall promptly report to the Commission the presence in the permit area of any critical habitat of threatened or endangered species, or of bald or golden eagles that they becomes aware of during construction. A review of the weekly construction progress reports (Docket #'s 68-73, 75-78, 81, 83, 84, 87-89, 91, 92, 94-172) did not note any critical habitat in the area during construction. No report of any critical habitat of threatened or endangered species, or of bald or golden eagle's notification to the Commission was found in the case file. Therefore, Order # 10 is completed.



11. **If any cultural resource, paleontological, archeological, historical, or gravesite as discovered during construction, it shall be marked, preserved and protected from any further disturbance until a professional examination can be made by the State Historical Society, a report of such examination is filed with the Commission, and clearance to proceed is given by the Commission.**

A Class I files and record search, and also a Class III pedestrian survey of the entire proposed route and collection substation for archeological and cultural resources was done. These surveys did not reveal any protected sites along the proposed route. The WAPA Environmental Assessment (Docket #32) supported a finding of no significance.

No cultural resource, paleontological site, archeological site, historical site, or grave site was discovered during construction. This is based on review of weekly construction progress reports and verification that no correspondence was identified in the Commission's file. Order # 11 was followed.

12. **All pre-existing roads and lanes used during construction must be restored to a condition that will accommodate their previous use, and areas used as temporary roads during construction must be restored to their original condition.**

FPL daily progress reports reported progress of 37, 154 feet of access roads that were installed for the wind towers. Sub base, fabric, and gravel were used to build the access roads. The roads were completed.

Contractor were to practice measures to minimize the impact to the existing landowner, township, county and state roads. Consideration to demanding low speed limits for heavy vehicles and equipment traveling on the roads was given. Any road damage caused by construction activities were to be repaired by contractor was mentioned in the Amended Application.

The transmission line was constructed on the north and south side of 279<sup>th</sup> Avenue NE for the 4.4 mile line. The transmission line crossed Hwy 83, 12<sup>th</sup> St. NE, 26<sup>th</sup> St. NE, 41<sup>st</sup> St. NE. The collection substation is located in the NW corner of 279<sup>th</sup> Avenue NE and 52<sup>nd</sup> St. NE. A July 26<sup>th</sup>, 2006 email (Docket #172) mentioned that Central Power contracted with Ecklund Township to complete the road repairs of 279<sup>th</sup> Avenue and that they had completed those repairs to their satisfaction. Due to this correspondence, Order #12 was satisfactory completed.

13. **Construction must be suspended when weather conditions are such that construction activities will cause irreparable damage, unless adequate protection measures approved by the Commission are taken.**

The construction started on August 30, 2005 with some road construction and installation of silt fence at the FPL substation. On September 14<sup>th</sup> wet conditions limited construction. On October 4<sup>th</sup> rain caused a shutdown of construction. On October 5<sup>th</sup> snow stopped all work. On October



7<sup>th</sup> road construction was halted due to frozen conditions. The transmission line and collection substation was energized on December 5<sup>th</sup>, 2005.

Based on review of the progress reports, construction was suspended or delayed when weather conditions were such that construction should not occur. Order # 13 was followed.

**14. Reclamation along the right-of-way shall be continuous and coordinated with construction.**

Debris associated with the transmission line construction can be packaging material, insulator crates, conductor reels, and wrapping. It may also include excess excavated soil and removed vegetation. Materials with salvage value, including conductor reels, unused conductor and hardware, poles, and other materials, were removed from the site for reuse. Excess soil and vegetation was distributed along the transmission right-of-way. The application stated that it would not be placed in wetlands or other aquatic resources. During construction solid waste were temporarily stored within the right-of-way or within the temporary construction easements, and then transported to appropriate disposal facilities. According to the Nationwide 33 Permit application, the contractor was to pick up solid wastes and place in containers that were regularly emptied, and prevented contamination of the project sites and other areas when handling and disposing of the wastes.

Limited ground disturbance at the structure sites occurred during construction. A lay down yard for secure, temporary storage of materials and equipment was established in a previously disturbed or developed area. Structure materials were placed and assembled in ROW prior to structure installation. Disturbed areas were restored to their original condition to the maximum extent practicable. Parisien's Tree Service was contracted to clear trees. The as built plan & profile drawings for the 230 kV transmission line identified areas where trees were removed. The post construction field inspection verified that the cleared trees were removed.

In the Central Power weekly progress report of October 3<sup>rd</sup>, 2005 (Docket #101) it was noted that clean-up was ongoing and largely completed for the transmission line. FPL had daily progress reports that documented cleanup. October 11<sup>th</sup> and October 24<sup>th</sup> mentioned cleanup occurring.

