2-1) Provide an update on all county permits for the project, specifically but not limited to conditional use permits that may have expired or been deemed to have expired since the filing of the Application.

a.)For any permit that has expired, been deemed to have expired, or has not been obtained, provide an estimated timeline for obtaining such permit.

Response: The Conditional Use Permit has been issued by Codington County, but was appealed. The decision by Circuit Court has not been received yet on the appeal and the permit remains in effect pending the decision. The Conditional Use Permit has been issued by Grant County for the portion of the project outside the footprint of the former Cattle Ridge project, and that permit has been appealed and a hearing has not yet been held or scheduled. The Grant County Conditional Use Permit remains in effect pending outcome of the appeal. The Conditional Use Permit for the portion of the project in Grant County, formerly part of the Cattle Ridge project, was granted over two years ago and has expired. An application has been filed for a new Conditional Use Permit for this portion of the project, and a hearing is scheduled on that application for April 8, 2019. Building permits in each county will be applied for as required by the applicable ordinances prior to commencing construction.

Respondent: Miles Schumacher, Attorney

2-2) Provide copies of all data requests submitted by any intervenor to you in this proceeding and copies of all responses to those data requests. Provide this information to date and on an ongoing basis.

Response: The response to the first set of data requests submitted by the intervenors will be submitted on March 22, 2019, and Crowned Ridge Wind will provide Staff with a copy at that time. We will also provide Staff with copies of any new responses on an ongoing basis.

Respondent: Miles Schumacher, Attorney

2-3) Please provide GIS shapefiles for project facilities, project boundaries, project constraints, and participating and non-participating residences.

Response:

See Confidential Attachments.

Respondent: Kim Wells, Environmental Services Manager

2-4) Referring to Section 6.3 of the Application, would Crowned Ridge be willing to agree to the following condition: *Applicant shall bury the underground collector system at a minimum depth of four feet, or deeper if necessary, in order to ensure the current land use is not impacted*. If not, please explain why.

Response: Applicant agrees to bury the underground collector system at a depth of 48".

Respondent: Mark Thompson, Manager Wind Engineering

2-5) Referring to sections 6.5 and 6.7 of the Application, please explain why the Application provides information for a 34-mile transmission line since a permit for such a line is not being requested in this Application.

Response: Information for a 34-mile transmission line was provided for informational purposes only, so the reader of the Application would understand how the Crowned Ridge Wind project connects to the transmission grid.

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-6) Referring to section 9.2.4 of the Application, please explain what the minor impact is that turbine foundations will have on the underlying geologic conditions.

Response: The minor impact is in reference to the slight gradient that will be visible at the turbine foundation location. This is a design characteristic to prevent water settling around the pedestal of the foundation.

Respondent: Mark Thompson, Manager Wind Engineering

2-7) Referring to section 9.2.4 Mitigation on page 38 of the Application, has the additional geotechnical testing been completed? If so, provide the results of all additional testing.

Response: Yes. No results are available at this time.

Respondent: Mark Thompson, Manager Wind Engineering

2-8) Refer to ARSD 20:10:22:15 parts (1), (2), and (3). Provide maps and plans addressing these sections of the rules. Specifically:

a) provide a map "showing surface water drainage patterns before and anticipated patterns after construction of the facility"
b) provide "… a map drawn to scale of the current planned water uses by communities, agriculture, recreation, fish, and wildlife which may be affected by the location of the proposed facility"
c) confirm that no offsite pipeline or channels are required for water transmission by the facility

Response:

a) See Attachment 1 which depicts current flowlines and direction. No changes to these flow patterns are anticipated as a result of construction of the Project.

b) There are no current planned water uses by communities, agriculture, recreation, fish, and wildlife which may be affected by the location of the proposed facility, so a map is not provided. The Application, Section 10.3.1.2, provides that "The Applicant expects to re-use treated water from waste water treatment plants for dust control during construction…If water re-use is not available, the Applicant will pursue locally available sources of pond water with participating landowners and will pursue any permits necessary to do so. Water use during operations is expected to come from existing rural water supplies for the O&M building. In the event rural water supplies are not available, the Applicant will install a groundwater well. Impacts to current or planned water uses are expected to be minimal given the avoidance and minimization measures". All water resources, including any that potentially could be utilized for the Project (although none currently have been identified) are shown in the Application, Figure 12.

c) Confirmed. No offsite pipeline or channels are required for water transmission by the Project.

Respondent: Kim Wells, Environmental Services Manager

2-9) Pursuant to ARSD 20:10:22:24, provide:

a) Estimated annual employment expenditures of the applicants, the contractors and the subcontractors during the construction phase of the proposed facility;
b) In a separate tabulation, the application shall contain the same data with respect to the operating life of the proposed facility, to be made for the first ten years of commercial operation in one-year intervals;

Response: Please refer to the response to 2-28.

Respondent: Mark Thompson, Manager of Wind Engineering

2-10) Refer to page 20 of the Application, has the company submitted its application for ADLS to the FAA? If not, when will that application be submitted?

Response:

Crowned Ridge Wind will file for the use of an Aircraft Detection Lighting System (ADLS) after receipt of Determinations of No Hazard (DNH) from the Federal Aviation Administration (FAA) for the Project's proposed turbine locations. Assuming the FAA concludes that airspace impacts do not result in a substantial adverse effect, Crowned Ridge Wind would anticipate receiving the DNHs in July 2019. Crowned Ridge Wind anticipates filing the application with the FAA for the use of an ADLS in August 2019.

