

**BEFORE THE STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION**

**BADGER WIND, LLC
BADGER WIND PROJECT – LOGAN AND MCINTOSH COUNTIES
SITING APPLICATION**

CASE NO. PU-22-086

**PRE-FILED TESTIMONY OF SARAH AFTERGOD
ON BEHALF OF BADGER WIND, LLC**

June 8, 2022

1 **I. INTRODUCTION AND QUALIFICATIONS**

2

3 **Q. Please state your name, employer, and business address.**

4 A. Sarah Aftergood. I am employed by Ørsted Onshore North America, LLC (“Ørsted”).
5 My business address is 812 San Antonio St., Austin, Texas.

6

7 **Q. What is your position with Ørsted?**

8 A. I am a Director of Environmental Permitting for Ørsted.

9

10 **Q. Briefly describe your work history and education.**

11 A. I have 10 years of experience carrying out the development and permitting of projects
12 in the renewable energy, power transmission, and environmental industries both
13 domestically and internationally. In my current role, I lead the Environmental and
14 Permitting team at Ørsted and oversee implementation of the United States Fish and
15 Wildlife Service (“USFWS”) Wind Energy and Eagle Conservation Plan Guidelines,
16 Section 10 Habitat Conservation Plans, Bald and Golden Eagle Act Eagle
17 Conservation Plans and NEPA reviews, as well as required local, State and Federal
18 avian, bat, and wildlife surveys and permits. I have a M.S. in International Marine
19 Environment Consultancy from Newcastle University in Newcastle upon Tyne, United
20 Kingdom and a B.S. in Biology from Trent University in Ontario, Canada. A copy of
21 my resume is attached as proposed **BW Exhibit 29-A**.

22

23 **Q. What is your role with respect to the Badger Wind Project (“Project”)?**

24 A. I am responsible for the Project’s compliance with local, State, and Federal
25 environmental regulations. My role includes overseeing coordination with
26 governmental agencies such as the USFWS, the North Dakota Game and Fish
27 Department (“NDGF”), the State Historical Society of North Dakota (“SHSND”)/North
28 Dakota State Historic Preservation Office (“SHPO”), and the United States Army
29 Corps of Engineers (“USACE”). In addition, I oversee the selection and work of
30 consultants completing environmental and wildlife studies and surveys for the Project

31 that are used to ensure compliance with applicable requirements and inform siting of
32 Project facilities to avoid or minimize risk to sensitive and protected resources.

33

34 **Q. What proposed hearing exhibits are you sponsoring in your testimony?**

35 A. I am sponsoring the following proposed hearing exhibits:

- 36 • BW Exhibit 1: Certificate of Site Compatibility Application
- 37 • BW Exhibit 2: Updated Figures 1-11 in support of the Project’s Application for
38 Certificate of Site Compatibility
- 39 • BW Exhibit 3: Comparison Figure
- 40 • BW Exhibit 5: Summary of Project Adjustments
- 41 • BW Exhibit 9: Grassland Habitat Assessment
- 42 • BW Exhibit 10: Plains Sharp-Tailed Grouse Conservation Strategy
- 43 • BW Exhibit 11: Summary of Avoidance, Minimization, and Mitigation Measures
- 44 • BW Exhibit 13: Class III Cultural Resources Inventory [**PUBLIC** and
45 **CONFIDENTIAL**]
- 46 • BW Exhibit 14: Class I Literature Review and Class II Architectural
47 Reconnaissance Inventory and SHSND/SHPO Letter
- 48 • BW Exhibit 15-A: Aquatic Resources Delineation Report (Atwell 2022)
- 49 • BW Exhibit 15-B: Aquatic Resources Inventory Report (WEST 2021)
- 50 • BW Exhibit 20: Additional North Dakota Department of Trust Lands
51 Correspondence
- 52 • BW Exhibit 21: Additional NDGF Correspondence
- 53 • BW Exhibit 22: Additional North Dakota Department of Transportation
54 Correspondence
- 55 • BW Exhibit 23: Red Lake Township Correspondence
- 56 • BW Exhibit 24: Additional SHSND/SHPO Correspondence
- 57 • BW Exhibit 25: Additional North Dakota Department of Environmental Quality
58 Correspondence
- 59 • BW Exhibit 28: Updated Bird and Bat Conservation Strategy
- 60 • BW Exhibit 29-A: Aftergood Resume

61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90

II. UPDATES TO APPLICATION

Q. Is proposed BW Exhibit 1 Badger Wind’s Application for Certificate of Site Compatibility for the Badger Wind Project (“Application”), which was filed with the PSC on February 25, 2022?

A. Yes.

Q. In Mr. Gebauer’s testimony, he describes the changes made to the Project layout between the time the Application was filed and when the final Project layout was filed on May 26, 2022. Are you aware of this testimony?

A. Yes.

Q. Did the Project changes described in Mr. Gebauer’s testimony affect resource impact estimates?

A. As shown on proposed BW Exhibit 5 (Summary of Project Adjustments), the changes to the current layout impact numbers compared to the preliminary layout impact numbers result in an overall smaller footprint of facilities. The current Project layout will result in approximately 11.51 acres of temporary impacts to delineated wetlands, which is a reduction of 1.89 acres. Collection lines intersect one perennial watercourse (reduced from two); however, collection lines will be bored under this watercourse, thereby avoiding impacts. While impact calculations are based on all 79 proposed turbine locations, only up to 74 turbines will be constructed; thus, the actual temporary and permanent impacts will be less.

III. ENVIRONMENTAL AND SITE ANALYSIS OVERVIEW

Q. What was the overall approach to environmental analysis of the Project Area?

A. Badger Wind followed the USFWS’s Wind Energy Guidelines (“WEGs”) and Eagle Conservation Plan Guidance (“ECPG”). The WEGs are a tier-based approach that

91 starts at Tier 1 and goes to Tier 5, if necessary. The ECPG calls for wind
92 project developers to take a staged approach to siting new projects.

