

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

**RUSO WIND PARTNERS, LLC
RUSO WIND PROJECT - WARD AND MCLEAN COUNTIES
SITING APPLICATION**

**RUSO WIND PARTNERS, LLC
230 KV TRANSMISSION LINE - MCHENRY AND WARD COUNTIES
SITING APPLICATION**

CASE NOS. PU-19-28/PU-19-29

**PRE-FILED TESTIMONY OF MORGAN BERRY
ON BEHALF OF RUSO WIND PARTNERS, LLC**

May 29, 2019

1 **I. INTRODUCTION AND QUALIFICATIONS**

2

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

4 A. My name is Morgan Berry. I am a Project Manager, Project Development, at
5 Southern Power Company (“Southern Power”) and my business address is 3535
6 Colonnade Parkway, Birmingham, AL 35243.

7

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

9 A. I have been with Southern Power since 2011. I was the lead developer for Southern
10 Power’s first two self-developed wind projects, which included leading a cross-
11 functional team of subject matter experts on matters related to existing, new and
12 emerging utility-scale wind generation technologies (turbines, blades, balance of
13 plant, etc.); directing the planning, prioritization and execution of teams responsible
14 for all project development activities; and transitioning developed projects to the
15 engineering, procurement and construction (“EPC”)/implementation team for
16 construction. In addition to working on those projects, I have assisted with
17 approximately nine other wind or solar projects. I have also led technical due
18 diligence and contract negotiations for multiple wind and solar projects.

19

20 Prior to joining Southern Power, I was an engineer for Southern Company
21 Generation, ExxonMobil Production Company, and Southern Nuclear. I have a
22 Bachelor of Chemical Engineering (Environmental Specialization) from Auburn
23 University. I am also a registered Professional Engineer in Alabama. A copy of my
24 resume is included as proposed Exhibit 29-A to my testimony.

25

26 **Q. What is your role with respect to the Ruso Wind Project (“Wind Project”) and**
27 **associated Generation Tie-In Facility and Switching Station (“Gen-Tie Line**
28 **Project”)** (collectively, the “Project”)?

29 A. I am the Project Manager and, as such, I lead a cross-functional team in all aspects
30 of the Project’s development.

31

32 **Q. Who will construct, own, and operate the Project?**

33 A. Ruso Wind Partners, LLC (“Ruso Wind”) will construct, own, and operate the Project.
34 See *also* Exhibit 28 (Ten Year Plan).

35

36 **Q. What is the relationship between Ruso Wind and Southern Power with respect**
37 **to the Project?**

38 A. Ruso Wind is a wholly-owned subsidiary of Southern Power. Southern Power is
39 assisting with development of the Project.

40

41 **Q. Please describe Southern Power’s experience in the renewable energy**
42 **industry.**

43 A. Southern Power is a leading U.S. wholesale energy provider and subsidiary of
44 Southern Company, a nationally recognized energy company with more than 9
45 million customers. Southern Power and its subsidiaries own 49 facilities operating or
46 under construction in 11 states with more than 11,300 megawatts (“MW”) of
47 generating capacity in Alabama, California, Georgia, Kansas, Maine, Minnesota,
48 Nevada, New Mexico, North Carolina, Oklahoma and Texas. These facilities help
49 meet the electricity needs of municipalities, electric cooperatives, investor-owned
50 utilities and commercial and industrial customers. Southern Power’s portfolio now
51 includes over 3,200 MW of renewable generation.

52

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

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

55 • Exhibit 1: Certificate of Site Compatibility Application (Sections 1.0, 2.0, 3.0,
56 4.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.6, 6.8, 6.9, 6.17, 7.0, 8.0, 9.1, 9.4, 9.5, 9.6, 9.7,
57 9.11, 10.0, 11.0, 12.0; Appendices A, B, C, E, J, K, L, M, N, O)

58 • Exhibit 2: Updates to Certificate of Site Compatibility Application

59 • Exhibit 3: Consolidated Certificate of Corridor Compatibility and Route Permit
60 Application (Sections 1.0, 2.0, 3.0, 4.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.8,
61 6.9, 6.17, 7.0, 8.0, 9.1, 9.4, 9.5, 9.6, 9.10, 10.0, 11.0, 12.0; Appendices A, B,
62 C, D)

- 63 • Exhibit 4: Updates to Consolidated Certificate of Corridor Compatibility and
- 64 Route Permit Application
- 65 • Exhibit 5: Final Wind Project and Transmission Line Map
- 66 • Exhibit 6: Final Wind Project Layout
- 67 • Exhibit 7: Preliminary Layout (PSC Application) vs. Current Layout (Final
- 68 Layout)
- 69 • Exhibit 8: Wind Project Constraints Maps
- 70 • Exhibit 9: Occupied Residence Summary Chart
- 71 • Exhibit 10: Shadow Flicker Acknowledgments
- 72 • Exhibit 11: Final Transmission Line Route, with Pole Locations
- 73 • Exhibit 12: Transmission Line Constraints Map
- 74 • Exhibit 13: Local Zoning Permits
- 75 • Exhibit 14: Township Letters of Support
- 76 • Exhibit 21: FAA Correspondence
- 77 • Exhibit 22: NDDOT Correspondence
- 78 • Exhibit 23: USAF Correspondence
- 79 • Exhibit 25: Airstrip Correspondence
- 80 • Exhibit 28: Ten Year Plan
- 81 • Exhibit 33: Turbine Layout Chart

82

83 **II. PROJECT DEVELOPMENT TEAM**

84

85 **Q. Could you identify the other members of the Project's development team?**

86 A. Yes. Kristin Mohon, also with Southern Power, is the Project's Environmental Lead,
87 and she is also submitting testimony on behalf of the Project. We have a number of
88 other internal Project team members assisting with other aspects of the Project's
89 development, including real estate, engineering and design, and permitting.

90

91 In addition to our internal team, Ruso Wind has retained outside consultants to
92 assist with the Project, including:

- 93 • Burns & McDonnell Engineering Company, Inc., to provide technical expertise
94 in sound and shadow flicker modeling.
- 95 • Western EcoSystems Technology, Inc. (“WEST”), to provide technical
96 expertise in environmental assessment and surveys, including biological,
97 grassland, and wetland surveys.
- 98 • Westwood, to provide technical expertise in environmental assessment and
99 surveys, including biological surveys, and preliminary engineering design.
- 100 • Beaver Creek Archaeology, Inc., to provide technical expertise in cultural and
101 architectural resource surveys.
- 102 • Comsearch, to conduct an analysis of microwave, telephone, TV and radio
103 communications in the Project Area.
- 104 • Capitol Airspace Group, to conduct an Obstruction Evaluation & Airspace
105 Analysis.
- 106 • KLJ, to assist with development of permitting applications and associated
107 environmental and resource analysis.
- 108 • Power Engineers, to conduct preliminary high voltage (“HV”) design, including
109 the Project Substation, Gen-Tie Line, and Switching Station.