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-11) When will Crowned Ridge know if rural water or a groundwater well be used to supply potable water to the O&M facility? If an aquifer is to be used as a source of potable water supply, then please provide the required information pursuant to ARSD 20:10:22:15(4).

Response: Rural water, rather than an acquirer, will be used to supply potable water to the O&M facility.

Respondent: Mark Thompson, Manager of Wind Engineering

2-12) Refer to page 23, section 6.9, of the Application, have the source water permits been obtained by the company for the source water? If not, when will the applications for source water permits be submitted to the necessary offices?

Response: Currently the project has options to use rural water and city water, and no water permits are therefore required. If an another source water is still required, the applications for those permits would be submitted approximately 30 days prior to construction.

Respondent: Mark Thompson, Manager of Wind Engineering

2-13) Referring to page 44, section 10.2.1.4, of the Application, in this section the company says "one water body within the Project Construction easement contains 100-year-floodplains (shown as FEMA Flood Zone A on Figure 12)." Figure 12 shows many Flood Zone A (yellow) water bodies in the project area. Which water body in Figure 12 is the one water body mentioned in section 10.2.1.4?

Response:

Inadvertently, the Application, Section 10.2.1.4 confused the terms "Project Area" and "Project Construction Easement," and then summarized the intersection of floodplains with these areas. Section 10.2.1.4 is hereby clarified and corrected to read as follows:

Electronic FEMA floodplain data is available for Codington County and Grant County. Review of these data indicates that multiple waterbodies within the Project Area contain 100-year-floodplains (shown as FEMA Flood Zone A on Figure 12). To the extent practicable, Project construction activities have been planned to avoid mapped streams or floodplains; however, the Project Construction Easement crosses eight unnamed tributaries with FEMA Zone A designations. Seven of these crossings are for collector lines and crane paths, and one is for an access road. If design changes require placement of structures within the 100-year floodplain of any waterbody within the Project Construction Easement, the Applicant will obtain a floodplain development permit from the appropriate regulatory agency, as required by Section 3.11.04 of the Codington County Zoning Ordinance and Section 1106 of the Grant County Compiled Zoning Ordinance.

Additionally, Table 10.2.1.1 is corrected as follows:

Table 10.2.1.1 USGS-Named Streams/Rivers and Floodplains within the Project Construction Easement

Surface Water Name	Number of Crossings	Floodplain Present at River Crossing[1]
North Fork Yellow Bank River	1	No
Mud Creek	4	Yes
Total	5	-

[1] *Includes review of available digital floodplain data for Codington County and Grant County.*

Sources: National Hydrography Data (NHD) (USGS 2014a) and Federal Emergency Management Agency (FEMA) data (FEMA 2016).

The Applicant will avoid and minimize impacts to floodplains. For example, where collector lines must be sited in a floodplain, they will be bored to avoid impacts. If a structure must be placed in a floodplain, which is not anticipated at this time, the Applicant will obtain a floodplain permit as necessary and as described above.

Attachment 1 indicates those floodplains intersected by the Project Construction Easement.

Respondent: Kim Wells, Environmental Services Manager

2-14) Refer to page 51 of the Application, explain the following:
a) How will the company mitigate seeds being transferred on construction equipment?
b) Where are the limited areas where clearing of trees be done?

Response:

a) Per the Application, Section 11.1.2, page 51, "Other indirect impacts could include the spread of noxious weed species resulting from construction equipment introducing seeds into new areas, or erosion or sedimentation due to ground-clearing in construction areas." These temporary impacts will be mitigated "through the use of BMPs as described in the Project SWPPP" (Section 11.1.2, page 51). Such BMPs include revegetation practices and installation of erosion control devices. The Applicant will use native vegetation (weed-free) seed mixes to revegetate disturbed areas to pre-construction conditions where necessary and feasible and pending landowner preferences" (Section 11.1.2, page 51).

b) The Project will not involve any major tree-clearing. Where feasible, access roads have been sited to avoid crossing tree rows. The collector substation also was sited to avoid impacts to tree rows. Some limited, minor clearing of brush or trees may be required during construction. The precise locations of these areas is not yet known. In those discrete and limited areas where minor tree-clearing will occur, the Applicant will first conduct nest clearance surveys and will implement seasonal clearing restrictions as described in Section 11.3.2.5. Any clearing in forested wetlands would be done using manual methods and adhering to the requirements in Nationwide Permit (NWP) 12 from the USACE. For forested wetlands, activities that involve only the cutting or removing of vegetation above the ground (e.g. mowing, rotary cutting, and chain-sawing) where the activity neither substantially disturbs the root system, nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material will be used. For clearing in other types of wetlands, only manual methods allowed under the USACE requirements for NWP 12 standards would be used including making sure any crossings would not exceed 500-feet in length and utilities would not run parallel to a stream bed, and all permanent impacts would be less than 0.10 acres. The same treatment methods as noted above would be used within and adjacent to USFWS protected basins based on our discussions with the USFWS to avoid impacts to USFWS protected basins that are not under the jurisdiction of the USACE.

Respondent: Mark Thompson, Manager of Wind Engineering

2-15) Refer to page 52 of the Application, provide the Project Aquatic Resources Summary Report or provide an update on its progress.