93
94 The five WEG Tiered reviews include:

- 95 • Tier 1 is preliminary site evaluation. It is a landscape level assessment
96 covering habitat for species of concern and identifying populated or protected
97 areas.
- 98 • Tier 2 is site characterization. At this point, third-party contractors are brought
99 on board to conduct a desktop review and discuss potential field work. A site
100 visit by a biologist and coordination with wildlife agencies also occur at this time.
- 101 • Tier 3 is field studies and impact prediction. In coordination with applicable
102 agencies, field studies are conducted to document natural and cultural
103 resources in and around the site, and to evaluate the risk to features, species
104 and habitat.
- 105 • Tiers 4 and 5 involve post-construction studies, which are used to document
106 actual project impacts (Tier 4) and any ongoing research (Tier 5).

107 The four ECPG Stage reviews include:

- 108 • Stage 1 is the site assessment. This is conducted in parallel with Tiers 1 and 2
109 of the WEG.
- 110 • Stage 2 is site-specific surveys and assessments. This involves the
111 collection of quantitative data through scientifically rigorous surveys designed
112 to assess the potential risk of the proposed project to eagles.
- 113 • Stage 3 is predicting eagle fatalities. In coordination with the USFWS Migratory
114 Bird Division, data collected from Stage 2 is used in models to predict eagle
115 risk expressed as the average number of fatalities per year extrapolated to the
116 tenure of the permit.
- 117 • Stage 4 is avoidance and minimization of risk and compensatory mitigation. In
118 Stage 4, the information gathered through the previous stages is used to
119 determine potential conservation measures and advanced conservation
120 practices (if available) to avoid or minimize predicted risks at the project.

122 In 2019 and 2020, Badger Wind initiated Tier 1 / 2 WEG and Stage 1 ECPG review
123 and agency coordination with the USFWS and NDGF. Based on the
124 recommendations provided, Badger Wind initiated Tier 3 WEG and Stage 2 ECPG
125 avian and wildlife studies in 2019 and that study work continued through 2020, 2021,
126 and 2022. In addition, Badger Wind is completing Stage 3 ECPG reviews and will
127 continue to coordinate with the USFWS in the coming months. Badger Wind used the
128 results of those studies to inform continued agency consultation, site selection, and
129 boundary refinement, avoidance, and minimization measures, and ultimately layout
130 placement. Additionally, the environmental studies and assessments completed
131 informed Badger Wind’s development of a draft Bird and Bat Conservation Strategy
132 (“BBCS”), prepared in coordination with the USFWS, which outlines avoidance,
133 minimization, and mitigation measures that have been or will be implemented by the
134 Project. A copy of the draft BBCS was provided as Appendix H to the Application
135 (proposed **BW Exhibit 1**). Since filing the Application, Badger Wind has updated the
136 draft BBCS to include information regarding planned voluntary offsets for potential
137 direct and indirect impacts, and the updated draft BBCS is provided as proposed **BW**
138 **Exhibit 28**. Since the BBCS is a “living” document, Badger Wind will continue
139 coordinating with the USFWS and NDGF on the BBCS, as needed, throughout the life
140 of the Project. The Project’s avoidance, minimization, and mitigation measures are
141 also summarized in proposed **BW Exhibit 11**.

142
143 **Q. What environmental and site analysis reports were filed with the Application for**
144 **the Project?**

145 A. The following environmental and site analysis reports were filed with the Application
146 (proposed **BW Exhibit 1**):

- 147 • Appendix C: Telecommunications Studies
- 148 • Appendix E: Sound Analysis Report
- 149 • Appendix F: Shadow Flicker Analysis Report
- 150 • Appendix G: Soil Types for the Badger Wind Project
- 151 • Appendix H: BBCS, which discusses the following Tier 1, 2, and 3 surveys:
 - 152 ○ Avian Use Surveys

- 153 ○ Bald Eagle and Raptor Nest Survey and Monitoring
- 154 ○ Bat Acoustic Monitoring
- 155 ○ Grassland Assessment
- 156 ○ Northern Long-Eared Bat Habitat Assessment
- 157 ○ Sharp-tailed Grouse Lek Monitoring
- 158 ○ Sharp-tailed Grouse Habitat Assessment
- 159 ○ Whooping Crane Desktop Assessment
- 160 • Appendix I: Reclamation and Weed Management Plan

161

162 **Q. Since the Application was filed, have any additional or updated reports been**
163 **completed?**

164 A. Yes. Since the Application was filed, Badger Wind completed or updated the following
165 environmental/cultural reports:

- 166 • Grassland Habitat Assessment (proposed **BW Exhibit 9**)
- 167 • Plains Sharp-Tailed Grouse Conservation Strategy (proposed **BW Exhibit 10**)
- 168 • Class III Cultural Resources Inventory [**PUBLIC** and **CONFIDENTIAL**]
169 (proposed **BW Exhibit 13**)
- 170 • Class I Literature Review and Class II Architectural Reconnaissance Inventory
171 (proposed **BW Exhibit 14**)
- 172 • Aquatic Resources Delineation Report (Atwell 2022) (proposed **BW Exhibit**
173 **15-A**)
- 174 • Aquatic Resources Inventory Report (WEST 2021) (proposed **BW Exhibit 15-**
175 **B**)

176

177 Additional reports and updates to reports are discussed in the Direct Testimony of
178 Nicholas Gebauer (proposed **BW Exhibit 30**).

179

180 **Q. In addition to the formal studies you have identified, were any other key site**
181 **analyses conducted?**

182 A. Yes. As discussed in the Application, Badger Wind used desktop and site-specific
183 data to identify and analyze potential impacts to a variety of resources in addition to

184 those covered by the formal reports, including: land use; human health and safety;
185 recreational resources; land-based economies; soils; vegetation; and rare and unique
186 natural resources. See proposed **BW Exhibit 1**, Sections 6.0 and 8.0.

