

UNITED STATES OF AMERICA 151 FERC ¶ 62,004
FEDERAL ENERGY REGULATORY COMMISSION

Duke Energy Progress, Inc.

Project No. 2206-030

ORDER ISSUING NEW LICENSE

(Issued April 1, 2015)

INTRODUCTION

1. On April 26, 2006, Carolina Power & Light filed an application pursuant to sections 4(e) and 15 of the Federal Power Act (FPA)¹ for a new license to continue operation and maintenance of its 108.6 megawatt (MW) Yadkin-Pee Dee Hydroelectric Project No. 2206 (Yadkin Pee-Dee Project, or project). The project is located on the Yadkin and Pee Dee Rivers in Anson, Montgomery, Richmond, and Stanly Counties, North Carolina. The project does not occupy federal land.
2. On March 7, 2013, Carolina Power & Light notified the Commission that it had changed its name to Duke Energy Progress, Inc. (Duke Energy), effective April 29, 2013. On February 4, 2014, the Commission amended the license accordingly.²
3. As discussed below, this order issues a new license for the Yadkin-Pee Dee Project.

BACKGROUND

4. The Commission issued the original license for the Yadkin – Pee Dee Project on May 19, 1958,³ and the license expired on April 30, 2008.⁴ Since then, the project has operated under an annual license pending the disposition of the new license application.

¹ 16 U.S.C. §§ 797(e) and 808 (2012).

² *Progress Energy Carolinas, Inc.*, 146 FERC ¶ 62,098 (2014). Carolina Power & Light did business as Progress Energy Carolinas, and was generally referred to as Progress Energy.

³ The Pee Dee River is a navigable waterway from the Atlantic Ocean upstream to at least Cheraw, South Carolina. *See Carolina Aluminum Co.*, 1 F.P.C. 495 (1937). The Yadkin-Pee Dee Project is located on the Pee Dee River upstream of the reach of the river found to be navigable. Since it is located on the headwaters of a navigable

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5. On December 28, 2006, the Commission issued a public notice that was published in the *Federal Register* accepting the application for filing and soliciting motions to intervene and protests. The notice set February 26, 2007, as the deadline for filing motions to intervene and protests.⁵ The South Carolina Department of Natural Resources (South Carolina DNR), the U.S. Department of the Interior (Interior), the North Carolina Wildlife Resources Commission (North Carolina WRC), the North Carolina Department of Environment and Natural Resources (North Carolina DENR), and the South Carolina Department of Health and Environmental Control (South Carolina DHEC) filed notices of intervention.⁶ The National Marine Fisheries Service (NMFS) filed a late notice of intervention.⁷ Alcoa Power Generating, Inc. (Alcoa Power); American Rivers and the Coastal Conservation League, collectively; The Nature Conservancy, Richmond County, the Carolina Forest Association, Anson County, the City of Rockingham (Rockingham), and the Sandhill Rod and Gun Club filed motions to intervene.⁸

6. On March 13, 2007, the Commission issued a public notice that was published in the *Federal Register* indicating the application was ready for environmental analysis and soliciting comments, recommendations, terms and conditions, and prescriptions.⁹ The notice set May 12, 2007, as the deadline for filing comments, recommendations, terms

waterway, the Yadkin – Pee Dee Project is located on a Commerce Clause waterway. Accordingly, the Yadkin – Pee Dee Project is required to be licensed pursuant to section 23(b)(1) of the FPA, 16 U.S.C. § 817(1) (2012), because it is located on a Commerce Clause waterway, affects interstate and foreign commerce through its connection to the interstate power grid, and construction occurred at the project after 1935.

⁴ 19 F.P.C. 704 (1958).

⁵ 72 *Fed. Reg.* 779-780 (January 8, 2007).

⁶ Under Rule 214(a) of the Commission's Rules of Practice and Procedure, South Carolina DNR, Interior, North Carolina WRC, North Carolina DENR, and South Carolina DHEC became parties to the proceeding upon timely filing of their notices of intervention. *See* 18 C.F.R. § 385.214(a) (2014).

⁷ Late intervention was granted to NMFS on February 6, 2014.

⁸ Timely, unopposed motions to intervene are granted by operation of Rule 214 (c) of the Commission's Rules of Practice and Procedure. *See* 18 C.F.R. § 385.214(c) (2014).

⁹ 72 *Fed. Reg.* 12792-12793 (March 19, 2007).

and conditions, and prescriptions. Interior, the U.S. Fish and Wildlife Service (FWS), North Carolina DENR, North Carolina WRC, South Carolina DHEC, South Carolina DNR, NMFS, The Nature Conservancy, American Rivers, the Coastal Conservation League, and Rockingham filed comments and recommendations. Duke Energy filed reply comments on June 14 and 29, 2007, in response to recommendations filed by Rockingham and FWS, respectively.

7. On July 30, 2007, Duke Energy filed a Comprehensive Settlement Agreement (Agreement). The Agreement resolved all outstanding issues associated with the relicensing, with the exception of fish passage. The Agreement was signed by Duke Energy (then Progress Energy); North Carolina DENR; North Carolina WRC; South Carolina DHEC; South Carolina DNR; Montgomery County, North Carolina; the Fairway Shores Homeowner's Association; the Pee Dee River Coalition; the Carolina Forest Association; Land Trust for Central North Carolina; The Nature Conservancy; Jordan Timberlands; and the Coastal Conservation League. Duke Energy adopted the terms of the Agreement as its relicensing proposal. The Commission issued public notice of the Agreement on July 31, 2007, with a comment deadline of August 20, 2007. Comments were filed by the Coastal Conservation League; Rockingham and American Rivers, collectively; and Anson County, North Carolina.¹⁰

8. A draft Environmental Impact Statement (draft EIS), prepared by Commission staff and issued on September 28, 2007, analyzed the effects of the proposed project (*i.e.*, the Agreement) and alternatives to it. Comments on the draft EIS were filed by Interior; FWS; NMFS; North Carolina WRC; North Carolina DENR; South Carolina DHEC; the U.S. Environmental Protection Agency; Alcoa Power; Duke Energy; Rockingham and American Rivers, collectively; the Coastal Conservation League; The Nature Conservancy; Linda and Jefferson Bruton; and Joy B. Hildreth (representing JMG Land & Timber Inc.).

9. On February 5, 2008, Duke Energy filed the Yadkin – Pee Dee River Diadromous Fish Passage Plan Agreement (Fish Passage Agreement). The Fish Passage Agreement is intended to resolve fish passage issues at the project. The Fish Passage Agreement was signed by Duke Energy (then Progress Energy), FWS, NMFS, North Carolina WRC, and South Carolina DNR. Duke Energy adopted the terms of the Fish Passage Agreement as part of its relicensing proposal.

¹⁰ On July 10, 2012, and November 4, 2014, John Tedder filed comments relating to ownership of lands that Duke Energy proposes to transfer to North Carolina. Duke Energy filed reply comments on November 14, 2014. Mr. Tedder's comments raise issues of private property rights that are not within the Commission's jurisdiction, but rather should be addressed in the appropriate state court.

10. Commission staff prepared a final EIS, which was issued on April 18, 2008.^{11, 12} NMFS filed comments on May 8, 2008; the U.S. Environmental Protection Agency filed comments on May 27, 2008; Duke Energy filed comments on May 29, 2008; and Anson County, North Carolina filed comments on June 9, 2008. Rockingham and American Rivers, collectively, filed comments on August 15, 2008, July 24, 2013, May 23, 2014, and June 23, 2014.¹³

11. The interventions, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue the license.

PROJECT DESCRIPTION

A. Project Area

12. The Yadkin – Pee Dee Project is located in the Pee Dee River Basin, which drains a portion of the eastern slopes of the Blue Ridge Mountains and some of the Piedmont areas of central North Carolina.¹⁴ The Yadkin River, from its headwaters near Blowing Rock, North Carolina, flows 203 miles in an easterly direction then turns south across North Carolina's densely populated mid-section that includes the urban areas of Winston-Salem, Charlotte, Statesville, Lexington, and Salisbury. It flows through five reservoirs before it joins the Uwharrie River at the upper end of Lake Tillery to form the Pee Dee River. The Pee Dee River then flows through Lake Tillery and Blewett Falls Lake, and for another 230 miles to South Carolina's Winyah Bay and the Atlantic Ocean.

13. The flow of the Yadkin River is controlled by seven dams operated by the U.S. Army Corps of Engineers (Corps), Alcoa Power, and Duke Energy. The Corps owns the W. Kerr Scott Dam, which is the uppermost dam in the river basin at river mile (RM) 385. The remaining six dams include, from upstream to downstream: (1) High Rock at RM 253, Tuckertown at RM 244.3, Narrows (Badin Lake) at RM 236.3, and Falls at RM 234, which are licensed to Alcoa Power as the Yadkin Hydroelectric Project No. 2197;

¹¹ Unless otherwise specified, references in this order to the EIS are to the final EIS.

¹² The final EIS includes an analysis of the Fish Passage Agreement.

¹³ Rockingham and American Rivers styled their July 24, 2013; May 23, 2014; and June 23, 2014 filings as a motion to supplement the record, a motion for a recreational flow study, and a motion to supplement the developmental analysis in the EIS, respectively. Duke Energy filed responses to these motions on August 8, 2013; June 9, 2014; and July 23, 2014. All of these filings are being treated as comments.

¹⁴ See EIS at 52-3.

and (2) Tillery at RM 218 and Blewett Falls at RM 188.2, which are licensed to Duke Energy as the Yadkin – Pee Dee Hydroelectric Project No. 2206.

B. Project Facilities

14. The project consists of two developments: the Tillery development and the Blewett Falls development. Each development includes a dam, powerhouse, impoundment, and project recreation sites. A detailed project description is contained in Ordering Paragraph (B)(2) and summarized below.

1. Tillery Development

15. The Tillery development consists of a 16-mile-long, 5,697-acre reservoir (Lake Tillery) that has a useable storage capacity of 84,150 acre-feet at a normal pool elevation of 278.2 feet National Geodetic Vertical Datum.¹⁵ Lake Tillery is impounded by an approximately 2,752-foot-long dam (Tillery Dam), which includes non-overflow sections, a 758-foot-long spillway section equipped with 18 radial spillway gates and a 14-foot-wide trash gate, and a 310-foot-long powerhouse intake.

16. Water from Lake Tillery flows through the powerhouse intake to a concrete powerhouse that is integral with the dam. The powerhouse houses three 22-MW Francis turbine-generators and one 18-MW fixed-blade propeller turbine-generator unit, for a total installed capacity of 84 MW.

17. There are no primary transmission lines associated with the development. Power from the Tillery development is sent to a sub-station, located in the vicinity of the powerhouse.

2. Blewett Falls Development

18. The Blewett Falls development consists of a 12-mile-long, 2,866-acre reservoir (Blewett Falls Lake) that has a usable storage capacity of 30,893 acre-feet at a normal pool elevation of 179.0 feet. Blewett Falls Lake is impounded by a 3,488-foot-long dam that is composed of non-overflow sections, an ungated spillway section that is equipped with flashboards 4 feet in height, and a 300-foot-long powerhouse intake.

19. Water from Blewett Falls Lake flows through a 300-foot-long forebay channel to the powerhouse, which houses three 3.2-MW and three 5-MW turbine generator units

¹⁵ The Agreement presents lake elevations in North American Vertical Datum (NAVD88), which is NGVD minus 0.9 foot. However, because the EIS and subsequent comment letters reference lake elevations in NGVD, elevations referenced in this order are in NGVD.

(each with its own penstock and headgate), with a total installed capacity of 24.6 MW. These units discharge to a 900-foot-long tailrace, which results in a 1,750-foot-long bypassed reach of the Pee Dee River.¹⁶

20. There are no primary transmission lines associated with the development. Power from the Blewett Falls development is sent to a sub-station, located in the vicinity of the powerhouse.

C. Project Recreation Facilities

21. Under the current license, Duke Energy operates and maintains, or provides for the operation and maintenance of, facilities at 10 project recreation sites. Of these, six sites are located at the Tillery development: (1) Swift Island Access Area; (2) Stony Mountain Access Area; (3) Norwood Access Area; (4) Lilly's Bridge Access Area; (5) Tillery Dam Canoe Portage; and (6) Tillery Tailrace Fishery Access Area. The remaining four sites are located at the Blewett Falls development: (1) Grassy Island Access Area; (2) Pee Dee Access Area; (3) Blewett Falls Tailwater Access Area; and (4) Blewett Falls Dam Canoe Portage. Project recreation sites provide a variety of recreation amenities that include boat ramps, boat docks, canoe portages, fishing piers, picnic tables, and parking.

D. Project Boundary

22. The project boundary for each development encloses the lake, project structures, and the project recreation sites noted above. Except where the boundary widens to enclose project structures and recreation facilities, it generally follows the normal full pool elevations of Lake Tillery (278.2 feet) and Blewett Falls Lake (179.0 feet).

E. Current Project Operation

23. The Yadkin – Pee Dee Project is operated in coordination with flow releases from Alcoa Power's upstream 209-MW Yadkin Project. Other than the inflow from the unregulated Uwharrie River, which has a drainage area of 373 square miles, inflows to Tillery depend on outflows from the peaking operation of the Yadkin Project's High Rock development.¹⁷

¹⁶ The bypassed reach is that segment of the Pee Dee River between Blewett Falls Dam and where flows from the powerhouse rejoin the river.

¹⁷ Alcoa Power operates its Yadkin Project in accordance with a 1968 headwater benefits agreement with the licensee of the Yadkin – Pee Dee Project. According to the 1968 agreement, Alcoa Power regulates weekly average stream flow from Falls Reservoir to provide a flow not less than 1,500 cubic feet per second (cfs) during the 10-week period preceding the recreation season (May 15 through September 15); 1,610 cfs from

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1. Tillery Development

24. Duke Energy operates the Tillery development as a peaking facility. Typical operation includes daily generation during weekdays, with load-following operation during the peak demand hours.¹⁸ The development typically does not generate on weekends, but may do so based on demand. The maximum turbine hydraulic capacity at the Tillery development is about 18,000 cfs.

25. The existing license authorizes Duke Energy to draw down Lake Tillery up to 22 feet from the normal full pool elevation of 278.2 feet. Duke Energy, however, manages Lake Tillery to limit daily drawdowns to not more than 4 feet from full pool under normal operating conditions. Per an informal agreement with North Carolina WRC, Duke Energy maintains water levels in Lake Tillery within 1 foot of normal full pool from April 15 to May 15 to protect largemouth bass spawning habitat.

26. Duke Energy is required, under the existing license, to release a year-round continuous minimum flow of 40 cfs from the Tillery development into the Pee Dee River directly downstream from Tillery Dam. This flow is typically provided via leakage through the spillway radial gates and/or the trash gate. Periodic measurements by the U.S. Geological Survey (USGS) downstream from Tillery Dam show that the actual minimum flow has been 70 to 80 cfs.

27. Outflow from the Tillery development flows 19 miles through the Tillery Reach before entering Blewett Falls Lake. It takes about 8 to 10 hours for flow released at Tillery Dam to reach Blewett Falls.

2. Blewett Falls Development

28. Duke Energy normally operates the Blewett Falls development once a day in a block-loaded mode,¹⁹ with either a three-unit block load (3,600 cfs), or a six-unit block load (7,200 cfs), depending on inflow. Consequently, flows in the Pee Dee River

May 15 through July 1; and 1,400 cfs from July 1 through September 15. *See* EIS at 61.

¹⁸ Load-following is defined as a form of generation where a power plant adjusts its power output as demand for electricity fluctuates throughout the day. A load-following facility will either shut down or greatly curtail output during the night and early morning, when the demand for electricity is the lowest.

¹⁹ A block load is a set output or load in MW scheduled for a period of time. The generation output graph would be shaped like a block (*e.g.*, 0 to 10 MW at the start of hour 1 and running for 3 hours at constant 10-MW output, then returning to 0 MW at the end of 3 hours).

downstream from the Blewett Falls Dam change once or twice daily, unlike the load-following operation at Tillery, where outflows can vary throughout the day. Inflow between 7,200 cfs and the powerhouse hydraulic capacity of 9,200 cfs is passed through the turbines, with excess flow being discharged over the spillway.

29. Blewett Falls begins generating at about the same time as the Tillery development, drawing down the reservoir to receive inflows. The existing license authorizes Duke Energy to draw down Blewett Falls Lake up to 17 feet from the normal full pool elevation of 179.0 feet. Because of operational concerns with the intakes, however, Duke Energy limits the drawdown to a maximum of 11 feet. Under normal operation, when river flow is less than 7,000 cfs, the daily drawdown ranges from 2 to 4 feet, which allows Duke Energy to capture flows released from the Tillery development, minimize spillage at the Blewett Falls development, and reregulate discharges from the Tillery development to reduce flow fluctuations downstream in the Pee Dee River.

30. Under low-flow conditions, the Blewett Falls development is sometimes operated with a single generating unit (1,200 cfs). When tributary inflow downstream from the project is minimal, flows released from Blewett Falls Dam account for a substantial portion of the flow in the Pee Dee River downstream.

31. Under the current license, Duke Energy is required to release a year-round continuous minimum flow of 150 cfs from the Blewett Falls development into the Pee Dee River directly downstream from Blewett Falls Dam. The minimum flow is measured 3.3 miles downstream from Blewett Falls Dam, at USGS gage no. 02129000. Based on flow records at this gage, the actual continuous flow in the Pee Dee River at this location has been seldom less than 250 cfs.

F. Proposed Project Operation and Environmental Measures

32. Duke Energy proposes to operate and maintain the project in accordance with the relicensing Agreement and the Fish Passage Agreement. The provisions of the Agreement are summarized below in sections 1 through 6, and the provisions of the Fish Passage Agreement are summarized below in section 7.²⁰

1. Minimum Flows and Other Stream Protection Measures

33. To enhance aquatic habitat downstream from Tillery Dam,²¹ Duke Energy proposes to provide a minimum flow at the Tillery development of 330 cfs year-round

²⁰ The parentheticals reference sections of the Agreement or Fish Passage Agreement.

²¹ The character of the Tillery Reach is undeveloped. The reach contains a blue
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(section 2.1.4.2). To enhance spawning conditions for American shad, Duke Energy further proposes to increase flows from Tillery to a minimum flow of 725 cfs, for a period of eight weeks, beginning as early as March 15, but no later than March 22. The 725-cfs minimum flow release would begin at the first passage of American shad past Blewett Falls Dam.

34. To enhance recreational boating downstream from the Tillery development, Duke Energy proposes to release 1,750 acre-feet of water per year, above and beyond the proposed minimum flows mentioned above (section 2.1.4.3). The volume of water can be increased to 1,950 acre-feet if releases for recreational purposes are made for at least four days between May 16 and May 31, or between September 1 and September 15. The four days can occur during either the spring or fall periods, or during the two periods combined. Duke Energy would manage the recreation flow releases through a Recreational Release Plan to be developed in coordination with North Carolina DENR and North Carolina WRC.

35. To protect water quality and aquatic resources in the Pee Dee River, Duke Energy proposes to release minimum flows from Tillery Dam so as not to draw high temperature surface water from Lake Tillery, if high temperature gradients are found in the upper 6 inches of the lake (section 2.1.4.4).

36. To enhance aquatic habitat and resources downstream from Blewett Falls Dam, Duke Energy proposes to provide minimum flows of 2,400 cfs from February 1 through May 15; 1,800 cfs from May 16 through May 31; and 1,200 cfs from June 1 through January 31 (section 2.1.3.2), subject to specific inflows being available from the Yadkin Project.²² Maintenance of these minimum flows would take precedence over maintenance of the lake levels discussed in the following section. The minimum flows may be reduced to leakage for two 5-hour periods each year to test the black start capabilities of the Blewett Falls development's turbines (section 2.1.3.4). The black-start tests would occur in October, November, December, or January

heron rookery, bald eagle nests, islands and shoals, and is adjacent to the FWS' Pee Dee National Wildlife Refuge. There are public access areas located along the Tillery Reach, including North Carolina WRC's Highway 109 Access Area. The Grassy Island shoals located above Blewett Falls Lake limit upstream motorized boating. See EIS at 91-92.

²² Duke Energy's proposed flows are contingent on Alcoa Power releasing the following minimum flows from Falls Dam as part of a new license for the upstream Yadkin Project: 2,000 cfs from February 1 through May 15, 1,500 cfs from May 16 through May 31, and 1,000 cfs from June 1 through January 31. Duke Energy proposes no other minimum flows should it not receive these flows from the Yadkin Project.

37. To enhance fish spawning conditions downstream from Blewett Falls Dam, Duke Energy proposes to adjust operations by gradually increasing and decreasing unit load (*i.e.*, with up- and down-ramping rates) between February 1 and May 15 for either one 14-day period and one 10-day period, or for five 5-day periods, with individual periods separated by 1 week (section 2.1.3.3). A Spawning Flow Management Team²³ would select the flow adjustment time periods based on water temperature and weather data, projected inflow conditions, and observations of fish spawning behavior. Duke Energy would prepare annual reports of the flow adjustment periods, including meeting notes, flow records from streamflow gages, and plant operations. After 5 years, the Spawning Flow Management Team would review the past years' flow adjustment operations and recommend changes, if necessary.

38. To monitor flow releases from Tillery Dam, Duke Energy proposes to install and maintain a continuous flow monitoring gage downstream from the Tillery development near the State Highway 731 bridge (section 2.1.4.5). To monitor inflow to Blewett Falls and minimum flow releases downstream from Blewett Falls Dam, Duke Energy would: (a) continue to operate and maintain the existing USGS streamflow gage located at Rockingham, North Carolina; and (b) continue its partial funding of the existing USGS streamflow gage on the Rocky River and fully fund the gage, if necessary (section 2.1.3.5). For the first 10 years of the license, Duke Energy would contract with USGS for the operation and maintenance of these gages. Duke Energy proposes to prepare an annual report documenting compliance with the minimum flow requirements.²⁴ Sections 2.1.3.5 and 2.1.4.5 of the Agreement provide for releasing flows greater than the required minimum flows to compensate for periods when the minimum flows are not met (*i.e.*, a true-up period).²⁵

²³ A Spawning Flow Management Team, consisting of Duke Energy, Alcoa Power, and the resource agencies, would determine how best to operate the Blewett Falls development during periods of changing operations. The Agreement does not define which resource agencies would be included on the Spawning flow Management Team. Therefore, we define them to include the same agencies that will compose the Resource Management Team to review fish passage measures: FWS, NMFS, North Carolina WRC, and South Carolina DNR.

²⁴ Compliance with the minimum flow requirements for the Tillery and Blewett Falls Developments, as measured at requisite streamflow gages, would be presumed if flows recorded at the gages are within 5 percent of the required minimum flow release.

²⁵ A "true-up" period is defined as follows: flows that fall below the minimum must be offset by flows greater than the minimum (during minimum release periods) in the same month for a reasonably equivalent amount of time, or no later than the 15th of the following month if necessary.

39. To protect aquatic habitat and organisms in the Pee Dee River during periods of low inflow, Duke Energy proposes to comply with the provisions of the February 2007 Low Inflow Protocol (LIP) (sections 2.1.5 and 2.2.3.5). The LIP provides a mechanism for adjusting minimum flows and lake levels in coordination with other large reservoirs in the basin (*i.e.*, Alcoa Power's Yadkin Project) during drought conditions to augment flows in the Pee Dee River.

40. Duke Energy would to begin releasing the proposed minimum flows within 60 days of the new license becoming final and non-appealable (section 2.1.6), provided Alcoa Power is releasing the flows specified in the Agreement from Falls Dam.²⁶

2. Reservoir Levels

41. To protect aquatic and riparian habitat at Lake Tillery, Duke Energy proposes to follow a seasonal lake level management regime (section 2.2.3.2). From December 15 through March 1, lake level fluctuations would be limited to 3 feet (between 275.2 and 278.2 feet), unless reservoir storage is needed to meet demand for electricity, in which case, lake level fluctuations would be limited to 5 feet (between 273.2 and 278.2 feet). During system emergencies and LIP periods, a fluctuation of up to 8 feet, or more, could occur. From April 15 through May 15, Duke Energy would limit drawdowns to 1.5 feet below the reservoir elevation as measured on April 1. During all other times of the year, Duke Energy would limit reservoir fluctuations to 2.5 feet below full pool (278.2 feet) during weekdays and 1.5 feet on weekends and holidays. Duke Energy also proposes to draw down Lake Tillery 15 feet every 5 years for shoreline management and gate testing purposes (section 2.2.3.3). To minimize effects on aquatic and terrestrial resources at the lake, the maintenance drawdown would be scheduled between September 15 and December 15.

42. To protect aquatic and riparian habitats on Blewett Falls Lake, Duke Energy proposes to operate the Blewett Falls development in a run-of-river mode when inflow is greater than 7,400 cfs (about 40 percent of the time) (section 2.2.2.2). When inflow to Blewett Falls Lake is less than 7,400 cfs (about 60 percent of the time), Duke Energy proposes to fluctuate Blewett Falls Lake up to 6 feet (between 173.0 and 179 feet), except during system emergencies or when the LIP is in effect. Under this operating regime, typical daily water level changes would range from 2 to 4 feet. To safely replace the flashboards, Duke Energy would need to lower Blewett Falls Lake to elevation 171.0 feet. To enhance blackbass spawning, Duke Energy proposes to limit lake level fluctuations to 2 feet (between 177.0 and 179.0 feet) during bass spawning season (*i.e.*, April 15 to May 15), except to meet required minimum flow releases or if the flashboards fail.

²⁶ See section 2.1.2 of the Agreement, n. 22, *supra*.

43. To facilitate the public's use of Lake Tillery, Duke Energy proposes to provide expected daily water levels for Lake Tillery on its toll-free telephone public messaging service (section 2.2.3.4). In addition, for the first 5 years of the license, Duke Energy would provide an annual public notice of the drawdown limits that will apply between December 15 and March 1.

44. To facilitate the Commission's administration of the license, Duke Energy proposes to file annual reports on lake level compliance (section 2.2.4). The reports would include hourly lake level readings recorded at the Tillery and Blewett Falls dams. Duke Energy proposes to implement its proposed lake level management regime within 120 days of the new license becoming final and non-appealable (section 2.2.5).