Response:

The Aquatic Resources Summary Report (Report) has been completed since submittal of the Application, and is provided as Attachment 1 to this Response. The Report describes aquatic resources survey efforts to date. As stated in the Application, Section 10.2.2 (page 45), "Wetland delineation surveys are ongoing, and results of these surveys will be utilized to refine and select precise locations of Project facilities." The Applicant has completed aquatic resources surveys on approximately 7,590 acres (89% of the area requiring survey). Approximately 967 acres (11%) will be surveyed in 2019, and surveys will begin as soon as weather conditions allow. The Applicant estimates that surveys will begin in early April 2019 and will be complete by early to mid-May 2019. The Report subsequently will be

amended following completion of surveys to incorporate all survey results.

Respondent: Kim Wells, Environmental Services Manager

2-16) Referring to section 11.2.2 of the Application, please explain why some permanent impacts to wetland areas may remain beyond the Project's operational lifetime.

Response:

As described in the Application, Section 11.2.2, "Through avoidance measures, the Applicant has limited impacts to wetlands and waterbodies to minimal areas associated with access roads. Impacts to wetlands and waterbodies that may result because of access road construction are minor and will be authorized under USACE Nationwide Permit (NWP) 12 for utility lines and associated facilities in waters of the U.S." It is anticipated that some access roads will remain in place after the Project's operational lifetime, where preferred by landowners. Therefore, limited authorized, permanent impacts to wetland areas may remain beyond the Project's operational lifetime.

Respondent: Kim Wells, Environmental Services Manager

2-17) Referring to section 11.3.1.2.2 of the Application, please clarify the following statement: "The Project Area is within the WNS Zone, therefore incidental take that results from operation of utility -scale wind-energy turbines **currently is not prohibited**." If the project area is in the WNS Zone, what incidental take is prohibited as identified in the same section of the Application?

Response: This language was intended to provide the reader information and context regarding the status of the northern long-eared bat (Myotis septentrionalis) and the associated final 4(d) rule of the U.S. Fish and Wildlife Service. Link to issuance of final 4(d) rule:

https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/FRnlebFinal4dRule14Jan2016.pdf):

Incidental take as a result of operating wind energy facilities is not prohibited under the 4(d) rule. The following are pertinent excerpts from the issuance of the final rule:

> Our primary reason for not establishing regulatory criteria for wind energy facilities is that the best available information does not indicate significant impacts to northern long-eared bats from such operations. We conclude that there may be adverse effects posed by wind-energy development to individual northern long-eared bats; however, there is no evidence

> suggesting that effects from wind-energy development has led to significant declines in this species, nor is there evidence that regulating the incidental take that is occurring would meaningfully change the conservation or recovery potential of the species in the face of WNS. Furthermore, with the adoption by wind-energy facilities of the new voluntary standards, risk to all bats, including the northern long-eared bat, should be further reduced. (page 1906)
>
> For the northern long-eared bat, we do not anticipate that the fatalities that will be caused by wind energy would meaningfully change the species' status in the foreseeable future. (page 1906)
>
> …we have not prohibited incidental take attributable to wind energy in this final rule. (page 1917)

In addition, as stated in Section 11.3.1.2.2 (page 56), incidental take that results from tree-clearing activities within 0.25 mile of a known northern long-eared bat hibernacula or within 150 feet of a known maternity roost tree between June 1 and July 31 is prohibited. However, the Project involves limited tree-clearing, and the results of a bat habitat assessment (Section 11.3.1.4.3.1, page 64), bat acoustic survey (Section 1 1.3.1.4.3.2, page 65), and coordination with the U.S. Fish and Wildlife Service (Section 11.3.1.2.2, page 57) indicate a low likelihood for northern long-eared bats to occur in the Project Area. As such, no impacts to the species, including incidental take, are likely to occur from the Project (Section 11.3.1.2.2, pages 56-57 and Section 11.3.2.1, page 67).

Respondent: Kim Wells, Environmental Services Manager

2-18) Referring to sections 11.3.2.3 and 11.3.2.4, will the Applicant be willing to conduct 2-years of post-construction mortality monitoring? If not, please explain why.

Response: The Applicant plans to conduct one year of systematic post-construction mortality monitoring to confirm low-risk expectations and to confirm operational trends are consistent with those observed for other projects in the region. The primary objective for post-construction monitoring should be defined with a clear purpose which is to estimate the mortality rate during the operation of the Project. If the monitoring confirms the Project is low risk and in line with expectations, only one year of monitoring will be conducted. If results indicate mortality exceeds that predicted based on ranges detected at similar projects and similar habitat types in the region, a second year of post-construction monitoring may be implemented.

Respondent: Kim Wells, Environmental Services Manager

2-19) Refer to page 69 of the Application, this page identifies the flight period for Dakota Skippers and Poweshiek Skipperlings as approximately June 15 – July 15. Other pages prior say the flight period is June 15 – July 20. Confirm which is the correct flight period.

Response: The adult flight period for Dakota skippers and Poweshiek skipperlings is approximately three weeks between mid-June to mid-July. The start and end dates of the flight period vary annually and generally are between June 22 and July 15 in South Dakota.

Regarding Section 11.3.2.1 (page 67) of the Application, the following language is correct: "The species, where present, are vulnerable to impacts within larval habitat year-round and adult habitat during the flight season (approximately June 15 - July 20, weather dependent). Where suitable habitat cannot be avoided, the Applicant will avoid construction activities in those specific locations during the adult flight period (approximately June 15 to July 20, weather dependent) to avoid direct mortality of breeding adults."