187

188 **IV. CULTURAL RESOURCES**

189

190 **Q. Regarding cultural and architectural history resources, what recommendations**
191 **were made by the SHSND for the Project?**

192 A. The Project has followed North Dakota SHPO/SHSND guidelines for cultural
193 (archaeological and architectural) assessment. The SHSND recommended that
194 Badger Wind conduct a Class I archaeological literature search, a Class III pedestrian
195 archaeological survey, and a Class II architectural windshield survey.

196

197 The SHSND recommended that the area of potential effect (“APE”) subject to the
198 Class III intensive cultural resources inventory be defined as any ground surface area
199 that has the potential to be disturbed by any construction or installed activities
200 associated with the Project.

201

202 Additionally, the SHSND recommended a Class II architectural reconnaissance
203 inventory survey within a two-mile visual APE of the proposed turbine locations. The
204 two-mile visual APE for the Class II architectural reconnaissance inventory survey
205 includes documentation of all buildings, structures, and objects 45 years of age or
206 older from the Project’s anticipated in-service date.

207

208 **Q. Please describe the cultural resource investigations conducted for the Project**
209 **to-date.**

210 A. Badger Wind retained consultants to conduct a Class I archaeological literature
211 search, Class I architectural literature review, Class II architectural and
212 reconnaissance inventory, and Class III cultural resources inventory for the Project.

213

214 **Q. Please describe the Class I and Class III archaeological investigations**
215 **conducted for the Project.**

216 A. Badger Wind retained Atwell, LLC (“Atwell”) to conduct the recommended Class I and
217 Class III investigations. Atwell conducted a Class I archaeological literature review of
218 a larger potential Project area plus a one-mile buffer in October 2020. The literature
219 review identified 40 previously documented cultural resources.

220
221 Atwell conducted a Class III intensive cultural resources inventory of all locations
222 where Project-related ground disturbance is proposed. In total, approximately 5,233
223 acres were covered by the Class III inventory over two field seasons (October and
224 November 2020 and September and October 2021). The Project layout changed
225 during this period, and some surveyed areas are no longer in the Project Area.

226
227 One previously identified Historic-period architectural site was visited during the Class
228 III inventory; this is recommended as ineligible for listing in the National Register of
229 Historic Places (“NRHP”). During the Class III inventory, all potential archaeological
230 sites identified were recommended ineligible for listing in the NRHP.

231
232 One archaeological Site Lead was identified, which is unevaluated for listing in the
233 NRHP. Badger Wind has designed the Project to avoid this Site Lead.

234
235 In 2022, Badger Wind retained DNV Energy USA Inc. (“DNV”) to conduct a
236 supplemental Class III inventory of Project modifications that were not covered by the
237 prior survey effort. A total of 764 acres were inventoried. All sites evaluated were
238 recommended as not eligible for NRHP-listing.

239
240 **Q. Have the Class I and Class III results been submitted to the SHSND?**

241 A. A report covering Atwell’s 2020-2021 Class I literature search and Class III inventory
242 was submitted to the SHSND in April 2022 (see proposed **BW Exhibit 13**). The
243 SHSND has requested that Atwell conduct shovel testing at seven sites, and that work

244 is scheduled to be conducted in the next couple of weeks. Once the additional field
245 work has been completed, an updated report will be provided to the SHSND.

246
247 DNV is in the process of completing a report for the survey work it completed in 2022
248 and anticipates the report will be submitted to the SHSND by the end of June.

249
250 Badger Wind will provide the updated Atwell report and the supplemental DNV report
251 to the PSC, along with SHSND concurrence letters.

252

253 **Q. Will the Project avoid impacts to the cultural resource sites identified?**

254 A. Yes. As noted above, Badger Wind has sited the Project facilities to avoid the one
255 unevaluated archaeological Site Lead identified. Additionally, Project infrastructure
256 and construction activities will also avoid the seven sites where SHSND has requested
257 shovel testing.

258

259 **Q. Will Badger Wind have procedures in place to address previously unidentified**
260 **cultural resources encountered during construction?**

261 A. Yes. Badger Wind prepared an Unanticipated Discoveries Plan (“UDP”) for the
262 Project (proposed **BW Exhibit 13**, Appendix D). The UDP details a process for prompt
263 communication and action regarding the discovery of previously unknown
264 archaeological resources or human remains, should they be encountered during
265 construction. The UDP was submitted to the SHSND for review with Atwell’s Class I
266 and III report.

267

268 **Q. Has a Class II architectural history survey been conducted for the Project?**

269 A. Yes. A Class I literature review and Class II architectural reconnaissance inventory
270 survey were completed in September and October 2021 for areas within a two-mile
271 radius of potential turbine locations. The survey methodology conformed to the North
272 Dakota SHPO guidelines for considering indirect effects of wind turbine projects and
273 included documentation of all buildings, structures, and objects 45 years of age or
274 older from the Project’s anticipated in-service date. Cultural Resource Analysts, Inc.

275 (“CRA”) prepared a report that was submitted to the SHSND in December 2021. After
276 reviewing the report, the SHSND requested modifications to the report and further
277 evaluation of two sites identified as warranting a detailed evaluation to assess
278 potential eligibility for listing in the NRHP. Based on that feedback, CRA coordinated
279 with the SHSND and modified the report to incorporate the SHSND’s
280 recommendations and submitted the updated report to SHSND on March 2022 (see
281 proposed **BW Exhibit 14**). The survey methodology and results are detailed in the
282 report.

283
284 During the Class II survey, CRA identified five architectural resources and one
285 contributing resource within two miles of the Project turbines that are recommended
286 as eligible for listing in the NRHP. However, the Project is not anticipated to have an
287 adverse direct or indirect impact on these resources. SHSND concurred with the
288 Class II survey report by letter dated March 24, 2022 (see proposed **BW Exhibit 14**).