3. Water Quality

45. To enhance water quality in the Pee Dee River, Duke Energy proposes to implement a program to meet North Carolina's dissolved oxygen (DO) standards in the Tillery and Blewett Falls tailraces (sections 2.3.2.2 and 2.3.3.2). The program includes field testing DO enhancement options and successful implementation of the best suited DO enhancement technology for each development.²⁷

46. To document adherence to state water quality standards, Duke Energy proposes to monitor DO and water temperature (a) downstream from the Tillery powerhouse near the Highway 731 bridge, and (b) immediately downstream from the end of the Blewett Falls tailrace in accordance with the requirements of the section 401 Water Quality Certification (certification) (sections 2.3.2.4 and 2.3.3.4).²⁸ To facilitate administration of the license, Duke Energy proposes to file an annual compliance report with the North Carolina Division of Water Quality (North Carolina DWQ) and the Commission by April 15 of the following year.

47. To monitor the condition of the aquatic community in the Pee Dee River from Tillery Dam to its confluence with the Rocky River, Duke Energy proposes to conduct

²⁷ Duke Energy completed the field testing of DO enhancement options at the Tillery and Blewett Falls Developments. As a result, Duke Energy installed a reservoir oxygen diffuser system, with supplemental draft tube venting (Units 1-3) at the Tillery development in 2011 and a draft tube venting system at the Blewett Falls development in 2010. Each system is equipped with Programmable Logic Controls to control the amount of DO enhancement that occurs on a real-time basis.

²⁸ Duke Energy filed a Dissolved Oxygen Compliance Implementation Plan with the Commission on January 20, 2012. Commission action on this proposed plan is pending, and the plan is discussed in this order.

post-licensing monitoring downstream from Tillery Dam (section 2.3.3.5). The extent of the monitoring will be in accordance with the certification requirements.

48. To further protect water quality in the Pee Dee River, Duke Energy proposes to participate in any Total Maximum Daily Load processes for the Yadkin-Pee Dee River (or its tributaries) in the future that involve activities within the Yadkin-Pee Dee Project boundary or on the Pee Dee River immediately downstream from either Lake Tillery or Blewett Falls Lake (section 2.3.3.6).

4. Recreation Measures

Blewett Falls Development

49. To enhance recreational opportunities at the Blewett Falls development, Duke Energy proposes to add a vault-type restroom facility, modify the boat ramp to accommodate a range of lake levels, update signage, add a new information kiosk, and improve parking management (*i.e.*, delineating parking for vehicles and trailers) at the existing Pee Dee Access Area (section 2.4.2.2).²⁹ At the development's existing Grassy Island Access Area, Duke Energy would improve the boat ramp, update signage, and improve parking management. Duke Energy also proposes to improve the existing Blewett Falls Dam Canoe Portage to current North Carolina State standards.

50. To facilitate public boating opportunities downstream from Tillery Dam, Duke Energy proposes to inform the public of boating flow releases on its website (section 2.4.2.3). Duke Energy would provide a link on its website to the flow gage at Rockingham, North Carolina, and to the flow gage to be installed by Duke Energy downstream from Tillery Dam.

51. To enhance or expand the Yadkin – Pee Dee River Trail from Tillery Dam to the I-95 Bridge,³⁰ Duke Energy proposes to make a one-time contribution of matching funds, up to a maximum of \$25,000, to North Carolina DENR (section 2.4.2.4). The funds

²⁹ In the Agreement, this access site is referred to as the Anson County public access area. *See* Duke Energy's response to staff's additional information request filed on May 23, 2014.

³⁰ The Yadkin – Pee Dee River Trail is a 230-mile-long river (water) trail, located on the Yadkin and Pee Dee Rivers, from Wilkesboro, North Carolina to the South Carolina border. The trail has 41 access sites and passes through the project reservoirs, as well as the free-flowing sections of the Yadkin and Pee Dee Rivers (*e.g.*, Tillery Reach). *See* EIS at 180.

would be used for development, promotional, or implementation purposes, and would be made available within 24 months of a new license becoming final and non-appealable.

Tillery Development

52. To enhance recreation at the Tillery development, Duke Energy proposes to add vault-type restrooms, add trash receptacles, update signage, install new information kiosks, and improve parking at the Stony Mountain, Norwood, Swift Island, and Lilly's Bridge Access Areas (section 2.4.3.2). In addition, Duke Energy proposes to improve the existing dock and boat launch at the Norwood Access Area to accommodate the full range of lake levels, as well as add a shelter with picnic tables at the Norwood and Lilly's Bridge Access Areas. Duke Energy also proposes to relocate the unimproved boat access site that is currently located in the area just south of the tailrace to Clarks Creek with a new access site that include a parking area, signage, an information kiosk, and a boat ramp on the Pee Dee River.

53. Duke Energy proposes to file a plan and schedule for making the proposed recreation improvements at the Blewett Falls and Tillery Developments within 180 days of a new license becoming final and non-appealable.

54. To enhance fishing access at the project, Duke Energy proposes to provide North Carolina WRC access across project lands and matching funds, up to \$25,000, to develop a shoreline public fishing area in Stanly County, North Carolina (section 2.4.3.3). The fishing access would consist of an accessible fishing pier and gravel parking area.

55. To improve law enforcement and lake management activities on Lake Tillery, Duke Energy proposes to co-fund, with North Carolina WRC, the development of a boathouse and boat ramp facility on Lake Tillery (section 2.4.3.4).³¹ The facility would be used by North Carolina WRC for enforcement purposes and Duke Energy for lake management purposes.

56. To improve recreation management at the Tillery development, Duke Energy proposes to meet with Stanly and Montgomery Counties, North Carolina, every 4 years to review public recreation needs and trends, public use, and lake access on Lake Tillery (section 2.4.4).

Recreation Management

57. To facilitate management of project recreation facilities, Duke Energy proposes to enter into a 10-year agreement with North Carolina WRC to operate and maintain the

³¹ Duke Energy would purchase materials and North Carolina WRC would provide labor for the facility's construction.

public recreation facilities required by the license (section 2.4.5). Duke Energy would fund such activities through a one-time payment of \$240,000, to be placed in a project-specific interest bearing account. Duke Energy would fund the account within 12 months of a new license becoming final and non-appealable. The agreement with North Carolina WRC would be subject to renegotiation at the end of 10 years.

5. Additional Stream Protection Measures

58. To provide protection for the riparian and aquatic resources along the Pee Dee River, in addition to the protections afforded by the minimum flows and shoreline management measures, Duke Energy proposes to conserve certain parcels of land it owns in the vicinity of the project by either donating them to the State of North Carolina or placing restrictive covenants on them (sections 2.1.3.6, 2.1.4.6, 2.5.2, and 2.5.3). Specifically, Duke Energy proposes to:

1. Within 5 years of a new license becoming final and non-appealable, donate to the State of North Carolina: (1) 1,600 acres of land it owns along the Pee Dee River downstream from Blewett Falls Dam on the east and west river banks, extending from Blewett Falls Dam to below the Highway 74 bridge; and (2) 300 acres of land it owns along the eastern bank of the river, extending for 4 miles downstream from the Highway 731 bridge.³² Until the lands are donated, Duke Energy would use reasonable efforts to conform to forestry management practices where timbering is scheduled.³³

³² The lands include the Gabbro Slopes area above Highway 74, as well as riparian and wetland complexes on the east and west river banks. The lands to be donated are shown in Appendix C to the Agreement.

³³ The practices include: (1) thin to approximately 30 trees per acre loblolly pine plantations that are 30 or more years old; (2) thin to approximately 30 trees per acre pine/hardwood mixed stands that are 30 or more years old, after consultation with North Carolina WRC; (3) thin to approximately 60 trees per acre 15 to 30 year old stands of loblolly pine; (4) reserve the ability to clear-cut parcels up to 25 acres in size where best management practices would dictate, after consultation with the North Carolina WRC; (5) leave an undisturbed buffer of not less than 100 feet in width along the Pee Dee River and along both sides of any blue line streams; and (6) not removing timber from predominantly hardwood stands. A blue-line stream is any stream that appears as a broken or solid blue line (or a purple line) on a USGS topographic map (*see* <http://portal.ncdenr.org/web/wq/swp/ws/401/waterresources/faqs>, accessed September 2, 2014).

2. Within 12 months of a new license becoming final and non-appealable, place restrictive covenants on: (1) its “Diggs Tract,” which is located along the Pee Dee River downstream from the Highway 74 bridge;³⁴ and (2) project lands in the Grassy Islands area in the upper reaches of Blewett Falls Lake and near the mouth of the Uwharrie River to protect a regionally significant wetland complex and other important natural areas.³⁵

59. To facilitate the state’s management of lands between Morrow Mountain State Park and the Pee Dee River, Duke Energy proposes to lease to the State of North Carolina, for the term of a new license, land it currently owns between the park and the river (section 2.5.4).³⁶ This land is in the vicinity of, and includes, the existing boat launch area at the state park. The lease is to be negotiated and executed within 12 months of the new license becoming final and non-appealable.

60. For conservation purposes, Duke Energy proposes to create a restrictive covenant on land it owns along the current canoe portage route (about 0.3 mile in length) at Blewett Falls Dam (section 2.6.1.3). Development of the lands needed for the canoe portage would be prohibited, except as required for the operation, maintenance, repair or improvement of the project or Duke Energy’s transmission or distribution system

6. Other Settlement Measures

61. To protect sensitive aquatic and riparian habitat and scenic quality at the Blewett Falls development, Duke Energy proposes to implement a new Shoreline Management Policy for Blewett Falls Lake, which prohibits private access,³⁷ except normal foot access to the lake across project lands at designated public access areas (section 2.6.1.1).

62. To document sediment movement and recruitment at the Blewett Falls development, Duke Energy proposes to conduct a sediment survey in Blewett Falls Lake and a gravel recruitment survey in the Blewett Falls tailwater 5 years after a new license becomes final and non-appealable (section 2.6.1.2). If the survey indicates that there is

³⁴ The restrictive covenant would create a buffer zone adjacent to the river at least 100 feet wide along the entire tract, and would permit only non-consumptive uses of the land (*e.g.*, recreation, hunting, and fishing).

³⁵ These tracts of land are depicted in Appendix D to the Agreement.

³⁶ This tract of land is depicted in Appendix E to the Agreement.

³⁷ *See* EIS at 225. Duke Energy does not permit private development for shoreline access and structures (*e.g.*, boat docks, boat ramps, fishing piers, etc.).

no significant problem related to gravel recruitment, Duke Energy would conduct another survey 10 years later.

63. To protect cultural resources at the Blewett Falls development, Duke Energy proposes to implement a Blewett Falls Historic Properties Management Plan (HPMP) (section 2.6.1.4). The HPMP would be filed with the Commission within 12 months of a new license becoming final and non-appealable.

64. To protect sensitive riparian and aquatic habitat and the scenic quality at the Tillery development, Duke Energy proposes to continue implementing the existing Lake Tillery Shoreline Management Plan (SMP) (section 2.6.2.1). To protect cultural resources at Tillery, Duke Energy proposes implement a Lake Tillery HPMP, which would be filed with the Commission within 12 months of the new license becoming final and non-appealable.

7. Fish Passage Measures

Anadromous Fish Passage

65. Duke Energy proposes to provide upstream and downstream passage for American shad and American eel at the project (sections 1 and 2 of the Fish Passage Agreement). Passage would be phased in over time so the effectiveness of the facilities can be evaluated and adjusted, as needed. Duke Energy would establish a Diadromous Fish Resource Management Team (RMT) to guide its fish passage activities at the project (section 6.1).³⁸

66. Duke Energy would design, construct, and operate a trap, sort, and truck (TST) facility at the Blewett Falls development (Phase I, which commences upon license issuance) to capture pre-spawn adult American shad and transport them to river reaches (Reaches 1 and 2)³⁹ upstream of Blewett Falls Dam (section 2.2). Duke Energy would consult with FWS, NMFS, North Carolina WRC, and South Carolina DNR on the facility's design, and conduct hydraulic modelling of the facility with pumped attraction flow to verify that appropriate internal and external flow fields are created under

³⁸ The RMT would consist of representatives from FWS, NMFS, North Carolina WRC, South Carolina DNR, and Duke Energy. The formation of the RMT and the activities of the team are elements of the Fish Passage Agreement that would not be enforceable by the Commission.

³⁹ Reach 1 is the Pee Dee River upstream of Blewett Falls Dam, and Reach 2 is the Yadkin and Uwharrie Rivers upstream of Tillery Dam.

operating conditions anticipated during the upstream migration season to facilitate passage of fish.

67. Beginning five spawning seasons after license issuance, Duke Energy would trap and transport adult American shad to either Reach 1 or Reach 2, with shad being initially transported to Reach 2.⁴⁰ Duke Energy would also monitor the movement and reproduction of adult shad in Reach 1 and Reach 2. Duke Energy would operate the facility for a period not to exceed 10 weeks, from March 1 through May 31, as well as develop a Fishway Operations and Maintenance Plan that includes operational details and responsibilities for the facility. For each season of operation, Duke Energy would collect information from a sample of shad caught,⁴¹ as well as temperature and DO concentrations of the water.

68. By 2025, Duke Energy would provide volitional upstream passage at Blewett Falls Dam (Phase 2), which would involve adding an exit flume from the Phase 1 TST facility to the forebay canal. Duke Energy would maintain the TST facility for the duration of the license to provide a means of capturing and moving fish to the river reaches upstream of Tillery Dam.

69. Duke Energy proposes to provide downstream American shad passage at the Blewett Falls development concurrent with construction of the Phase 1 upstream passage facilities at Blewett Falls Dam (section 2.3). The downstream passage facility would consist of a mobile barge system (floating collection system) that would be towed and anchored in place at the west wing dam abutment at the existing fish ladder structure during the outmigration season for juvenile shad. Duke Energy would consult with FWS, NMFS, North Carolina WRC, and South Carolina DNR in the facilities' final design.

70. The downstream passage facility would be operational by the fourth year after license issuance. Duke Energy would use the first year of operation to (a) test the facility, (b) determine appropriate operating parameters to pass fish downstream, (c) evaluate techniques for counting outmigrating juvenile American shad, and (d) develop a methodology to evaluate the effectiveness of the downstream passage facility.

⁴⁰ The Fish Passage Plan provides interim target numbers of shad that would be transported to Reach 1 (35,000 to 40,000 fish) and Reach 2 (17,000 to 20,000 fish). Should FWS or NMFS prescribe fish passage at Alcoa Power's Falls Dam, Duke Energy would transport up to 100,000 adult shad upstream of Tillery Dam to support restoration of shad upstream of Falls Dam.

⁴¹ The information collected would include length, weight, sex, body condition, and age classes of spawning fish.

71. Duke Energy would operate the downstream passage facility from September through December, and would conduct an outmigration study during the first 3 years of operation. Duke Energy, in consultation with the RMT, would use the information from the study to modify the period of operation, as necessary, to coincide with the majority of the outmigration run, while minimizing operating time. Duke Energy would document and report any deviations that occur in the operating season.

72. To document the effectiveness of the passage measures at Blewett Falls Dam, Duke Energy proposes to develop and implement a plan to monitor American shad populations in the Pee Dee River from Blewett Falls Dam downstream to the U.S. Highway 74 bridge (section 2.1).⁴² Monitoring would occur during the period of March 1 to May 31. Duke Energy would provide annual reports that document the results of the monitoring.

American Eel Passage Measures

73. To facilitate the effective placement of an upstream eel passage facility, Duke Energy proposes to monitor American eel movement in the Pee Dee River downstream from Blewett Falls Dam for 3 years (section 3.1). Following this monitoring effort, Duke Energy would design, construct, and operate an upstream eel lift at Blewett Falls Dam.⁴³ Duke Energy would begin operating the facility in the fifth year after license issuance, and operate the facility from March 15 through June 15 each year.

74. Duke Energy would annually document and report on the operation of the eel passage structure, and would collect information on numbers, lengths, and weights of migrating elvers as part of the effort. Beginning in 2022, and continuing for 3 years, Duke Energy would annually monitor eel populations from Tillery Dam to Blewett Falls Lake and downstream from Blewett Falls Dam to assess habitat use relative to availability. In 2025, Duke Energy would assess the effectiveness of the eel passage measures, and make recommendations regarding passage of American eel at Tillery Dam.

⁴² The American shad monitoring program would assess: (a) the relative abundance and population characteristics of American shad in the Blewett Falls tailwater; (b) the location and congregation of fish in the tailwater; (c) the timing, peaks, and duration of the spawning run relative to water temperature; and (d) upstream and downstream passage effectiveness.

⁴³ Passage of American eel would initially focus on the reach between Blewett Falls and Tillery dams. Eels would either be passed directly to Blewett Falls Lake at the eel passage structure, or be moved by Duke Energy to some other location on the lake.

75. Duke Energy proposes to prepare and file a plan 5 years after license issuance to evaluate options to provide safe, timely, and effective downstream passage for American eels (section 3.2).⁴⁴ Based on this evaluation, Duke Energy would implement one or more methods of downstream eel passage, as recommended by the RMT, 12 years after license issuance. Duke Energy would operate the selected downstream passage structure(s) from October 1 through December 15 each year (or for some other period determined by the RMT to be appropriate), and begin monitoring eel out-migration 6 to 10 years following installation of upstream eel passage at the project dams.

General Fish Passage Measures

76. Duke Energy proposes, in cooperation with FWS, NMFS, North Carolina WRC, and South Carolina DNR, to conduct a comprehensive assessment of the progress in implementing the Yadkin – Pee Dee River diadromous fish restoration and passage program in 2025 (section 4).⁴⁵ Duke Energy would modify passage facilities, as necessary, based on the assessment.

77. Duke Energy would pass other fish species (*e.g.*, blueback herring) collected in the TST facility incidental to passage of American shad, provided that such passage does not interfere with the primary purpose of the facility (section 5). Duke Energy would implement any handling protocols developed by the RMT for such other species.

78. Duke Energy proposes to meet, at least, annually with the RMT (section 6.2). Duke Energy and the RMT would: (a) review the fish passage program and on-going diadromous fish implementation activities; (b) make any needed adjustments to monitoring programs or other planned activities; and (c) discuss any issues that affect schedule or costs of studies, planned activities, or other factors affecting the diadromous fishery resource. Duke Energy would consult with the RMT regarding monitoring and adjusting the overall fish passage program, as well as evaluating progress towards achieving the restoration plan's goals (section 6.3).

⁴⁴ Options for downstream eel passage would include, but not be limited to: operational changes (*i.e.*, seasonal nighttime shutdowns); seasonal use of full depth screens and a bypass system; use of conventional weirs, fyke nets, or other trapping devices to capture silver eels in lake tributaries, or along lake shoreline upstream of Blewett Falls Dam; or use of the downstream passage facility for American shad at Blewett Falls Dam.

⁴⁵ Appendices B and C of the order outline the details of what is to be considered as part of this assessment.

79. Duke Energy proposes to prepare annual reports documenting progress in implementing the diadromous fish restoration program (section 6.4). Duke Energy would submit the reports no later than March 31 of the year following the assessment to the RMT for approval, with final reports filed with the Commission by May 31. Duke Energy would provide interim reports on American shad passage by December 31 each year. Finally, Duke Energy proposes to summarize all monitoring results in a comprehensive fish passage assessment report that would be used by the RMT in its 2025 assessment review.

SUMMARY OF LICENSE REQUIREMENTS

80. As summarized below, the license, which authorizes 108.6 MW of renewable energy, requires, except as noted below, the Duke Energy-proposed operational and environmental measures discussed above to protect and enhance water quality, fish, wildlife, recreation, and cultural resources at the project. The license includes modifications to some of these measures to facilitate the Commission's administration of the license. In addition to the Duke Energy-proposed measures, this license requires the following measures.

81. To ensure that North Carolina's standards for DO are maintained at the Tillery and Blewett Fall Developments, through the license term, the license approves Duke Energy's Dissolved Oxygen Compliance Implementation Plan filed with the Commission on January 20, 2012.

82. To protect threatened and endangered species, as well as their habitat, the license requires the terms and conditions included in NMFS' Biological Opinion (BO), as outlined in Appendix D. The license also requires a species protection plan that details how the terms and conditions of the BO will be implemented.

83. To protect the state threatened Yadkin River goldenrod and the bald eagle, the license requires: (1) a Yadkin River goldenrod management plan that includes monitoring and other measures to protect populations known to occur within the project boundary; and (2) bald eagle protection measures that includes surveys and adherence to FWS's management guidelines to protect nesting habitat in the project area.⁴⁶

84. To enhance recreational opportunities at the project, the license requires Duke Energy to develop a recreation plan that includes provisions for: (1) operating and maintaining existing and proposed (*i.e.*, Clarks Creek Access Area) project recreation sites and facilities; (2) enhancing the six existing project recreation sites at the Tillery

⁴⁶ *See*

www.fws.gov/southeast/es/baldeagle/NationalBaldEagleManagementGuidelines.pdf.

development by installing vault toilets, picnic tables, and information kiosks; improving the parking areas; and improving the boat ramp and dock at Norwood Access Area to accommodate a range of reservoir elevations; (3) enhancing the four existing project recreation sites at the Blewett Falls development by installing vault toilets, picnic tables, and information kiosks; improving the parking areas; improving the boat ramp at Pee Dee Access Area to accommodate a range of reservoir elevations; and improving the 2,026-foot-long Blewett Falls Dam Canoe Portage; and (4) assessing whether the existing the SR 1744 Access Area, or an alternative site, is to be improved and made a project recreation site.

85. To protect cultural resources at the Yadkin – Pee Dee Project, the license requires Duke Energy to develop a HPMP as part of implementing a Programmatic Agreement (PA).

86. The license does not require Duke Energy’s proposed sediment and gravel recruitment surveys for Blewett Falls Lake and tailwater because there is little evidence that sediment movement and recruitment at the project is an issue. Nor does the license require Duke Energy to fund certain non-project recreation measures.

WATER QUALITY CERTIFICATION

87. Under section 401(a)(1) of the Clean Water Act (CWA),⁴⁷ the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency has either issued water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed 1 year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.⁴⁸

88. On May 11, 2007, Duke Energy applied to North Carolina DWQ for certification pursuant to the CWA for the Yadkin – Pee Dee Project, which North Carolina DWQ received the same day. On February 11, 2008, North Carolina DWQ issued its certification for the Yadkin – Pee Dee Project. On September 12, 2008,⁴⁹ North Carolina DWQ issued a modified certification (referred to as “mod1”) for the project that includes

⁴⁷ 33 U.S.C. § 1341(a)(1) (2012).

⁴⁸ 33 U.S.C. § 1341(d) (2012).

⁴⁹ North Carolina DWQ filed the modified certification on October 8, 2008, and included the certification’s final signature page and several attached maps omitted from the original certification and the modified certification issued September 12, 2008.

conditions, which are set forth in Appendix A of this order, and incorporated into the license by Ordering Paragraph D.

89. North Carolina DWQ's certification includes 12 conditions to protect water quality and ensure the project complies with state water quality standards, four of which are general or administrative and are not discussed further.⁵⁰ The remaining 8 conditions require Duke Energy to:⁵¹ (1) identify and report consumptive water uses at the project to North Carolina DWQ and the North Carolina Division of Water Resources; (2) implement the Agreement's stream protection measures specified in sections 2.5, 2.6.1.1, and 2.6.2.1; (3) conduct post-licensing monitoring of aquatic life downstream from Tillery Dam;⁵² (4) implement the DO enhancement measures, including monitoring, contained in the Agreement; (5) implement the Agreement's (a) instream flows and LIP (section 2.1),⁵³ (b) reservoir level restrictions (section 2.2), (c) water quality measures

⁵⁰ The general terms and conditions stipulate that: (1) no contaminants resulting from construction activities are permitted to enter wetlands, waters, or riparian areas beyond the footprint of the impact depicted in the certification; (2) no sediment and erosion control measures be placed in wetlands or water to the maximum extent practicable; (3) the certification does not grant or affirm any property right, license, or privilege in any waters or any right of use in any waters; and (4) the licensee conduct its activities in a manner consistent with state water quality standards, and applicable law.

⁵¹ The Agreement provides, and the certification requires, that the effective date for implementing the measures be tied to when the license order is final and non-appealable. However, due to the uncertainty of such a date, the deadlines for implementing the measures included in this license are tied to the license issuance date, or as otherwise specified in the license order. *See Virginia Electric Power Company*, 106 FERC ¶ 62,245 at P 46 (2004); and *Pacificorp*, 105 FERC ¶ 62,207 at PP 25-29 (2003).

⁵² The monitoring plan would include, but not be limited to, identifying (a) the monitoring sites, (b) the type and frequency of monitoring, (c) the success/recovering criteria for macroinvertebrates and fish, and (d) a trigger date for the biological criteria evaluation.

⁵³ *See* Appendix B of the Agreement. The LIP contains measures to be implemented at Alcoa Power's Yadkin Project and Duke Energy's Yadkin – Pee Dee Project. The elements of the LIP pertaining to the Yadkin Project are not enforceable by the Commission as part of this license. In addition, the formation of the Yadkin – Pee Dee River Basin Drought Management Advisory Group and the activities of the group are elements of the LIP that would not be enforceable by the Commission because the Commission cannot enforce the provisions of a settlement against parties it does not regulate. *See, e.g., Avista Corporation*, 93 FERC ¶ 61,116 at 61,329 (2000).

(section 2.3), (d) stream protection measures (2.5), and (e) shoreline and historic properties management measures (sections 2.6.1.1 and 2.6.2.1); (6) collaborate with North Carolina WRC to make boat ramps at Blewett Falls Lake accessible for public boating use over the normal operating range; (7) notify North Carolina DWQ within 5 working days of discovering any flow and lake level deviation; and (8) copy North Carolina DWQ on the diadromous fish and American eel passage schedule.