Regarding Section 11.3.2.5 (page 69) of the Application, the text should read: "Minimize impacts to Dakota skippers and Poweshiek skipperlings by avoiding construction in suitable habitat during the adult flight period (approximately June 15-July 20, weather dependent) to avoid direct mortality of breeding adults."

Respondent: Kim Wells, Environmental Services Manager

2-20) Please provide the expected mortality rate of birds and bats for the project using post-construction mortality studies completed at other existing wind farms located in a similar environment.

Response:

The Applicant currently is completing a Wildlife Conservation Strategy (WCS) for the Project. The WCS will address birds and bats. The Applicant will submit the WCS to the South Dakota Public Utilities Commission prior to the start of Project construction, and will implement the WCS during construction and operation of the Project. The WCS will include a Wildlife Response and Reporting System (WRRS) Manual as described in the Application, Section 11.3.2.5 (page 69).

Respondent: Kim Wells, Environmental Services Manager

2-21) Please identify and estimate all indirect impacts (e.g. displacement) the wind turbines may have on birds, including waterfowl, prairie grouse, and grassland specialists.

Response: The Application sets forth the indirect impacts that have potential to occur as a result of the Project. Section 11.1.2, page 51, states "indirect impacts could include the spread of noxious weed species resulting from construction equipment introducing seeds into new areas, or erosion or sedimentation due to ground-clearing in construction areas." Section 11.3.2.3, page 68, states "Impacts to avian species can be direct (e.g., turbine strike mortality) or indirect (e.g., loss [or] degradation of habitat)." Section 11.3.2.4 indicates that "Impacts to bat can be direct (e.g., turbine strike mortality) or indirect (e.g., loss [of] degradation of habitat)." The Applicant currently is preparing a Wildlife Conservation Strategy (WCS) that will discuss indirect effects in detail. The WCS will be filed with the Commission prior to start of construction of the Project and will be implemented during Project construction and operation. Below is a summary of indirect effects.

Disturbance/Displacement

In addition to mortality associated with wind farms, concerns have been raised that some bird species may avoid areas near turbines after the wind farm is in operation (Drewitt and Langston 2006). For example, at the Buffalo Ridge wind energy facility in Minnesota, densities of male songbirds were significantly lower in Conservation Reserve Program (CRP) grasslands containing turbines than in CRP grasslands without turbines though the causal mechanism was not studied (Leddy et al. 1999). Reduced abundance of grassland songbirds was found within 50 m of turbine pads for a wind farm in Washington and Oregon, and the investigators attributed displacement to the direct loss of habitat or reduced habitat quality and not to the presence of turbines (Erickson et al. 2004). Research at three sites in North and South Dakota (Shaffer and Buhl 2016) suggests that certain grassland songbird species (seven of nine studied; one species was unaffected; one species was attracted) may avoid turbines by as much as 300 m. Displacement and attraction were observed to continue through the five-year study period. None of these studies have addressed whether these avoidance effects are temporary (i.e., the birds may habituate to the presence of turbines over time) or permanent. Pearce-Higgins et al. (2012) found little evidence for a post-construction decline for ten species of birds at wind projects in upland habitats in the United Kingdom.

Project construction activities and the presence of turbines and other Project features may disturb or displace birds, particularly species of habitat fragmentation concern. Some species detected during avian use surveys may breed in the Project Area, suggesting at least some potential for impact to breeding birds. However, the impacts to birds from disturbance or displacement from the Project are likely to be low based on relatively low bird use in the Project area. The heavy agricultural use within the Project Area suggests that the additional disturbance and habitat loss caused by construction and operation of the Project will not cause birds to avoid the Project Area, nor should it alter the current use of habitat by bird species within the Project Area. The risk of disturbance/displacement will be further reduced through avoidance and minimization measures undertaken by the Applicant during the design, construction, and operational phases of the Project.

Sharp-tailed grouse and greater prairie-chicken could be affected by Project development if Project infrastructure disturbs or displaces grouse from leks or areas of preferred habitat (grasslands). Current research suggests that certain grouse species may avoid anthropogenic structures (Hagen et al. 2011) but the effect of tall structures on birds is still not well understood (Walters et al. 2014). Males may tolerate various types of disturbance more than

females (Connelly et al. 1998). The Project Area, however, is largely used for agricultural purposes and already is disturbed or fragmented in areas surrounding leks, and any impacts to native grassland habitat will be restored with native vegetation (weed-free) seed mixes. The risk of disturbance/displacement further will be reduced through avoidance and minimization measures undertaken during the design, construction, and operational phases of the Project.

Habitat Loss and Fragmentation

Birds, including grassland specialists and prairie grouse species, may be indirectly affected by habitat loss and fragmentation due to Project development. Habitat fragmentation can exacerbate the consequences of habitat loss for birds by decreasing patch area and increasing edge habitat. Habitat fragmentation can reduce bird productivity through increased nest predation and parasitism and reduced pairing success of males (Robinson et al. 1995). However, the increase in the amount of habitat loss and fragmentation as a result of Project construction will be minimized by the use of existing roads to the extent possible and lands already altered by agriculture, as well as restoring any native prairie impacts with native vegetation (weed-free) seed mixes.

References

Arnold, T.W. and R.M. Zink. 2011. Collision mortality has no discernible effect on population trends of North American birds. PloS One 6 (9):e24708.

Connelly, J.W., M.W. Gratson and K.P. Reese. 1998. Sharp-tailed Grouse (Tympanuchus phasianellus), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu.bnaproxy.birds.cornell.edu/bna/species/354.