289
290 **V. WETLANDS AND WATERBODIES**

291
292 **Q. How has Badger Wind identified wetlands and waterbodies within the Project**
293 **Area?**

294 A. Wetlands within the Project Area were initially identified using the National Wetlands
295 Inventory (“NWI”). Field wetland delineations were then completed between late
296 August and early September 2020, and again between late September and early
297 November 2021. As part of the delineations, wetlands and waterbodies under the
298 jurisdiction of the Clean Water Act were identified, as well as non-jurisdictional
299 wetlands. Wetlands and waterbodies were delineated within a survey corridor that
300 included any ground surface area that has the potential to be disturbed by any
301 construction activities or installed facilities associated with the Project.

302
303 Due to changes to the proposed Project layout that were made following feedback
304 from the FAA and to accommodate landowners, limited additional field delineations
305 were conducted in spring 2022 to delineate wetlands in these areas.

306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336

During these surveys, approximately 272.6 acres of wetlands and six watercourses were delineated within the Project survey area.

Q. Are there many wetlands within the Project Area?

A. No. The Project is primarily situated in the Missouri Coteau Slope Level IV Ecoregion of North Dakota. The northwestern portion of the Study Area also intersects the Missouri Coteau ecoregion. The Missouri Coteau Slope Region supports well-developed drainages and has fewer prairie potholes in comparison to the Missouri Coteau ecoregion. Wetlands in the northeastern portion of the Study Area include wetlands associated with prairie potholes. Both ecoregions naturally support very few forested areas; as a result, wetlands within the Study Area are predominantly emergent. Wetlands in agricultural settings within the Study Area may exhibit anthropological disturbance, particularly ditching and draining to support row crops. As shown in updated Figure 4 (proposed **BW Exhibit 2**), there are few wetlands within the Project Area.

Q. How has Badger Wind considered wetlands in the Project layout design?

A. The Project has been designed to avoid permanent impacts to delineated wetlands and minimize temporary wetland impacts. One access road will cross a field-delineated drainage wetland that parallels an existing road, resulting in a permanent impact to this wetland of less than 0.01 acre. Badger Wind has sited this access road in the location of an existing farm road to further minimize impacts to this wetland. A culvert will be installed where this access road crosses a drainage to facilitate continued wetland function and local hydrology. This impact will be self-certified under the USACE nationwide permit (“NWP”) program in accordance with Section 404 of the Clean Water Act.

Badger Wind will minimize temporary wetland and waterbody impacts by using matting in wetlands during construction, boring collection/communication lines beneath wetlands, and co-locating impacts where practicable. Based on the current design

337 (including all 79 potential turbine locations), there would be approximately 11.51 acres
338 of temporary impacts to delineated wetlands. Since only up to 74 turbines will be
339 constructed, actual temporary impacts will be less.

340

341 **Q. How has Badger Wind considered surface waters in the Project layout design?**

342 A. The Project and associated facilities have been sited to avoid or minimize impacts to
343 surface waters to the extent practicable. Turbines have been sited to avoid surface
344 waters. Access roads, crane paths, and collection lines have been designed to
345 minimize crossing of streams and other surface waters, to the extent practicable. The
346 collection lines intersect one perennial watercourse. However, the collection lines will
347 be bored under this watercourse, thereby avoiding impacts.

348

349 **Q. Will the Project qualify for coverage under a USACE NWP?**

350 A. Yes, it is anticipated that the Project will be under the impact thresholds established
351 for coverage under one or more USACE NWPs.

352

353 **VI. AVIAN AND BAT ANALYSES**

354

355 **Q. Did Badger Wind conduct the wildlife studies recommended by the USFWS and**
356 **NDGF in accordance with the agreed-upon protocols?**

357 A. Yes.

358

359 **Q. Please discuss each of the studies conducted for the Project, beginning with**
360 **the avian use surveys.**

361 A. In consultation with the USFWS and NDGF, Badger Wind completed two years of
362 baseline general avian use surveys to evaluate potential impacts to Migratory Bird
363 Treaty Act (“MTBA”) protected species. Fixed-point surveys to quantify avian use of
364 the Study Area were conducted during the spring (March through May) and fall
365 (August through November) seasons from May 2019 to April 2021. In total, for both
366 years of surveys, one federally listed endangered bird species (whooping crane) was
367 detected. In the first year of surveys, there were 34 bald eagle detections and six

368 golden eagle detections; in year two, there were 35 bald eagle detections and six
369 golden eagle detections. Thirty-five North Dakota Species of Conservation Priority
370 (“SCP”) (including whooping crane, bald eagle, and golden eagle) were detected.
371 Thirteen Birds of Conservation Concern (“BCC”) were observed.

372

373 **Q. What do the results of the avian use surveys indicate about avian use in the**
374 **Project Area?**

375 A. Overall, the species composition, seasonal abundance, and spatial use documented
376 during avian surveys are considered typical for birds in this region. The majority of
377 species observed are common and abundant within the region. The Project is not
378 anticipated to result in population-level impacts to avian species, including waterfowl
379 and species of concern.

380

381 **Q. Please discuss the raptor and eagle nest surveys conducted for the Project.**

382 A. Badger Wind conducted aerial and ground-based eagle and raptor nest surveys in
383 2019 and 2020 to document eagle and non-eagle raptor nest locations within and
384 adjacent to the Project Area. Raptor nest surveys were completed for the Project Area
385 plus a ten-mile buffer.

386

387 In total, 12 non-eagle raptor nests were recorded within the Project Area. This total
388 includes nests located during surveys as well as those noted incidentally during field
389 microsite efforts. Occupied nests belonged to ferruginous hawks, great horned owls,
390 red-tailed hawks, Swainson’s hawks, and unknown raptor species.

391

392 No golden eagle nests were identified within the Project Area or within ten miles of the
393 Project Area during eagle and raptor nest surveys in 2019 and 2020.