110

111 **III. UPDATES TO THE APPLICATIONS**

112

113 **Q. Is proposed Exhibit 1 Ruso Wind’s Application for Certificate of Site**
114 **Compatibility for the Ruso Wind Project (“Wind Project Application”), which**
115 **was filed with the North Dakota Public Service Commission (“Commission”)**
116 **on January 21, 2019?**

117 A. Yes.

118

119 **Q. Have there been any updates to the Wind Project Application?**

120 A. Yes. Updates to the Wind Project Application were filed as proposed Exhibit 2 on
121 May 17, 2019. As described in proposed Exhibit 2, the proposed Project Area has
122 been reduced and additional potential representative turbine models have been
123 analyzed.

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Q. Could you provide an overview of how the proposed Wind Project Area and layout have changed since filing the Wind Project Application?

A. The original Wind Project Area identified in the Wind Project Application consisted of approximately 35,654 acres located within Ward and McLean Counties. The current Wind Project Area consists of approximately 16,197 acres, and is located entirely in Ward County. The Wind Project Area was reduced to include only parcels that are hosting facilities, are needed for setback compliance, or may be needed to host facilities in the event one or more turbine locations need to be shifted during construction to avoid previously unidentified issues or features.

With respect to the layout, one primary and two alternate turbine locations have been removed, specifically Turbines T-4, A-64 (previously Alt-12) and A-65 (previously Alt-11). Additionally, since the Siemens Gamesa SG-4.5-145 turbine has the ability to be uprated to 4.8 MW without affecting setback compliance or previously conducted sound and shadow flicker modeling results, Ruso Wind is now considering the Siemens Gamesa SG-4.8-145. As a result, the total number of proposed primary turbine locations has been reduced from 53 to 47, and the number of alternate turbine locations has increased from 13 to 16. Finally, adjustments have been made to some collection lines and access road locations based on further site analysis and stakeholder coordination.

The most current Project Area and layout for the Wind Project are shown on proposed Exhibit 6. Additionally, proposed Exhibit 7, which shows both the preliminary layout and Project Area and the current layout and Project Area, helps illustrate the changes made. In addition, proposed Exhibit 33 is a chart that shows which turbine models are proposed for each location, the current status of each turbine location (primary, alternate, or eliminated) compared to the originally proposed layout, and the current turbine ID numbers compared to the originally proposed layout.

155 **Q. Is proposed Exhibit 3 Ruso Wind’s Consolidated Application for Certificate of**
156 **Corridor Compatibility and Route Permit for Ruso Wind’s Gen-Tie Line Project**
157 **(“Gen-Tie Line Application”), which was filed with the Commission on January**
158 **21, 2019?**

159 A. Yes.

160

161 **Q. Have there been any updates to the Gen-Tie Line Application?**

162 A. Yes. Updates to the Gen-Tie Line Application are provided as proposed Exhibit 4.
163 The following changes have been made: First, at the request of McHenry County,
164 the Gen-Tie Line centerline (the “Route”) has been adjusted so that the centerline is
165 150 feet from the section line. Second, some structures along the Gen-Tie Line
166 Route in McHenry County were adjusted to span or otherwise avoid areas of
167 potentially unbroken (undisturbed) grassland. Third, Ruso Wind identified a
168 narrower corridor that it is requesting the Commission approve as the designated
169 corridor for the Gen-Tie Line Project (“Designated Corridor”), which is discussed
170 further below. The current Gen-Tie Line Route, structure locations, and proposed
171 Designated Corridor are shown on proposed Exhibit 11.

172

173 **Q. Please describe what is shown on proposed Exhibit 5.**

174 A. Proposed Exhibit 5 is a map showing the current Wind Project Area and facility
175 layout, and the current Gen-Tie Line proposed Designated Corridor, Route, and
176 structure locations.

177

178 **IV. DESCRIPTION OF THE PROJECT**

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180 **Q. Could you provide a general description of the Wind Project’s proposed**
181 **output and facilities?**

182 A. As currently designed, the Wind Project would generate up to 205 MW of electricity.

183 The Wind Project’s facilities would include:

- 184 • Up to 47 wind turbines (with 16 alternate locations) and related equipment;
- 185 • New gravel access roads and improvements to existing roads (as needed);

- 186 • Underground electrical collection and communication lines, with above-ground
187 junction boxes;
- 188 • Project Substation;
- 189 • Operations and Maintenance (“O&M”) facility;
- 190 • Up to 3 permanent meteorological evaluation (“MET”) towers (up to 108 meters
191 tall); and
- 192 • Additional temporary construction areas, including a concrete batch plant, a
193 laydown area for equipment, intersection improvements to facilitate over-length
194 turning, crane paths, working pads, and a staging area for turbine delivery.

195

196 **Q. Where will the Project interconnect to the grid?**

- 197 A. The Project will interconnect to the grid via the existing Great River Energy Stanton
198 to McHenry 230 kV transmission line.

199

200 **Q. Please provide a general description of the proposed Gen-Tie Line Project.**

- 201 A. The Gen-Tie Line Project includes an approximately 10-mile long 230-kV Gen-Tie
202 Line and a new approximately 3.5-acre Switching Station. The proposed Gen-Tie
203 Line would extend from the Project Substation in Ward County (Section 7,
204 Township 151 N, Range 81 W) to the proposed Switching Station in McHenry
205 County (Section 5, Township 151 N, Range 80 W). The Switching Station would be
206 owned and operated by Great River Energy upon completion.

207

208 **Q. Could you describe the proposed study corridor, Designated Corridor, and
209 Route for the Gen-Tie Line shown in proposed Exhibit 11?**

- 210 A. Ruso Wind conducted a desktop environmental analysis of a one-mile-wide corridor
211 centered on the Gen-Tie Line Route (the “Study Corridor”), and is completing
212 cultural resource and wetland field surveys of a 150-foot-wide area (75 feet on either
213 side of the Gen-Tie Line Route) that aligns with the Gen-Tie Line’s permanent
214 easement area. As discussed above, Ruso Wind requests that the Commission
215 designate the 150-foot survey area, along with the 3.5 acre Switching Station area,
216 as the “Designated Corridor” for the Gen-Tie Line Project.