Clean up of the transmission line and substation construction sites, including removing and disposing of debris occurred based on the post construction field inspection. All temporary facilities were removed, and the staging and staging and laydown areas were cleaned up. Reclamation along the right-of-way was continuous and coordinated with construction. Order #14 was completed satisfactory.

**15. Reclamation, fertilization and reseeding is to be done according to the Natural Resource Conservation Service and County Farm Service Agency recommendations for CRP, native prairie and other lands unless otherwise specified by the landowner and approved by the Commission.**



At the preconstruction meeting (Docket #74) on August 30<sup>th</sup>, 2005, reseeding requirements were discussed to make sure Burleigh County Agent Elroy Haadem requirements agreed with the US Fish & Wildlife Service recommendations.

Construction activities disturbed soils and vegetation to an extent that would require some reseeding following completion of operations. Soils were smoothed to the natural contours of the surrounding areas. Reseeding with native perennial species compatible with the surrounding vegetation occurred. If surface disturbance did not significantly impact nearby vegetation, plants regenerated or sprout from onsite existing propagates.

Construction activities included implementation of the Stormwater Pollution Prevention Plan. Site silt fence or erosion control matting was not required for the transmission line. The collection substation required the need for placement of a silt fence. A silt fence was installed at the substation site.

Reclamation, fertilization, and reseeding were done in accord to the Burleigh County Agent and the US Fish & Wildlife Service recommendations. Order #15 was completed.

**16. FPL's and Central Power's obligations for reclamation and maintenance of the right-of-way shall continue throughout the life of the transmission system.**

Regular maintenance and inspections are performed during the life of the facility to ensure its continued integrity. Periodic inspections are performed by ground personnel on snowmobile or ATV, or by aerial means for the transmission line. Inspections are limited to the right-of-way. If problems are found during inspection, repairs are assigned to Central Power construction crews. If damages to crops occurred during maintenance and repairs, reimbursement is made to the landowner, consistent with the terms of the easement. The collection substation is graveled and fenced. FPL conducts substation inspections and service orders are established if maintenance is required.

The facilities generate electromagnetic fields (EMFs) once energized on December 5<sup>th</sup>, 2005. The EMF level is related to the power carried by the line, the configuration and sag of the conductors, span length, and location of measurement relative to the line. EMF levels are inversely proportional to the distance from the conductors. At 500 feet in a transverse direction from the line, the annual maximum EMF will measure approximately 0.07 mG for a 200,000 kVA line according to the application. FPL/Central Power will continue to closely monitor this issue and will respond to any new research on EMF as the circumstances require.

During the post construction field inspection on October 17, 2011 it was observed that the 3-wire fence paralleling under the transmission line had each wire grounded by the transmission structures. This may have been done to limit induced voltage from the transmission line.

Based on a post construction field inspection, FPL and Central Power has performed reclamation and maintenance of the right-of way has continued since the facilities have been energized. Order #16 has been followed since the facilities were energized on December 5, 2005.



**17. Trees and other wooded vegetation must be replaced at a rate of two for every one removed along the route. Landowners shall be given the option of having replacement trees/shrubs planted off the right-of-way on the landowners property or waiving that requirement in writing and allowing replacement plantings of trees/shrubs elsewhere. FPL/Central Power shall inspect tree replacements once a year for three years and send a report on or shortly before October 1 of 2006, 2007 and 2008 to the Commission documenting work completion and condition of woodlands planting. The Commission may order additional plantings if survival rates are less than 75% of the required ratio of two for one.**

No trees were removed at the construction substation site of FPL. Central Power harvested 135 trees and shrubs for the Burleigh Wind 230 kV transmission line and the Order required a two for one replanting rate. This required 270 mitigation trees be planted and that those trees have a 75% survival rate on the required 270 trees. Central Power chose to plant 330 mitigation trees and shrubs in order to help insure the 75% survival rate on the 270 trees. Central Power contracted with Cashman Nursery of Bismarck to do tree mitigation plantings. The 330 trees and shrubs were planted 3 locations in 2006.

On September 7, 2007 Mark Sherman sent an email (Docket #177) with a 2007 tree mitigation report. Cashman Nursery replaced 39 trees in 2007 to bring the survival rate to 100 % of the 330 trees and shrubs after year one.

On September 26, 2008 Mark Sherman sent an email (Docket #178) for year 2 after planting. Three hundred and seven of the 330 tree survived. That was a 113.7% survival rate on the 270 trees required by the PSC order. Mr. Sherman closed his email that he believed he had completed the reporting requirements required by the PSC Order and to let him know if additional information was needed.