394

395 One active bald eagle nest is, and one alternate bald eagle nest was, located within
396 the Project Area but are located more than two miles from Project turbine locations.
397 One active bald eagle nest was found within the Project Area during both the 2019
398 and 2020 eagle and raptor nest surveys. No other active bald eagle nests were found

399 within two miles of the Project Area during the 2019 and 2020 nest surveys. However,
400 on March 10, 2021, a new active bald eagle nest was located within the Project Area
401 incidentally during eagle-use surveys. The 2019–2020 and 2021 nests are believed
402 to belong to the same nesting territory, as the 2021 bald eagle active nest is
403 approximately 1.98 miles east of the 2019–2020 nest. As such, the 2019–2020 nest
404 was classified as an alternate nest site, since recent guidance issued by the USFWS
405 notes that nesting bald eagles are not expected to roam beyond two miles from nest
406 sites. The 2019–2020 nest was checked repeatedly after the discovery of the new
407 nest in 2021, and during the course of those checks, it could no longer be located. No
408 bald eagles were observed at the old nest site during these subsequent checks.

409
410 Additionally, in 2022, two ground surveys of raptor and eagle nests were conducted.
411 No eagle nests were identified within the Project Area. Active nests belonged to
412 ferruginous hawks.

413
414 **Q. What do the results of the avian use surveys and raptor and eagle nest surveys**
415 **indicate about eagle use in the Project Area?**

416 A. Based on the data collected, use of the Project by bald eagles is consistent with
417 geographical use in this region. Based on the nest surveys, there are no golden eagle
418 nests within the Project Area or within ten miles of the Project Area. Given the low
419 observed use rate, golden eagle use of the Project Area is expected to be minimal.
420 Further, no prairie dog colonies (a known prey source) exist within the Project Area.

421
422 **Q. How will the Project avoid and minimize eagle impacts to?**

423 A. Badger Wind has sited turbines at least two miles from the two bald eagle nests within
424 the Project Area (one active and one alternate). Accordingly, impacts are not
425 expected to occur to bald eagle nests. The Project is not anticipated to impact golden
426 eagles.

427
428 If a new eagle nest is identified within the Project Area, or a Project-related eagle
429 fatality is confirmed, Badger Wind will coordinate with the USFWS and may implement

430 adaptive management. Badger Wind continues to coordinate with the USFWS
431 regarding recommendations and measures to avoid and minimize potential impacts
432 to eagles.

433

434 **Q. Is there a potential for whooping cranes to occur in the Project Area?**

435 A. The Project Area lies at the edge of the portion of the whooping crane migration
436 corridor in which 75 percent of whooping crane sightings have occurred. Because
437 whooping cranes were documented within the Project Area, and the whooping crane
438 habitat assessment indicates that stopover habitat is present in the Project Area, there
439 is the potential for whooping cranes to use the Project Area during migration.

440

441 **Q. Did Badger Wind conduct a whooping crane habitat assessment?**

442 A. Yes. Badger Wind conducted a whooping crane stopover habitat assessment in
443 September 2021 using data sources recommended by the USFWS and NDGF.

444

445 **Q. What do the results of the avian use surveys and the whooping crane habitat
446 assessment indicate about whooping crane use in the Project Area?**

447 A. During on-site avian use and eagle use surveys, three adult whooping cranes were
448 observed foraging in agricultural areas (i.e., corn fields) within the Project Area on
449 April 15, 2020. The roosting location was confirmed to be within the west-central
450 portion of the Project Area at the confluence of two seasonally saturated wetlands.
451 Poor harvesting conditions in 2019 led to the presence of unharvested corn in fields
452 in the spring of 2020. It is possible that the whooping cranes were dispersing farther
453 from the migration corridor's centerline than expected due to these conditions.

454

455 Because whooping cranes were documented within the Project Area, and the
456 whooping crane habitat assessment indicates that stopover habitat is present in the
457 Project Area, there is the potential for whooping cranes to use the Project Area during
458 migration. Although potential stopover habitat for whooping cranes is present within
459 the Project Area, this habitat is of relatively lower quality and quantity compared to
460 nearby reference areas analyzed in the whooping crane habitat assessment.

461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491

Q. What steps is Badger Wind taking to avoid impacts to whooping cranes?

A. Although the occurrence of whooping cranes in the Project Area is unlikely, if a whooping crane is sighted within the Project Area during construction, construction will stop within one mile of the sighting until the whooping crane has left the area. Additionally, Project collection and communication lines will be buried, thereby avoiding potential collision risk. Crops left unharvested, which could attract whooping cranes to the Project Area, will be minimized to the extent practicable.

Q. Please discuss the grouse lek monitoring surveys completed for the Project.

A. Badger Wind conducted aerial and ground-based sharp-tailed grouse lek surveys in 2019 and 2020. Two confirmed lek locations were observed within the current Project Area boundary. Four confirmed, and one possible, lek locations were observed within one mile of the Project Area boundary. Seven confirmed, and one possible, lek locations were observed beyond the current Project Area’s one-mile buffer. Confirmed leks held four to 27 individuals.

Q. Please discuss sharp-tailed grouse use observed during the avian use surveys.

A. During year one avian use and eagle use surveys, 38 sharp-tailed grouse were detected, including 32 in the spring and six in the fall. During year two avian use and eagle use surveys, 18 sharp-tailed grouse were detected, including nine in the spring and nine in the fall.

Q. Discuss the strategy the Project has employed to minimize potential impacts to sharp-tailed grouse?

A. Badger Wind retained Western EcoSystems Technology, Inc. (“WEST”) to develop a Plains Sharp-Tailed Grouse Conservation Strategy (proposed **BW Exhibit 10**) for the Project. The Strategy involved a multi-step analysis that included: (1) determining sharp-tailed grouse habitat requirements and potential impacts from wind energy development on the species using existing research; (2) considering how the Project would impact sharp-tailed grouse populations at a landscape level by summarizing

492 existing data; (3) identifying potentially suitable sharp-tailed grouse habitat within the
 493 Project Area based on existing lek locations, research-based suitable habitat factors,
 494 and a site-specific unbroken grasslands assessment; and (4) considering turbine
 495 spacing to allow movement of grouse species between turbines. As discussed in the
 496 Strategy, Badger Wind sited the majority of turbines in areas that are not suitable for
 497 sharp-tailed grouse. Further, all of the turbines located in identified suitable habitat
 498 are sited in previously fragmented areas, which helps minimize impacts to the local
 499 sharp-tailed grouse population. Additionally, Badger Wind spaced turbines a
 500 minimum of 0.6 miles apart, which may facilitate movement between key habitats.