90. In the EIS,⁵⁴ Commission staff recommended aquatic-life monitoring because it would provide a mechanism for verifying that the minimum flows downstream from Tillery Dam protect the aquatic community in the Pee Dee River. The Agreement, however, does not specify the criteria by which the condition of the aquatic community would be judged, nor does it indicate what corrective measures would be implemented if the conditions of the aquatic community fall short of the performance criteria. The certification addresses the first of staff's concerns by defining the success criteria for macroinvertebrates, but does not address the second. Therefore, Article 401(a) requires that the Aquatic Life Monitoring Plan define success criteria for fish and outline potential solutions, should the monitoring suggest additional measures are needed.

91. The certification stipulates that the minimum flow requirements for the Yadkin – Pee Dee Project are contingent on the release of specific flows from the upstream Yadkin Project's Falls development.⁵⁵ Because Commission action on the Yadkin Project license application is pending,⁵⁶ it operates on an annual license under the terms and conditions of the expired license. Those terms and conditions do not require Alcoa Power to release the higher specified minimum flows included in section 2.1.2 of the Agreement, and, as such, the Commission has no way to ensure that Alcoa Power release the specified minimum flows. Therefore, if inflows from the Falls development are less than those specified, for any reason during the license term, Article 403 requires Duke Energy to release the certification's required minimum flows for the Tillery and Blewett Falls Developments, or inflow to the Tillery Development, whichever is less.

92. The certification requires Duke Energy to implement the provisions of section 2.5 of the Agreement. These provisions include: (1) donating to the State of North Carolina certain parcels of undeveloped, non-project land bordering the Pee Dee River downstream from Blewett Falls Dam;⁵⁷ (2) placing restrictive covenants⁵⁸ on

⁵⁴ See EIS at 300 and A-19.

⁵⁵ See n. 22, *supra*.

⁵⁶ The Yadkin Project has not yet received a certification from North Carolina DWQ, which the Commission must have prior to taking action on the license application.

⁵⁷ These licensee-owned lands include (a) lands on the east and west river banks

(continued)

undeveloped, project land located adjacent to project-affected waters (the Grassy Islands area on Blewett Falls Lake and the confluence of the Uwharrie River on Lake Tillery); (3) placing a restrictive covenant on licensee-owned, non-project land along the Pee Dee River downstream from the Highway 74 bridge (Diggs Tract); and (4) leasing to the State of North Carolina licensee-owned, non-project land between Morrow Mountain State Park and the Pee Dee River that includes an existing non-project boat ramp along Lake Tillery.

93. In the EIS,⁵⁹ Commission staff did not recommend the measures pertaining to donating lands to North Carolina and placing restrictive covenants on non-project lands because these parcels of land are not necessary for project purposes or to ameliorate a project effect.⁶⁰ Although these are conditions of the certification, they are beyond the scope of the license and not related to the project. While these measures are included in the Agreement, and it is expected that the licensee will implement them as it has agreed to do, they are beyond the Commission's jurisdiction and are not included as conditions of this license.

94. As to the project lands that the certification requires be placed in restrictive covenants, staff found that those lands are necessary for project purposes because they would help protect vegetated habitat for diadromous fish and preserve the natural character of the project lakes. Article 401(c) requires Duke Energy to notify the Commission when the covenants are executed.

95. The certification requires Duke Energy to lease to the State of North Carolina non-project land it currently owns between Morrow Mountain State Park and the Pee Dee River. Although the EIS said that this land was necessary for project purposes,⁶¹ this

of the Pee Dee River downstream from Blewett Falls Dam, extending from the dam to downstream from the Highway 74 bridge (Buchanan Lands), and (b) lands along the eastern bank of the Pee Dee River, extending about 4 miles downstream from the Highway 731 (Almond Lands).

⁵⁸ The restrictive covenants on project lands establish a 100-foot buffer zone adjacent to project-affected waters that allows certain non-consumptive uses of these lands, such as fishing, hunting, hiking, and bird-watching.

⁵⁹ See EIS at 316 and A-22.

⁶⁰ The parties to the Agreement did not intend that these land conveyance measures be included in any new license issued for the project. See Joint Explanatory Statement filed July 30, 2007 at 10.

⁶¹ See EIS at 316.

order finds that this land is not needed to ensure public access to Lake Tillery. North Carolina NWR owns and operates a boat launch and parking area in this area that provides direct access to upper reaches of Lake Tillery. There is no reason to assume that North Carolina WRC will not manage the leased land for public recreation and continue to provide public access to Lake Tillery in the future. Therefore, these lands do not need to be added to the project boundary at this time.

96. The certification requires, and the EIS recommended,⁶² that Duke Energy install DO enhancement measures at the Tillery and Blewett Falls Developments, and monitor DO in the tailwaters of both developments, as proposed. On January 20, 2012, Duke Energy filed a proposed Dissolved Oxygen Compliance Implementation Plan for the Tillery and Blewett Falls Developments. This plan, among other things, describes: (1) the DO enhancement measures tested at each development; (2) the DO enhancement measures permanently installed at each development; (3) the locations for the monitoring stations; and (4) the monitoring and reporting provisions, including filing an annual report with North Carolina DWQ and the Commission by April 15 of each year.

97. The Dissolved Oxygen Compliance Implementation Plan filed by Duke Energy is consistent with staff's recommendation in the EIS and fulfills North Carolina DWQ's certification requirement for DO, and will provide Duke Energy a means to ensure that DO levels are maintained consistent with current North Carolina's DO standards (*i.e.*, a minimum of 4.0 milligrams per liter [mg/L] and a daily average of 5.0 mg/L). Therefore, Article 402 requires Duke Energy to implement the plan.

COASTAL ZONE MANAGEMENT

98. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),⁶³ the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's coastal zone management program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification. By letter dated December 6, 2006,⁶⁴ the South Carolina Office of Ocean and Coastal Resource Management notified Duke Energy that the project is consistent with the South Carolina coastal zone management program.

⁶² See EIS at 303.

⁶³ 16 U.S.C. § 1456(c)(3)(A) (2012).

⁶⁴ See Attachment 3 of Duke Energy's December 13, 2006 response to Commission staff's September 14, 2006 additional information request.

SECTION 18 FISHWAY PRESCRIPTION

99. Section 18 of the FPA⁶⁵ provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

100. By letter filed May 12, 2007, NMFS, on behalf of the Secretary of Commerce, filed a preliminary fishway prescription. By letter filed May 14, 2007, FWS, on behalf of the Secretary of the Interior, filed a preliminary fishway prescription. On June 11, 2007, in accordance with section 241 of the Energy Policy Act of 2005,⁶⁶ Duke Energy informed the Commission that it had requested trial-type hearings with the Department of Commerce and Interior to review their fishway prescriptions,⁶⁷ and, under section 33 of the FPA, proposed alternatives for each of the upstream and downstream prescriptions. On September 13, 2007, Duke Energy notified the Commission that it withdrew its requests for trial-type hearing and its proposed alternative fishway prescriptions, because it had reached agreement with NMFS and FWS on fish passage measures to be implemented at the project.⁶⁸

101. On December 17, 2007, and February 5, 2008, FWS and NMFS, respectively, filed modified fishway prescriptions for the Yadkin – Pee Dee Project that are consistent with the Fish Passage Agreement. The prescriptions generally require: (1) American shad and American eel monitoring downstream from the Blewett Falls development, including monitoring abundance and population characteristics, movement patterns, and usage of fish passage facilities; (2) upstream and downstream passage facilities (*i.e.*, upstream TST facility and downstream gulper system) for American shad at Blewett Falls by the fourth spawning season after license issuance; (3) volitional upstream American shad passage facilities by 2025 (*i.e.*, addition of an exit flume to the TST facility), unless

⁶⁵ 16 U.S.C. § 811 (2012).

⁶⁶ The Energy Policy Act of 2005 provides parties to the project's licensing proceeding the opportunity to request trial-type hearing regarding issues of material fact used to support the prescriptions developed under section 18 of the FPA. The Act also provides parties the opportunity to propose alternatives to preliminary prescriptions.

⁶⁷ The administrative records were consolidated before a U.S. Coast Guard Administrative Law Judge, acting for the Department of Commerce (*see* Docket No. 2007-NMFS-0001).

⁶⁸ The Fish Passage Agreement is summarized earlier in this order under section F.7, *Proposed Project Operation and Environmental Measures*, with details provided in FWS's and NMFS' section 18 prescriptions (*see* Appendices B and C of this order).

NMFS and FWS agree that such facilities should be delayed or foregone; (4) upstream American eel passage facilities (*i.e.*, an eel lift at Blewett Falls Dam) no later than the fifth year following license issuance; (5) a plan to evaluate the potential effectiveness of a number of downstream American eel passage alternatives at Blewett Falls; (6) a comprehensive assessment of the fish passage program in 2025; (7) an operation, monitoring, and maintenance plan; and (8) annual reports, the formation of a resource management team, and handling protocols for other diadromous fish species (*e.g.*, blueback herring, striped bass, etc.) and rare, threatened, and endangered (RTE) species (*e.g.*, shortnose and Atlantic sturgeon). FWS's and NMFS' fishway prescriptions are attached to this order as Appendices B and C, respectively, and made requirements of the license by Ordering Paragraph E.

102. As part of their respective fishway prescriptions, FWS and NMFS requested that the Commission reserve authority to prescribe fishways, or to modify existing fishways. Consistent with Commission policy, Appendices B and C, which are made part of this license by Ordering Paragraph E, reserve the Commission's authority to require fishways that may be prescribed by the Secretaries of Interior or Commerce for the Yadkin – Pee Dee Project.

THREATENED AND ENDANGERED SPECIES

103. Section 7(a)(2) of the ESA of 1973⁶⁹ requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

104. Four federally listed species are known to, or potentially, occur in the project area and downstream in the Pee Dee River. These species include the federally endangered Carolina heelsplitter, the federally endangered Schweinitz's sunflower, and the federally endangered shortnose sturgeon and Atlantic sturgeon.

A. Carolina heelsplitter

105. As discussed in the EIS,⁷⁰ Carolina heelsplitter is a species of mussel that may be present in the Pee Dee River downstream from Tillery and Blewett Falls dams in small numbers. Commission staff concluded that continued operation of the Yadkin - Pee Dee Project, as proposed by Duke Energy and with staff's recommended measures, is not likely to adversely affect the species because the proposed minimum flows would

⁶⁹ 16 U.S.C. § 1536(a) (2012).

⁷⁰ See EIS at 168.

improve the species habitat in the river.⁷¹ FWS concurred with this finding by letter filed November 7, 2007.

B. Schweinitz's sunflower

106. Schweinitz's sunflower was not known to occur within the Yadkin – Pee Dee Project boundary at the time the license application was filed and the EIS issued. Therefore, Commission staff made no determination of project effects on the species. However, Duke Energy's updated Lake Tillery SMP, filed with the Commission on December 19, 2011, and approved on October 9, 2012,⁷² documented the presence of Schweinitz's sunflower on project land around the upstream portion of the lake. It was found within an undeveloped portion of project lands, downstream from the Yadkin Project's Falls development and outside the influence of project-related activities, including lake level fluctuations associated with the operation of the Yadkin – Pee Dee Project's Tillery development. This area is currently, and will remain, protected under Duke Energy's "Resource Protection and Management" classification in the Lake Tillery SMP, which does not permit water dependent structures, removal of vegetation, dredging or filling, alteration of shoreline features, or construction of any structure in these areas. Article 410 requires the continued implementation of the SMP until Duke Energy files, and upon approval implements, an updated plan. Therefore, continued operation of the Yadkin – Pee Dee Project, as licensed herein, will not affect Schweinitz's sunflower; thus, no further consultation under the ESA is required.

C. Shortnose and Atlantic Sturgeon

107. Shortnose sturgeon have been documented in the lower Pee Dee River, up to RM 158, about 30 miles downstream from Blewett Falls Dam.⁷³ In the draft EIS,⁷⁴ issued September 28, 2007,⁷⁵ Commission staff determined that with its recommended measures, relicensing the Yadkin-Pee Dee Project is not likely to adversely affect the shortnose sturgeon. Staff requested NMFS' concurrence on January 24, 2008. Staff reiterated its findings in the final EIS.

⁷¹ See EIS at 31-32 and 168.

⁷² 141 FERC ¶ 62,021 (2012).

⁷³ See EIS at 167.

⁷⁴ The EIS served as staff's Biological Assessment.

⁷⁵ See draft EIS at 31 and 156-57.

108. On April 23, 2009, staff again requested that NMFS complete consultation for the Yadkin – Pee Dee Project, among other projects in the Southeast. On September 9, 2009, NMFS advised Commission staff that it did not concur with staff's finding in the EIS. NMFS indicated that the record was incomplete and requested additional information, which staff provided on October 9, 2009. Staff subsequently met with NMFS, Duke Energy, and others⁷⁶ on July 13, 2011, to discuss the status of, and what was needed to complete, consultation for shortnose sturgeon. Based on the discussions and information presented at the meeting, NMFS indicated that it had what it needed to issue a BO for the Yadkin – Pee Dee Project.⁷⁷

109. On February 6, 2012, NMFS listed the Atlantic sturgeon as endangered under the ESA,⁷⁸ including the Carolina Distinct Population Segment (DPS) that inhabits the Pee Dee River system. This listing became effective April 6, 2012. Because the Yadkin – Pee Dee Project would potentially affect Atlantic sturgeon in a similar way as the shortnose sturgeon, Commission staff determined that relicensing the project would likely adversely affect the Atlantic sturgeon and its habitat. Staff requested formal consultation with NMFS on March 5, 2012.

110. On April 29, 2013, NMFS filed its BO for the Yadkin – Pee Dee Project, which concluded that the proposed action is not likely to jeopardize the continued existence of shortnose sturgeon or the Carolina DPS of Atlantic sturgeon. NMFS clarified aspects of the BO in a letter filed August 7, 2013.⁷⁹

111. The BO includes an incidental take statement with five reasonable and prudent measures (RPM) to minimize take of shortnose and Atlantic sturgeon, along with 15 terms and conditions to implement the measures. The RPMs are meant to minimize

⁷⁶ The others included personnel from FWS, North Carolina WRC, South Carolina DNR, Alcoa Power, and the Southern Environmental Law Center (representing Rockingham and American Rivers).

⁷⁷ See ESA Meeting Summary filed by Commission staff on August 16, 2011. NMFS was concerned with the relationship between Duke Energy's proposed flows for the Blewett Falls development and those that may be required in the pending certification for the Yadkin Project.

⁷⁸ 77 Fed. Reg. 5880 and 5914.

⁷⁹ Commission staff, Duke Energy, and NMFS met on July 1, 2013 to discuss and clarify numerous aspects of the BO. This meeting was also attended by FWS, South Carolina DNR, North Carolina WRC, American Rivers, the Southern Environmental Law Center, and the Water and Power Law Group.

incidental take of shortnose and Atlantic sturgeon that results from: (1) constructing fish passage for anadromous fish at Blewett Falls Dam; (2) poor water quality; and (3) flow releases downstream from the Blewett Falls development.

112. The terms and conditions require Duke Energy to: (1) limit in-water construction work associated with fish passage construction or maintenance activities, within 500 yards of Blewett Falls Dam, to May 1 through January 31, except for dam safety and other emergency work; (2) design the upstream fish passage facilities to exclude sturgeon; (3) allow NMFS access to fish passage records and facilities; (4) prepare and submit to NMFS an annual operation and inspection report of upstream fish passage facilities; (5) handle sturgeon in accordance with NMFS' protocol for shortnose, Atlantic, Gulf, and green sturgeons;⁸⁰ (6) collect tissue samples from captured and released sturgeon; (7) scan captured sturgeon for a PIT tag;⁸¹ (8) notify NMFS of any lethal sturgeon take; (9) should lethal take occur, freeze the carcass and contact NMFS for shipping instructions; (10) monitor flows in the Action Area;⁸² (11) quantify available spawning and early rearing habitat under the new flow regime in the Action Area; (12) monitor water quality in the Action Area; (13) identify water quality monitoring stations in consultation with the RMT;⁸³ (14) develop and implement an Aquatic Life Monitoring and Adaptive Management Plan (Aquatic Life Plan) to identify project effects on the species and implement corrective measures; and (15) annually monitor the project effects on shortnose and Atlantic sturgeon populations.

113. Collectively, conditions 14 and 15 in the above paragraph are actions to implement RPM No. 5 of the BO (*see* Appendix D), which seeks to identify and correct any unforeseen project effects on sturgeon in the Pee Dee River basin. On December 23, 2013, Duke Energy notified the Commission that, on that day, it had challenged the validity of RPM No. 5 in U.S. District Court for the Western District of North Carolina. Duke Energy asserted that RPM No. 5 (a) unlawfully attempts to expand the proposed

⁸⁰ *See* BO, Attachment 1. Kahn, J. and M. Mohead. 2010. A protocol for use of shortnose, Atlantic, Gulf, and green sturgeons. *in* NOAA technical memorandum NMFS-OPR-45. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, Maryland. 62 p.

⁸¹ PIT tags are Passive Integrated Transponder tags that are used to track the movements of individual organisms of a species.

⁸² The Action Area in the BO is defined as the entire Pee Dee River from Tillery Dam downstream to the Atlantic Ocean. *See* NMFS' BO at 14.

⁸³ Members of the RMT will include FWS, NMFS, North Carolina WRC, South Carolina DNR, and Duke Energy.

action for the project, and (b) is inconsistent with the ESA and its implementing regulations. Duke Energy requested the Commission defer issuance of the new license pending resolution of its legal challenge. On February 7, 2014, Duke Energy renewed its request to defer license issuance, but, alternatively, asked the Commission to include a specific re-opener to modify the license, as necessary, pending the outcome of the court proceeding should the Commission decide not to defer license issuance.

114. On May 2, 2014, Duke Energy informed staff that it was actively engaged in settlement negotiations with NMFS to identify an alternative monitoring program that would resolve Duke Energy's legal challenge.⁸⁴ On September 2, 2014, the U.S. District Court approved a settlement agreement between Duke Energy and NMFS.⁸⁵ The settlement agreement provides that NMFS will revise the BO, as well as develop new and modified RPMs to replace RPMs 3, 4, and 5 in the April 29, 2013 BO. The settlement agreement establishes a schedule for issuance of the revised BO in January or February 2015.

115. Delays in issuing the BO for this project have precluded issuance of a new license for over 4 years. While Duke Energy has challenged aspects of NMFS' BO, the court has not stayed any aspect of the BO; therefore, there is no bar preventing Commission action. Any further deferral of license issuance is not warranted and is not in the public interest because it will unduly delay implementing environmental enhancement measures. Therefore, the terms and conditions of the BO are attached as Appendix D and made requirements of the license by Ordering Paragraph F.

116. Nonetheless, because the BO terms and conditions are subject to change, Ordering Paragraph F reserves the Commission's authority to modify the license, as necessary, to ensure consistency with any revised conditions. To monitor compliance with, and facilitate administration of, the terms and conditions of the BO, the license includes Article 404, which requires Duke Energy to explain how it will implement the terms and conditions of the BO.

117. In addition to the incidental take conditions, NMFS recommended four conservation measures to help protect, and promote the recovery of, listed species.⁸⁶

⁸⁴ See Duke Energy's May 2, 2014 answer to Commission staff's April 4, 2014 additional information request.

⁸⁵ The settlement agreement was filed with the Commission on September 2, 2014 by Duke Energy and on September 5, 2014 by NMFS.

⁸⁶ Conservation measures are discretionary recommendations. The regulations implementing the ESA define conservation recommendations as "suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on

(continued)

These measures would require Duke Energy to: (1) construct upstream and downstream fish passage facilities for shortnose and Atlantic sturgeon at the Blewett and Tillery dams; (2) install and operate de-stratification pumps to restore DO levels to state standards in Lake Tillery and Blewett Falls Lake; (3) support future monitoring to identify migration patterns of shortnose and Atlantic sturgeon within the other rivers of the Winyah Bay system,⁸⁷ including evaluating the relationship between stream flow and sturgeon movement; and (4) coordinate basin-wide stakeholder events designed to address environmental effects to the Yadkin – Pee Dee River watershed.

118. While the recommended fish passage facilities likely would support the protection and recovery of shortnose and Atlantic sturgeon at the project, there is no evidence that such measures are needed at this time. More importantly, we have no ability to require this measure because it would conflict with NMFS' mandatory section 18 fishway prescription, which specifically requires the fish passage facilities at Blewett Falls Dam be designed to exclude sturgeon until suitable methods for upstream and downstream passage of sturgeon can be developed.⁸⁸ However, the Commission can reopen the license to include such measures if NMFS later prescribes fish passage facilities for sturgeon pursuant to Article 403.

119. The license does not require Duke Energy to install the de-stratification pumps to restore DO levels because Duke Energy installed an oxygen diffuser system in Lake Tillery in 2010 that has improved DO levels in the lake and downstream in Blewett Falls Lake. The monitoring required by the license will provide a means to document that DO levels are maintained at or above levels consistent with the current state standard for DO.

120. The license also does not require Duke Energy to (a) support monitoring of sturgeon movement in other rivers of the Winyah Bay system, or (b) coordinate basin-wide events to address environmental perturbations in the watershed. While such efforts may lead to information that would support sturgeon recovery in the Winyah Bay system, these measures do not address a project effect. Further, the Commission does not typically require its licensees to undertake general research and management coordination, which is the responsibility of the resource agencies. Nonetheless, Duke Energy is free to work with NMFS, FWS, North Carolina WRC, and South Carolina DNR to implement the conservation recommendations outside the license.

listed species or critical habitat or regarding the development of information.”
See 50 C.F.R. § 402.02 (2014).

⁸⁷ Winyah Bay is the estuary of the Atlantic Ocean in which the Pee Dee River flows.

⁸⁸ *See* BO at 100 and 108.

121. On July 25, 2013, Rockingham and American Rivers filed comments with the Commission, reiterating concerns that the BO is not based on the best available scientific data. Specifically, Rockingham and American Rivers argue that the BO relies on an inappropriate and inadequate metric (Index C⁸⁹) to identify available habitat and to define appropriate minimum flows for the Tillery Reach. They contend that a dual flow analysis⁹⁰ is more appropriate in this instance. Rockingham and American Rivers filed multiple declarations, depositions, and information to support this claim.

122. As relevant here, the ESA requires that federal agencies consult, formally or informally, with NMFS when the agency determines that a proposed action may affect a threatened and endangered species.⁹¹ As discussed above, staff consulted with NMFS and obtained its BO, finding that the proposed relicensing of the Yadkin – Pee Dee Project would not jeopardize the continued existence of shortnose sturgeon or the Carolina DPS of Atlantic sturgeon. NMFS determined that the incidental take of sturgeon may occur as a result of project relicensing, and, pursuant to ESA section 7(b),⁹² provided an incidental take statement as part of its BO. The statement includes terms and conditions to implement measures to avoid or minimize incidental take, and those conditions are included in the license.

123. This proceeding is not the appropriate venue to address Rockingham's and American Rivers' assertion that the BO does not satisfy NMFS' obligations under ESA.⁹³

⁸⁹ Index C is one method of estimating the amount of habitat that would be available over time under alternative flow scenarios. Index C provides an estimate of habitat availability at the lower end of the habitat duration curve, which is thought to represent the critical (or limiting) flows in the system. *See* EIS at 109. Index C is commonly used when peaking discharges do not exceed the minimum base flow by a factor of 5 to 50, or with constant flows. *See* Rockingham's and American Rivers' July 24, 2013 motion at 39-40.

⁹⁰ Dual flow analysis is commonly used to predict the availability of suitable habitat for a fish species and/or life stage at two flows; a minimum base flow and a peaking release flow. Weighted usable area at the lower of the two flows is considered the amount of habitat effectively available to a species and/or life stage.

⁹¹ *See* 50 C.F.R. § 402.01(b)(2014).

⁹² 16 U.S.C. § 1536(a)(4) (2012).

⁹³ Moreover, the Commission does not have the authority to render a decision on the validity of the BO. When a BO is prepared in the course of a Commission licensing proceeding, the only means of challenging its substantive validity is on judicial review of the Commission's decision in the court of appeals. *See City of Tacoma, Washington v.*

(continued)

Rockingham and American Rivers filed extensive comments on NMFS' draft BO, and is essentially rearguing factual issues that NMFS had before it in preparing the final BO. As the Commission has said,⁹⁴ it will not substitute its judgment for that of the agency that Congress has determined in the ESA should be responsible for providing its expert opinion regarding whether relicensing the Yadkin – Pee Dee Project is likely to jeopardize the continued existence of a listed species. In this case, that agency is NMFS.

NATIONAL HISTORIC PRESERVATION ACT

124. Under section 106 of the National Historic Preservation Act (NHPA)⁹⁵ and its implementing regulations,⁹⁶ federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (defined as historic properties) and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

125. To satisfy these responsibilities, the Commission executed a PA with the North Carolina SHPO and invited Duke Energy and the Catawba Indian Nation to concur with the stipulations of the PA. Duke Energy concurred. The PA requires the licensee to develop and implement an HPMP for the term of any new license for this project. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 412 requires the licensee to implement the PA and file the HPMP with the Commission within 1 year of license issuance.

FERC, 460 F.3d 53, 75 (D.C. Cir. 2006). In this instance, though, Duke Energy challenged aspects of NMFS' BO in the U.S. District Court for the Western District of North Carolina.

⁹⁴ See *Alabama Power Company*, 143 FERC ¶ 61,249 (2013).

⁹⁵ 54 U.S.C. § 306108. Pub. L. 113-287, 128 Stat. 3188 (2014). (The National Historic Preservation Act was recodified in Title 54 in December 2014).

⁹⁶ 36 C.F.R. Part 800 (2014).

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(j) OF THE FPA

126. Section 10(j)(1) of the FPA⁹⁷ requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act,⁹⁸ to “adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)” affected by the project.