217

218 **Q. What is the status of executing a Generator Interconnection Agreement**
219 **(“GIA”) for the Project?**

220 A. Ruso Wind is currently in the Midcontinent Independent System Operator, Inc.’s
221 (“MISO”) Detailed Planning Phase 2, which we expect to be complete on June 28,
222 2019. The Project would then move to MISO’s Detailed Planning Phase 3, which is
223 expected to be completed in November 2019. We anticipate the GIA will be
224 executed by the Second Quarter of 2020.

225

226 **Q. Has Ruso Wind obtained the necessary property rights to construct the**
227 **Project within the proposed Project site and corridor?**

228 A. Yes. Ruso Wind currently holds wind energy leases and easement agreements,
229 transmission easement agreements, and an option to purchase agreement with
230 approximately 65 landowners, 34 of whom own land within the current Wind Project
231 Area and along the Gen-Tie Line Route. The area secured provides sufficient
232 acreage to construct the Project, as proposed.

233

234 **Q. Do you have an update regarding securing an off-taker for the Project?**

235 A. We do not currently have an off-taker, but are actively marketing the Project to
236 utilities and commercial and industrial customers and have been selected for
237 multiple short-lists.

238

239 **Q. What is the anticipated schedule for the construction and in-service of the**
240 **Project?**

241 A. Project construction is anticipated to begin as early as Third Quarter 2019, and the
242 Project is anticipated to be operational by the end of 2020.

243

244 **Q. What is the estimated total cost of the Project?**

245 A. The estimated total cost to construct the Wind Project is approximately \$250 to \$280
246 million. The estimated total cost to construct the Gen-Tie Line Project is
247 approximately \$5 to \$7 million.

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V. PROJECT DEVELOPMENT AND PROJECT AREA SELECTION

Q. Please provide an overview of the Project’s development history.

A. Southern Power purchased Ruso Wind Partners, LLC, on December 21, 2017 from White Wind Holdings, LLC. At the time Southern Power acquired Ruso Wind, Ruso Wind had completed an initial assessment of the wind resource, submitted an interconnection request, and studied environmental compatibility; had begun securing easement agreements with interested landowners; and had started on-site MET data collection.

Since acquisition of Ruso Wind, Southern Power has assisted Ruso Wind with continued development efforts. To date, Ruso Wind has: installed three temporary MET towers and one Sonic Detection And Ranging (“SoDAR”) unit on the Project site to verify and quantify the strong wind resource in the area; acquired the property rights necessary to construct the Project; and engaged in on-going environmental site analysis and stakeholder coordination, which has been used to inform the Project design. The result of those efforts is the currently proposed Wind Project and Gen-Tie Line Project.

Q. What factors make the Project site a good site for wind development?

A. Ruso Wind selected the Project Area because it possesses certain traits that are essential to successfully developing a wind project: strong landowner and community support; an extraordinary wind resource; existing land uses and environmental features that are compatible with an appropriately-sited wind project; and electrical infrastructure near the facility to facilitate interconnection to the grid.

Q. Please describe Ruso Wind’s community outreach with respect to the Project.

A. Since Ruso Wind began development of the Project, it has tried to foster positive relationships with landowners and other stakeholders in the community. In addition

278 to meetings with individual landowners, below are examples of some of the outreach
279 conducted:

- 280 • On November 28, 2017, Ruso Wind met with Howard Rogers (Greeley Township
281 Chairman) to provide information regarding the Project.
- 282 • On December 7, 2017, Ruso Wind met with Don Schmidt (Iota Flats Township
283 Chairman) to provide information regarding the Project.
- 284 • On April 11, 2018, and November 8, 2018, Ruso Wind held landowner dinners to
285 discuss the progress of the Project.
- 286 • On May 2, 2018, Ruso Wind met with Dana Larsen (Ward County Engineer),
287 Travis Schmidt (Ward Assistant County Engineer), Nancy Simpson (Ward
288 County Planning and Zoning Administrator), and Ryan Kamrowski (Ward County
289 Tax Director) to discuss the Project, including benefits to the county.
- 290 • On December 19-20, 2018, Ruso Wind met with Project landowners to review
291 proposed locations of Project facilities.
- 292 • On December 20, 2018, Ruso Wind met with Shelly Wepler (Ward County
293 Commissioner), John Fjeldahl (Ward County Commissioner), Dana Larsen (Ward
294 County Engineer), Nancy Simpson (Ward County Planning and Zoning
295 Administrator), Cy Kittleson (Brilliant Township Commissioner), and David
296 Medalen (McHenry County Commissioner) to discussion the Project and its
297 benefits.
- 298 • On February 21, 2018, Ruso Wind met with Dana Larsen (Ward County
299 Engineer), Travis Schmidt (Ward Assistant County Engineer), Nancy Simpson
300 (Ward County Planning and Zoning Administrator), and Ryan Kamrowski (Ward
301 County Tax Director) to discuss the Project and required permits.

302 As a result of its extensive, on-going outreach effort, Ruso Wind has developed a
303 strong relationship with the Project landowners, as well as with the local community.

304

305 **Q. Were any concerns raised by the community regarding the Project?**

306 A. There were some minor requests we were able to accommodate, but no major
307 concerns were raised. For example, we removed Turbine T-4 to address a local
308 airstrip owner's and the North Dakota Aeronautics Commission's ("NDAC") concern.

309 Additionally, at McHenry County's request, we adjusted the Gen-Tie Line to be 150
310 feet away from the section line and met with the Minot branch of the North Dakota
311 Department of Transportation to address any potential concerns regarding the Gen-
312 Tie Line and placement of the Switching Station. See Exhibit 22. Also, at Ward
313 County's request, we met with the townships to obtain their input in advance of
314 obtaining our county permit.

- 315
- 316 **Q. Please describe what has previously been marked as proposed Exhibit 14.**
- 317 A. Proposed Exhibit 14 contains letters of support that were provided by Greely
318 Township, Iota Flats Township, and Brilliant Township. In these letters, the
319 Townships expressed their support for the Project because of its economic benefits,
320 such as tax revenue generated for the state and local governments and local
321 schools, creation of high-paying jobs, and lease payments to local landowners.