Drewitt, A.L. and R.H.W. Langston. 2006. Assessing the impacts of wind farms on birds. Ibis 148:29-42.

Erickson, W.P., J. Jeffrey, K. Kronner, and K. Bay. 2004. Stateline Wind Project Wildlife Monitoring Annual Report. July 2001 - December 2003. Technical report peer-reviewed by and submitted to FPL Energy, the Oregon Energy Facility Siting Council, and the Stateline Technical Advisory Committee. Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. December 2004.

Erickson, W.P., M.M. Wolfe, K.J. Bay, D. H. Johnson, and J.L. Gehring. 2014. A comprehensive analysis of small-passerine fatalities from collision with turbines at wind energy facilities. PLOS One 9 (9): e107491.

Hagen, C.A., J.C. Pitman, T.M. Loughin, B.K. Sandercock, and R.J. Robel. 2011. Impacts of anthropogenic features on lesser prairie-chicken habitat use. Studies in Avian Biology. 39: 63-75.

Johnson, G.D. and W.P. Erickson. 2011. Avian, bat and habitat cumulative impacts associated with wind energy development in the Columbia Plateau Ecoregion of eastern Washington and Oregon. Prepared for Klickitat County, Washington, USA. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, USA.

Leddy, K.L., K.F. Higgins, and D.E. Naugle. 1999. Effects of wind turbines on upland nesting birds in CRP grasslands. Wilson Bulletin 111:100–104.

Partners in Flight (PIF). 2019. Population Estimates Database 3.0. Available at http://pif.birdconservancy.org/PopEstimates/. Accessed March 2019.

Pearce-Higgins, J.W., L. Stephen, A. Douse, and R.H.W. Langston. 2012. Greater impacts of wind farms on bird populations during construction than subsequent operation:

results of a multi-site and multi-species analysis. Journal of Applied Ecology 49:386–394.
Pickwell, B. 1931. The prairie horned lark. St. Louis Academy of Sciences Transactions 27:1–153.
Robinson, S.K, F.R. Thompson, T.M. Donovan, D.R. Whitehead, J. Faaborg. 1995. Regional forest fragmentation and the nesting success of migratory birds. Science 267:1987–90.
Shaffer, J.A. and D. Buhl. 2016. Effects of wind□energy facilities on breeding grassland bird distributions. Conservation Biology 30 (1):59-71.
Stahl, J.T., and M.K. Oli. 2006. Relative importance of avian life history variables to population growth rate. Ecological Modeling 198:23–39.
Walters, K., K. Kosciuch, and J. Jones. 2014. Can the effect of tall structures on birds be isolated from other aspects of development? Wildlife Society Bulletin, 38: 250–256.
Western Area Power Administration (WAPA) and U.S. Fish and Wildlife Service (USFWS). 2015. Programmatic Biological Assessment for the Upper Great Plains Region Wind Energy Program. Western Area Power Administration and the U.S. Fish and Wildlife Service. April 2015.

Respondent: Kim Wells, Environmental Services Manager

2-22) Please provide a copy of all lek surveys completed for the project.

Response:

A standalone report is not available. The Application, Section 11.3.1.3.3 describes that several leks were observed during spring 2007-2008 avian surveys within a nearby study area, and that four leks were recorded during spring 2016 lek surveys in an earlier iteration of the Project Area. The South Dakota Game Fish and Parks also provided lek location data in response to Applicant data requests. Known lek locations were documented spatially in the Applicant's Project planning databases to ensure consideration during Project siting. Occurrence of leks also will be discussed in detail in the Project Wildlife Conservation Strategy (WCS). The Applicant will submit the WCS to the South Dakota Public Utilities Commission prior to the start of Project construction, and will implement the WCS during construction and operation of the Project.

Respondent: Kim Wells, Environmental Services Manager

2-23) Please provide a copy of the Bird and Bat Conservation Strategy. If a plan is not yet completed, does the Applicant agree to meet the condition below if the permit is granted? If not, please explain why.

Applicant shall file a Bird and Bat Conservation Strategy (BBCS) prior to beginning construction of the Project. The BBCS shall be implemented during construction and

operation of the Project.

Response: The Applicant is currently completing a Wildlife Conservation Strategy (WCS) for the Project. The WCS will address birds and bats. The Applicant will submit the WCS to the South Dakota Public Utilities Commission prior to the start of Project construction, and will implement the WCS during construction and operation of the Project. The WCS will include a Wildlife Response and Reporting System (WRRS) Manual as described in the Application, Section 11.3.2.5 (page 69).

Respondent: Kim Wells, Environmental Services Manager

2-24) Refer to page 72, section 12.2, of the Application, which water bodies in the construction area are anticipated to be directional bored beneath?

Response:

As stated in the Application, Section 10.2.2 (page 45), "Wetland delineation surveys are ongoing, and results of these surveys will be utilized to refine and select precise locations of Project facilities." The same is true of cultural resources investigations. The Applicant has completed aquatic resources surveys on approximately 7,590 acres (89% of the area requiring survey) and cultural surveys on approximately 8,430 acres (87% of the area requiring survey). The Applicant estimates that remaining surveys will begin in March or April 2019 and will be complete in late spring 2019.