127. In response to the March 13, 2007, public notice that the project was ready for environmental analysis, FWS, NMFS, and South Carolina DNR filed a total of 16 recommendations under section 10(j).⁹⁹ Four recommendations were determined to be outside the scope of section 10(j) and are discussed in the next section. The license includes conditions consistent with seven out of the remaining 12 recommendations that are within the scope of section 10(j), including: (1) NMFS’ recommendation for minimum flows downstream from Tillery Dam (Condition 9 of Appendix A); (2) FWS’s and NMFS’ recommendations for minimum flows downstream from the Blewett Falls development (Condition 9 of Appendix A); (3) NMFS’ recommendation for a drought contingency plan (Condition 9 of Appendix A); (4) NMFS’ recommendation for a diadromous fish monitoring plan (Appendices B and C); (5) South Carolina DNR’s recommendation to adopt the Fish Passage Agreement (Appendices B and C); and (6) protection measures consistent with FWS’s recommendation for a bald eagle management plan (Articles 410 and 411).¹⁰⁰

128. If the Commission believes that any such recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory

⁹⁷ 16 U.S.C. § 803(j)(1) (2012).

⁹⁸ 16 U.S.C. §§ 661 *et seq.* (2012).

⁹⁹ FWS filed eight recommendations on May 9, 2007, NMFS filed seven recommendations on May 12, 2007, and South Carolina filed one recommendation on May 12, 2007.

¹⁰⁰ The required bald eagle protection measures will include: (1) continued implementation of the FWS’s National Bald Eagle Management Guidelines; (2) requisite provisions from the Lake Tillery SMP and the required Blewett Falls SMP; and (3) bald eagle surveys. In the EIS, staff determined that requiring these measures would protect bald eagles for the length of the license. *See* EIS at 164-165, 310, and A-21.

responsibilities of such agencies. If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part I of the FPA or other applicable law and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources.

129. Commission staff made an initial determination that the following recommendations may be inconsistent with the comprehensive planning standard of section 10(a)(1) and the public interest standard of section 4(e) of the FPA: (1) FWS's recommendation to provide year-round minimum flows in the Pee Dee River downstream from Tillery Dam of 800 to 1,000 cfs and 1,500 to 1,800 cfs during the spring spawning season; (2) and (3) FWS's and NMFS' recommendation to develop a minimum flow release mechanism at Tillery Dam; (4) FWS's recommendation to implement an interim ramping rate of no more than one foot per hour change in water surface elevation at Blewett Falls; and (5) FWS's recommendation to install trashracks with 2.5-inch bar spacing at both developments.

130. By letters dated September 28, 2007, staff advised FWS and NMFS of its preliminary determinations of potential inconsistencies. FWS and NMFS filed responses on November 13, 2007, and November 14, 2007, respectively, and staff held a section 10(j) meeting on December 5, 2007, to discuss the matters with FWS and NMFS. At the section 10(j) meeting, the inconsistencies were resolved for FWS's and NMFS' recommendations for a minimum flow release mechanism at Tillery Dam,¹⁰¹ and FWS's recommendations to implement an interim ramping rate at Blewett Falls¹⁰² and install trashracks with 2.5-inch bar spacing at both the Tillery and Blewett Falls Developments.¹⁰³ However, FWS's recommendations for minimum flows downstream from Tillery Dam remained unresolved.

¹⁰¹ FWS and NMFS concurred with Commission staff that because Duke Energy already has the capability to release minimum flows through an existing sluice gate, there is no need for additional flow release mechanisms at Tillery Dam.

¹⁰² FWS concurred with Commission staff that FWS's recommended interim ramping rate is not needed, because Duke Energy's proposed shutdown sequence could provide a down-ramping rate similar to that recommended by FWS.

¹⁰³ FWS concurred with Commission staff that FWS's recommended trashracks at the two developments are not needed, because the existing trashracks already provide similar protection, and there is no evidence of an adverse effect on the fish populations in the project area due to entrainment through the project's generating units.

131. With respect to FWS's recommended minimum flow downstream from Tillery Dam, FWS asserts that the proposed minimum flows do not adequately mitigate for long-term, project-induced adverse effects on fish and aquatic resources in the Pee Dee River downstream from Tillery Dam, and that additional flows are needed to enhance aquatic habitat. FWS recommends releasing flows of 800 to 1,000 cfs in the Tillery Reach from May 16 to January 31 to benefit native fish and improve aquatic habitat in the reach, and 1,500 to 1,800 cfs during the spring to improve American shad spawning habitat. Rockingham and American Rivers also recommend these flows.

132. In the EIS,¹⁰⁴ Commission staff found that Duke Energy's proposed year-round flow of 330 cfs would substantially improve the availability of fish and aquatic invertebrate habitat over existing conditions, increasing the percent of maximum habitat area possible from 34 to 68 percent (a 17 percent increase).¹⁰⁵ The higher year-round minimum flows recommended by FWS, as well as Rockingham and American Rivers, would provide 80 percent of the maximum habitat area possible (an increase of 15 percent over Duke Energy's proposed flows).

133. With regard to the spring high (or spawning) flow, staff found that Duke Energy's proposed spring flow of 725 cfs would increase the maximum spawning habitat area possible for American shad from 34 percent (existing condition) to 68 percent, an increase of 34 percent. FWS's spring flow of 1,500 to 1,800 cfs would provide 94 percent of the maximum spawning habitat area possible, an additional increase of 26 percent over the proposed flow. However, staff concluded that the additional shad spawning habitat was not needed because spawning habitat would not be a limiting factor in their recovery in Tillery reach for the foreseeable future.¹⁰⁶

¹⁰⁴ See EIS at 108-18 and 324-25.

¹⁰⁵ Duke Energy's instream flow study assessed habitat needs for 29 species/life stages/habitat types, including a range of resident and diadromous species (*e.g.*, golden and robust redhorse, blackbass, sunfishes, darters, catfish/suckers, striped bass, American shad, American eel, and sturgeon); their specific life stages (*e.g.*, spawning, rearing/juvenile, adult); habitat types that could apply to several species (*e.g.*, deep slow generic with cover, shallow slow early lifestage, etc.); and aquatic insects and other macroinvertebrates, including mayflies, stoneflies, and caddisflies. See EIS at 109-11; and Duke Energy's 2006 Pee Dee River Instream Flow Study Final Report at 5-1 to 5-5.

¹⁰⁶ See EIS at 110-114. With Duke Energy's proposed spring flow of 725 cfs, the Tillery reach would have more than 2,000 acres, or over three square miles, of American shad spawning habitat.

134. Providing Duke Energy's proposed flows would have an annual cost of \$850,570.¹⁰⁷ Providing FWS's, as well as Rockingham's and American River's, flows would have an annual cost of \$1,227,500,¹⁰⁸ and would result in less great blue heron foraging habitat in the Tillery Reach. Staff concluded that the incremental increase in available aquatic and American shad spawning habitat provided by FWS's higher flows do not justify the costs. Therefore, staff recommended Duke Energy's proposed year-round minimum flows and spring spawning flows. Accordingly, FWS's recommendation is inconsistent with the public interest standard of section 4(e) and the comprehensive planning standard of section 10(a) of the FPA. This license requires staff's recommended minimum flows.

135. Although the inconsistency between FWS's recommendation and the FPA remains unresolved, this license includes a minimum flow requirement and other measures (*e.g.*, American shad passage, water quality improvements, and monitoring responses of aquatic life to those measures) to protect fish and aquatic habitat in the Tillery Reach. Therefore, in accordance with section 10(j)(2)(B) of the FPA, the measures required by the license will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by this project.

SECTION 10(a)(1) OF THE FPA

136. Section 10(a)(1) of the FPA¹⁰⁹ requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

A. NMFS and FWS Recommendations

137. NMFS and FWS, collectively, made four recommendations under section 10(j) that are not specific measures to protect, mitigate damages to, or enhance fish and

¹⁰⁷ See EIS at 261. As presented in the EIS, Commission staff estimates the cost of the measure to be \$535,000 in 2007 dollars. Staff adjusted this cost to 2014 dollars, which is \$850,570.

¹⁰⁸ *Id.* As presented in the EIS, Commission staff estimates the cost of the measure to be \$1,227,500 in 2007 dollars. Staff adjusted this cost to 2014 dollars, which is \$1,793,630.

¹⁰⁹ 16 U.S.C. § 803(a)(1) (2012).

wildlife, but pertain to stream flow plans,¹¹⁰ maintenance of tailrace recreation access at Blewett Falls, and a management plan to protect Yadkin River goldenrod at the Yadkin – Pee Dee Project. Consequently, these recommendations are not considered under section 10(j) of the FPA. Instead, these recommendations are considered under the broad public-interest standard of section 10(a)(1).

138. NMFS¹¹¹ recommends Duke Energy develop and implement an Instream Flow and Habitat Protection, Mitigation, and Enhancement Plan to implement Duke Energy's proposed flows for the Tillery and Blewett Falls Developments within 1 year of license issuance. NMFS also recommends that Duke Energy implement an adaptive management approach for instream flows; whereby Duke Energy would implement specific flows, evaluate the flows to determine if they meet pre-defined goals, and modify the flows to meet the goals, if necessary. In the EIS,¹¹² Commission staff did not recommend NMFS' two monitoring plans because they were not specific measures to protect fish and wildlife at the project. Nonetheless, the license requires, through the certification conditions and the terms of the BO: (1) an Aquatic Life Monitoring Plan (Condition 7 in Appendix A); and (2) a Comprehensive Monitoring and Adaptive Management Plan (Appendix B). In addition, the license includes the certification's requirement to establish a Spawning Flow Management Team, which will determine the timing of spring flow released for American shad spawning. The Commission, though, cannot enforce the activities of this team.

139. Interior¹¹³ recommends that Duke Energy continue to maintain public access to the Blewett Falls tailwater, as it has in the past, and provide facilities that comply with the American with Disabilities Act (ADA). In the EIS,¹¹⁴ staff recommended, and Article 408 requires, Duke Energy to continue operating and maintaining the Blewett Falls Tailwater Access Area, and to enhance the site by providing a vault toilet. A licensee's obligation to comply with ADA, however, exists independent of its project license, and the Commission has no statutory role in implementing or enforcing the ADA as it applies

¹¹⁰ NMFS' two stream flow monitoring plans were not sufficiently detailed to consider them under section 10(j) of the FPA.

¹¹¹ See NMFS' May 12, 2007 filing at 5 of Attachment B.

¹¹² See EIS at 321.

¹¹³ See Interior's May 9, 2007 filing.

¹¹⁴ See EIS at 279.

to its licensees.¹¹⁵ Nevertheless, Article 408 requires Duke Energy to consider the needs of the disabled in the planning and design of project recreation facilities.

140. To facilitate management of a state listed threatened plant species endemic to the Yadkin River in project area,¹¹⁶ Duke Energy proposes to conduct a survey for Yadkin River goldenrod within 5 years of license issuance.¹¹⁷ If occurrences of this species are found within the project boundary, Duke Energy proposes to develop a Yadkin River goldenrod monitoring plan and file it with the Commission for approval. Interior recommends that Duke Energy develop a management plan for Yadkin River goldenrod, with provisions to control encroaching vegetation, monitor the effects of project operation on habitat, and create additional suitable habitat.¹¹⁸ Interior states that the availability of suitable habitat and the fate of all known populations of the species are primarily determined by the manner in which Alcoa Power's Narrows and Falls Developments, and Duke Energy's Tillery development are operated.

141. At the time the EIS was prepared, the only known occurrence within the Yadkin – Pee Dee Project boundary consisted of a small clump just downstream of Alcoa Power's Falls Dam in the headwaters of Lake Tillery. This occurrence was not found during Duke Energy's Rare, Threatened, and Endangered (RTE) species relicensing surveys.¹¹⁹

¹¹⁵ *Northern States Power Co.*, 78 FERC ¶ 61,363 (1997).

¹¹⁶ Yadkin River goldenrod is a plant endemic to about 3.2 miles of rock outcrops and shoreline along the Yadkin River in North Carolina, mostly within the project boundaries of the Yadkin and Yadkin – Pee Dee projects. *See* 78 Fed. Reg. 70104, 70108-09 (November 22, 2013). On May 11, 2005, FWS proposed to list the Yadkin River goldenrod as a candidate species for listing under the ESA. *See* 70 Fed. Reg. 24870, 24873.

¹¹⁷ *See* Duke Energy's December 10, 2007 filing.

¹¹⁸ Yadkin River goldenrod's requirements for seed germination and seedling establishment are not known, but are thought to be limited by a lack of suitable habitat. Also, the persistence of established plants appears to be linked to periodic high flow events with sufficient velocity to scour the habitat, inhibiting growth of other plants, but without prolonged flooding. Reductions in the frequency and magnitude of scouring events due to hydropower plant operation may be facilitating the encroachment of vegetation such as mimosa, a non-native, invasive understory tree which shades existing occurrences of Yadkin River goldenrod and may be competing for suitable habitat.

¹¹⁹ *See* EIS at 152.

142. In the EIS,¹²⁰ staff concluded that Interior's measures to protect Yadkin River goldenrod were unnecessary because the rocky outcrops in the headwaters of Lake Tillery, thought to be the most suitable habitat for the plant within the project boundary, would not be affected by lake level fluctuations associated with Yadkin – Pee Dee Project operation.¹²¹ However, to document new populations that may become established and warrant protection, staff recommended surveys for the plant 5 years after license issuance and every 10 years thereafter; and if the plant is found, staff recommended Duke Energy conduct surveys every 5 years.¹²²

143. In 2011, Duke Energy and the North Carolina Natural Heritage Program (North Carolina NHP) staff surveyed the upper portion of Lake Tillery and identified 11 Yadkin River goldenrod plants in three separate clusters, two of which are located within the Yadkin-Pee Dee Project boundary.¹²³ The two clusters of plants in the Yadkin – Pee Dee Project boundary are located on lands in the "Resource Protection and Management" area classification of the Lake Tillery SMP, and are not subject to disturbance from shoreline development or private lease permitting. In addition, the plants are located in areas not subject to recreational use (*i.e.*, foot traffic and boat access) and water level fluctuations associated with project operation. However, the plants likely would be exposed to periodic high flow events.

144. In 2013, Alcoa Power and FWS entered into a Candidate Conservation Agreement to address ongoing threats to the species within the Yadkin Project boundary,¹²⁴ which

¹²⁰ See EIS at 163 and 309-10.

¹²¹ The small clump of Yadkin River goldenrod found by Alcoa Power just downstream from the Yadkin Project's Falls Dam would be affected during flood conditions, with flows exceeding 74,000 cfs. However, this magnitude of flow is infrequent in the river system.

¹²² Staff's recommendations are based on Duke Energy's proposed measures included in its December 10, 2007 filing commenting on the draft EIS.

¹²³ See Duke Energy's 2011 Lake Tillery SMP at 9; section 2.4, Rare, Threatened and Endangered Species and Special Natural Communities.

¹²⁴ Alcoa Power's measures include operating the Yadkin Project to reduce high-velocity flood events; managing habitat for Yadkin River goldenrod as part of the Yadkin Project's SMP; annually controlling encroachment of non-native, invasive vegetation; and using signs to direct boaters, anglers, and other recreationists away from existing populations in the tailrace area. In addition, Alcoa Power assists FWS in efforts to augment the population near the base of its dams.

resulted in FWS removing Yadkin River goldenrod as a candidate species for listing under the ESA.¹²⁵ Yadkin River goldenrod may continue to expand its range within the Yadkin – Pee Dee Project boundary in the future. Implementing a management plan for Yadkin River goldenrod at the Yadkin – Pee Dee Project that includes measures similar to those outlined in the Candidate Conservation Agreement between Alcoa Power and FWS for the Yadkin Project, will facilitate a coordinated conservation effort among Duke Energy, Alcoa Power, FWS, North Carolina WRC, and North Carolina NHP in the basin. This will help ensure the species is protected throughout its known range and allow it to potentially expand its population. Developing this plan would cost \$5,000. Because the benefits of preserving this rare plant are worth the cost, Article 405 requires Duke Energy to develop and implement a Yadkin River goldenrod management plan.

B. Blewett Falls Shoreline Erosion Control Plan

145. During an environmental site review, Commission staff observed erosion and significant bank-undercutting at a number of sites along Blewett Falls' shoreline.¹²⁶ Duke Energy, however, does not propose any specific measures to control shoreline erosion at the Blewett Falls development, and no entity recommended specific measures for shoreline erosion control. In the EIS,¹²⁷ staff determined that shoreline erosion on Blewett Falls Lake may be the result of many factors, including wind and wave action, project operation related to lake level fluctuations, which can be as much as 4 feet on a daily basis, recreational use at the project's recreation access sites, or project-related construction activities. Staff recommended,¹²⁸ that Duke Energy develop and implement a shoreline erosion control plan to address project-related shoreline erosion at Blewett Falls Lake.

146. Citing *FERC v. City of Centralia*,¹²⁹ Duke Energy asserts that there must be substantial evidence on the record documenting impacts in order for the Commission to require a licensee to undertake either mitigation measures or a study of the need for mitigation measures. Duke Energy contends that one public scoping meeting and one

¹²⁵ See 78 Fed. Reg. 70104, 70108-09 (November 22, 2013); and for the full text of Alcoa Power's and FWS's Candidate Conservation Agreement, see http://www.fws.gov/asheville/pdfs/YRGR%20CCA_07-12-2013.pdf.

¹²⁶ See EIS at 44.

¹²⁷ See EIS at 50-51.

¹²⁸ See EIS at 295-96.

¹²⁹ 213 F.2d 742 (D.C. Cir. 2000).

visual observation of a single, limited area of erosion does not constitute substantial evidence documenting project-related impacts.

147. While there is evidence that erosion is occurring along specific stretches of the Blewett Falls shoreline, there is no evidence that shoreline erosion is prevalent at the project. Rather, Commission staff's observations of existing shoreline erosion along Blewett Falls Lake is indicative of erosion caused by wind action, as the erosion sites are concentrated in areas (a) exposed to the greatest fetch,¹³⁰ or (b) of unprotected shoreline. In either case, the existing erosion is not the result of project operation or other project activity. Therefore, the license does not require Duke Energy to develop an erosion control plan for Blewett Falls Lake. The license does include, however, SMPs for Lake Tillery and Blewett Falls Lake that will help protect the lake's shorelines from project-related erosion.

C. Blewett Falls Sediment and Gravel Recruitment Surveys

148. Duke Energy proposes to conduct, within 5 years of license issuance, a sediment survey in Blewett Falls Lake and a gravel recruitment survey in the Blewett Falls tailwater to document sediment movement and gravel recruitment at the Blewett Falls development. The gravel recruitment survey will supplement an identical survey conducted by Duke Energy to support its license application. If results show no significant problems in gravel recruitment, Duke Energy proposes to conduct another survey again in 10 years. Although Commission staff recommended the surveys in the EIS,¹³¹ there is little support in the record for conducting the surveys. The Pee Dee River downstream from Blewett Falls Dam, for about 23 miles, has a gradient ranging from 1.27 to 3.15 feet per mile. The dominate substrate in this reach of river is bedrock, boulder, and cobble, with some gravel, sands, and silt deposits.¹³² Duke Energy's pre-filing substrate characterization study found there was a diverse composition of substrate types present in the Blewett Falls tailwater and downstream in the Pee Dee River, including smaller substrate types.¹³³ Thus, recruitment or persistence of gravel or smaller particle-size substrates does not appear limited by Blewett Falls Dam. In addition, there

¹³⁰ Fetch is the distance traveled by wind or waves across open water. The longer the fetch and the faster the wind speed, the more wind energy is imparted to the water surface and the greater potential for erosion to occur on the receiving shoreline.

¹³¹ See EIS at 290.

¹³² See EIS at 100 and section 6 of the 2006 Pee Dee River Instream Flow Study Final Report.

¹³³ See Duke Energy's License Application, Exhibit E, at E4-85.

is no information in the record to suggest that conditions associated with project operation would change to warrant further surveys.

149. For the above reasons, the license does not require Duke Energy to conduct the sediment and gravel recruitment surveys at the Blewett Falls development. Duke Energy, however, is free to undertake this measure, as provided for under the Agreement.

D. Bald Eagle Protection Measures

150. Active bald eagle nests were documented near Tater Top Mountain at Morrow Mountain State Park (near Lake Tillery), on the east shoreline of Lake Tillery, in the Tillery tailrace area, and above Blewett Falls Dam during relicensing studies.¹³⁴ In addition, three active nests were observed at Lake Tillery during the 2011 breeding season.¹³⁵ To protect bald eagles at the project, Duke Energy proposed to: (1) implement the shoreline protection measures contained in the existing Lake Tillery SMP, as well as develop and implement a shoreline management policy for Blewett Falls Lake; (2) continue to follow the FWS's National Bald Eagle Management Guidelines; and (3) conduct surveys for bald eagles every 3 years for the term of the new license to protect bald eagles occurring in the project area.¹³⁶ Duke Energy proposed to discontinue the monitoring program when the bald eagle is delisted from the state and federal threatened and endangered species lists.¹³⁷

151. In the EIS,¹³⁸ Commission staff recommended that Duke Energy develop a bald eagle management plan that included annual monitoring to document active nest locations and minimize the effects of shoreline development, recreation, and other shoreline uses on bald eagles nesting in the project area, along about 150 miles of project shoreline.¹³⁹ Duke Energy asserts that annual bald eagle monitoring during the license

¹³⁴ See EIS at 155.

¹³⁵ See Lake Tillery Shoreline Management Plan, filed on December 19, 2011.

¹³⁶ See Duke Energy's October 16, 2006 and December 10, 2007 filings.

¹³⁷ FWS issued a bald eagle delisting notice on July 9, 2007 (72 Fed. Reg. 37346), and it became effective on August 9, 2007. Although federally delisted, bald eagles are still protected by the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, as well as listed as threatened in North Carolina.

¹³⁸ See EIS at 291.

¹³⁹ The area to be monitored includes land within the project boundary, as well as adjacent land within FWS's recommended buffer distances for activities that may disturb nesting bald eagles (see FWS's National Bald Eagle Management Guidelines).

term is overly protective and unnecessary, because its current shoreline management policies and guidelines provide adequate protection for nesting bald eagles.¹⁴⁰ As an alternative to annual surveys, Duke Energy proposes a step-wise program that would allow for reducing the frequency of monitoring over the license term. Nonetheless, in the EIS,¹⁴¹ staff noted that annual surveys would allow Duke Energy to identify sensitive sites and potential sources of disturbance, and to implement any needed protection measures to comply with the Bald and Golden Eagle Protection Act.

152. In considering the need for bald eagle protection measures at the Yadkin – Pee Dee Project, staff reviewed Duke Energy’s 2011 Lake Tillery SMP and found that the SMP includes measures to protect bald eagle nesting and perching sites at leased properties along the shoreline.¹⁴² However, the Lake Tillery SMP does not include a mechanism to identify bald eagle nests. In addition, there are currently no specific measures in place to identify or protect bald eagle nesting or perching sites at Blewett Falls Lake. Therefore the Lake Tillery and Blewett Falls Lake SMPs required by Articles 410 and 411, respectively, include provisions for bald eagle surveys, on a case by case basis, prior to conducting or permitting activities that may disturb bald eagles, as well as provisions to implement FWS’s National Bald Eagle Management Guidelines. In addition, because the needs of, and management objectives for, the bald eagle may change over time, Articles 410 and 411 include provisions for reports and consultation with FWS and North Carolina WRC to revisit survey requirements.

E. Basis for Tillery Reach Minimum Flows

153. As discussed above, staff recommended Duke Energy’s proposed minimum flows for the Tillery Reach because the incremental increase in available habitat (about 25 percent) provided by the higher flows recommended by the FWS, Rockingham, and American Rivers, would not justify the higher costs.¹⁴³ While Rockingham and American Rivers agree that the proposed flows would enhance habitat conditions, they contend that Commission staff’s analysis is deficient or incomplete in several respects. First, they state that staff’s analysis does not describe any objectives or desired future conditions for the native fish community in the Tillery reach. Second, they state that staff did not apply basic science to analyze impacts of regulated flows on the fish community.

¹⁴⁰ See Duke Energy’s May 29, 2008 filing.

¹⁴¹ See EIS at A-21.

¹⁴² See Tillery SMP, Appendix A, *Guidelines for the Use of Leased Properties at Lake Tillery*, section 6.4 *Bald Eagle and Blue Heron Nesting and Perch Sites*.

¹⁴³ See EIS at 298-300.

Third, they state that staff relies only on part of the available information in reaching its decision and that using Index C and maximum weighted usable area (WUA) were not the best methods for predicting habitat availability. Finally, staff should have used information from the Duke Energy dual flow analysis to address peaking effects.¹⁴⁴ Each of these arguments is addressed below.

154. Regarding desired future conditions for the fish community in the Tillery Reach, they argue that staff's analysis does not define the amount of enhancement needed in the reach, address whether the fish community would continue to be dominated by exotics, or target those native species subject to special protections under the ESA and other applicable laws.

155. It is not the Commission staff's obligation to define desired future conditions or river restoration goals. Rather, this is the responsibility of federal and state fish and wildlife agencies charged with managing the resource(s) in question. As it typically does, staff relied on applicable resource agencies' comprehensive plans¹⁴⁵ and the consultation record to identify the resources of interest and desired goals and objectives for the resources affected by the Yadkin – Pee Dee Project. Contrary to Rockingham's and American River's assertions, staff's analysis considered the habitat requirements of 29 species, life stages, and habitat types, with a particular emphasis on the spawning habitat needs of American shad and the overall habitat needs of the golden redhorse,¹⁴⁶ in recommending Duke Energy's proposed flow regime. As noted earlier, staff found substantial improvement of existing conditions with Duke Energy proposed flows, but much less incremental improvement with Rockingham's and American Rivers' recommended flows.¹⁴⁷

¹⁴⁴ See Rockingham's and American Rivers' July 24, 2013 motion at 32-44. Commission staff based its recommendation for minimum flows on an analysis that used Index C, instead of a dual flow analysis.

¹⁴⁵ See EIS at 326-28, and the additional plans identified by staff in the Comprehensive Plans section of this order.

¹⁴⁶ See EIS at 109-19. The golden redhorse was chosen as a surrogate evaluation species for the uncommon Carolina redhorse, a federal species of concern.