501

502 **Q. Please discuss the acoustic bat monitoring conducted for the Project.**

503 A. To characterize bat activity in the Project Area, Badger Wind conducted two years of
 504 acoustic bat monitoring within the Project Area. Overall, bat activity within the Project
 505 Area was relatively low during both years. The first year of acoustic bat monitoring
 506 occurred from May 23 – October 16, 2019 at one MET tower and at four ground-based
 507 locations representative of potential turbine locations. Three of the four ground
 508 locations and the one MET tower location were within the current Project Area. The
 509 majority (approximately 89 percent) of bat passes were classified as low frequency,
 510 which is representative of species such as big brown bat, silver-haired bat, and hoary
 511 bat. The remaining bat passes were classified as high frequency bat passes, which
 512 is representative of species such as eastern red bat. No federally listed bat species
 513 were confirmed; however, bat passes identified as high frequency could belong to the
 514 *Myotis* species group, which includes the northern long-eared bat (“NLEB”). Four
 515 *Myotis* calls (0.20 percent of all bat calls) identified as little brown bat (North Dakota
 516 Level 1 SCP) were recorded during the study.

517

518 A second year of acoustic bat monitoring occurred within the Project Area from April
 519 14 – October 15, 2020 at two MET towers and at four ground-based locations
 520 representative of potential turbine locations. Three of the four ground locations and
 521 both MET tower locations were within the current Project Area boundary. The majority
 522 (approximately 82 percent) of bat passes were classified as low frequency. As with

523 the first year results, no federally listed species were confirmed. Two unknown *Myotis*
524 species calls (0.18 percent of all bat calls) were recorded during the study; however,
525 a species determination could not be made as these calls contained characteristics of
526 both NLEB and little brown bat. An additional three *Myotis* calls (0.26 percent of bat
527 calls) identified as little brown bat (North Dakota Level 1 SCP) were recorded during
528 the study.

529
530 Badger Wind also performed a bat habitat desktop assessment to identify potentially
531 suitable NLEB summer habitat (roosting and foraging) within the Project Area. The
532 assessment found that potential suitable habitat for NLEB is limited within the Project
533 Area. Specifically, the bat habitat desktop assessment found that less than 0.1
534 percent (approximately 62.9 acres) of the Project Area supports woodlands and
535 wooded shelter belts that may provide roosting and foraging habitat for NLEB.
536 Available wooded areas within the Project Area are highly fragmented, and there is
537 very limited connectivity of wooded shelter belts throughout the landscape. Wooded
538 stands on site are all less than ten acres in size. Most riparian areas in the Project
539 Area do not support adjacent woodlands. Based on the habitat assessment and lack
540 of conclusive NLEB calls detected, the potential for NLEB to occur in the Project Area
541 is low.

542
543 **Q. In addition to the avoidance and minimization measures discussed above with**
544 **respect to eagles and sharp-tailed grouse, how will the Project avoid and**
545 **minimize avian and bat impacts?**

546 A. Badger Wind has designed the layout to minimize tree clearing and potential impacts
547 to raptor nests. Additionally, Badger Wind has sited turbines at least 0.25 miles from
548 identified active, occupied non-eagle raptor nests to the extent practicable.

549
550 As discussed earlier in my testimony, Badger Wind has prepared a BBCS based on
551 the results of surveys and agency recommendations, which outlines specific
552 avoidance and minimization measures that Badger Wind has implemented during
553 Project layout and design, or plans to implement during construction and operation, to

554 avoid and minimize potential impacts on birds and bats. A copy of the draft BBCS
555 was provided as Appendix H to the Application (proposed **BW Exhibit 1**, Appendix
556 H). Since filing the Application, Badger Wind has updated the draft BBCS to include
557 information regarding planned voluntary offsets for potential indirect impacts, and the
558 updated draft BBCS is provided as proposed **BW Exhibit 28**. Badger Wind will
559 continue coordinating with the USFWS and NDGF on the BBCS, as needed,
560 throughout the life of the Project. Additionally, Badger Wind will conduct post-
561 construction fatality monitoring for at least a one-year period, which will be developed
562 in coordination with the USFWS and NDGF.

563

564 **VII. AGENCY COORDINATION**

565

566 **Q. Prior to filing its Application, did Badger Wind contact all agencies and entities**
567 **identified in Section 69-06-01-05 of the North Dakota Administrative Code**
568 **(“NDAC”)?**

569 A. Yes. Prior to filing its Application, Badger Wind contacted all agencies and entities
570 identified in NDAC Section 69-06-01-05. In October 2021, Badger Wind sent Project
571 notification letters to 32 federal, state, and local agencies, including agencies and
572 officers listed on NDAC Section 69-06-01-05, and had separately contacted the
573 remaining agencies/entities identified in NDAC Section 69-06-01-05.