322

323 **VI. PROPOSED WIND PROJECT LAYOUT**

324

- 325 **Q. Please describe the factors considered when developing the Wind Project**
326 **layout.**
- 327 A. Once the site was selected and leases secured, Ruso Wind identified preliminary
328 turbine locations based on a wind resource analysis, engineering considerations,
329 site inspections, topography, known environmentally-sensitive areas, and input from
330 local, state and federal agencies and stakeholders. The design of the proposed
331 layout optimizes the wind resource, minimizes impact on existing resources and
332 potentially sensitive areas, avoids or minimizes potential environmental impacts,
333 complies with the Commission's setback requirements and all local zoning
334 requirements, and incorporates stakeholder input. The most current Project Area
335 and proposed layout for the Wind Project are shown on proposed Exhibit 6.

- 336
- 337 **Q. Did Ruso Wind specifically take into consideration landowner input in the**
338 **Project's design?**

339 A. Yes. Ruso Wind met with landowners who were anticipated to host Project facilities
340 to review the layout and receive feedback. Comments and suggestions made by
341 participating landowners were considered and will continue to be incorporated into
342 the final layout, when possible.

343

344 **Q. Has Ruso Wind determined what turbine model it will use?**

345 A. No, Ruso Wind is still determining what turbine model to use for the Project.

346

347 **Q. What turbines are currently under consideration for the Project?**

348 A. The turbine models proposed in the Wind Project Application were a combination of
349 two Siemens Gamesa turbine models, the SWT-2.415-108 and the SG-4.2-145.
350 Ruso Wind has proposed three additional potential turbine models, which are
351 described in the updated Table 7 in proposed Exhibit 2. The three columns
352 highlighted in green are the additional turbine models under consideration for the
353 Project.

354

355 Since the three General Electric (“GE”) turbine models were identified as potential
356 options after the Wind Project Application was filed, Ruso Wind provided the turbine
357 model specifications as updates in proposed Exhibit 2. In addition, Ruso Wind had
358 sound and shadow flicker modeling conducted to ensure that the GE turbine models
359 would comply with the Commission’s sound level requirement and Ruso Wind’s
360 shadow flicker commitment.

361

362 **Q. Are the turbine sites dependent upon which turbine model or models you
363 select?**

364 A. Yes. As shown in proposed Exhibit 33, most turbine locations will work for all turbine
365 models currently under consideration. However, there are a few locations that will
366 only work for certain smaller turbine models. As noted in proposed Exhibit 33, while
367 Ruso Wind has confirmed compliance with sound and shadow flicker requirements
368 for the GE turbine models being considered, Ruso Wind is still in the process of

369 confirming setback compliance for certain locations and will provide updated
370 information at the public hearing.

371

372 **Q. Will Ruso Wind limit the total number of turbines constructed within the Wind**
373 **Project Area to up to 47 turbines?**

374 A. Yes. Although a total of 63 turbine locations are proposed, only up to 47 turbines
375 would be installed.

376

377 **Q. Will Ruso Wind limit the total megawatts of wind energy constructed within**
378 **the Wind Project Area to up to 205 MW?**

379 A. Yes.

380

381 **Q. Might the total megawatts of the Project be less than 205 MW?**

382 A. Yes. The total megawatts will be dependent on the output of the specific turbine
383 model or models selected.

384

385 **VII. ENGINEERING AND OPERATIONAL DESIGN – WIND PROJECT**

386

387 **Q. Will the collection system be installed underground?**

388 A. Yes, with the exception of a few above-ground cabling junction boxes, the collection
389 system will be installed underground.

390

391 **Q. Please describe the foundations that will be constructed for the turbines?**

392 A. Final dimensions for foundations are dependent on geotechnical analyses and
393 turbine model selection, but it is estimated that the foundations could be
394 approximately 19 meters (62.3 feet) in diameter and 2 to 3 meters (7 to 10 feet) in
395 depth.

396

397 **Q. How wide will the access roads be?**

398 A. During construction, access roads will be approximately 50 feet wide. After
399 construction, the permanent access roads will be approximately 16 feet wide.

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Q. Do you plan to enter into a road use agreement with Ward County?

A. Yes, Ruso Wind will negotiate a memorandum of agreement with Ward County covering the Project’s road use in the county.

Q. What light mitigation technology will be used for the Project?

A. In accordance with State requirements, the Project will utilize an Aircraft Detection Lighting System (“ADLS”) for the Project. Lighting would be installed on wind turbines in accordance with Federal Aviation Administration (“FAA”) requirements.

Q. What is your understanding of when ADLS is activated?

A. Per FAA Advisory Circular 70/7460-1L – Obstruction Marking and Lighting with Change 2, the ADLS is activated when an aircraft is three nautical miles horizontally and 1,000 feet vertically from the nearest turbines.

Q. With respect to the light mitigation technology to be used for the Project, has FAA approval been obtained?

A. Ruso Wind has not yet filed for ADLS FAA approval because Ruso Wind has not yet selected the turbine(s), which is an important element to the ADLS system. Ruso Wind will seek the necessary FAA approval once the final turbine model(s) has been selected.

VIII. SETBACKS

Q. Is the Project designed to comply with all the setback requirements in the Siting Act and the Commission’s rules?

A. Yes. The Project is designed to comply with all setbacks outlined in the updated Table 8 in proposed Exhibit 2, and in Table 10 of the Gen-Tie Line Application (Exhibit 3).

430 **Q. Is the Project also designed to comply with all applicable local setback**
431 **requirements?**

432 A. Yes. In Ward County, an electrical wind generator tower must be set back a
433 distance of at least 1.1 times its height from roadway right-of-way (“ROW”),
434 farmsteads, and electrical transmission lines. The Wind Project is designed to meet
435 this requirement. Setback distances for transmission lines are not specified in Ward
436 County or McHenry County. No Project facilities would be located within McLean
437 County, therefore no setback requirements pertaining to McClean County apply.
438 Brilliant Township in Ward County has retained zoning authority, but does not specify
439 setback requirements for the Wind Project or the Gen-Tie Line. See *also* Table 9 in
440 proposed Exhibit 2.

441
442 **Q. In calculating your setback distances, did you measure from the center of the**
443 **base of the turbine to the closest point of the applicable feature?**

444 A. Yes. All setbacks have been applied measuring from the center of the base of the
445 turbine tower to the applicable feature, and using the tallest and largest rotor
446 diameter turbine model under consideration for that turbine site. As noted above,
447 Ruso Wind is in the process of confirming setback compliance for the GE turbine
448 models at certain locations, and will provide an update at the public hearing.