Planting occurred in 2006. The Order specified that FPL/Central Power shall inspect tree replacement once a year for three years and send a report to the Commission. The Commission only has two years of reports. A third year report is required before for completion of Order #17 can occur.

**18. FPL and Central Power shall provide the Commission with copies of design specifications for construction of the transmission line and associated collection substation showing the location as built.**

Central Power provided sufficient design specifications in the Amended Application and exhibits to understand and verify the proposed transmission line. Central Power also provided final plan & profile drawings (Docket #176) of the as built transmission line. Central Power has completed their part of Order # 18.



The collection substation was to be located on 17 acres in the SE ¼ of Section 17, Township 142 North, Range 79 West, and Burleigh County, ND. The Amended Application Exhibit 2e was to give FPL substation design and drawings. No design specifications for construction were found in this exhibit. Found in this exhibit is a site location on a topographic map where the substation was to be constructed. FPL also provided the Commission with an access road location map (Docket #53) to the collection substation as its only other design specification. No as built drawings of the collection substation were found in the Commission's case file. FPL should provide design specifications for the station and an as built substation site diagram with fence dimensions in order to complete Order # 18.

**19. FPL/Central Power shall work with landowners and residents to mitigate any increase in television and residential radio interference that results from the transmission system.**

The application stated that no areas in the corridor meet this criterion to have increase television and residential radio interference. Insulators and hardware used on the line were standard design to provide nearly corona free operation, as well as reduce audible noise and radio and television interference. Television and radio interference is possible when a facility has hardware that is not tightened properly on energized lines. This is rare with new construction but should be considered once the transmission line is energized if television or residential radio interference occurs.

Following construction, there will be a minimal amount of sound from the proposed facility as the result of corona effects. Corona effects occur when air molecules near conducting wire are ionized due to changes in the electric field intensity at the conductor surface, producing audible noise, radio noise, small amounts of ozone, and corona-related energy loss. Corona-generated audible noise from transmission lines and substations is generally described as a crackling or hissing noise. This noise is most noticeable when conductors are wet (as a result of precipitation). During dry weather, noise is barely perceptible, creating only a sporadic crackling sound.

Nineteen residences were identified within the corridor with 2 occupied residences within 500 feet of the route. No record of television or residential radio interference was found in the Commission's case file. Keitu found no radio interference along the transmission and found no interference problems. Order #19 is completed.

**20. FPL/Central Power shall work with landowners to determine and implement appropriate damage mitigation measures.**

Initially, FPL/Central Power send out a land agent (landman) to discuss the proposed project and obtain permission to obtain access to a landowners property for preliminary surveys of the proposed route and corridor. Once a proposed route is identified the land agent obtains an easement to construct a facility. After the easement is signed and other proper paperwork and resources are in place, construction can begin. Part of the proper paperwork and resources are mitigation measures to reduce adverse impact. Once construction is complete, the land agent meets with the landowners to identify any damages or concerns that they may have and for



FPL/Central Power to repair the damages or compensate for these damages to maintain good landowner relationships. Most easements have a damage clause for damage mitigation measures.

General mitigative measures of FPL/Central Power were part of the Amended Application for the Certificate of Corridor Compatibility. The August 17, 2005 Pre-construction Conference (Docket # 61) discussed landowner relations, approved haul routes, and POD/Communication Meetings. These were also items that help reduce damage measures.

Construction of this project required a storm water pollution prevention plan. This plan spelled out mitigation measures required to be followed by the siting applicant and their contractors. Federal, State, and local agencies issue recommendations to be followed also. These measures were followed. No damage issues were found during the post construction inspection.

Based on the fact that no landowner complaint documentation was found in the case file, Order # 20 has been satisfied.

**21. FPL/Central Power shall obtain approval from the Commission or Commission staff prior to any changes in structure locations.**

On August 17, 2005 Mark Sherman of Central Power authored a letter (Docket #64) to Jerry Lein of the Commission requesting the relocating of three structure locations. On September 14, 2005 the Commission staff approved the request to move 3 structures (Docket #80). Structure # 5 was relocated 10 feet east to avoid a fiber optic cable. Structure # 12 was relocated 30 feet east due to the fact it would be in a low area with moist soft soil. Structure # 11 was moved 30 feet east to reduce the span length between Structures #11 and #12 to be within design strength parameters.

The proposed location of the collection substation was within the 17 acre area mentioned in the amended application. No change in the substation location was required.

FPL/Central Power obtained approval from the Commission or Commission staff prior to any changes in structure locations. Order #21 is completed.