574

575 **Q. What agencies/entities has Badger Wind received correspondence from or**
576 **consulted with?**

577 A. Badger Wind received comments from or otherwise consulted with the following
578 agencies/entities:

- 579 • USACE
- 580 • U.S. Department of Commerce, National Telecommunications and Information
581 Administration
- 582 • U.S. Department of the Interior, Bureau of Land Management
- 583 • U.S. Department of Agriculture, Natural Resources Conservation Service
- 584 • U.S. Department of Defense

- 585 • USFWS
- 586 • FAA
- 587 • NDGF
- 588 • North Dakota Aeronautics Commission and Wishek Municipal Airport
- 589 • North Dakota Department of Environmental Quality
- 590 • North Dakota Department of Trust Lands (“NDTL”)
- 591 • North Dakota Department of Water Resources (formerly the State Water
- 592 Commission)
- 593 • North Dakota Geological Survey
- 594 • North Dakota Parks & Recreation
- 595 • SHSND and SHPO
- 596 • North Dakota Department of Transportation (“NDDOT”)
- 597 • Logan County
- 598 • McIntosh County
- 599 • Red Lake Township

600

601 After the Application was filed, Badger Wind received additional comments and
602 correspondence from the NDTL (proposed **BW Exhibit 20**), the NDDOT (proposed
603 **BW Exhibit 22**), the NDGF (proposed **BW Exhibit 21**), the SHSND/SHPO (proposed
604 **BW Exhibits 14** and **24**), and Red Lake Township (proposed **BW Exhibit 23**).

605

606 Additionally, after the Application was filed, the PSC received comments directly from
607 the NDGF (proposed **BW Exhibit 21**) and the North Dakota Department of
608 Environmental Quality (proposed **BW Exhibit 25**).

609

610 **VIII. USFWS AND NDGF COORDINATION**

611

612 **Q. Please provide an overview of Badger Wind’s consultation with the USFWS and**
613 **NDGF on the Project.**

614 A. From early 2020 through present, Badger Wind has engaged in extensive coordination
615 with the USFWS and the NDGF on surveys and protocols, Project site selection,

616 turbine placement, avoidance and minimization measures, and voluntary offsets. That
617 extensive history is outlined in Section 9.6 of the Application (proposed **BW Exhibit**
618 **1**).

619

620 **Q. Discuss the concerns raised by the USFWS and NDGF regarding unbroken**
621 **grasslands.**

622 A. Unbroken grasslands provide habitat for grassland species. The agencies' concerns
623 regarding unbroken grasslands have focused on direct turbine impacts and the
624 potential for Project turbines to displace grassland breeding birds, such as sharp-tailed
625 grouse. Essentially, the concern is that turbines may result in grassland breeding
626 birds moving away from areas where turbines are located. Displacement does not
627 mean that the birds are physically harmed or that they do not breed, but rather that
628 they may move away from turbines to conduct breeding activities.

629

630 **Q. What are unbroken grasslands?**

631 A. Unbroken grasslands are grasslands that have never been tilled or otherwise
632 disturbed by mechanized equipment.

633

634 **Q. Are unbroken grasslands protected areas?**

635 A. No. There are no local, state, or federal requirements for or prohibitions against
636 development on grasslands.

637

638 **Q. With respect to unbroken grasslands and grassland breeding birds, please**
639 **discuss Badger Wind's efforts to address concerns raised by the USFWS and**
640 **the NDGF.**

641 A. Over the progression of two plus years of agency coordination and consultations,
642 Badger Wind discussed with the USFWS and the NDGF ways to address their
643 concerns regarding potential impacts to unbroken native grasslands and grassland
644 breeding birds. The agencies' recommendations factored significantly in the
645 development of and modifications to the proposed Project site and final layout, as well

646 as the development of the avoidance, minimization, and mitigation measures Badger
647 Wind has implemented or committed to implementing in the BBCS.

648
649 Badger Wind approached addressing the agencies' concerns regarding unbroken
650 grasslands and grassland birds in three ways. First, during site selection, Badger
651 Wind revised the size and location of the proposed Project area to avoid large areas
652 of unbroken grassland and moved Project infrastructure out of unbroken grassland in
653 the northeast corner of the Project Area. Second, Badger Wind conducted extensive
654 localized wildlife and vegetation surveys to inform siting decisions and avoid or
655 minimize potential Project impacts to unbroken grasslands and grassland birds. Third,
656 Badger Wind voluntarily committed to using the best-available science to calculate
657 offsets for any remaining potential direct and indirect impacts (i.e., displacement) of
658 grassland birds.

659
660 **Q. Please discuss how the Project layout was designed to minimize potential**
661 **impacts to unbroken grasslands and grassland birds.**

662 A. Badger Wind has minimized siting of turbines, roads, and other infrastructure in
663 unbroken grasslands, thereby minimizing the potential for impacts on grassland-
664 dependent species. Based on input from the NDGF and USFWS, Badger Wind
665 retained WEST to complete desktop and field verifications of unbroken grassland
666 within the Project Area (see the Grassland Habitat Assessment, proposed **BW Exhibit**
667 **9**). As discussed above, Badger Wind also conducted grassland breeding bird
668 surveys in consultation with the NDGF. The results of these studies and surveys have
669 been used to evaluate and inform Project infrastructure siting decisions to avoid and/or
670 minimize potential impacts to grassland bird habitat.

671
672 Only two turbine pads will have permanent impacts to field-verified unbroken
673 grassland: the north edge of the pad of Turbine 17 will impact 0.02 acres of this
674 grassland type, and the west edge of Turbine 60 will impact 0.06 acres of this
675 grassland type. Further, as discussed above, Badger Wind has sited turbines within
676 fragmented (agricultural) areas to minimize potential impacts to grassland species.

677 Additionally, to reduce habitat fragmentation, existing roads will be used where
678 feasible, and new roads and temporary laydown areas have been sited in previously
679 disturbed or agricultural areas, outside of unbroken grasslands, to the extent
680 practicable.