449
450 **Q. Has Ruso Wind prepared a figure that depicts setbacks and other siting**
451 **constraints for the Wind Project?**

452 A. Yes, that information is depicted in the constraints map provided as proposed Exhibit
453 8. The map includes the final Wind Project layout and associated facilities, as well
454 as state and local setbacks, applicable exclusion and avoidance areas, and other
455 features accounted for in design, such as residences, woodlands, wetlands,
456 microwave beam paths, and military installations. There is also a residence setback
457 chart on the right side of the map, which shows the shortest distance between each
458 occupied residence and a turbine.

459

460 **Q. Does the constraints map show participating and non-participating**
461 **residences?**

462 A. Yes. The red diamonds are non-participating occupied residences, and the pink
463 diamonds are participating occupied residences.

464

465 **Q. Are there any other features to be considered in turbine siting that are not**
466 **depicted on the map?**

467 A. Yes. This map does not show the location of cultural resources, which are
468 confidential.

469

470 **Q. Has Ruso Wind also prepared a chart summarizing information pertaining to**
471 **the occupied residences in and around the Wind Project Area?**

472 A. Yes, an Occupied Residence Summary Chart is provided as proposed Exhibit 9.
473 The chart shows the participant status of the residence, the location of the residence
474 with respect to the current Project Area, the distance to the closest Project turbine
475 for each occupied residence, the status of the nearest Project turbine (primary or
476 alternate), and the maximum modeled sound and shadow flicker levels for each
477 occupied residence (including both the Siemens Gamesa and GE turbine models).

478

479 **Q. In that Chart, five residences are shown as having estimated shadow flicker**
480 **above 30 hours per year. Will Ruso Wind obtain waivers from the owners of**
481 **those five residences?**

482 A. Ruso Wind has obtained a Shadow Flicker Acknowledgment and Waiver from the
483 owners of one of the five residences (see Exhibit 10), and is working to obtain
484 acknowledgments from the owners of the other residences (all but one residence is
485 owned by Project participants). In the event we are unable to obtain a waiver, Ruso
486 Wind will take the steps necessary to reduce shadow flicker levels at the residences
487 to 30 hours per year or less.

488

489 **Q. What is the shortest distance between a Project turbine and a participating**
490 **landowner's occupied residence?**

491 A. The shortest distance between a Project turbine and a participating landowner's
492 occupied residence is 1,646.3 feet. This is the distance between Occupied
493 Residence 14 and Turbine T-40.

494

495 **Q. What is the shortest distance between a Project turbine and a non-**
496 **participating landowner's occupied residence?**

497 A. The shortest distance between a Project turbine and a non-participating landowner's
498 occupied residence is 2,018.2 feet (three times the tallest proposed tip height is
499 1,771.8 feet). This is the distance between Occupied Residence 17 and Turbine T-
500 5.

501

502 **IX. PERMITS AND APPROVALS**

503

504 **Q. Has Ruso Wind obtained the county land use approvals required for the Wind**
505 **Project?**

506 A. Yes. Ward County issued a Special Use Permit for the Wind Project on May 7,
507 2019. See Exhibit 13.

508

509 **Q. Has Ruso Wind obtained the county land use approvals required for the Gen-**
510 **Tie Line Project?**

511 A. Yes. McHenry County issued a Zoning Permit and Conditional Use Permit for the
512 Gen-Tie Line Project on May 7, 2019. See Exhibit 13. As explained in a letter from
513 Ward County, dated May 14, 2019, Ward County does not require zoning or building
514 permits for the Gen-Tie Line. See Exhibit 13.

515

516 **Q. Is a conditional use permit required from any of the townships?**

517 A. Yes. Brillian Township in Ward County has retained zoning authority and requires a
518 conditional use permit for new utilities. On April 25, 2019, Brillian Township issued a
519 Conditional Use Permit for the Project (Wind Project and Gen-Tie Line Project). See
520 Exhibit 13.

521

522 **X. EXISTING INFRASTRUCTURE**

523

524 **Q. Did you coordinate with existing infrastructure owners in siting the Project**
525 **within the Project Area?**

526 A. Yes.

527

528 **Q. Please discuss Ruso Wind's process for identifying existing facilities and**
529 **coordinating with the facility owners.**

530 A. Ruso Wind provided a map and description of the proposed Project to local utility
531 providers and requested information regarding existing infrastructure in the Project
532 Area. Ruso Wind will continue to coordinate with infrastructure owners throughout
533 Project development, construction, and operation.

534

535 **Q. Do Project facilities avoid all microwave beam paths?**

536 A. Yes. Ruso Wind conducted a study identifying microwave beam paths and towers in
537 the Project Area, and a copy of the Microwave Study is included in Appendix N to
538 proposed Exhibit 1. Ruso Wind incorporated the information from the Microwave
539 Study into the Project's design to confirm that Project facilities avoid all microwave
540 beam path Fresnel Zones.

541

542 **Q. Does the Project comply with the recommended avoidance distances in the**
543 **Comsearch Land Mobile & Emergency Services Report conducted for the**
544 **Project (Exhibit 1, Appendix M)?**

545 A. Yes. Project turbines will not be sited within 77.5 meters of land mobile fixed-base
546 stations in order to avoid any possible impact to the communications services
547 provided by these stations. As described in the Comsearch report, the Project is not
548 anticipated to have a significant effect on the first responder, industrial/business land
549 mobile sites, area-wide public safety, and commercial E-911 communications
550 services in the Project Area.

551

552 **Q. Please describe Ruso Wind's coordination with the Minot Airforce Base.**

553 A. Ruso Wind has consulted with the Minot Airforce Base throughout the process of
554 finalizing the Wind Project layout. Ruso Wind communicated with the Minot Airforce
555 Base multiple times and provided the Wind Project layout (including turbine
556 locations, collector lines, roads, and crane walks). Ruso Wind also met with
557 representatives to discuss the locations of Project facilities. Ruso Wind incorporated
558 the Minot Airforce Base's comments in developing the current Wind Project layout.
559 As shown in proposed Exhibit 23, the Minot Airforce Base has no concerns
560 regarding the current Wind Project layout.