While placement of turbines and some other project facilities is considered relatively final, other project feature locations may be refined slightly pending ongoing survey efforts and any discoveries made during construction of unexpected circumstances. As such, the final location of certain Project facilities, such as collection lines, is still being finalized, the location of waterbodies that will be bored is not yet known. As stated in the Application, Section 10.2.2 (page 44), "collector lines will be sited to avoid intersecting wetland or other waterbodies to the extent practical. Where collector lines must intersect these resources, the Applicant will bore under these features to the extent practical to minimize impacts (see Section 1 1)." The current site plan shows the following number of intersections between aquatic features and crane paths and/or collection routes where aquatic features would be bored, however, these are not final:

- NWI Wetlands
    - Freshwater Emergent – 125 crossings

- Riverine – 31 crossings
- Freshwater Forested/Shrub – 1 crossing
- Freshwater Pond – 1 crossing

• NHD Flowlines

- Total line segments - 88 total line segments, including 4 separate crossings of Stray Horse Creek and 2 separate crossings of Willow Creek

Respondent: Kim Wells, Environmental Services Manager

2-25) Refer to page 90 of the Application, does the company have its NPDES permit? If no, provide an update on when that will be obtained.

Response: The company does not have its NPDES permit, this will be obtained prior to construction.

Respondent: Mark Thompson, Manager Wind Engineering

2-26) Referring to section 16.2 of the Application, will project construction need a concrete batch plant? If so, are any air permits from state or federal agencies required for the operation of the batch plant and who will be responsible for obtaining such a permit.

Response: A batch plant will be needed. Air quality permits will be required. At Crowned Ridge Wind's direction, the EPC Contractor will apply for and obtain the permits.

Respondent: Mark Thompson, Manager Wind Engineering

2-27) Pursuant to ARSD 20:10:22:23(2), please provide a forecast of the immediate and long-range impact of property and other taxes of the affected taxing jurisdictions. This should include the forecasted nameplate and production taxes to be paid to the state, each affected county, each affected township, and each affected school district.

Response: Per South Dakota Codified Law (SDCL) 10-35-18, Crowned Ridge Wind is expected to provide annual tax revenues of $897,000.00 and a total of $22,425,000.00 for the nameplate capacity over the estimated 25 year life of the Project.

Per South Dakota Codified Law (SDCL) 10-35-19.1, Crowned Ridge Wind forecasts an annual average of $575,000.00 generated in tax revenues and a forecasted total of $14,940,000.00 for the electricity produced over the estimated 25 year life of the Project.

Breakdown for the estimated allocation to county, township and school district is as follows:

Jurisdiction	Estimated Tax Dollars Life of Project[(1)]
Grant County	$2,170,000.00
Codington County	$4,880,000.00
Mazeppa Township	$30,000.00
Twin Brooks Township	$40,000.00
Stockholm Township	$30,000.00
Troy Township	$60,000.00
German Township	$90,000.00
Leola Township	$280,000.00
Waverly Township	$400,000.00
Rauville Township	$50,000.00
Waverly School District	$26,150,000.00
Milbank School District	$3,190,000.00
Total	$37,370,000.00

1) Includes both nameplate capacity and electricity production taxes

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-28) Pursuant to ARSD 20:10:22:24, please provide "the estimated number of jobs and a description of job classifications, **together with the estimate annual employment expenditures of the applicants, the contractors, and the subcontractors during the construction phase of the proposed facility {emphasis added}**" and "[…] the same data with respect to the operating life of the proposed facility, to be made for the first ten years of commercial operation in one-year intervals."

Response: During the construction phase (approximately 6 months) of the project, the Applicant currently forecasts approximately $10,000,000 for construction labor (including foremen, laborers, carpenters, electricians, millwrights, and heavy equipment operators), management, and subcontractor labor peaking at up to 250 employees in the middle of the project.

Approximately 7-12 permanent employees will be hired and retained at the job site for the operating life of the facility with an annual salary of $75,000 - $150,000 per year. This amounts to a range of employment expenditures of $600,000 to $1,000,000 per year. It is currently forecasted that salaries would escalate at approximately 3% per year.

Respondent: Mark Thompson, Manager of Wind Engineering

2-29) Refer to page 103 of the Application, provide an update on the status of obtaining crossing agreements for each of the railroad crossings in the construction area.

Response: Crowned Ridge Wind anticipates submitting an application with Burlington Northern Santa Fe Corporation (BNSF) by May 1, 2019 for the proposed crossings with the BNSF railroad located in Codington County and Grant County. Crowned Ridge Wind anticipates an eight-week review process by BNSF and that all crossing agreements with BNSF will be obtained by July 2019.

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-30) Refer to page 106 of the Application, various tables in Appendix E are mentioned in relation to archeological sites. Appendix E relates to the Avian Use Study. Provide the appendix and correlating tables for the archeological sites mentioned on page 106.

Response:

The cultural resources reports were removed from the final Application prior to submittal to the SDPUC due to the sensitive and confidential nature of the content of such reports. Applicant inadvertently retained Appendix reference to those reports in Section 18, and hereby corrects the following statements as shown below:

-Section 18.6 (page 106): "The Project Construction Easement overlaps nine of the previously documented archaeological sites "

-Section 18.6.1.2 (page 106): “Eighty-three (83) previously documented standing structures have been identified within 1 mile of the Project Area.”

-Section 18.6.1.3, (page 106): “Six previously documented historic bridges have been identified within 1 mile of the Project Area.”

-Section 18.6.1.4, (page 106): “Five previously documented cemeteries have been identified within 1 mile of the Project Area.”

The correlating tables are provided to this response as Confidential Attachment 1. Per the State Archaeologist, these materials are confidential, contain protected information, are not

to be published or posted, and are to be made available on a need-to-know basis only.