681
682 **Q. In its May 27, 2022 letter, the NDGF requested that Badger Wind address**
683 **voluntary offsets for potential Project impacts in the BBCS. Have you updated**
684 **the BBCS to address voluntary offsets?**

685 A. Yes. The updated BBCS is provided as proposed **BW Exhibit 28**.

686
687 **Q. In the May 27, 2022 letter, the NDGF acknowledges that the “new turbine layout**
688 **is a great improvement from the original layout, with many turbines moved away**
689 **from areas of important habitat” but goes on to say “even with the changes**
690 **made there are likely to be significant impacts to wildlife and the habitats they**
691 **depend on.” Do you agree with this statement?**

692 A. I agree that Badger Wind has coordinated closely with the NDGF and the USFWS to
693 revise the Project location and layout so as to avoid areas of important habitat.
694 However, I do not agree that the Project as sited is likely to result in significant impacts
695 to wildlife and wildlife habitat. As noted earlier in my testimony, there are few wetlands
696 within the Project Area, and turbines have been sited to avoid wetland impacts and to
697 minimize potential waterfowl displacement. With respect to grassland species, the
698 Project Area and layout were adjusted in coordination with the NDGF and the USFWS
699 to avoid the larger intact areas of unbroken grassland in the northeastern portion of
700 the Project Area. Only two turbines are partially located on unbroken grassland, and
701 all turbines are located in already-fragmented areas, thus reducing the potential
702 impact to grassland species and their habitat.

703
704 Further, while the NDGF notes general concerns about collision, habitat loss, and
705 displacement and avoidance (all of which Badger Wind has considered in Project
706 siting), the NDGF did not identify a specific concern other than that Badger Wind had
707 not referenced a specific offset commitment in the BBCS. As the NDGF partially

708 acknowledges, Badger Wind has already discussed with the NDGF plans to provide
709 voluntary offsets, including exchanging offset calculations and identifying a potential
710 local group to partner with on habitat preservation/restoration efforts. Thus, while the
711 commitment may not have been referenced in the BBCS, Badger Wind understands
712 what is at stake and has taken appropriate steps to avoid, minimize, and mitigate
713 (through voluntary offsets) potential Project impacts.

714

715 **IX. COMPLIANCE WITH PSC SITING RULES**

716

717 **Q. Are you familiar with the exclusion areas, avoidance areas, selection criteria**
718 **and policy criteria identified in NDAC Section 69-06-08-01?**

719 A. Yes.

720

721 **Q. Please discuss whether there are any general exclusion areas located within the**
722 **Project Area.**

723 A. There are no categories of general exclusion areas within the Project Area.

724

725 **Q. Please discuss whether any of the exclusion areas specific to wind energy**
726 **conversion facilities are located within the Project Area.**

727 A. Five exclusion areas specific to wind energy conversion facilities are present within
728 the Project Area:

- 729 • Areas less than 1.1 times the height of the turbine from the nearest edge of
730 an interstate or state roadway right of way;
- 731 • Areas less than 1.1 times the height of the turbine + 75 feet from the centerline
732 of any county or maintained township roadway;
- 733 • Areas less than 1.1 times the height of the turbine from the nearest edge of any
734 railroad right-of-way;
- 735 • Areas less than 1.1 times the turbine height from the nearest edge of a 115 kV
736 or higher transmission line right-of-way; and

- 737 • Areas less than 1.1 times the turbine height from the property line of a non-
738 participating landowner and 3 times the height of the turbine from an inhabited
739 rural residence of a non-participating landowner, unless a variance is granted.

740

741 Although present within the Project Area, the turbines have been sited to avoid these
742 areas.

743

744 **Q. Are there any general avoidance areas present within the Project Area?**

745 A. Yes. The following general avoidance areas are present within the Project Area:

- 746 • Historical resources which are not designated as exclusion areas: Badger Wind
747 has sited the Project facilities to avoid the one unevaluated archaeological
748 resource site identified. Additionally, Project infrastructure and construction
749 activities avoid the seven sites where additional shovel testing will be
750 conducted.

- 751 • Woodlands and wetlands: Wetlands and small woodlands and shelterbelts are
752 present within the Project Area but permanent impacts to wetlands have been
753 avoided to the extent feasible. As currently designed, up to approximately
754 11.51 acres of temporary impacts, and less than 0.01 acres of permanent
755 impacts to wetlands could occur as a result of Project construction. As
756 discussed above, the permanent impact to a wetland would occur because an
757 access road will cross a field-delineated drainage wetland that parallels an
758 existing road. Badger Wind has sited this access road in the location of an
759 existing farm road to further minimize impacts to this wetland, resulting in a
760 permanent impact to this wetland of less than 0.01 acre. A culvert will be
761 installed where this access road crosses a drainage to facilitate continued
762 wetland function and local hydrology. Impacts to woodlands will be avoided to
763 the extent practicable. As currently designed, the Project may impact
764 approximately 0.03 acres of trees/shrubs. Where unavoidable, impacts have
765 been minimized to the extent feasible. If impacts to trees and/or shrubs occur,
766 Badger Wind will comply with the PSC's tree and shrub mitigation
767 specifications.

768
769 **Q. Will the Project comply with the wind energy conversion facility-specific sound**
770 **avoidance area requirement?**

771 A. Yes. For further discussion, see the Direct Testimony of Nicholas Gebauer (proposed
772 **BW Exhibit 30**).

773
774 **Q. Will any significant adverse effects resulting from the location, construction,**
775 **and operation of the Project as they relate to the selection criteria set forth in**
776 **the PSC's rules be at an acceptable minimum or managed and maintained at an**
777 **acceptable minimum?**

778 A. Yes.

779
780 **Q. Were the policy criteria set forth in the PSC's siting rules considered and utilized**
781 **to the extent possible by Badger Wind when designing the proposed Project?**

782 A. Yes.

783
784 **Q. Were the factors set forth in NDCC § 49-22-09 considered by Badger Wind when**
785 **designing the proposed Project?**

786 A. Yes.

787
788 **IV. CONCLUSION**

789
790 **Q. Based on the analysis conducted by Badger Wind, as set forth in the proposed**
791 **hearing exhibits, will construction of the proposed Project produce minimal**
792 **adverse human and environmental effects?**

793 A. Yes.

794
795 **Q. Does this conclude your Testimony?**

796 A. Yes.

797