561
562 **Q. Please describe the existing public airports and private airstrips in the vicinity**
563 **of the Project.**

564 A. The nearest public airport to the Project Area is the Garrison Municipal Airport
565 located approximately 20 miles southwest. The Minot International Airport is located
566 approximately 23.5 miles northwest, and the Turtle Lake Municipal Airport is located
567 approximately 20.5 miles south.

568
569 There are no private landing strips within the Project Area. In coordination with the
570 North Dakota Aeronautics Commission ("NDAC"), Ruso Wind identified private
571 landing strips in the vicinity of the Project Area, including two within three miles.

572
573 **Q. Please describe the Project's efforts to avoid or minimize impacts to public**
574 **airports.**

575 A. As an initial step, Ruso Wind retained Capitol Airspace Group to conduct an
576 Obstruction Evaluation & Airspace Analysis for the Project to identify obstacle
577 clearance surfaces established by the FAA. The analysis confirmed there were not
578 obstacle clearance surfaces within the Project Area.

579
580 Additionally, in 2018, Ruso Wind received Determinations of No Hazard from the
581 FAA for preliminary turbine locations at a tip height up to 600 feet. On February 26,
582 2019, Ruso Wind submitted the revised turbine locations to the FAA. *See also*
583 Exhibit 21.

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Q. Please describe the Project’s efforts to avoid or minimize impacts to private airstrips.

A. In response to a scoping letter from Ruso Wind, the NDAC initially identified four potential private use airstrips in proximity to the Project and recommended contacting the landowners of the private airstrips. See Exhibit 25 (email dated August 27, 2018). A representative from Ruso Wind met with the owners of the Oak Creek and Semchenko airstrips to discuss the Project. See Exhibit 25. The owner of the Semchenko airstrip expressed support for the Project and did not have concerns with respect to the airstrip. In response to concerns raised by the owner of the Oak Creek airstrip and the NDAC regarding turbine location T-4, Ruso Wind agreed not to construct a wind turbine at the T-4 location. See Exhibit 25; see also Ruso Wind Comment, filed February 19, 2019.

Through communications with these two airstrip owners, and further coordination with the NDAC, Ruso Wind learned that the other airstrips identified are no longer active. See Exhibit 25 (emails dated October 3 and 5, 2018). The NDAC confirmed that Ruso Wind did not need to pursue contacting the other airstrips. See Exhibit 25 (emails dated October 3 and 5, 2018).

XI. PROPOSED GEN-TIE LINE DESIGN

Q. Is proposed Exhibit 11 a Map of the current Gen-Tie Line Route with pole locations?

A. Yes.

Q. Do the Project’s easements and agreements cover the adjusted Route and proposed Designated Corridor?

A. Yes.

Q. What factors went into routing the Gen-Tie Line?

615 A. The Gen-Tie Line Route was selected so as to minimize the length of the route
616 between the two end-points (the Project Substation and the Switching Station), while
617 minimizing impacts to existing land use, infrastructure, and environmentally-sensitive
618 areas (including United States Fish and Wildlife grassland easements). The route
619 was also dictated by the need to have landowners who were willing to grant
620 easements and a purchase option for the Switching Station.

621
622 **Q. What kind of structures does Ruso Wind plan to use for the proposed Gen-Tie**
623 **Line?**

624 A. The Gen-Tie Line would include a combination of wood and galvanized steel
625 structures as well as a combination of direct embed and concrete drilled pier
626 foundations. The conductor would likely be a VR2 Ibis aluminum conductor steel
627 reinforced (ACSR) 397.5. The monopole dead ends and substation dead ends
628 would be constructed on a concrete drilled pier foundation, with an overall
629 foundation diameter of approximately nine feet and embedded length of 30 feet.
630 The wood poles that have line angle over two degrees would be guyed, three-pole
631 direct embedded structures. The remaining structures would be directly embedded
632 into the ground, with an overall foundation diameter of approximately 2.5 to 3.5 feet
633 and embedded length of approximately 9 to 17 feet.

634
635 **Q. What will the structure height be?**

636 A. The average above-ground height of the structures would range from 75 to 120 feet.
637 The structure locations would be placed approximately 500 to 700 feet apart
638 depending on site-specific considerations. Final structure placement and actual span
639 lengths between structures would vary depending on geological, ecological, or
640 engineering constraints identified during the final design. The Gen-Tie Line will be
641 constructed to maintain minimum conductor-to-ground clearance as required by
642 National Electrical Safety Code rules.

643
644 **Q. Will any permanent access roads be required for the Gen-Tie Line?**

645 A. No.

646

647 **Q. Are there any occupied residences within 500 feet of the Gen-Tie Line?**

648 A. No.

649

650 **Q. Could you explain in more detail what is shown by the map marked as**
651 **proposed Exhibit 12?**

652 A. Proposed Exhibit 12 is a constraints map for the Gen-Tie Line Project. The map
653 includes the final Gen-Tie Line proposed Designated Corridor and Route, structure
654 locations, and the Switching Station location. The map also includes state and local
655 setbacks, applicable exclusion and avoidance areas, and other features accounted
656 for in design, such as residences, wetlands, microwave beam paths, and military
657 installations.

658

659 **XII. PROJECT CONSTRUCTION**

660

661 **Q. Discuss the personnel that will be involved in construction of the Project.**

662 A. The Project is expected to employ approximately 200 temporary workers to support
663 Project construction. The construction crews would include skilled labor personnel
664 as well as unskilled laborers.

665

666 **Q. Please describe the temporary facilities that will be required for construction**
667 **of the Wind Project.**

668 A. The temporary facilities that will be required for the construction phase of the Project
669 include a concrete batch plant, a laydown area for equipment, intersection
670 improvements to facilitate over-length turning, crane paths, working pads, and a
671 staging area for turbine delivery.

672

673 **Q. Please describe the temporary workspace that will be required for the Gen-Tie**
674 **Line during construction.**

675 A. Each Gen-Tie Line structure would require a 2,400 square foot pad during
676 foundation construction. The Switching Station would include a four-acre temporary

677 construction pad. These pads would be used to stage equipment and materials for
678 the construction of the Project. During construction, equipment and worker vehicles
679 would travel to and from site. Temporary access roads would parallel the Gen-Tie
680 Line Route where existing public roads or section lines cannot be
681 utilized. Temporary access roads would generally require little to no grading or
682 vegetation clearing during drier conditions and consist of driving vehicles across land
683 from the nearest public road, section line or private driveway. These temporary
684 roads may require grading and gravel placement if inclement weather is forecasted
685 during the construction period for the safe travel of equipment, and arrangements
686 would be made with the landowners regarding leaving these roads in place or
687 restoring them to prior conditions. Wire stringing sites would be located
688 approximately every 2 miles along the Gen-Tie Line Route. Each site will
689 encompass a one-acre temporary workspace.