¹⁴⁷ Considering just the habitat needs of these two species, Duke Energy's proposed flows in the spring increase the percent of maximum WUA from 55 percent under current conditions to 70 percent, while Rockingham's and American River's recommended flows provide a 56 percent increase, similar to existing conditions. For the remainder of the year, the proposed flows increase habitat from 51 to 66 percent of the maximum WUA, while Rockingham's and American River's recommended flows would

(continued)

156. Rockingham and American Rivers remaining arguments hinge on their disagreement of the use of Index C and maximum WUA to determine habitat availability under peaking operations. Rockingham and American Rivers argue that staff erred in not reviewing the available scientific literature on the effects of extreme flow fluctuations on aquatic communities for the purpose of verifying its instream flow analysis. They assert that if Commission staff had done so, as well as used the information from the dual flow analysis, it may have reached a different decision.

157. Index C and maximum WUA are tools for analyzing and summarizing data on the flow-habitat relationship using the Physical Habitat Simulation Modeling system. Index C summarizes a large amount of data and focuses on the amount of habitat available at the low end of the flow regime. The proportion of maximum WUA focuses on the amount of habitat available at distinct flows. Both methods can be and were used in this proceeding to assess flow effects on large groups of organisms, life stages, and habitats, or on targeted subsets. This approach provides a comprehensive review and analysis of flow needs in the Tillery Reach.

158. Duke Energy provided a limited dual flow analysis as part of its license application.¹⁴⁸ However, no entity made recommendations for flows based specifically on the dual flow analysis. Because the focus of flow enhancement efforts for most stakeholders was on minimum flows, rather than peaking effects (the focus of dual flow analysis), and the fact that maximum WUA methods were adequate to address low flows, Commission staff did not include the dual flow analysis in the EIS.

159. Contrary to Rockingham's and American Rivers' arguments, Commission staff did consider all available information in the record in forming its recommendations. Staff acknowledged in the EIS that flow changes associated with the project's peaking operation modifies the seasonal periodicity of flows and affects fish, aquatic habitat, and wildlife that depend on the riverine environment for habitat and foraging opportunities.¹⁴⁹ Nonetheless, staff found that Duke Energy's proposed flows and ramping operation would adequately address such effects by reducing the magnitude of flow fluctuations in the Tillery Reach and providing significantly more habitat that persists on a daily, weekly, and yearly basis than currently occurs with the 40-cfs minimum flow. While Rockingham's and American Rivers' recommended flows would further reduce the

provide 75 percent of the maximum WUA. *See* EIS at 118.

¹⁴⁸ *See* section 9 of the 2006 Pee Dee River Instream Flow Study Final Report at 7.

¹⁴⁹ *See* EIS at 108 and 156.

magnitude of the flow fluctuations, staff concluded that the amount of additional habitat would not justify the higher costs.

F. Tillery Reach Recreation Flows

160. Duke Energy proposes,¹⁵⁰ and the certification requires, the release of 1,750 acre-feet of water (about 884 cfs released over a 24-hour period) annually, in addition to the 330-cfs minimum flow discussed above, from Tillery Dam to enhance recreational boating in the Tillery reach.¹⁵¹ As defined in the Agreement (section 2.1.4.3), Duke Energy could increase the recreation flow releases to 1,950 acre-feet (about 985 cfs released over a 24-hour period) annually provided that the releases are made for at least 4 days between May 16 and May 31, or between September 1 and September 15. The 4 days of recreation releases would be in May or September, or a combination of the two. To determine how the volume of water would be allocated, Duke Energy proposes to develop, and the certification requires, a Recreation Flow Release Plan in consultation with North Carolina WRC and North Carolina DENR. Duke Energy proposes to evaluate the Recreation Flow Release Plan for 3 years; modify the plan accordingly; and re-evaluate the plan at 5 year intervals. However, as the certification stipulates, the volume of water allocated for recreational boating may not exceed 1,950 acre-feet.

161. The Tillery reach is a low-gradient river reach that supports canoes and kayaks. Duke Energy conducted a Pee Dee River Instream Flow Study¹⁵² to assess the effects of

¹⁵⁰ See Agreement at Section 2.1.4.3.

¹⁵¹ In comments on the EIS, Rockingham and American Rivers state that the Tillery Reach is included on the Nationwide Rivers Inventory (NRI), a list of rivers designated by the National Park Service (NPS) that may be potentially eligible for designation as a Wild and Scenic River. Rockingham and American Rivers assert that staff neither consulted with the NPS, nor evaluated the project's effects on the Outstanding Remarkable Values for which the reach is classified. By definition, a river listed on the NRI must be free-flowing. Staff questions whether the Pee Dee River segment from the South Carolina State line to Lake Tillery, classified in 1982, should be included on the NRI since the project was licensed in 1958 and both Tillery Dam and Blewett Falls Dam impound the river along this segment. Regardless, the Secretary of the Interior, not the Commission, is responsible for reviewing a proposed project's consistency with the Wild and Scenic Rivers Act. Interior and NPS were included on the Commission's Mailing List for the Yadkin – Pee Dee Project and did not comment on the project's consistency with the Wild and Scenic Rivers Act.

¹⁵² See Duke Energy's license application, Appendix B – Pee Dee River Instream Flow Study Final Report, dated April 2006. The navigation study is a component of the Pee Dee River Instream Flow Study Final Report.

flows on aquatic resources and recreational boating. The study assessed the navigability of the reach by a 14-foot motorized jon boat. The study results indicate that recreational users are able to canoe and kayak the Tillery Reach at Duke Energy's proposed minimum flow of 330 cfs. Although the study participants indicate that additional flow for boating could enhance the boating experience, they did not identify a specific flow during the study.

162. Rockingham and American Rivers assert that Duke Energy's instream flow study was inadequate because the study: (1) did not identify specific recreation goals relative to the flows necessary to achieve the goals; (2) was not field verified; (3) did not analyze the suitability of flows for angling and other flow-based recreation in the Tillery Reach; and (4) did not analyze recreation demand and capacity.¹⁵³ In addition, they assert that the minimum flow of 330 cfs is too low for boating, as evidenced by video footage showing paddlers of canoes and kayaks having difficulty navigating the reach.¹⁵⁴ Rockingham and American Rivers contend that the recreational potential of the Tillery Reach has been limited by the lack of public access and instream flow. Further, they argue that, due to the character of the Tillery Reach and its proximity to cities, recreational use would increase and generate substantial economic value if Duke Energy released adequate flows into the reach, and improved access.

163. Rockingham and American Rivers recommend a preliminary recreation flow release of 1,200 cfs during daylight hours on weekends and holidays each year from May 16 to September 15, with such flows subject to change based on a recreation flow study.¹⁵⁵ As discussed in the EIS,¹⁵⁶ the study would entail a desktop analysis, direct observations of instream flow conditions for recreation interviews with users, and multiple flow comparison surveys. They recommend Duke Energy conduct the study prior to, not after, license issuance.¹⁵⁷

¹⁵³ See Rockingham's and American Rivers' July 24, 2013 motion at 17-32.

¹⁵⁴ *Id.* at 30-31.

¹⁵⁵ See Rockingham's and American Rivers' August 15, 2008 filing at 7-16.

¹⁵⁶ See EIS at 200.

¹⁵⁷ See Rockingham's and American Rivers' August 15, 2008 filing at 8; Rockingham's and American Rivers' July 24, 2013 motion at 16 and 29; Rockingham's and American Rivers' August 28, 2013 motion at 8; and Rockingham's and American Rivers' May 23, 2014 motion for a 2014 recreation flow study.

164. In the EIS,¹⁵⁸ Commission staff found Duke Energy's instream flow study consistent with the study plan developed in consultation with federal and state agencies, non-governmental organizations, and Alcoa Power. The study results allowed for an estimate of the flows needed to support upstream and downstream navigation of motorized and non-motorized boats within the Tillery Reach. Based on the study, staff concluded that 330 cfs would improve boating conditions over the existing conditions of 40 cfs; however, 330 cfs would not be sufficient to allow downstream navigation of jon boats in the Tillery Reach between Tillery Dam and North Carolina WRC's Highway 109 Access Area. Instead, staff found that 671 cfs would be needed for the downstream navigation of jon boats. These flows could be provided using the 1,750 acre-feet to 1,950 acre-feet of water dedicated to recreational boating flows, when allocated in combination with intervening flows from the tributaries.¹⁵⁹

165. As discussed in the EIS,¹⁶⁰ releasing 1,200 cfs every weekend and holiday during the recreation season, as requested by Rockingham and American Rivers, would require an annual allocation of 33,560 acre-feet. Given the low recreational use of the Tillery Reach,¹⁶¹ the \$197,700 annual cost¹⁶² of releasing these recommended flows do not justify the limited benefits, and are not in the public interest. In addition, the reach downstream from Tillery Dam contains a heron rookery, and staff found that flows between 800 and 1,800 cfs, as recommended by FWS, would reduce the foraging habitat for great blue heron.¹⁶³ Regardless, the certification limits the volume of water available for recreational boating flows to 1,950 acre-feet and requires Duke Energy to develop, after consultation with the North Carolina DENR and North Carolina WRC, a Recreation Flow Release Plan.

¹⁵⁸ See EIS at 201-02.

¹⁵⁹ See EIS at 201-02 and 313.

¹⁶⁰ See EIS at 314.

¹⁶¹ See Duke Energy's license application, Appendix E7-2 – Recreation Needs Assessment, dated April 2006, which shows recreational use of the Tillery Reach of 53 percent on April weekends; 30 percent on Memorial Day; 37 percent on June weekends; 33 percent on October weekends; and 30 percent for the remainder of the year.

¹⁶² See EIS at 274. As presented in the EIS, staff estimated the cost of the measure to be \$129,600 in 2007 dollars. Adjusted to 2014 dollars, staff estimates the measure to cost \$197,700.

¹⁶³ See EIS at 314-15.

166. In the EIS,¹⁶⁴ Commission Staff recommended, and Article 406 requires, that Duke Energy develop and implement a Recreation Flow Release Plan to determine how to allocate the required flows. Staff recommended the plan include details to facilitate its implementation, including: (1) a map or maps that clearly identify the segment of the Tillery Reach to be evaluated, which is to extend from Tillery Dam downstream to the Highway 109 Access Area;¹⁶⁵ (2) a description of the flow-dependent recreational use types (*e.g.*, motorized jon boat, non-motorized boat (canoe and kayak), and angling) included in the evaluation; (3) a description of, including the basis for, the rate (cfs), timing (*i.e.*, time of year, number of days, day of week, and time of day), and duration (hours) of the flows; (4) a description of the methodology to be used to monitor recreational use; (5) a provision to notify the public of the flow releases; and (6) a provision to file a report at the end of 3-years to evaluate and, if necessary, modify the plan. In the EIS,¹⁶⁶ staff concluded that the benefits of staff's recommended measures would justify the additional \$17,340 cost to Duke Energy's proposed plan¹⁶⁷ and, therefore, would be in the public interest.

167. The approach outlined in the Agreement, and required by the certification, is reasonable to determine the appropriate recreation flow release schedule for the Tillery Reach. Consequently, there is no need to require Duke Energy to conduct a recreation flow study prior to license issuance, as requested by Rockingham and American Rivers.

G. Public Information on Flow and Reservoir Levels

168. Duke Energy proposes to monitor river flows and reservoir levels, and provide that data to the public through a link on the company's website. Specifically, Duke Energy would provide a link to USGS Gage No. 02129000, on the Pee Dee River near Rockingham, North Carolina, as well as to the new flow gage it plans to install downstream from Tillery Dam. The new flow gage will provide information on, and monitor compliance with, the recreation flow releases to the Tillery Reach. In the EIS,¹⁶⁸ Commission staff concluded that Duke Energy's proposal would enhance public use of

¹⁶⁴ See EIS at 314.

¹⁶⁵ See EIS at 201 and 314.

¹⁶⁶ See EIS at 315.

¹⁶⁷ See EIS at 274 and 315. As presented in the EIS, staff estimated the cost of this measure to be \$14,010 in 2007 dollars. Adjusted to 2014 dollars, staff estimates the measure to cost \$17,340.

¹⁶⁸ See EIS at 203.

the Pee Dee River. Article 407 requires Duke Energy to provide public information on river flows and recreation flow releases at the project.

H. Recreation Enhancements

1. Recreation Facilities

169. Duke Energy proposes to operate and maintain, or to provide for the operation and maintenance of the 10 existing project recreation sites,¹⁶⁹ and to enhance these sites. There are six recreation sites at the Tillery development¹⁷⁰ and four recreation sites at the Blewett Falls development.¹⁷¹

170. At the Tillery development, Duke Energy proposes to improve the parking areas; install picnic tables, trash receptacles, vault toilets, signage, and information kiosks; and modify the boat ramp and dock at the Norwood Access Area to accommodate a range of lake elevations. Duke Energy proposes to construct, operate, and maintain the Clarks Creek Access Area as a project recreation site within the Tillery development boundary. Proposed recreation measures at this site include a parking area, boat access to the Pee Dee River, signage, and an information kiosk. At the Swift Island Access Area, Duke Energy proposes to develop and implement soil erosion and sediment control measures to stabilize the parking area. At the Blewett Falls development, Duke Energy proposes to improve the parking areas; install picnic tables, trash receptacles, vault toilets, signage, and information kiosks; modify the boat ramp at the Pee Dee Access Area to accommodate a range of lake elevations; improve the boat ramp at Grassy Island Access Area; and improve the 2,026-foot-long Blewett Falls Dam Canoe Portage.

¹⁶⁹ See Duke Energy's May 2, 2014 filing.

¹⁷⁰ The sites include: (1) the Swift Island Access Area that has four boat launches, two boat docks, and parking; (2) the Stony Mountain Access Area that has a boat launch, parking, and an access road with shoulder parking; (3) the Norwood Access Area that has parking, a boat launch, and a boat dock; (4) the Lilly's Bridge Access Area that has a boat launch, a fishing platform, and parking; (5) the Tillery Dam Canoe Portage; and (6) the Tillery Tailrace Fishing Access Area.

¹⁷¹ The sites include: (1) the Grassy Island Access Area that has a boat launch and parking; (2) the Pee Dee Access Area that has two boat launches, boat docks, and parking; (3) the Blewett Falls Tailwater Access Area that has a fishing platform and parking; and (4) the Blewett Falls Dam Canoe Portage.

171. In the EIS,¹⁷² Commission staff concluded that Duke Energy's proposed recreation measures, in combination with the additional staff-recommended environmental measures, would enhance recreational opportunities at the project, as well as along the Pee Dee River downstream. However, some of Duke Energy's proposed measures lack specificity. In the EIS,¹⁷³ staff recommended Duke Energy develop, in consultation with the resource agencies; Anson, Montgomery, and Stanly Counties; and Rockingham, a Recreation Plan to include the measures outlined above. Therefore, Article 408 requires Duke Energy to file a Recreation Plan for Duke Energy's 11 project recreation sites, including the proposed Clarks Creek Access Area.

172. Rockingham recommends that Duke Energy provide vault toilets, trash receptacles, lighting, picnic tables, and signage; extend existing boat ramps; and enlarge the existing parking area at the Pee Dee Access Area.¹⁷⁴ Rockingham also recommends that Duke Energy provide vault toilets, trash receptacles, and lighting, as well as extend the boat ramps at the Grassy Island Access Area. In the EIS,¹⁷⁵ Commission staff, based on Duke Energy's Recreation Needs Assessment, recommended that Duke Energy provide Rockingham's recommended additional measures because the anticipated benefits to recreation of these measures would be worth the cost.

173. Additionally, Rockingham recommends that Duke Energy conduct a feasibility study for providing campsites at the Pee Dee Access Area and the Grassy Island Access Area. In the EIS,¹⁷⁶ Commission staff recommended that Duke Energy evaluate the feasibility of developing campsites at the Pee Dee Access Area and the Grassy Island Access Area to address recreation needs and demand. Staff's recommendation was based on a few responses to Duke Energy's Recreation Needs Assessment, but overall the assessment did not identify the need for camping facilities to enhance the recreation experience. In comments on the draft EIS,¹⁷⁷ North Carolina WRC states that it operates the Pee Dee Access Area and the Grassy Island Access Area, and that camping is contrary to the agency's policies and is incompatible with the designated uses at the access areas. North Carolina WRC, however, provides no evidence to support its

¹⁷² See EIS at 212-13.

¹⁷³ See EIS at 312-13.

¹⁷⁴ See Rockingham's May 14, 2007 filing.

¹⁷⁵ See EIS at 311-12.

¹⁷⁶ See EIS at 292.

¹⁷⁷ See North Carolina WRC's December 10, 2007 filing.

position. Regardless, North Carolina WRC disagrees with a need for a feasibility study for providing campsites.

174. As discussed in the EIS,¹⁷⁸ a variety of camping opportunities occur throughout the project region, including at Morrow Mountain State Park located in the northwestern section of Lake Tillery. Although some survey respondents in Duke Energy's Recreation Needs Assessment suggested that providing additional camping opportunities at the Pee Dee Access Area and Grassy Islands Access Area would enhance their camping experience, camping represents a small percentage (between 6 and 7 percent capacity) of the recreation pursued at the project. Neither Duke Energy, nor the signatories to the Agreement, identified a need for developing any campsites at the project. Given the limited use, the apparent inconsistency with resource agency objectives, and the availability of camping nearby, the license does not require Duke Energy to conduct a feasibility study for providing campsites.

175. To enhance recreational boating in the Tillery Reach, Rockingham and American Rivers¹⁷⁹ recommend that Duke Energy: (1) upgrade the existing non-project Highway 109 Access Area, which is located on the Tillery Reach upstream and outside of the Blewett Falls development boundary, and is owned, operated, and maintained by North Carolina WRC; and (2) conduct a feasibility assessment for installing a new boat access area in the 19-mile-long Tillery Reach. They assert that the limited use of the Tillery Reach reflects a lack of adequate flows and public access, and that future recreational use is likely to increase if adequate flows and public access are provided. In the EIS,¹⁸⁰ Commission staff concluded that no significant recreational use demand has been demonstrated, based on Duke Energy's Recreation Needs Assessment, to require Duke Energy to provide these measures. If the recreation needs change during the license term, Standard Article 17 provides a mechanism for the Commission to reopen the license to require additional recreation measures.

176. Anson County, North Carolina recommends that Duke Energy provide additional public access at Blewett Falls Lake because only one site provides boat access at varying reservoir elevations.¹⁸¹ Anson County suggests that Duke Energy consider developing "Old Hooker Boat Landing" or "Lumber Landing" to enhance public access.

¹⁷⁸ See EIS at 179-180.

¹⁷⁹ See Rockingham's and American Rivers' August 15, 2008 filing.

¹⁸⁰ See EIS at 214.

¹⁸¹ See Anson County, North Carolina's August 20, 2007 filing at 10. The county did not provide any details on, or demonstrate a need for, its recommendations.

177. In the EIS,¹⁸² to enhance public access at Blewett Falls Lake, Commission staff recommended that Duke Energy either improve the existing informal SR 1744 Access Area on Blewett Falls Lake, or provide an alternative site for the purpose of providing additional public access. The SR 1744 Access Area has an unpaved boat ramp, a swimming beach, and a grassy/dirt parking area that accommodates 25 vehicles and 10 vehicles with boat-trailers. Duke Energy states that the record does not support, nor does any agency identify, a need for improving the SR 1744 Access Area.¹⁸³ Duke Energy suggests an adaptive management approach for the SR 1744 Access Area,¹⁸⁴ where indicators would be established to justify developing the site. In later comments on the final EIS,¹⁸⁵ Duke Energy states that an additional recreation site at the Blewett Falls development should be contingent on improvements made at the Pee Dee Access Area and recreational use data collected for the Licensed Hydropower Development Recreation Report (Form 80).¹⁸⁶

178. Contrary to Duke Energy's argument, there is a need for additional public access on the western shoreline of Blewett Falls Lake. According to Duke Energy's Recreation Needs Assessment, recreational use at both the SR 1744 Access Area and Pee Dee Access Area reached or exceeded 100 percent capacity on holidays and certain weekends. Because staff found that the SR 1744 Access Area, or an alternative site at Blewett Falls Lake, would address existing and future recreation demand, Article 409 requires Duke Energy to assess whether the SR 1744 Access Area or an alternative site should be developed and made a project recreation site.

2. Monitoring Recreational Use

179. Duke Energy proposes to monitor recreation at project recreation sites and report recreational use levels on the project's Form 80. Duke Energy proposes to hold a recreation group meeting prior to filing Form 80 data with the Commission to discuss

¹⁸² See EIS at 213 and 279.

¹⁸³ See Duke Energy's December 10, 2007 and May 29, 2008 filings.

¹⁸⁴ See Duke Energy's December 10, 2007 filing at 6.

¹⁸⁵ See Duke Energy's May 29, 2008 filing at 3-4.

¹⁸⁶ To evaluate recreation resources at the project, the Commission requires the licensee to prepare and submit a Form 80 every 6 years (*see* 18 C.F.R. section 8.11). Each Form 80 must identify the project's recreation facilities and the level of public use of these facilities.

recreational use and demand, as reflected by the data. In the EIS,¹⁸⁷ Commission staff found that monitoring of recreational use and demand at the project would assist Duke Energy to identify when recreation needs are no longer being met. Therefore, Article 408 requires Duke Energy to file a Recreation Monitoring Report with the Form 80 every 6 years.

I. Shoreline Management

1. Tillery Development

180. Duke Energy proposes to continue implementing the Lake Tillery SMP, which the Commission approved on November 24, 2004.¹⁸⁸ The Lake Tillery SMP guides shoreline management and permitting activities at the Tillery development, and consists of the following components: (1) objectives for shoreline management; (2) a description of measures and guidelines, such as land use classifications, as well as permitted and prohibited shoreline uses, to maintain the aesthetic resources at Lake Tillery; (3) a monitoring and enforcement program; (4) public education and outreach; and (5) a provision to periodically review and update the plan every 10 years. In the EIS,¹⁸⁹ Commission staff found that the plan would protect the scenic, recreational, and environmental resources at the project, and recommended that it be included in any new license issued for the project.

181. Subsequent to the EIS being issued, Duke Energy filed an updated Lake Tillery SMP on December 19, 2011, with a supplement filed on March 12, 2012. The Commission approved, with modifications, the updated SMP on October 9, 2012,¹⁹⁰ requiring Duke Energy to: (1) correct contour elevations on the project boundary and reservoir shoreline maps (Ordering Paragraph (B)); and (2) include language that directs a lessee to minimize effects on leased lands, particularly water willow beds, forested shorelines, and submerged woody debris (Ordering Paragraph (C)).

182. Since 2012, Duke Energy has not filed any updates to the Lake Tillery SMP to incorporate the above requirements. Further, the following additional updates are needed to reflect the requirements of this license: (1) update section 2.6, *Recreation Resources*, to include all project recreation sites at the Tillery development, including the proposed

¹⁸⁷ See EIS at 206.

¹⁸⁸ 109 FERC ¶ 62,129 (2004).

¹⁸⁹ See EIS at 219 and 220.

¹⁹⁰ 141 FERC ¶ 62,021 (2012).

Clarks Creek Access Area,¹⁹¹ as well as remove references to providing funds to North Carolina WRC for a fishing pier at Stony Mountain Access Area, a North Carolina WRC enforcement facility at Stony Mountain Access Area, and operation and maintenance of Duke Energy's boat access areas at Lake Tillery because no entity demonstrated the need for the measures and the Commission does not look favorably on funding requirements;¹⁹² and (2) update section 2.7, *Cultural Resources*, to include consultation with the Catawba Indian Nation and North Carolina SHPO to protect archaeological sites.

183. Article 410 requires Duke Energy to continue implementing the Lake Tillery SMP upon license issuance and until Duke Energy updates the plan. Article 410 also requires Duke Energy to file an updated Lake Tillery SMP with the modifications outlined above. In addition, to provide a mechanism for tracking shoreline resources and uses, as well as facilitate future reviews, this license requires Duke Energy to file Geographic Information System (GIS) data regarding the Lake Tillery area and shoreline management classifications. Article 410 includes the details and filing specifications for the GIS data required by the Commission.

184. As explained earlier in this order,¹⁹³ the certification requires Duke Energy to place a restrictive covenant on undeveloped project land at the confluence of the Uwharrie River on Lake Tillery. Placing a restrictive covenant on this parcel of land will help protect vegetated habitat and preserve the natural character of the lake. To facilitate the Commission's administration of the license, the SMP required by Article 410 must indicate that this land is subject to a restrictive covenant.

2. Blewett Falls Development

185. Duke Energy proposes to develop and implement a SMP for Blewett Falls Lake to protect the lake's environmental resources and preserve its undisturbed character. Specifically, Duke Energy proposes to prohibit private access, except foot access, to the lake across project lands at designated public access areas. In the EIS,¹⁹⁴ Commission staff recommended that Duke Energy develop a SMP for Blewett Falls Lake that includes specific goals and objectives to protect riparian and aquatic habitat and the scenic quality of the Blewett Falls development, consultation with resource agencies in developing the

¹⁹¹ See Duke Energy's May 2, 2014 filing.

¹⁹² See *Settlements in Hydropower Licensing Proceedings Under Part 1 of the Federal Power Act*, 116 FERC ¶ 61,270 (2006) at P 26.

¹⁹³ See ¶ 92, *supra*.

¹⁹⁴ See EIS at 226.

plan, periodically reviewing and updating the plan, and a provision for monitoring and enforcing the measures. Article 411, therefore, requires Duke Energy to file a SMP for Blewett Falls Lake that includes the above provisions.

186. The certification requires Duke Energy to place a restrictive covenant on undeveloped project land in the Grassy Islands area on Blewett Falls Lake.¹⁹⁵ For the same reasons discussed above for the land (*i.e.*, at the confluence of the Uwharrie River) along Lake Tillery, the SMP required by Article 411 must indicate that Grassing Islands area is subject to a restrictive covenant.

J. Funding Contribution for the Yadkin-Pee Dee River Trail

187. Duke Energy proposes to provide a one-time contribution of matching funds up to \$25,000 to North Carolina DENR to enhance and/or expand any portion of the existing Yadkin-Pee Dee River Trail, from Tillery Dam in North Carolina to the I-95 Bridge in South Carolina. The funds would be used for development, promotional, and/or implementation purposes. In the EIS,¹⁹⁶ Commission staff found that the funding contribution to North Carolina DENR would enhance the recreational opportunities associated with the trail, and, thus, recommended the measure.