Respondent: Kim Wells, Environmental Services Manager

2-31) Referring to Table 24 of the Application, please explain why the Facility Permit from the PUC is listed as "complete, permit issued."

Response: The indication for the status of PUC permit was inadvertently marked as complete, permit issued; it should read "Applied – decision pending."

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-32) Referring to Appendix H, please explain why the sound study is representative of winter conditions (i.e. frozen ground covered in snow) when the ground attenuation factor used in the study was 0.5.

Response:
The ground attenuation factor of 0.5 is representative of a half-hard and half-soft ground mixture. The ground attenuation factor is a generalized assumption that has been found to be most representative of agricultural land under a variety of meteorological conditions (Institute of Acoustics 2013; Massachusetts Clean Energy Center and Massachusetts Department of Environmental Protection 2016). The ground attenuation factor is not intended to represent a specific season or time of year. The ground attenuation factor of 0.5 has been verified by field measurements compared to model predictions and has been found to provide the most accurate representation of attenuation for most on-shore wind farms (Institute of Acoustics 2013; Massachusetts Clean Energy Center and Massachusetts Department of Environmental Protection 2016).

References:
Institute of Acoustics. 2013. A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise. Available at https://www.ioa.org.uk/sites/default/files/IOA%20Good%20Practice%20Guide%20on%20Wind%20Turbine%20Noise%20-%20May%202013.pdf.

Massachusetts Clean Energy Center and Massachusetts Department of Environmental Protection. 2016. Massachusetts Study on Wind Turbine Acoustics. Available at http://files.masscec.com/research/wind/MassCECWindTurbinesAcousticsStudy.pdf.

Respondent: Jay Haley, Wind Engineer

2-33) In the tables found in Appendix C of Appendix H of the Application, does structure mean occupied residence?

Response:

In the tables found in Appendix C of Appendix H of the Application, structure means occupied residence or other occupied structure.

Respondent: Jay Haley, Wind Engineer

2-34) Referring to Appendix L, would the Applicant agree to a condition, if the permit is granted, that requires the funding an escrow account at $5,000 per turbine per year for a period of 30 years with the ability for the Commission to adjust after 10 years?

Response:

Crowned Ridge Wind agrees to the condition, provided the condition is worded so it is neither duplicative of nor inconsistent with similar conditions being imposed in Grant and Codington Counties on the funding of escrow per turbine. For reference, the Grant and Codington county conditions for funding of escrow can be found at:

Grant County Ordinance for WES

https://grantcounty.sd.gov/photos/announcements/Proposedwes.pdf

Codington County Ordinance

https://www.codington.org/wp-content/uploads/2018/07/Ordinance-68-Section-5.22-WES.pdf

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-35) Referring to Appendix M, please explain what "considerable issues" the DOE had with the tower placement in the area and provide an update as to how those issues are being resolved.

Response: In August 2018, Crowned Ridge Wind corresponded with the National Telecommunications and Information Administration (NTIA) and requested for the NTIA to share the general location of the Project (boundary of Project Area) with the federal agencies represented in the Interdepartment Radio Advisory Committee. One agency, the U.S. Department of Energy (DOE), had "considerable issues" with turbine placement in this general area. The "considerable issues" expressed by the DOE was a judgment based on the broad overview of the Project area and not the specific turbine locations proposed by Crowned Ridge Wind. Crowned Ride Wind considered all available beam path data in the siting of the Project's turbine locations and avoided known areas that could result in radio frequency blockage. Crowned Ridge Wind will coordinate with the DOE moving forward to ensure that the Project's proposed turbine locations avoid any issues that may have been considered.

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-36) Referring to page 8, lines 19-28 of Jay Haley's testimony, please identify if Watertown's climatic data set was reviewed and why it could not be used in the shadow flicker model. Further, please identify any other climatic data sets from towns closer to the Project Area were considered and why those data sets could not be used in the shadow flicker model.

Response:

Watertown, South Dakota is not included in the National Climatic Data Center database of long-term sunshine probabilities. The closest city is Huron, South Dakota, which is approximately 80 miles to the southwest of the Project Area. Due to its close proximity, Huron's sunshine probabilities are likely well representative for the Project Area. Other cities included in the National Climatic Data Center available to choose from were further from the Project Area (i.e., Sioux Falls, Rapid City).

Respondent: Jay Haley, Wind Engineer

2-37) Refer to the testimony of Kimberly Wells. On page 4, lines 4-5, she states that the company "Is in the process of finishing wetland and stream delineation field surveys, and cultural resources surveys." Provide an update on the status of these surveys and an estimate on when they'll be completed.

Response: The Applicant has completed aquatic resources surveys on approximately 7,590 acres (89% of the area requiring survey). Approximately 967 acres (11%) will be surveyed in 2019, and surveys will begin as soon as weather conditions allow. The Applicant estimates that surveys will begin in March or April 2019 and will be complete in late spring 2019.

The Applicant has completed cultural surveys on approximately 8,430 acres (87% of the area requiring survey). Approximately 1,223 acres (13%) will be surveyed in 2019, and surveys will begin as soon as weather conditions allow. The Applicant estimates that surveys will begin in March or April 2019 and will be complete in late spring 2019.

Respondent: Kim Wells, Environmental Services Manager

2-38) Referring to page 13, line 1 of Kimberly Wells' direct testimony, please explain what is meant by "site turbines with consideration of SDGFP-documented leks." Specifically, did the GF&P provide any recommendations regarding a construction buffer during lekking season and/or turbine locations near leks?