690

691 **XIII. PROJECT OPERATION AND MAINTENANCE**

692

693 **Q. Discuss the personnel that will be involved in the operation and maintenance**
694 **of the Project.**

695 A. Ruso Wind anticipates that Project operation and maintenance will result in 8 to 12
696 long-term jobs.

697

698 **Q. What monitoring and maintenance are required for the Gen-Tie Line?**

699 A. Maintenance activities along the Gen-Tie Line Route include maintenance of
700 vegetation and upkeep of Gen-Tie Line components. Maintenance activities would
701 require six to eight full-time personnel that are also supporting the Wind Project; two
702 to four of these individuals would be on-site at any given time.

703

704 **Q. Will there be routine, scheduled inspections of the Wind Project to ensure it is**
705 **operating appropriately?**

706 A. Yes. Following construction, the Wind Project would undergo detailed inspection
707 and testing procedures before becoming operational. Inspection and testing would

708 occur for each component of the wind turbines, as well as the associated
709 communication, meteorological, collection and Supervisory Control and Data
710 Acquisition (“SCADA”) systems. Once operational, the Wind Project will undergo
711 routine inspections consistent with industry standards. For more information on
712 these routine inspections, see Section 5.2.1 of the Wind Project Application (Exhibit
713 1).

714

715 **Q. How will the Project be monitored between inspections?**

716 A. The Project will be remotely monitored 24/7 by operations staff via a SCADA
717 system. The SCADA system provides data on turbine generation and production,
718 availability, meteorology, and communication, and relays alarms and communication
719 errors.

720

721 **Q. Will the Project be designed, constructed and operated in compliance with all**
722 **applicable federal, state, and local regulations?**

723 A. Yes.

724

725 **XIV. ONE-CALL/EMERGENCY RESPONSE**

726

727 **Q. Will the Project participate in the North Dakota One-Call program, both prior to**
728 **construction and as a facility owner once the Project is constructed?**

729 A. Yes.

730

731 **Q. What steps will the Project take to prepare for a potential emergency situation**
732 **at the Project site?**

733 A. Prior to the start of construction, the Project team will meet with the local emergency
734 responders (fire department, police department, ambulance services, and hospital)
735 to share with them the Project layout, a general overview of the construction
736 timeline, and emergency points of contact (i.e., the onsite Safety Manager, Project
737 Manager, and Construction Manager). This information will also be formalized in an
738 Emergency Action Plan, which will include the proximity of the closest hospital

739 and/or clinics, driving route to these locations along with hours, 911 or the
740 appropriate telephone numbers to dial in the case of emergency, and estimated
741 travel time for an ambulance service to arrive. As part of this Emergency Action
742 Plan, a 911 address will be established for the laydown area, which will be the
743 location for the construction office trailers, the primary meeting area in case of an
744 emergency, and will be the meeting location for emergency services to check in.
745 Each of the emergency responders will be provided with coordinates for the
746 individual turbine sites, along with the site layout drawing to allow them to safely
747 travel to the turbine locations in the case of an emergency at a turbine location
748 where the individual is unable to be transported safely back to the laydown area.
749 Radio communication, along with cell phone communication, will be checked and
750 verified throughout the Project area so that in case of an emergency, proper
751 notifications can be made and roads to the laydown yard or to the closest highway
752 can be kept clear to allow safe transportation of emergency vehicles.

753
754 The Project team will also work with the local emergency responders to set up a
755 mock rescue to help both the construction team and the emergency responders get
756 comfortable with travel times and points of contact, and be prepared for different
757 emergency scenarios. The exact timing of this mock rescue will depend on the
758 schedule of the emergency responders and may be done at one or more times
759 during the construction timeline.

760
761 The Emergency Action Plan is also reviewed periodically as part of the weekly and
762 monthly safety topics for the site construction team. This is to ensure that the
763 construction team is familiar with what steps to take in case of an emergency, to
764 educate new employees, and to provide a refresher for other employees.

765

766 **XV. DECOMMISSIONING AND RESTORATION OF PROJECT AREA**

767

768 **Q. Discuss the estimated life of the Wind Project, and decommissioning and**
769 **restoration of the Project site.**

770 A. The estimated life of the Wind Project is expected to be 30 years. Ruso Wind will
771 file a decommissioning plan for review by the Commission prior to the
772 commencement of operations. Ruso Wind may explore alternatives to Project
773 decommissioning, such as retrofitting the turbines and power system with upgrades
774 based on new technology. However, if the Project is decommissioned, Ruso Wind
775 will restore the site in accordance with the Commission's decommissioning rules.

776

777 **XVI. TREE AND SHRUB MITIGATION SPECIFICATIONS**

778

779 **Q. With respect to tree and shrub clearing, is Ruso Wind requesting the ability to**
780 **clear an area wider than 50 feet in some locations within the Wind Project Area**
781 **and along the Gen-Tie Line Route?**

782 A. Yes. There are some locations in the Wind Project Area and along the Gen-Tie Line
783 Route where we may need to remove trees and/or shrubs in areas wider than 50
784 feet. There are certain areas in the Wind Project Area where we will need to clear
785 areas up to 100 feet wide in order to construct collection lines, access roads, and/or
786 crane walks. Along the Gen-Tie Line Route, there are areas where we will need to
787 clear up to 150 feet wide, depending upon pole locations, span length, and other
788 factors. For this reason, Ruso Wind is requesting Commission approval to clear an
789 area more than 50 feet wide for these portions of the Wind Project Area and the
790 Gen-Tie Line Route.

791

792 **XVII. PROJECT BENEFITS**

793

794 **Q. What are some of the benefits of the proposed Project?**

795 A. The Project will generate tax revenue both locally and for the State. The Project is
796 expected to create both short-term and long-term positive impacts to the local
797 economy without interfering with the existing land use. For example, the Project will
798 create steady, well-paying jobs locally. The Project would also create an additional,
799 diversified source of income for landowners receiving lease payments and
800 landowner-investors receiving profits from the sale of electricity, which could raise

801 the per capita income in Ward County and the surrounding area. Construction of the
802 Project could potentially provide temporary revenue increases in the vicinity of the
803 Project due to increased demand for lodging, food services, fuel, and general
804 supplies. Personal income could also be generated by circulation and recirculation
805 of dollars paid out by the Project as business expenditures, as well as state and
806 local taxes.