188. Neither Duke Energy, nor any other entity, explained exactly how the funds would be allocated, identified the benefits to accrue from the funding, explained whether such funding would be adequate to attain the benefits, and explained whether there is a need for such improvements. Because such funding would be contingent on the receipt of funds from other sources, the Commission cannot ensure that such measures would be implemented.¹⁹⁷ Therefore, the license does not require Duke Energy to provide up to \$25,000 to North Carolina DENR. However, Duke Energy is free to enter into an off-license agreement for this measure.

K. Funding to North Carolina WRC

189. Duke Energy proposes to: (1) provide up to \$25,000 to North Carolina WRC to develop a public shoreline fishing area in Stanly County; (2) co-fund, with North Carolina WRC, the construction of a joint-use boat house and boat ramp for law enforcement and lake management purposes on Lake Tillery; and (3) provide \$240,000,

¹⁹⁵ See ¶ 92, *supra*.

¹⁹⁶ See EIS at 214 and 311.

¹⁹⁷ See *Settlements in Hydropower Licensing Proceedings Under Part I of the Federal Power Act*, 116 FERC ¶ 61,270 (2006) at P 11.

for 10 years, to North Carolina WRC for it to operate and maintain Duke Energy's project recreation sites.¹⁹⁸

190. The Commission does not typically look favorably on funding requirements, but rather looks to its licensees to provide specific measures to address project effects and purposes.¹⁹⁹ The parties did not demonstrate the need for a shoreline fishing area in Stanly County, explain where the facility would be located, or explain why the allocated funds would be sufficient to provide the measure. Therefore, there is no basis for requiring the funding. Co-funding a joint-use boat house and boat ramp for law enforcement is also problematic because it is not clear as to the project purpose these facilities would serve, and the Commission cannot enforce such an agreement against a non-licensee. As to funding another entity to maintain project recreation facilities, the Commission has explained that the licensee is ultimately responsible for the operation and maintenance of its project recreation facilities. Consequently, any cost-sharing agreement would have to be a matter of contract between the licensee and the third party.²⁰⁰ For the above reasons, this license does not require the payments to North Carolina WRC. However, Duke Energy is free to enter into an off-license agreement for these measures.

L. Economic Analysis in the EIS

191. Rockingham and American Rivers assert that Commission staff's analysis of project economics is incomplete because: (1) staff did not analyze how the merger of Progress Energy with Duke Energy affects the uses and benefits of the project; (2) staff did not complete a comparison of the economic benefits of staff's alternative and Rockingham's and American Rivers' alternative under *Mead Corp.*;²⁰¹ (3) staff did not analyze the feasibility of a power plant retrofit to generate power with higher minimum flows; and (4) staff did not analyze how Alcoa Power and Duke Energy coordinate the operation of their respective projects, the Yadkin Project and the Yadkin – Pee Dee Project.

¹⁹⁸ See section 2.4.5 of the Agreement. At the end of 10 years, Duke Energy and North Carolina WRC would re-negotiate the operation and maintenance agreement.

¹⁹⁹ See *Settlements in Hydropower Licensing Proceedings Under Part I of the Federal Power Act*, 116 FERC ¶ 61,270 at P 26 (2006).

²⁰⁰ *Id.* at P 20.

²⁰¹ 72 FERC ¶ 61,027 (1995).

1. Progress Energy and Duke Energy Merger

192. Rockingham's and American Rivers' argument that the analysis in the EIS should be redone to consider the uses and benefits of Yadkin-Pee Dee Project relative to Duke Energy's entire portfolio of energy assets, and to require Duke Energy to "disclose its plans and needs for the project" is misplaced.²⁰² As Duke Energy points out, the effect of the merger on the holder of the license was a change in its name and the licensee's holding company; it was not a transfer. Neither of these changes requires additional or different analyses, or an update to Duke Energy's Exhibit B.

2. Comparison of Economic Benefits

193. Rockingham and American Rivers argue that by considering its recommended minimum flow (*i.e.*, 1,000 cfs year-round and 1,800 cfs in the spring) as an environmental measure rather than an action alternative, the EIS analysis failed to determine whether power generation under its recommended flow alternative would be economical under *Mead Corp.*²⁰³ The range of alternatives that must be considered is a matter within an agency's discretion,²⁰⁴ and there is no requirement to examine each proposed mitigation or enhancement measure as a separate alternative.²⁰⁵ The EIS discussed the benefits and cost of lost generation associated with Rockingham's and American Rivers' flow alternative, and explained the reasons for not adopting the recommendation.²⁰⁶ Accordingly, the analytical approach taken in the EIS, which is the same the Commission has employed for decades, considered a reasonable range of alternatives and enabled Commission staff to make an informed recommendation concerning the relicensing of the Yadkin – Pee Dee Project.

194. Rockingham and American Rivers suggest that implementing their proposal still results in an economic project and that its flow proposal is justified. As explained earlier, staff determined that Rockingham's and American Rivers' flow alternative was not

²⁰² See City's and American Rivers' July 24, 2013 motion at 10-11.

²⁰³ Rockingham and American Rivers assert that the EIS analysis omits the economic finding because their flow alternative was included Table 57, which summarizes the costs of the various environmental measures, and not in Table 58, which summarizes the costs of the three action alternatives considered in the EIS. See Rockingham's and American Rivers' July 24, 2013 motion at 13.

²⁰⁴ *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 551-52 (1976).

²⁰⁵ *Idaho Power Co.*, 110 FERC ¶ 61,242 (2005) at PP 80-85.

²⁰⁶ See EIS at 298-300.

justified by the minor incremental improvement to downstream aquatic habitat relative to the staff alternative, and that current and projected recreation benefits did not justify the higher flows.

3. Tillery Turbine Retrofit

195. Rockingham and American Rivers criticize the EIS for not evaluating the feasibility of their recommendation to require Duke Energy to replace or modify an existing turbine or add a new turbine to the Tillery development to allow it to generate with its higher recommended minimum flows to further enhance aquatic habitat and recreational use of the Tillery Reach. Rockingham and American Rivers argue that such a retrofit would permit continuous power generation and may increase the project's net economic benefit. In support, Rockingham and American Rivers present new information which they claim demonstrates that adding a 7-MW minimum flow turbine could be economically feasible.²⁰⁷ Their analysis estimates construction costs at \$19.6 million, and that the minimum flow turbine would generate about 61,320 MWh/year valued at \$3.5 million, based on non-peak rates. Their analysis suggests that Duke Energy could recover the turbine cost in about 6 years.²⁰⁸

196. Duke Energy takes issue with a number of Rockingham's and American Rivers' assumptions and costs used in developing their analysis, including the availability of water, generation assumptions, and the need for major modifications to the sluice gate or a new powerhouse to install the 7-MW turbine.²⁰⁹ Duke Energy estimates that a minimum flow turbine would cost about \$28,000,000, and increase the net investment of Commission staff's recommended alternative, with Rockingham's and American Rivers' flows and Tillery retrofit, to \$50,957,090.²¹⁰

197. Commission staff reviewed the new information provided by Rockingham and American Rivers,²¹¹ and Duke Energy,²¹² since the issuance of the final EIS. Adding a

²⁰⁷ Rockingham's and American River's study for a minimum flow turbine assumes that the new powerhouse would operate 24 hours-a-day, 365 days-a-year, have a design flow of 1,200 cfs, and generate non-peak energy. *See* Exhibit 12 of Rockingham's and American Rivers' July 24, 2013 motion.

²⁰⁸ *See* Exhibit 13 of Rockingham's and American Rivers' July 24, 2013 motion.

²⁰⁹ *See* Duke Energy's July 23, 2014 filing at 8-12.

²¹⁰ *Id.* at 12.

²¹¹ *See* Rockingham's and American Rivers' July 24, 2013 and June 23, 2014 motions.

new minimum flow turbine would be expensive, and it would generate energy primarily during non-peak demand periods rather than peak-demand periods, which reduced the value of power.²¹³ Passing flows through a minimum flow turbine would reduce the aeration effect and water quality benefits associated with spilling water through the existing trash gate. To ensure water quality is protected, the turbine unit would likely include a mechanism for aerating the flows, and such a mechanism would further increase costs. Finally, a minimum flow turbine would increase the potential for fish entrainment and mortality.²¹⁴ All of these factors would increase the cost of Rockingham's and American Rivers' proposed flows, relative to staff's recommended alternative.

198. As discussed in this order, staff concluded that the limited additional benefits to aquatic habitat and low recreational use of the Tillery Reach do not justify the added cost of providing Rockingham's and American Rivers' recommended flows. Staff also noted that the existing trash gate at Tillery Dam was capable of passing its recommended minimum flows. Therefore, no further study of a retrofit is needed. Regardless, as Duke Energy points out, if retrofitting the Tillery development ever becomes economical and beneficial to its customers Duke Energy can request to amend the license to do so.

4. Coordination of Yadkin and Yadkin – Pee Dee Projects

199. Rockingham and American Rivers fault the EIS for not considering the operational coordination between Alcoa's Yadkin Project and Duke Energy's Yadkin – Pee Dee Project, in order to increase power generation or otherwise enhance non-developmental uses of the basin.²¹⁵ Contrary to Rockingham's and American Rivers' arguments, Commission staff recognized the relationship between the two projects by preparing a single EIS that addressed resources affected by both projects. As discussed in the EIS,²¹⁶ Alcoa modeled operation of the Yadkin Project and its ability to provide the proposed minimum flows using the OASIS hydrologic model. In addition, staff modeled the combination of reservoir levels and minimum flows to determine the effects of more

²¹² See Duke Energy's August 8, 2013 and July 23, 2014 responses to Rockingham's and American Rivers' July 24, 2013 and June 23, 2014 motions.

²¹³ Staff estimates the off-peak energy rate to be \$39.96/MWh and the peak rate to be \$79.56/MWh.

²¹⁴ See EIS at 120.

²¹⁵ See Rockingham's and American Rivers' July 24, 2013 motion at 15.

²¹⁶ See EIS at 81-85.

restrictive drawdown limits at Alcoa's High Rock reservoir on the Yadkin-Pee Dee system. That analysis shows that the proposed flows for the Yadkin and Yadkin – Pee Dee projects, as well as Rockingham's and American Rivers' recommended flows would almost always be available, except during drought conditions.

ADMINISTRATIVE PROVISIONS

A. Annual Charges

200. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of such funds.

B. Exhibit F and G Drawings

201. The Commission requires licensees to file sets of approved project drawings in electronic file format. Article 202 requires the filing of these drawings.

202. The Exhibit G drawings filed with the license application do not enclose and show all of the project features, including the recreation facilities, within the project boundary. Therefore, Article 203 requires Duke Energy to file revised Exhibit G drawings to show all of the licensed recreation facilities enclosed within the project boundary.

C. Amortization Reserve

203. The Commission requires that for new major licenses, non-municipal licensees must set up and maintain an amortization reserve account upon license issuance. Article 204 requires the establishment of the account.

D. Headwater Benefits

204. Some projects directly benefit from headwater improvements that were constructed by other licensees, the United States, or permittees. Article 205 requires the licensee to reimburse such entities for these benefits if they were not previously assessed and reimbursed.

E. Use and Occupancy of Project Lands and Waters

205. Requiring a licensee to obtain prior Commission approval for every use of occupancy of project land would be unduly burdensome. Therefore, Article 413 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

F. Review of Final Plans and Specifications

206. Article 301 requires the licensee to provide the Commission's Division of Dam Safety and Inspections (D2SI) Atlanta Regional Office with final contract drawings and specifications, together with a supporting design report, consistent with the Commission's engineering guidelines. The submittal shall include a temporary construction emergency action plan, a quality control and inspection program, and a soil erosion and sediment control plan.

207. Article 302 requires the licensee to provide the Commission's D2SI-Atlanta Regional Office with cofferdam and deep excavation construction drawings.

208. Where new construction or modifications to the project are involved, the Commission requires the licensee to file revised drawings of project features as built. Article 303 provides for the filing of these drawings.

209. Article 304 requires the licensee to coordinate any modifications that would affect project works or operation resulting from environmental requirements, with the Commission's D2SI – Atlanta Regional Office.

G. Commission Approval of Resource Plans, Notification, and Filing of Amendments

210. In Appendices A, B, and C, there are certain certification conditions and fishway prescriptions that either do not require the licensee to file plans with the Commission for approval; do not require the licensee to file reports with the Commission; require agency, but not Commission notification of emergencies and other activities; or require license amendments. Therefore, Article 401 requires the licensee to: (a) file the plans with the Commission for approval; (b) file reports with the Commission after monitoring has been completed; (c) notify the Commission of emergencies and other activities; and (d) file amendment applications, as appropriate.

STATE AND FEDERAL COMPREHENSIVE PLANS

211. Section 10(a)(2) of the FPA²¹⁷ requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.²¹⁸ Under section 10(a)(2)(A) of the FPA, federal and state agencies filed 44 comprehensive plans that address various resources in North Carolina. Of these, the Commission staff

²¹⁷ 16 U.S.C. § 803(a)(2)(A) (2012).

²¹⁸ Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2014).

identified and reviewed 19 comprehensive plans that are relevant to this project.²¹⁹ No conflicts were found.

APPLICANT'S PLANS AND CAPABILITIES

212. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,²²⁰ Commission staff evaluated Duke Energy's record as a licensee for these areas: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. This order adopts staff's analyses and conclusions.

A. Conservations Efforts

213. Section 10(a)(2)(C) of the FPA requires the Commission to consider the extent of electricity consumption efficiency improvement programs in the case of license applicants primarily engaged in the generation or sale of electric power, like Duke Energy. Duke Energy has provided conservation services for its electricity customers since 1971. Duke Energy has several programs to promote conservation and energy efficiency for residential, commercial, industrial, and agricultural customers including: (1) making available special electric rates to customers who modify or build their homes to meet insulation and other energy conservation requirements and to large industrial customers that shift usage from peak times; (2) providing the public with energy saving tips through local advertisements; (3) making available an online energy audit suitable for individual residences or small business; and (4) providing on-site energy needs assessments along with recommendations on how to solve energy-related problems for larger businesses. These programs show that Duke Energy is making an effort to conserve electricity and has made a satisfactory good faith effort to comply with section 10(a)(2)(C) of the FPA.

²¹⁹ The list of applicable plans can be found in section 5.3 of the EIS for the project. In addition to the comprehensive plans reviewed in the EIS, staff reviewed four additional plans, including: (1) Interstate fishery management plan for Atlantic striped bass (Report No. 24), dated March 1995; (2) Amendment 1 to the Interstate Fishery Management Plan for Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*) (Report No. 31), dated July 1998; (3) Amendment 2 to the Interstate Fishery Management Plan for shad and river herring, dated May 2009; and (4) Amendment 3 to the Interstate Fishery Management Plan for shad and river herring, dated February 2010.

²²⁰ 16 U.S.C. §§ 803(a)(2)(C) and 808(a) (2012).

B. Compliance History and Ability to Comply with the New License

214. Based on a review of Duke Energy's compliance with the terms and conditions of the existing license, Commission staff finds that Duke Energy's overall record of making timely filings and compliance with its license is satisfactory. Therefore, staff believes Duke Energy can satisfy the conditions of a new license.

C. Safe Management, Operation, and Maintenance of the Project

215. Commission staff has reviewed Duke Energy's management, operation, and maintenance of the Yadkin – Pee Dee Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines. Staff concludes that the dams and other project works are safe, and that there is no reason to believe that Duke Energy cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

216. Commission staff has reviewed Duke Energy's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that Duke Energy has devices that monitor structural movement or stress, seepage, uplift, and equipment failure at the project. Duke Energy regularly inspects the project turbine generator units to ensure they continue to perform in an optimal manner, schedules maintenance to minimize effects on energy production, and, since the project has been in operation, has undertaken several initiatives to ensure the project is able to operate reliably into the future. Staff concludes that Duke Energy is capable of operating the project to provide efficient and reliable electric service in the future.

E. Need for Power

217. Duke Energy is an integrated electric utility, serving nearly 2 million people in a 22,000 square mile service area in North Carolina and South Carolina. The 108.6-MW Yadkin – Pee Dee Project generates an average of 370,100 MWh annually.

218. The Yadkin – Pee Dee Project is located within the Virginia-Carolinas area of the Southeastern Electric Reliability Council (SERC) region, which includes Virginia, North Carolina, and South Carolina. In the SERC region, the average annual growth rate for peak energy demand over the last 10-year period (2003-2012) has been 1.55 percent per year. The projected growth rate for peak energy demand for the next 10-year period (2013-2022) is 1.16 percent per year. Over the next 10 years, the demand for peak energy in the SERC region is projected to increase by 6,918 MW. SERC anticipates that additional capacity will be needed to maintain reliability. Power from the Yadkin – Pee

Dee Project will continue to meet Duke Energy's customers growing needs, as well as meet part of the regional need for power.²²¹

F. Transmission Services

219. The project's transmission facilities include the generator leads, station transformers, buses, and switchyard located at each of the two powerhouses. Duke Energy proposes no changes that would affect its own, or other transmission services in the region.

G. Cost Effectiveness of Plans

220. Duke Energy proposes to: (1) increase minimum flow releases downstream from the Tillery and Blewett Falls Developments; and (2) monitor and maintain DO enhancement facilities installed at each development. Duke Energy also proposes several measures and plans to enhance fish and wildlife, terrestrial, recreation, and cultural resources at the project. Based on Duke Energy's record as an existing licensee, Commission staff concludes that these proposals are likely to be carried out in a cost-effective manner.

H. Actions Affecting the Public

221. Duke Energy provided extensive opportunity for public involvement in the development of its application for a new license for the Yadkin – Pee Dee Project. In addition to using the project to help meet local power needs, during the previous license period Duke Energy provided facilities to enhance the public use of project lands and facilities, and operated the project with consideration for the protection of downstream uses of the Pee Dee River.

PROJECT ECONOMICS

222. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,²²² the Commission uses

²²¹ In their July 24, 2013 and June 23, 2014 comments, Rockingham and American Rivers argue that the Commission must analyze how the merger of Progress Energy into Duke Energy Corporation affects the uses and benefits of the project. The merger resulted in a change in the name of the licensee and the holding company that owns the licensee. Neither of these changes requires additional or different analyses.

²²² 72 FERC ¶ 61,027 (1995).

current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

223. In applying this analysis to the Yadkin – Pee Dee Project, Commission staff considered three options: no action, Duke Energy's proposal, and the project as licensed herein.²²³ Under the no action alternative, the project would continue to operate as it does now. The project has an installed capacity of 108.6 MW, and generates an average of 370,100 MWh of electricity annually. Multiplying staff's estimate of average generation by the alternative power cost of \$68.67/MWh²²⁴ yields a total value of the project's power of \$25,414,767 in 2014 dollars. The average annual project cost is about \$7,499,610, or \$20.26/MWh. To determine whether the proposed project is currently economically beneficial, staff subtracts the project's cost from the value of the project's power. Therefore, the project costs \$17,915,157, or \$48.41/MWh, less to produce power than the likely alternative cost of power.

224. As proposed by Duke Energy, the levelized annual cost of operating the project is \$9,771,010, or \$26.92/MWh. The project would generate an estimated average of 362,900 MWh of energy annually. When the estimate of average generation is multiplied by the alternative power cost of \$67.22/MWh, the result is a total value of the project's power of \$24,394,138 in 2014 dollars. Therefore, in the first year of operation, the project would cost \$14,623,128, or \$40.30/MWh, less than the likely alternative cost of power.

225. As licensed herein, with the mandatory conditions and staff measures, the levelized annual cost of operating the project would be about \$10,175,260, or \$28.04/MWh.²²⁵ With the same amount of estimated average generation and the same

²²³ Details of staff's economic analysis for the project as licensed herein and for various alternatives are included in the EIS issued on April 25, 2008, at 257-59. All costs identified in the EIS were adjusted to 2014 dollars, based on the CPI-U index for years 2009-2013.

²²⁴ The alternative power cost was estimated for 2014, and includes the value of energy generated plus a value for dependable capacity. The value of energy is a composite of on-peak and off-peak rates.

²²⁵ This cost includes Duke Energy's estimated cost of \$392,860/year for implementing the conditions of the final BO issued by the NMFS on April 29, 2013. The cost does not include approximately \$88,000/year for measures not recommended by

(continued)

alternative power cost as Duke Energy's proposal, the project would produce power valued at \$24,394,138 in 2014 dollars. Therefore, subtracting the project's cost from the value of power, in the first year of operation, the project would produce power at a cost of \$14,216,870, or \$39.18/MWh, less than the likely alternative cost of power.

226. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include the ability to help maintain the stability of a power system, such as by quickly adjusting power output to respond to rapid changes in system load; and to respond rapidly to a major utility system or regional blackout by providing a source of power to help restart fossil-fuel based generating stations and put them back on line.

COMPREHENSIVE DEVELOPMENT

227. Sections 4(e) and 10(a)(1) of the FPA²²⁶ require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued must be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

228. The EIS for the project contains background information, analysis of effects, and support for related license articles. The project will be safe if operated and maintained in accordance with the requirements of the license.

229. Based on Commission staff's independent review and evaluation of the Yadkin – Pee Dee Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the EIS, the proposed Yadkin -- PeeDee Project, with the staff-recommended measures, is best adapted to a comprehensive plan for improving or developing the Yadkin – Pee Dee River system.

230. This alternative was selected because: (1) issuance of a new license will serve to maintain a beneficial, dependable, and inexpensive source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, recreational resources, and historic properties; and (3) the 108.6 MW of

staff that pertains to funds proposed by Duke Energy.

²²⁶ 16 U.S.C. §§ 797(e) and 803(a)(1) (2012).

electric capacity comes from a renewable resource that does not contribute to atmospheric pollution.

LICENSE TERM

231. Section 15(e) of the FPA²²⁷ provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.²²⁸

232. The license authorizes a moderate amount of new construction (*e.g.*, fish passage facilities) and new environmental mitigation and enhancement measures (*e.g.*, higher minimum flow releases from the Tillery and Blewett Falls Developments, recreation flow releases from the Tillery development, diadromous fish monitoring associated with the fish passage program, and sturgeon monitoring. Because the license requires a moderate amount of measures, a 40-year license term for the Yadkin – Pee Dee Project is appropriate.

The Director orders:

(A) This license is issued to Duke Energy Progress, Inc. (licensee), for a period of 40 years, effective upon license issuance, to operate and maintain the Yadkin – Pee Dee Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The Project consists of:

(1) All lands, to the extent of the licensee's interests in these lands, described in the project description and the project boundary discussion of this order.

(2) Project works which include:

The Tillery Development consisting of: (1) a 16-mile-long, 5,697-acre reservoir at normal pool elevation 278.2 feet National Geodetic Vertical Datum (NGVD) with a

²²⁷ 16 U.S.C. § 808(e) (2012).

²²⁸ See *Consumers Power Co.*, 68 FERC ¶ 61,077, at 61,383-84 (1994).

useable storage capacity of 84,150 acre-feet; (2) the project dam consisting of (i) a 1,200-foot-long earthen embankment, (ii) an approximately 1,552-foot-long concrete gravity structure consisting of a 758-foot-long, 62-foot-high spillway that has eighteen 34-foot-wide by 24-foot-high radial spillway gates and a 14-foot-wide trash sluice gate, (iii) a 310-foot-long powerhouse intake, (iv) a 176-foot-long west-bank non-overflow segment, and (v) a 308-foot-long east-bank non-overflow segment; (3) a concrete powerhouse integral to the dam, containing three Francis turbine-generator units, each with a 22-MW nameplate rating, and one fixed-blade propeller turbine-generator unit with an 18-MW nameplate rating, having a total installed capacity of 84 MW; and (4) appurtenant facilities.

The Blewett Falls Development consisting of: (1) a 12-mile-long, 2,866-acre reservoir at a normal pool elevation of 179.0 feet NGVD, with a useable storage capacity of 30,893 acre-feet; (2) a 3,488-foot-long dam consisting of (i) an 870-foot-long east earthen embankment, (ii) a 1,468-foot-long, concrete gravity ungated spillway with 4-foot-high flashboards, (iii) an 850-foot-long west earthen embankment, and (iv) a 300-foot-long powerhouse intake; (3) a 300-foot-long forebay channel, leading to a concrete-brick powerhouse containing six S. Morgan Smith turbine-generator units (three 3.2-MW units and three 5-MW units), each with its own penstock and headgate, having a total installed capacity of 24.6 MW; (4) a 900-foot-long tailrace; and (5) appurtenant facilities.

The project works generally described above are more specifically shown and described by those approved portions of exhibits A and F shown below:

Exhibit A: The following sections of Exhibit A filed on April 26, 2006:

Pages A-1 through A-17 of Exhibit A, entitled "Project Description," describing the structural, mechanical, electrical, and transmission equipment for each of the two developments.

Exhibit F:

Exhibit F Drawing	FERC No. 2206 -	Description
<i>Blewett Development</i>		
Sheet F-1	1001	Blewett Dam – General Plan of Development
Sheet F-2	1002	Blewett Dam – Powerhouse Plan
Sheet F-3	1003	Blewett Dam – Powerhouse Cross-Section
Sheet F-4	1004	Blewett Dam – One Line Diagram

Tillery Development

Sheet F-5	1005	Tillery Dam – General Plan of Development
Sheet F-6	1006	Tillery Dam – Plan & Sections of Dam and Spillway
Sheet F-7	1007	Tillery Dam – Powerhouse Plan and Sections
Sheet F-8	1008	Tillery Dam – Plan of Operating Floor
Sheet F-9	1009	Tillery Dam – Powerhouse and Intake, Dam Cross Section
Sheet F-10	1010	Tillery Dam – Unit 4 Cross section
Sheet F-11	1011	Tillery Dam – Unit 4 Plans
Sheet F-12	1012	Tillery Dam – Main One-line Diagram

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibits A and F described above are approved and made part of this license. The Exhibit G drawings filed as part of the application for license do not conform to the Commission's regulations and are not approved.

(D) This license is subject to the conditions submitted by the North Carolina Department of Environment and Natural Resources – Division of Water Quality under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1)(2012), as those conditions are set forth in Appendix A to this order. Notwithstanding the terms of the water quality certification, the measures required by the certification and in this license are effective upon license issuance.