Response:

In April 2017, the South Dakota Game, Fish, and Parks (SDGFP) asked that the Applicant consider placing a 1-mile buffer around leks when siting and placing infrastructure. The Applicant sited infrastructure in consideration of avoiding or minimizing impacts to known lek locations to the extent practical. All turbines are sited more than 0.3 miles from known lek locations. We believe this buffer is sufficient because there are existing features and/or disturbances not related to the Project, including roadways, within 0.3 mile of the lek centroid already existing in the project area. Given all constraints in the Project Area, the Applicant elected to use a reduced buffer, as have other recent wind applicants. The SDGFP also recommends that construction during the lekking period (March 1 to June 30) avoid known leks by two miles. The Applicant will follow this recommendation during construction activities, thereby minimizing potential affects to known leks as a result of construction activities. We believe the combination of avoidance of construction during the lekking period and the siting buffer from turbines are sufficient measures to avoid and minimize potential impacts on sharp-tailed grouse leks.

Respondent: Kim Wells, Environmental Services Manager

2-39) Refer to the testimony of Mark Thompson. On page 8 he lists 12 jobs that will be created due to this wind farm.
a) How many of those jobs will be located in South Dakota?

b) Will any of the employees of these positions be from South Dakota or will the worker be hired from other states and moved to South Dakota?

Response:

a) All of the 12 positions are on site jobs and will be in South Dakota.

b) The origin of the personnel employed is not known at this time. It will only be known when the interview and selection process is complete, which is expected to occur 6 months prior to the project's commercial operating date (COD).

Respondent: Mark Thompson, Manager Wind Engineering

2-40) Refer to the testimony of Mark Thompson. On page 11 he states that a decommissioning plan is required to be filed for Board approval in Grant County at least 30 days prior to construction.
a) Has the company filed this plan with Grant County? If not, when will the decommissioning plan be filed?
b) Will the decommissioning plan filed with Grant County vary in anyway from the plan filed in this application?

Response: a) No, 30 days prior to the start of construction

b) The filed plan will not vary from filing outlined in the application.

Respondent: Mark Thompson, Manager Wind Engineering

2-41) Refer to the testimony of Tyler Wilhelm and Sam Massey. On page 5 they state that 99% of the necessary property rights have been obtained. Provide an update on if the remaining 1% has been obtained. If it hasn't, does the company still estimate all property rights necessary for the project will be obtained by March 1, 2019?

Response: Crowned Ridge Wind is working actively with the landowner to obtain the outstanding easement. The Applicant anticipates that all property rights necessary for the Project will be obtained by March 31, 2019.

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-42) Referring to page 7, lines 14 through 18 of Tyler Wilhelm's and Sam Massey's direct testimony, please identify what local telecommunications companies the Applicant has been in contact with and the status of discussions with those companies. Further, are there any plans to enter into an agreement with those companies and, if so, provide a status update on the agreement.

Response: Crowned Ridge Wind has been in contact with Interstate Telecommunication Cooperative, Inc. (ITC). At this time detailed information has been exchanged between Crowned Ridge Wind and ITC containing proposed locations of Project infrastructure and the location of ITC's existing utilities within or adjacent to the proposed Project Area. Crowned Ridge Wind has mapped the locations of ITC's existing utilities and will work with ITC to design for underground crossings to meet ITC's crossing requirements. ITC is still reviewing the locations of the Project's proposed infrastructure in relation to their existing utilities. Crossing Agreements with ITC will be required and are to be pursued once reviews have been finalized by both parties.

Crowned Ridge Wind's correspondence with ITC indicates that ITC will have completed upgrades to their system, inclusive of fiber optic communications, by fall of 2019 and before Crowned Ridge Wind anticipates energizing the Project. Such upgrades greatly reduce the potential for interferences to occur, however, Crowned Ridge Wind will continue to work with ITC to implement a mitigation plan to address how potential, but unlikely, interferences would be cured.

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager

2-43) Refer to the testimony of Tyler Wilhelm and Sam Massey. On page 8 they state that the ADLS application process will begin when the company receives DNHs from the FAA.
a) Provide an update on the status of the DNH process.
b) Is the DNH application process still anticipated to be completed in the second quarter of 2019?
c) If the ADLS process is not completed but still in process by the anticipated start of construction, what are the company's plans for lighting of the towers?

Response:

a) Provide an update on the status of the DNH process.

- Crowned Ridge Wind has recently requested that the FAA confirm their findings and, assuming no omissions, that the FAA continue their review by conducting further aeronautical studies and circularization for public comment.

b) Is the DNH application process still anticipated to be completed in the second quarter of

2019?

- If the FAA concludes that the airspace impacts do not result in a substantial adverse effect and there are no comments received during public comment, then Crowned Ridge Wind would anticipate receipt of DNHs by July 2019.

c) If the ADLS process is not completed but still in process by the anticipated start of construction, what are the company's plans for lighting of the towers?

- Crowned Ridge Wind will equip the Project's turbines with ADLS capability prior to the construction of the Project. If ADLS approval is still in process during start of construction and after operations begin, Crowned Ridge Wind will comply with all lighting and markings otherwise required by the FAA. ADLS capabilities will be enforced by Crowned Ridge Wind once/if the use of ADLS is approved by the FAA.

Respondent: Sam Massey, Director of Renewable Development

Tyler Wilhelm, Project Manager