807

808 **XVIII. CONCLUSION**

809

810 **Q. Based on the studies and analyses conducted, and the testimony you have**
811 **presented today, what are some of the conclusions Ruso Wind has reached**
812 **regarding the proposed Project?**

813 A. Ruso Wind has sited the Project to comply with applicable local zoning and the
814 Commission's siting requirements, as well as to minimize potential impacts to
815 existing land uses, cultural resources, natural resources, and existing infrastructure.
816 The Project also has strong landowner and community support, and will provide
817 significant benefits to the local community and the state. Therefore, Ruso Wind
818 respectfully requests that the Commission issue a Certificate of Site Compatibility, a
819 Certificate of Corridor Compatibility, and a Route Permit for the Project.

820

821 **Q. Does this conclude your Testimony?**

822 A. Yes.

823

MORGAN LAWTON BERRY, PE

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daytime: (205) 992-0172

Education and Certifications

- Bachelor of Chemical Engineering (Environmental Specialization), Magna Cum Laude, Auburn University: 05/2001
- Certified Professional Engineer in Alabama (#30020)

Professional Work Experience**Southern Power Company****Project Manager**, Project Development (Birmingham, AL): 07/2015 – Present

- Lead developer for SPC's first two self-developed wind projects (~400MW); responsibilities include the following:
 - Leading a cross functional team of professionals that are highly proficient in matters related to existing, new and emerging utility scale wind generation technologies (turbines, blades, balance of plant, batteries, etc.)
 - Directing the planning, priority and execution of teams responsible for all project development activities
 - Creating and driving processes for organically developed projects as well as project acquisitions
 - Maintaining accountability for integrated project scopes, schedules and budgets within defined tollgates
 - Acting as single point of contact during the project development process as well as the diligence process; full scope project management through board approval
 - Driving a fully integrated project development schedule that links all critical development activities (permitting, tax abatement negotiation, OEM contracting, procurement, energy assessment and prediction, transmission, construction, etc.)
 - Holding commercial responsibility for major equipment supply contracts, etc.
 - Ensuring collaboration among a multi-disciplinary team of internal and external resources to promote the timely completion of all tasks leading to the success of the project
 - Creating cost competitive projects by challenging all project cost (capital and operating) inputs for business case
 - Evaluating plant performance criteria and make equipment selections that optimize technical adequacy, overall lifecycle cost and financial return
 - Transitioning developed projects to EPC / implementation team for construction
 - Supporting asset divestments
- Led technical diligence and directly negotiated multiple contacts for 143MW Cactus Flats wind project
- Led technical diligence activities for >1GW successful solar project acquisitions for SPC, including Decatur Parkway, Decatur County, Roserock, Garland, Lamesa, Boulder, & Henrietta projects
- Managed first phase of implementation / construction of 100MW of solar projects in central Georgia
- Directly manage small team of Associates performing due diligence activities and business case development
- Regularly interface with executive management to update status, budget, and challenges of multiple projects

Sr. Engineer, Generation Development (Birmingham, AL): 03/2011 – present

- Performed detailed due diligence reviews for multiple merger & acquisition opportunities, including traditional (gas) and renewable (biomass / solar) projects
- Supported the development of greenfield self-developed projects as well as projects / portfolios acquisitions
- Supported project development efforts including due diligence, business case development, risk assessment, and contract negotiation
- Supported the development siting strategy and the identification of prioritized areas for project development based on technology application and expected addressable market

Southern Company Generation – Engineering and Construction Services**Sr. Engineer**, Power Engineering / Chemical Processes (Birmingham, AL): 10/2006 – 03/2011

- Lead process engineer for the Scherer SCR projects; responsibilities include development of mass balances and design basis, specification of and procurement for critical process equipment, drawing review, budget / schedule support, and vendor interface
- Owner's engineer for 3rd party balance of plant design for Scherer SCR projects
- Developed in-house expertise on emission control for biomass sources, including detailed assessment of and development of comments to IB MACT rule
- Lead process engineer for Branch FGD conceptual design (through 10/2007); responsibilities included development of mass balances, design basis, scope book, and cost estimate

Exhibit 29-A

Sr. Engineer, Power Engineering / Chemical Processes (Birmingham, AL): 10/2006 – 03/2011, continued

- Power Engineering lead for SCR catalyst volume procurement; prepared specification and led bid evaluation process for volume procurement of SCR catalyst for new SCR projects; effort resulted in \$15M+ savings across system
- Led SCR catalyst procurement process for Franklin 3 combined cycle project
- Developed methodology for calculating startup emissions for McDonough combined cycle project

Engineer II, Project Engineering (Birmingham, AL): 11/2005 – 10/2006

- Coordinated inter-disciplinary teams in developing technical requirements and specifications for the Hammond FGD project and regional limestone grinding facilities in Alabama and Georgia
- Developed and implemented database tool for tracking status of retrofit projects

ExxonMobil Production Company – US Production

Sr. Engineer / Sr. Project Engineer / Project Engineer, Operations Technical Surface Dept.

(Houston, TX): 06/2004 – 08/2005 & (New Orleans, LA): 06/2001 – 06/2004

- Managed multiple engineering projects, including feasibility evaluation, engineering design, budget & schedule development, funding commitment, procurement, contractor management, construction, progress reporting & cost tracking, startup, and project close-out
- Served as primary contact to Operations personnel at several offshore oil & gas production facilities; responsible for providing day-to-day technical support, surveillance of operating conditions, and developing opportunities to increase efficiency, maintain integrity, and lower operating costs
- Developed, implemented, and sustained risk-based strategies to increase system-wide equipment reliability through monitoring, maintenance, and inspection technologies

Southern Nuclear – Plant Farley

Engineering Intern, Engineering Support Department (Columbia, AL): 06/2000 – 08/2000

- Gained basic understanding of nuclear power plant operation
- Compiled fire protection & licensing databases; participated in plant cooling water flow validation

Skills and Qualifications

- Proven ability to learn new and challenging technical material
- Skilled in technical computer applications including data analysis and process simulation

Honors

- Graduate of Engineering & Construction Services 2008 Leadership Development Program
- Southern Co. Generation “One Team” award for SCR catalyst volume procurement: January 2008