(E) This license is subject to the conditions submitted by the Secretary of the U.S. Department of the Interior and the Secretary of the U.S. Department of Commerce under section 18 of the FPA, as those conditions are set forth in Appendices B and C, respectively, to this order.

(F) This license is subject to the incidental take terms and conditions of the biological opinion (BO) submitted by the National Marine Fisheries Service (NMFS) under section 7 of the Endangered Species Act, as those conditions are set forth in Appendix D to this order. Authority is reserved to the Commission to amend this license to include such terms and conditions as may be required by NMFS upon resolution of the

court challenge filed by the licensee on the BO issued on April 29, 2013, and to modify the conditions of this license as necessary to achieve consistency with any such modified BO terms and conditions.

(G) This license is also subject to the articles set forth in Form L-10 (Oct. 1975), entitled “Terms and Conditions of License for Constructed Major Project Affecting the Interests of Interstate or Commerce,” (*see* 54 F.P.C. 1792 et seq.), as reproduced at the end of this order, and the following additional articles:

Article 201. Administrative Annual Charges. The licensee must pay the United States annual charges, effective the first day of the month in which the license is issued, and as determined in accordance with the provisions of the Commission’s regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 108.6 megawatts.

Article 202. Exhibit F Drawings. Within 45 days of the date of issuance of this license, as directed below, the licensee must file the approved exhibit drawings in electronic file format on CD disks.

a) Digital images of the approved exhibit drawings must be prepared in electronic format. Prior to preparing each digital image, the FERC Project-Drawing Number (*i.e.*, P-2206-1001 through P-2206-1012) must be shown in the margin below the title block of the approved drawing. The licensee must file two separate sets of exhibit drawings in electronic format on CD disks with the Secretary of the Commission, ATTN: OEP/DHAC. Exhibit F drawings must be segregated from other project exhibits, and identified as **(CEII) material under 18 CFR §388.113(c)**. Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-2206-0001, F-1, Description, MM-DD-YYYY.TIF]. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY - black & white raster file
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4
RESOLUTION – 300 dpi desired, (200 dpi min)
DRAWING SIZE FORMAT – 24” x 36” (min), 28” x 40” (max)
FILE SIZE – less than 1 MB desired

Article 203. Revised Exhibit G Drawings. Within 90 days of the effective date of the license, the licensee must file, for Commission approval, revised Exhibit G drawings enclosing within the project boundary all principal project works necessary for operation and maintenance of the project, including the 11 project recreation sites listed by the

licensee in its filing of May 2, 2014. The Exhibit G drawings must comply with sections 4.39 and 4.41 of the Commission's regulations.

Article 204. Amortization Reserve. Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project must be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee must set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee must deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee must set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee must maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves must be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios must be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity must be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 205. Headwater Benefits. If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee must reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 301. Contract Plans and Specifications. At least 60 days prior to the start of any construction, the licensee must submit one copy of its plans and specifications and supporting design document to the Commission's Division of Dam Safety and Inspections (D2SI) – Atlanta Regional Engineer, and two copies to the Commission (one of these must be a courtesy copy to the Director, D2SI). The submittal to the D2SI – Atlanta Regional Engineer must also include as part of preconstruction requirements: a Quality

Control and Inspection Program, a Temporary Construction Emergency Action Plan, and a Soil Erosion and Sediment Control Plan. The licensee must not begin construction until the D2SI – Atlanta Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

Article 302. Cofferdam and Deep Excavation Construction Drawings. Should construction require cofferdams or deep excavations, the licensee must: (1) review and approve the design of contractor-designed cofferdams and deep excavations prior to the start of construction; and (2) ensure that construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of any cofferdams or deep excavations, the licensee must submit one copy to the Commission's Division of Dam Safety and Inspections (D2SI) - Atlanta Regional Engineer and two copies to the Commission (one of these copies must be a courtesy copy to the Commission's Director, D2SI), of the approved cofferdam and deep excavation construction drawings and specifications, and the letters of approval.

Article 303. As-built Drawings. Within 90 days of completion of construction of the facilities authorized by this license, the licensee must file for Commission approval, revised exhibits A, F, and G, as applicable, to describe and show those project facilities as built. A courtesy copy must be filed with the Commission's Division of Dam Safety and Inspections (D2SI) - Atlanta Regional Engineer, the Director, D2SI, and the Director, Division of Hydropower Administration and Compliance.

Article 304. Project Modification Resulting From Environmental Requirements. If environmental requirements under this license require modification that may affect the project works or operations, the licensee must consult with the Commission's Division of Dam Safety and Inspections Atlanta Regional Engineer. Consultation must allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect the project works, dam safety, or project operation.

Article 401. Commission Approval, Notification, and Filing of Amendments.

(a) Requirement to File Plans for Commission Approval

Various conditions of this license found in the North Carolina Department of Water Quality's (DWQ) section 401 Water Quality Certification (certification) (Appendix A), the U.S. Fish and Wildlife Service's (FWS) section 18 Fishway Prescription (Appendix B), and the National Marine Fisheries Service's (NMFS) section 18 Fishway Prescription (Appendix C) require the licensee to prepare plans in consultation with other entities for approval by North Carolina DWQ, FWS, or NMFS, and to implement specific measures without prior Commission approval. Each such plan

must also be submitted to the Commission for approval. These plans are listed below, along with their respective due dates.

WQC Condition No.	FWS's Fishway Prescription	NMFS' Fishway Prescription	Plan Name	Due Date
7			Aquatic Life Monitoring Plan	Within 6 months of license issuance
	Section 2.1, ¶ 7	B.3	American Shad Population Monitoring Plan	Within 9 months of license issuance
	Section 2.2, ¶ 11	C.5	Hydraulic Model Study Plan	Within 12 months of license issuance
	Section 2.2 ¶ 15	B.5 and B.6	Fish Passage Operation, Monitoring, and Maintenance Plan, including Post Construction Evaluation	Within 4.5 years of license issuance
	Section 2.2, ¶ 17	B.3	Adult American Shad Movement Study Plan	Within 4.5 years of license issuance
	Section 2.3, ¶ 23	B.3	Downstream Fishway Effectiveness Evaluation Methodology	Within 4.5 years of license issuance
	Section 2.3, ¶ 26	B.3	American Shad Outmigration Study Plan	Within 4.5 years of license issuance
	Section 3.1, ¶ 30	B.3	American Eel Upstream Movement Study Plan	Within 9 months of license issuance

WQC Condition No.	FWS's Fishway Prescription	NMFS' Fishway Prescription	Plan Name	Due Date
	Section 3.1, ¶ 36	B.3	American Eel Annual Monitoring Plan	Within 6.5 years of license issuance
	Section 3.2, ¶ 39	B.3	Downstream American Eel Passage Study Plan	Within 5 years of license issuance

The Aquatic Life Monitoring Plan required by Condition 7 of the water quality certification included in Appendix A must also: (a) define success criteria for fish; and (b) outline potential solutions, should the monitoring suggest additional measures are needed.

The licensee must include with each plan filed with the Commission documentation that the licensee developed the plan in consultation with North Carolina Wildlife Resources Commission (North Carolina WRC) and the South Carolina Department of Natural Resources (South Carolina DNR), and received approval from North Carolina DWQ, FWS, and NMFS, as appropriate. Each such plan also must include a provision to file resulting reports with the Commission, as well as the appropriate agency or agencies. The Commission reserves the right to make changes to any plan submitted. Upon Commission approval, the plan becomes a requirement of the license, and the licensee must implement the plan or changes in the project operation or facilities, including any changes required by the Commission.

(b) Requirement to File Reports

Certain conditions of North Carolina DWQ's certification, as well as FWS's section 18 Fishway Prescription require the licensee to file reports with other entities. Because these reports relate to compliance with requirements of this license and may have bearing on future actions, each such report must also be submitted to the Commission. These reports are listed in the following table:

WQC Condition No.	FWS Fishway Prescription^a	Description	Due Date
9		Annual Project Compliance Report	By March 15 of each year for the prior calendar year

WQC Condition No.	FWS Fishway Prescription ^a	Description	Due Date
9		Blewett Falls Lake Sediment Survey	Within 5 years of license issuance
	Section 6.4, ¶ 51 and 52	Annual Diadromous Fish Restoration Progress Report	By May 31 of the year following the annual assessment
	Section 6.4, ¶ 53	Comprehensive Diadromous Fish Assessment	By December 31, 2025

^a NMFS’ fishway prescription does not specifically require the diadromous fish report and assessment, though these measures are a part of the Yadkin – Pee Dee River Diadromous Fish Passage Plan Agreement to which NMFS is a signatory.

The licensee must submit to the Commission documentation of any consultation, and copies of any comments and recommendations made by any consulted entity in connection with each report. The Commission reserves the right to require changes to project operation or facilities based on the information contained in the report and any other available information.

(c) Requirement to Notify Commission of Planned and Unplanned Deviations from License Requirements, and Fulfilling License Requirements

Two North Carolina DWQ certification conditions in Appendix A and three conditions within FWS’s and NMFS’ fishway prescriptions in Appendices B and C would allow the licensee to temporarily modify project operations under certain conditions. The Commission must be notified prior to implementing such modifications, if possible, or in the event of an emergency, as soon as possible, but no later than 10 days after each such incident. The North Carolina WRC, FWS, NMFS, and South Carolina DNR must also be notified prior to implementing any modifications to project operation under the low-inflow protocol and minimum flows required by certification Conditions No. 9 and 11, as well as the scope of stocking activities and the season of operation for diadromous and American eel downstream passage required by the agencies’ fishway prescriptions. In addition, the North Carolina DWQ certification Condition No. 9 in Appendix A requires the licensee to place restrictive covenants on certain project lands within specified periods of time. The Commission must be notified when the recordation has been completed.

WQC Condition No.	FWS Fishway Prescription	NMFS Fishway Prescription	License Requirement
9			Initiation and conclusion of operation under the Low-Inflow Protocol
9			Placing restrictive conservation covenants of the Grassy Islands and Uwharrie River tracts within 24 months of license issuance
9			Additional operational measures under stage 4 of the low inflow protocol
11			Minimum flow rates and lake level fluctuations
	Section 2.2, ¶ 13 & 23		Operation of the upstream and downstream diadromous fish passage facility at Blewett Falls
	Section 2.2, ¶ 14, 17, 19, 21, & 22	C.2	Scope of stocking activities for diadromous fish passage program
	Section 2.3, ¶ 23 & 26	B.7	Downstream diadromous fish passage operation and season of operation
	Section 3.2, ¶ 43	B.7	Downstream American eel passage season of operation

(d) Requirement to File Amendment Applications

Certain North Carolina DWQ certification conditions in Appendix A, and FWS and NMFS fishway prescriptions contemplate unspecified long-term changes to project operation or facilities for the purpose of mitigating environmental effects. These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. These conditions are listed below.

WQC Condition No.	FWS Fishway Prescription	NMFS Fishway Prescription	Modification
8			Additional measures to meet dissolved oxygen standards
9			Flow adjustment operations to enhance fish spawning

WQC Condition No.	FWS Fishway Prescription	NMFS Fishway Prescription	Modification
9			Operation under the low inflow protocol
	Section 2.1, ¶ 9	B.5	Modification of diadromous fish passage facilities and associated measures
	Section 2.2, ¶ 11	B.5	Upstream diadromous fish passage facilities at Blewett Falls
	Section 2.3, ¶ 24	B.5	Downstream diadromous fish passage facilities at Blewett Falls
	Section 3.1, ¶ 38	B.5	Upstream American eel passage at the Tillery development
	Section 3.2, ¶ 41	B.5	Downstream American eel passage facilities at Blewett Falls

Article 402. Dissolved Oxygen Compliance Monitoring Plan. The Dissolved Oxygen Compliance Monitoring Plan, filed January 20, 2012 (*see* Attachment 3 of filing at 142-219), is approved and must be implemented according to the schedule included in the plan.

The approved Dissolved Oxygen Compliance Monitoring Plan must not be amended without prior Commission approval. The Commission reserves the right to make changes to the Dissolved Oxygen Compliance Monitoring Plan.

Article 403. Minimum Flows. The licensee must provide the minimum flows included in sections 2.1.3.2 (Blewett Falls Development) and 2.1.4.2 (Tillery Development) of the Comprehensive Relicensing Agreement, filed on July 30, 2007, and required by Condition 9 of the North Carolina Division of Water Quality's water quality certification issued February 11, 2008, as modified on September 12, 2008 (in Appendix A), or inflow to the Tillery Development, whichever is less.

Article 404. Shortnose and Atlantic Sturgeon Protection Plan. Within six months of license issuance, the licensee must file for Commission approval, a Shortnose and Atlantic Sturgeon Protection Plan detailing how it will implement the incidental take terms and conditions of the National Marine Fisheries Service's (NMFS) Biological Opinion, filed on April 29, 2013, to minimize take of listed species. The terms and conditions are included in Appendix D.

The plan must include, at a minimum, the licensee's strategy for implementing the provisions outlined in the terms and conditions of the incidental take statement. In addition, the plan must include a provision for filing any report required by the conditions of the incidental take statement with the Commission for review.

The plan must be developed after consultation with NMFS, the U.S. Fish and Wildlife Service, the North Carolina Wildlife Resources Commission, and the South Carolina Department of Natural Resources. The licensee must include with the plan an implementation schedule, documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the agencies above, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 405. *Yadkin River Goldenrod Monitoring and Protection Plan.* Within one year of license issuance, the licensee must develop, and file with the Commission for approval, a Yadkin River Goldenrod Monitoring and Protection Plan, to monitor and protect populations of the species within the project boundary.

The plan must include, at a minimum:

- (1) Measures to protect existing populations, including, but not limited to, annual control of invasive species;
- (2) Surveys conducted every 5 years to monitor species occurrence and the effects of project operation and project-related recreation on Yadkin River goldenrod habitat; and
- (3) Reports to be filed with the Commission by January 31 of the year following the 5-year survey period detailing survey results and any recommendations for protecting identified populations, including expanding suitable habitat within the project boundary.

The plan must be developed after consultation with the U.S. Fish and Wildlife Service, the North Carolina Natural Heritage Program, North Carolina Wildlife Resources Commission, and Alcoa Power. The licensee must include with the plan an implementation schedule, documentation of consultation, copies of recommendations on

the completed plan after it has been prepared and provided to the above entities, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 406. Recreation Flow Release Plan. Within one year of license issuance, the licensee must file with the Commission for approval, a Recreation Flow Release Plan for the Tillery Reach of the Pee Dee River. The purpose of the plan is to determine how to allocate the 1,750 acre-feet and 1,950 acre-feet of water from Lake Tillery for boating and angling during the recreation season (May 15 through September 15) from Tillery Dam to the North Carolina Wildlife Resources Commission's (North Carolina WRC) Highway 109 Access Area, as required by section 2.1.4.3, *Recreational Boating Flows*, of the Settlement Agreement for the Relicensing of the Yadkin-Pee Dee River Project (Settlement Agreement) filed on July 30, 2007, and required by Condition 9 of the North Carolina Division of Water Quality's (North Carolina DWQ) water quality certification (certification; in Appendix A).

The plan must include the following additional items:

- (1) a map or maps clearly identifying the segment of the Tillery Reach to be evaluated, which extends from Tillery Dam downstream to the North Carolina WRC's Highway 109 Access Area;
- (2) a description of the flow-dependent recreational use types (*e.g.*, motorized jon boat, non-motorized boat (canoe and kayak), and angling) included in the evaluation;
- (3) a description of, including the basis for, the rate (cubic feet per second), timing (*i.e.*, time of year, number of days, day of week, and time of day), and duration (hours) of the flows;
- (4) a description of the methodology used to monitor recreational use during the recreation flow releases;
- (5) a provision to notify the public through a toll-free telephone number and on the licensee's website of the flows to be released, the schedule for releasing

the flows, and any modifications to the scheduled releases due to operating emergencies beyond the control of the licensee; and

- (6) a provision to file a report by April 15 of the year following the end of the 3-year evaluation (*see* section 2.1.4.3 of the Settlement Agreement), with any recommendations for modifying the flow release schedule consistent with the requirements of North Carolina DWQ's certification.

The report identified in No. 7 above must include, at a minimum: (a) a detailed description of the study plan, including the survey methodology, the number of participants, and the questionnaire used to elicit boater and angler opinions and flow preferences; (b) the survey results; (c) the recommended flows for boating and angling and the basis for the flows; (d) a schedule for releasing the flows; and (e) documentation of consultation with U.S. Fish and Wildlife Service (FWS), the U.S. Geological Survey (USGS), National Park Service, North Carolina DWQ, North Carolina WRC, and the City of Rockingham, North Carolina (Rockingham).

The plan must be developed after consultation with FWS, USGS, the National Park Service, North Carolina DWQ, North Carolina WRC, and Rockingham. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the entities above, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific reasons.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 407. Public Information at Tillery Development. Upon license issuance, the licensee must provide an electronic link on its website to the U.S. Geological Survey's flow gage at Rockingham, North Carolina. In addition, within one month of installing a new stream flow gage approximately 0.5-mile downstream from Tillery Dam, near the North Carolina State Highway 731 Bridge, as required by Condition No. 9 of the North Carolina Division of Water Quality's water quality certification (in Appendix A), the licensee must provide a link on its website to the gage to provide information on river flows. The licensee must notify the Commission upon completion of each of these requirements.

Article 408. Recreation Plan. Within nine months of license issuance, the licensee must file with the Commission for approval, a Recreation Plan for the Yadkin-Pee Dee Hydroelectric Project that includes the following:

- (1) Provisions for the operation and maintenance (O&M) of the following existing project recreation sites described on pages E7-10 through E7-19 of the licensee's final license application, and clarified in additional information filed May 2, 2014: (a) at the Tillery development - the Swift Island Access Area, Stony Mountain Access Area, Norwood Access Area, Lilly's Bridge Access Area, Tillery Dam Canoe Portage, and the Tillery Tailrace Fishing Access Area; and (b) at the Blewett Falls development - the Grassy Island Access Area, Pee Dee Access Area, Blewett Falls Tailwater Access Area, and the Blewett Falls Dam Canoe Portage. The O&M provisions must include, at a minimum: (1) signage at each project recreation site as specified in section 8.2 of the Commission's regulations, and updated for accuracy as needed; and (2) trash receptacles at each project recreation site and a schedule for trash pick-up.
- (2) A description of the project recreation sites, the amenities at each site, and how the needs of the disabled were considered in the planning and design of the recreation facilities.
- (3) Provisions for implementing the following enhancement measures proposed in sections 2.4.2.2 and 2.4.3.2 of the Settlement Agreement for the Relicensing of the Yadkin – Pee Dee River Project (Settlement Agreement) filed July 30, 2007, and clarified in additional information filed on May 2, 2014:
 - (a) At the Swift Island Access Area: (1) soil erosion and sediment control measures to stabilize soil erosion at the parking area; (2) two vault toilets; (3) an information kiosk; and (4) designated parking for vehicles and vehicles with trailers;
 - (b) At the Stony Mountain Access Area: (1) a vault toilet; (2) an information kiosk; and (3) designated parking for vehicles and vehicles with trailers;
 - (c) At the Norwood Access Area: (1) a picnic shelter and picnic tables; (2) two vault toilets; (3) an information kiosk; (4) designated parking for vehicles and vehicles with trailers; and (5) measures to ensure the dock and boat ramp are operational over a range of reservoir levels;
 - (d) At the Lilly's Bridge Access Area: (1) a picnic shelter and picnic tables; (2) two vault toilets; (3) an information kiosk; and (4) designated parking for vehicles and vehicles with trailers;

- (e) At the Grassy Island Access Area: (1) a vault toilet; (2) designated parking for vehicles and vehicle with trailers; and (3) measures to improve the boat ramp;
 - (f) At the Pee Dee Access Area: (1) a vault toilet; (2) an information kiosk; (3) designated parking for vehicles and vehicles with trailers; and (4) measures to ensure the boat ramp is operational over a range of reservoir levels;
 - (g) At the Blewett Falls Tailwater Access Area: a vault toilet; and
 - (h) At the Blewett Falls Dam Canoe Portage: improvements to the canoe portage.
- (4) A provision to relocate the informal Clarks Creek Access Area to Clarks Creek within the Tillery Development boundary, as proposed in section 2.4.3.2 of the Settlement Agreement. The new Clarks Creek Access Area must include a parking area, signage, an information kiosk, and a boat ramp.
 - (5) For each improvement identified in Nos. 3 and 4 above, the plan must include conceptual drawings and specifications, and a schedule for implementing the measures that does not exceed four years from license issuance.
 - (6) A map or maps showing the type of each of the project recreation facilities and their location in relation to the Yadkin – Pee Dee Project boundary.
 - (7) Concurrent with the periodic filing of the Licensed Hydropower Development Recreation Report (Form 80) with the Commission, the licensee must file a report that discusses: (a) the adequacy of the Recreation Plan to meet its stated goals and the need for any modification to the plan; and (b) any proposed measures or modifications to project recreation sites and a schedule for implementing such changes.

The Recreation Plan must be developed after consultation with the U.S. Fish and Wildlife Service, North Carolina Wildlife Resources Commission, North Carolina Division of Parks and Recreation, the City of Rockingham, North Carolina, and Anson, Montgomery, and Stanly Counties, North Carolina. The licensee must include with the plan an implementation schedule, documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the entities above, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific reasons.

The Commission reserves the right to require changes to the plan. Land-disturbing or land-clearing activities associated with the Recreation Plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 409. *Assessment of Boating Access Improvements at the Blewett Falls Development.* Upon license issuance, the licensee must conduct an assessment of the existing SR 1744 Access Area shown on figure E7-2 and described on page E7-17 of the licensee's final license application, or an alternative site at Blewett Falls Lake, to assess which, if any, site should be developed and made a project recreation site.

Within six months of license issuance, the licensee must file with the Commission for approval, a report that includes the results of the assessment. The report must include the following: (1) an identification of the selected site to provide boat access to Blewett Falls Lake, including the reasons for the selection; (2) a description of the existing recreational use of the area; (3) an identification of the current recreation facilities at the site; (4) the acreage of the site; (5) a map that clearly identifies the site in relation to the Blewett Falls development boundary; (6) measures proposed for upgrading or developing the site, including associated cost estimates; (7) conceptual site drawings and specifications; and (8) a provision to modify the project boundary accordingly.

The Assessment of Boating Access Improvements at Blewett Falls Development must be developed after consultation with the U.S. Fish and Wildlife Service, the North Carolina Wildlife Resources Commission, the North Carolina Division of Parks and Recreation, and Anson County, North Carolina. The report must include an implementation schedule, documentation of consultation, copies of recommendations on the completed report after it has been prepared and provided to the entities above, and specific descriptions of how the entities' comments are accommodated by the report. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing the report with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific reasons.

The Commission reserves the right to require changes to the report. Land-disturbing or land-clearing activities associated with the Assessment of Boating Access Improvements at Blewett Falls Development must not begin until the licensee is notified by the Commission that the report is approved. Upon Commission approval, the licensee must update the Recreation Plan required by Article 408 to include any changes required by the Commission.

Article 410. *Lake Tillery Shoreline Management Plan.* Upon license issuance, the licensee must continue to implement the Lake Tillery Shoreline Management Plan (SMP)

approved by the Commission on October 9, 2012. Within six months of license issuance, the licensee must file with the Commission for approval, a revised Lake Tillery SMP, with the following modifications:

- (1) Revise the text of the Lake Tillery SMP to include the requirements of Ordering Paragraph (B) and Ordering Paragraph (C) of the Commission's Order Modifying and Approving Updated Shoreline Management Plan (141 FERC ¶ 62,021 (2012));
- (2) Revise section 2.6, *Recreation Resources*, consisting of page 12 to page 14, and other applicable sections to identify and describe the licensee's 11 project recreation sites required by Article 408;
- (3) Revise section 2.6, subsection *Recreation Use Levels*, at page 13, to provide for the filing of current recreational use data required by the Licensed Hydropower Development Recreation Report (Form 80) with the Commission;
- (4) Revise section 2.6, subsection *Recreation Use Levels*, consisting of page 13 and page 14, and other applicable sections, to remove the requirement of providing funds to the North Carolina Wildlife Resources Commission;
- (5) Revise section 2.7, *Cultural Resources*, consisting of page 14 and page 15, and other applicable sections, to include consultation with the Catawba Indian Nation;
- (6) Revise the licensee's contact information in Appendix A, *Guidelines for the Use of Leased Properties at Lake Tillery, Attachment A, Contact Information*;
- (7) Show the project land at the confluence of the Uwharrie River being subject to a restrictive covenant;
- (8) Update Appendix A, *Guidelines for the Use of Leased Properties at Lake Tillery*, section 6.4 *Bald Eagle and Blue Heron Nesting and Perch Sites*, to include:
 - (a) a provision to survey for bald eagle nests prior to conducting or permitting activities (*e.g.*, construction, alteration of shorelines or wetlands, installation or expansion of docks and marinas) within the project boundary that may cause disturbance to bald eagles in the project area;
 - (b) measures to protect bald eagle nesting habitat, including adhering to the U.S. Fish and Wildlife Service's (FWS) National Bald Eagle Management Guidelines, as they may be modified from time to time; and

- (c) a reporting and consultation requirement to review bald eagle survey results annually (if any) and determine, in consultation with FWS and the North Carolina Wildlife Resources Commission, if revising or discontinuing surveys is appropriate. Reports documenting the bald eagle survey results must be filed with the Commission by January 31 of the year following the survey.
- (9) Appendix E, *North Carolina Natural Heritage Program Rare Plant and Animal Species Maps*, and any subsequent updates of this map, must be clearly labeled with Docket No. 2206, marked "Privileged," and filed separately with the Commission.

The licensee must develop the updated plan in conjunction with Article 405, Yadkin River Goldenrod Monitoring and Protection Plan, so that provisions for protecting the species are consistent.

The Commission reserves the right to require changes to the updated plan. Implementation of the updated plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the updated plan, including any changes required by the Commission.

Within 90 days of license issuance, the licensee must file two separate sets of Geographic Information System (GIS) data in a georeferenced electronic file format (such as ArcView shape files, GeoMedia files, MapInfo files, or a similar GIS format) with the Secretary of the Commission, ATTN: OEP/DHAC. The data must include (a) polygon files of the project reservoir surface area including a separate polygon for the tailrace area, and (b) polyline file of the shoreline management classifications. The filing must be in CD or diskette format and must include polygon data that represents the surface area of the reservoir/tailrace, as shown on the project boundary exhibits, and polyline data that represents the linear extent of each shoreline classification segment as shown on maps in the shoreline management plan. A polygon GIS data file is required for the reservoir/ tailrace. The attribute table for the reservoir/ tailrace must include at least the reservoir name, water elevation, and elevation reference datum. A polyline GIS data file is required for the shoreline classifications associated with the reservoir. The attribute table for the reservoir must include at least the reservoir name and management classification description for each polyline, consistent with the shoreline management plan.

All GIS data must be positionally accurate to ± 40 feet in order to comply with National Map Accuracy Standards for maps at a 1:24,000 scale. The file name(s) must include: FERC Project Number, data description, date of this order, and file extension in the following format (P-2206, reservoir name polygon/or reservoir name shoreline polyline data, MM-DD-YYYY.SHP). The filing must be accompanied by a separate text file describing the spatial reference for the georeferenced data: map projection used (*i.e.*, UTM, State Plane, Decimal Degrees, *etc.*), the map datum (*i.e.*, North American 27,

North American 83, etc.), and the units of measurement (*i.e.*, feet, meters, miles, etc.). The text file name must include: FERC Project Number, data description, date of this order, and file extension in the following format (P-2206, project reservoir/or shoreline classification metadata, MM-DD-YYYY.TXT).

Article 411. Blewett Falls Lake Shoreline Management Plan. Within one year of license issuance, the licensee must file with the Commission for approval, the Blewett Falls Lake Shoreline Management Plan (SMP) to protect the scenic quality of, and environmental resources at, the project. The plan must include, but not be limited to, the following:

- (1) the goals and objectives of the plan;
- (2) a description of the Blewett Falls development, including a map or maps that delineates the project boundary;
- (3) a provision that prohibits private access to Blewett Falls Lake across project lands, except at designated public access areas;
- (4) a permitting program for allowable structures at the shoreline, including permit application procedures, monitoring, and enforcement provisions;
- (5) a provision showing the project land known as the Grassy Islands area being subject to a restrictive covenant;
- (6)
 - (a) a provision to survey for bald eagle nests prior to conducting or permitting activities within the project boundary that may cause disturbance to bald eagles in the project area;
 - (b) measures to protect bald eagle nesting habitat, including adhering to the U.S. Fish and Wildlife Service's (FWS) National Bald Eagle Management Guidelines, as they may be modified from time to time; and
 - (c) a reporting and consultation requirement to review bald eagle survey results annually (if any) and determine, in consultation with FWS and the North Carolina Wildlife Resources Commission (North Carolina WRC), if revising or discontinuing surveys is appropriate. Reports documenting the bald eagle survey results must be filed with the Commission by January 31 of the year following the survey and
- (7) a provision to review and update the Blewett Falls Lake SMP every 10 years thereafter, following Commission approval, to evaluate the adequacy of the plan to meet its stated goals, and determine the need for any modifications, based on the review.

The Blewett Falls Lake SMP must be developed after consultation with FWS, the North Carolina Department of Natural and Environmental Resources, and North Carolina WRC. The licensee must include with the plan an implementation schedule, documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the agencies above, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific reasons.

The Commission reserves the right to require changes to the plan. Implementation of the policy must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 412. Programmatic Agreement and Historic Properties Management Plan. The licensee must implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission and the North Carolina State Historic Preservation Officer for Managing Historic Properties that May be Affected by a License Issuing to Progress Energy Carolinas, Inc., for the Continued Operation and Maintenance of the Yadkin-Pee Dee Hydroelectric Project in Anson, Montgomery, Richmond, and Stanly Counties, North Carolina (FERC Project No. 2206)," executed on June 10, 2008, and including but not limited to the Historic Properties Management Plan (HPMP) for the project. Pursuant to the requirements of this Programmatic Agreement, the licensee must file, for Commission approval, a HPMP within one year of issuance of this order. The Commission reserves authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee must obtain approval from the Commission, the North Carolina State Historic Preservation Officer, and the Catawba Indian Nation, before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effects.

Article 413. Use and Occupancy. (a) In accordance with the provisions of this article, the licensee must have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee must also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other

condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee must require multiple use and occupancy of facilities for access to project lands or waters. The licensee must also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee must: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee must file three copies of a report briefly describing for each conveyance made under this

paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is 5 acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee must consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer;

(2) Before conveying the interest, the licensee must determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value;

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed must not endanger health, create a

nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee must take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee must not unduly restrict public access to project waters;

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project must be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article must apply to any part of the public lands and reservations of the United States included within the project boundary.

(H) The licensee must serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on matters related to that filing. Proof of service these entities must accompany the filing with the Commission.

(I) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 825l (2012), and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2014). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Ann F. Miles
Director
Office of Energy Projects

FEDERAL ENERGY REGULATORY COMMISSION

**TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING THE INTERESTS OF
INTERSTATE OR FOREIGN COMMERCE**

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the

region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall

make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually-agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the

interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the

relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary

of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to

the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 22. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 23. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

APPENDIX A**Water Quality Certificate Conditions for the Yadkin-Pee Dee Project Issued by the North Carolina Department of Environment and Natural Resource – Division of Water Quality on February 11, 2008, as modified on September 12, 2008, with the filing of the certification’s signature page and omitted maps on October 8, 2008**

For the reasons discussed in this order, Condition 9 of the Certification is modified to delete those portions of section 2.5 pertaining to non-project lands, including section 2.5.2 (donated lands), 2.5.3 (the Diggs Tract), and 2.5.4 (leased lands).

Conditions of Certification:

1. No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Certification. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices, shall be performed so that no violations of state water quality standards, statutes, or rules occur;
2. Sediment and erosion control measures shall not be placed in wetlands or water to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored within six months of the date that the Division of Land Resources has released the project;
3. The Applicant shall identify and report in writing existing and proposed consumptive uses to NCDWQ [North Carolina Division of Water Quality] and the N.C. Division of Water Resources (NCDWR). The Applicant shall report the existing or projected (as appropriate) average consumptive withdrawal and maximum capacity for each withdrawal. The Applicant shall report existing consumptive uses to NCDWQ and NCDWR within 60 days of the acceptance of the License and shall report proposed new or expanded consumptive uses to NCDWQ and NCDWR within 30 days of receiving a request for the proposed new or expanded withdrawal and before submitting any requests to Federal Energy Regulatory Commission (FERC).
4. This Certification does not grant or affirm any property right, license or privilege in any waters or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights or water use rights of any other person, and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. No person shall

interpose this Certification as a defense in any action respecting the determination of riparian or littoral rights or other water use rights. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded. This Certification issues on the express understanding of the NC Department of Environment and Natural Resources (NCDENR) that pursuant to Federal Power Act section 27, 16 U.S.C. § 821, the License does not establish or determine a proprietary right to any use of water. It establishes the nature of the use to which a proprietary right may be put under the Federal Power Act.

Continuing Compliance:

5. Progress Energy Carolinas, Inc.²²⁹ shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with section 303(d) of the Clean Water Act) and any other appropriate requirements of State law and federal law. If the Division determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the Division may reevaluate and modify this Certification to include conditions appropriate to assure compliance with such standards and requirements in accordance with 15A NCAC 2H.0507(d). Before modifying the Certification, the Division shall notify Progress Energy Carolinas, Inc. and the Federal Energy Regulatory Commission, provide public notice in accordance with 15A NCAC 2H.0503 and provide opportunity for public hearing in accordance with 15A NCAC 2H.0504. Any new or revised conditions shall be provided to Progress Energy Carolinas, Inc. in writing, shall be provided to the Federal Energy Regulatory Commission for reference in any Permit or License issued by that agency and shall also become conditions of the FERC License for the project. In addition, if the DO enhancement program as outlined in the Relicensing Agreement does not result in meeting the DO or temperature water quality standard, then this Condition shall be triggered to result in additional measures to meet these standards. Provided further, if the Division develops and adopts standard success criteria for fish similar to the aquatic macrobenthos criteria referenced at Condition 7.e.i. of this Certification, the Condition may also be triggered to incorporate said standard success criteria.

²²⁹ On February 4, 2014, after the North Carolina Division of Water Quality issued the water quality certification for the Yadkin – Pee Dee Project, the Commission amended the license to change the licensee’s name from Progress Energy Carolinas, Inc. to Duke Energy Progress, Inc. *See Progress Energy Carolinas, Inc.*, 146 FERC ¶ 62,098 (2014).

Mitigation:

6. Stream protection, mitigation and enhancement measures, as specific in Sections 2.5, 2.6.1.1, and 2.6.2.1 of the Comprehensive Settlement Agreement dated June 29, 2007, shall be implemented. NCDWQ shall be copied on the property transfers, leases, and any related restrictive covenants, for the property described in the Comprehensive Settlement Agreement dated June 29, 2007.

Other Conditions:

7. Aquatic Life Monitoring

Progress Energy Carolinas, Inc. shall conduct post-licensing monitoring of aquatic life below Tillery Dam as outlined below. The purpose of the monitoring is to document the condition of the aquatic community in the Pee Dee River from Tillery Dam to its confluence with the Rocky River. In addition to the water quality monitoring as specified in the Comprehensive Settlement Agreement dated June 29, 2007, the following biological monitoring shall be required by Progress Energy Carolinas, Inc. as outlined in the January 18, 2007, letter from John Dorney of NCDWQ to John Crutchfield of Progress Energy Carolinas, Inc., (subject: Biological monitoring below Lake Tillery to meet water quality standards) and the April 12, 2007, letter from Phillip J. Lucas of Progress Energy Carolinas, Inc., to John Dorney of NCDWQ, responding to the June 29, 2007 letter (subject: Progress Energy Carolinas, Inc. review and comment on proposed biological monitoring below the Tillery hydroelectric plant), including enclosure 1 “Progress Energy Carolinas, Inc. Detailed Technical Comments Regarding Proposed NCDWQ Biological Monitoring of the Pee Dee River from Tillery Dam to Rocky River Confluence.”²³⁰ Progress Energy Carolinas, Inc. shall submit for NCDWQ written approval a detailed monitoring plan including a specific monitoring schedule, that address, at a minimum, the following items:

- a. Monitoring Sites – Two sites (TZ1 and TZ2) shall be used with the exact monitoring locations selected after consultation and a site visit by NCDWQ.
- b. Frequency of monitoring – Pre-new license and post-new license biological monitoring shall be conducted to establish a baseline condition for the determination of changes attributable to, among other things, improvements

²³⁰ Reference to the June 29, 2007 letter is a typographical error, as it should refer to the January 18, 2007 letter. See Duke Energy’s March 31, 2015 filing of the letters.

in flow and dissolved oxygen. Pre-new license conditions shall be determined prior to implementation of licensed minimum flow, and dissolved oxygen improvements from the project. Post-new license sampling shall be conducted on three (3) year intervals for at least four (4) cycles with written reports provided to NCDWQ. Following the submittal of the written report following the fourth cycle, NCDWQ and Progress Energy Carolinas, Inc. shall consult regarding the need for and any changes to future monitoring.

- c. Type of monitoring – Aquatic macrobenthos monitoring shall be conducted using methodology approved by NCDWQ. Fish community sampling shall be conducted using methodology used in the 2004 shallow water study, including tote barge electrofishing, backpack electrofishing, and seining. In addition, the standard physical and chemical monitoring that is routinely done during macrobenthos or fish sampling shall be conducted.
- d. Timing of monitoring – Monitoring shall be conducted during July or August of the years when it is required, and each sampling event shall be conducted during the same three week window during July or August to reduce variability.
- e. Success/Recovery Criteria –
 - i. Aquatic macrobenthos – Success criteria for aquatic macrobenthos shall be the standard NCDWQ qualitative rating system. Classification of the community at least as “Good-Fair” shall be deemed successful for aquatic macrobenthos.
 - ii. Fish – Fish monitoring data shall be reported in a format to be approved in writing by NCDWQ in order to evaluate the response of the fish community to higher flows and higher dissolved oxygen levels. NCDWQ may develop success criteria for fish, and Progress Energy Carolinas, Inc. will be afforded an opportunity to review and comment on success criteria developed by NCDWQ before the modification provision of Condition 5 of Certification No. 3730 mod1 is triggered.
- f. Trigger Date for Biological Criteria Evaluation – Attainment of macrobenthos success criteria shall be measured using analytical data obtained from a sampling event conducted during or before 2020, provided that the 2020 trigger date may be extended upon a showing by Progress Energy Carolinas, Inc., that uncontrollable conditions, such as extended

drought or chemical or sewage release, interfered with attainment of the success criteria. Upon such showing, NCDWQ shall set an alternative date.

8. Dissolved oxygen monitoring and improvement – Improvements to the dissolved oxygen in the Yadkin River shall be done in compliance with the Comprehensive Settlement Agreement. However, if dissolved oxygen levels are less than the applicable water quality standard after those improvements, Progress Energy Carolinas, Inc. shall propose additional measures to NCDWQ in order to meet that standard. Such measures, as agreed upon in writing by NCDWQ, shall be implemented by Progress Energy Carolinas, Inc. at an agreed-upon schedule.
9. Comprehensive Settlement Agreement – The Comprehensive Settlement Agreement dated June 29, 2007, is hereby incorporated by reference into this Certification, with the exception of Sections 2.4, 2.6 (except for 2.6.1.1. and 2.6.2.1.), and 2.5 (except for those portions of section 2.5.3 dealing with the Grassy Islands and Uwharrie River parcels of land) of the Comprehensive Settlement Agreement dated June 29, 2007. The Conditions of Certification No. 3730 mod1 shall control over conditions in the Comprehensive Settlement Agreement dated June 29, 2007, which are inconsistent with this Certification.
10. Progress Energy Carolinas, Inc. shall collaborate with the N.C. Wildlife Resources Commission to make boat ramps at Blewett Falls Lake accessible for public boating use over the range of elevations up to 4 feet below normal full pond elevation (178.1 ft. 1929 NGVD datum).
11. Progress Energy Carolinas, Inc. shall notify NCDWQ in writing 5 working days of discovery of any deviations to the flow rates and lake level fluctuations as set forth in the Comprehensive Settlement Agreement. Decreased flow shall be restored as soon as practical to the written satisfaction of NCDWQ.
12. DWQ shall be copied on the fish and eel passage schedule.

The following conditions are taken from the Comprehensive Settlement Agreement dated June 29, 2007 and are hereby incorporated as conditions of this Certification.

I. Minimum Instream Flows and Other Stream Protection Measures

A. River Inflows from APCI's [Alcoa Power Generating Inc.] Yadkin Hydroelectric Project

Progress Energy's obligation to meet the minimum flow releases described herein is contingent upon Progress Energy's Tillery Development receiving specified minimum flow releases from Alcoa Power Generating Inc's Yadkin Hydroelectric Project. The

following specified minimum levels of inflow to Lake Tillery from Falls Dam are necessary for Progress Energy to meet its minimum flow obligations:

- February 1 to May 15 – 2,000 cfs as measured on an average daily basis;
- May 16 to May 31 – 1,500 cfs as measured on an average daily basis;
- June 1 to January 31 – 1,000 cfs as measured on an average daily basis.

B. Blewett Falls Plant

1. Minimum Flow Regime

From February 1 through May 15 of each year, the continuous minimum flow will be 2,400 cfs, as measured at the existing USGS gage at Rockingham, to enhance spawning habitat in the Pee Dee River downstream of the Blewett Falls Development. From May 16 through May 31 of each year, a continuous minimum flow will be 1,800 cfs, and for the remainder of the year, June 1 through January 31, the continuous minimum flow will be 1,200 cfs, all subject to allowable variances described below. This Certification establishes a higher priority on the maintenance of minimum flows than the maintenance of reservoir water levels. Therefore, infrequently, events may require the prioritization of maintaining minimum flows over the reservoir water levels identified in Section II of the Comprehensive Settlement Agreement.

2. Flow Adjustments to Enhance Fish Spawning

Progress Energy shall operate its Blewett Falls facility during certain times of the year in a manner intended to enhance fish spawning conditions downstream of the Blewett Falls Development as described and defined below. These time periods are referred to herein as “flow adjustment operations” and they shall occur each year as either (a) one 14-day and one 10-day period, or (b) five 5-day periods. In any event, these periods of flow adjustment to enhance spawning will be characterized by the following:

- Flow adjustment operations shall occur between February 1 and May 15.
- The specific time periods in each year will be decided upon by resource agencies, Progress Energy, and Alcoa Power Generating Inc. (APGI) – collectively, the “Spawning Flow Management Team.” Other entities able to demonstrate relevant fisheries expertise may participate in these discussions. If the option of one 14-day period and one 10-day period is chosen, Progress Energy must be notified of the specific dates at least 14 days prior to the start of each period. If the option of five 5-day periods is chosen, Progress Energy must be notified of the entire schedule at least 10 days in advance of the start of the first of the 5-day periods.

- Periods of flow adjustment operations shall be chosen by the Spawning Flow Management Team based on interpretation of relevant factors that might include, but are not limited to, water temperature and weather data, projected inflow conditions, and observations of fish spawning behavior. If the option of five 5-day periods is implemented, two of these periods must occur between April 15 and May 15.
- Because of concerns regarding the predictability of inflows over longer periods of time, the individual flow adjustment periods must be separated by at least one week, unless otherwise approved by Progress Energy.
- If a period of unusually low inflow to Blewett Falls Reservoir or a Low Inflow Protocol (LIP) period occurs during a previously selected flow adjustment operation period, the release of the required minimum continuous flow (or in the case of an LIP event, the LIP flow) will still be considered a flow adjustment period.
- If a period of higher inflow to Blewett Falls Reservoir occurs during a selected flow adjustment operation period, wherein there is a continuous operation of all commercially available turbines in the Blewett Falls powerhouse, possibly accompanied by additional spillage over the dam crest, this period will count as a flow adjustment period so long as any interruptions in the continuous operation of all commercially available turbines are infrequent and unscheduled.
- If a period of intermediate inflow to the Blewett Falls Reservoir occurs (flows in the range of 3,000 to 6,000 cfs), Progress Energy will manage releases at the Blewett Falls powerhouse as follows:
 - (1) If unregulated tributary inflow to the Pee Dee River above Blewett Falls (particularly from the Rocky River) changes significantly during a designated flow adjustment operation period, Progress Energy can respond to these changes in flow as needed to manage reservoir operations by increasing or reducing the number of turbines in operation without consideration to the limits described below in (2) through (5). This would still be considered a flow adjustment period.
 - (2) Except as identified in (1) above, the upramp time of each turbine at Blewett Falls will be no less than 30 minutes from off-line to full gate.

- (3) Except as identified in (1) above, the downramp time of each turbine at Blewett Falls from full gate to off-line will be in accordance with the following guidelines:
 - i. After the first operating unit is taken off-line, the second operating unit to be taken off-line shall not be taken off-line for at least two hours after the first operating unit was taken off-line.
 - ii. After the second operating unit is taken off-line, the third operating unit to be taken off-line shall not be taken off-line for at least four hours after the second operating unit was taken off-line.
 - iii. After the third operating unit is taken off-line, the fourth operating unit to be taken off-line shall not be taken off-line for at least six hours after the third operating unit was taken off-line.
- (4) On the first day of any flow adjustment operation period, Blewett Falls must commence such related operations no later than 8 a.m. to still be considered as a full day of flow adjustment operation.
- (5) On the last day of any flow adjustment operation period, Blewett Falls units can begin to be taken off-line no earlier than 4 p.m. By example, the schedule below would be considered a full day of a designated flow adjustment operation period if it were the last day of such period:
 - i. 4 PM – go from 5 units to 4 units
 - ii. 6 PM – go from 4 units to 3 units
 - iii. 10 PM – go from 3 units to 2 units
- (6) If the five 5-day flow adjustment operation periods are chosen in any given year, each period shall begin on a Monday morning and end on a Friday evening.
- (7) If the one 14-day and one 10-day period is chosen in any given year, the actual dates shall be such as to minimize the number of weekend days within the 14-day period. For the 10-day period, there will be no more than 2 weekend days.

All decisions to be made by the Spawning Flow Management Team, as outlined in this section, shall require consensus as specifically defined as follows in the Comprehensive Settlement Agreement:

A resolution based on consensus shall have either the unanimous support of all Parties, or at least no opposition from any Party. If a Party has no objection to the resolution, but does not specifically endorse it, the lack of opposition shall be considered to be support of the resolution.

Progress Energy will prepare an annual report of the operations of the Blewett Falls Development during the Flow Adjustment Operation periods, consisting of meeting notes, flow records from streamflow gages, and plant operations. The operations of the Tillery Plant during the Flow Adjustment Period will be coordinated by Progress Energy and subject to dispatch by Progress Energy in accordance with its system needs.

The first year of implementation of the Flow Adjustment Operations shall be the calendar year following the year of license issuance. After five years of Flow Adjustment Operations, the Spawning Flow Management Team shall evaluate the Flow Adjustment Operations and develop recommended changes for consideration by the resource agencies and Progress Energy. Re-evaluation at 5-year intervals may occur if determined necessary and if agreed to by the Spawning Flow Management Team.

3. Minimum Flow Variance

The minimum flow regime will allow a variance for two 5-hour periods each year to reduce the minimum flow release to just leakage flow for testing black-start capability of turbines at the Blewett Falls powerhouse. These black-start tests will be restricted to occur only in October, November, December, or January, when environmental effects of low flow for a 5-hour period are expected to be minimal. Further, these tests shall not be conducted in October if a Stage 1 or greater Low Inflow Protocol event has been triggered.

4. Minimum Flow Compliance and Monitoring

Progress Energy will maintain, to the standards established by the USGS, a continuous flow monitoring gage at the site of the current Rockingham USGS gage and will provide flow data to the public, via the Internet or other appropriate means, to be updated no less than every two (2) hours. For the first ten (10) years after issuance of the New License, Progress Energy will contract with the USGS for operation and maintenance of this gage. Annual reporting of flows will be in accordance with normal USGS practices and procedures. Compliance with minimum flows for the Blewett Falls facility will be measured at the Rockingham gage.

Progress Energy will maintain, to the standards established by the USGS, a continuous flow monitoring gage at the site of the current Rocky River gage near the mouth of the Rocky River. Progress Energy currently pays a portion of the cost of the maintenance of this gage. If for any reason the funding of this gage by others is lost, then Progress Energy will be responsible for the additional funding necessary to maintain the gage. However, the Applicant may elect to discontinue the use of USGS as the provider of this service after the first ten (10) years following the issuance of the new license.

Minimum releases required at the Blewett Falls Development shall be presumed to have been met if flows recorded at the streamflow gage at Rockingham are within 5% of the required minimum release, so long as the "true-up" procedure described below is implemented. Progress Energy will prepare an annual report documenting its compliance with minimum releases, including any "true-up" periods. To the extent practicable, Progress Energy will "true-up" minimum flows monthly; that is, flows falling below the minimum shall be offset by flows greater than the minimum (during minimum release periods) in the same month for a reasonably equivalent amount of time. If any instances of recorded lower-than-required minimum flows are not properly compensated for in the month they occur, such compensation will occur as soon as practicable in the next month, but no later than the 15th day of that month. Progress Energy's annual report shall indicate all periods where a "true-up" was required and show how and when the actual "true-up" occurred. The annual report shall be filed with the NCDENR-DWQ and DWR, by March 31 of the following year. If any of the resource agencies have significant concerns or comments on the report, a consultation meeting will be convened to discuss these concerns. Such meeting shall be held within 45 days of the issuance of the report.

There shall be no "gaming" of the minimum flow variance allowed under this compliance standard; that is, under no circumstance shall Progress Energy intentionally or willfully use the existence of the variance and true-up mechanism to deliberately manipulate minimum flow releases to coincide with demand for electricity. For example, a consistent record of lower-than- required minimum flows during periods of high electrical demand shall be considered "gaming."

Certain LIP events require the release of 925 cfs as the "critical flow." The Applicant shall endeavor to maintain this target flow; however, compliance will have been achieved if the flow recorded during this event is between 900 and 950 cfs at the Rockingham gage.

C. Tillery Plant

1. Minimum Flow Regime

Progress Energy will provide a continuous year-round minimum flow at the Tillery Development of 330 cfs except for a period of eight continuous weeks commencing as

early as March 15, but no later than March 22, when a minimum flow of 725 cfs shall be provided to enhance American shad spawning. This release of 725 cfs will start in 2010, or at the first passage of American shad above Blewett Falls Dam, whichever is later.

2. Temperature of Minimum Flow Releases

Flows released at the Tillery Development for the purpose of meeting minimum flow requirements will be done in such a way as to avoid skimming high temperature surface water from the uppermost surface of Lake Tillery if high temperature gradients are found to occur in the upper six inches of the lake.

3. Minimum Flow Compliance and Monitoring

Within 12 months of the New License becoming Final and Non-Appealable, Progress Energy will install and maintain, to the standards established by the USGS, a continuous flow monitoring gage below the Tillery Development near the State Highway 731 Bridge and will provide flow data to the public, via the Internet or other appropriate means, to be updated no less than every two (2) hours for the first ten (10) years after issuance of the New License. Progress Energy will contract with the USGS for operation and maintenance of this gage. Annual reporting of flows will be in accordance with normal USGS practices and procedures.

Minimum releases required at the Tillery Development are presumed to have been met if flows recorded at the streamflow gage near the Highway 731 Bridge are within 5% of the required minimum, as long as the “true-up” procedure described below is implemented. Progress Energy will prepare an annual report documenting its compliance with minimum releases including any “true-up” period. To the extent practicable, Progress Energy will “true-up” minimum flows monthly; that is, flows falling below the minimum shall be offset by flows greater than the minimum (during minimum release periods) in the same month and for a reasonably equivalent amount of time. If any instances of recorded lower-than-required minimum flows are not properly compensated for in the month they occur, such compensation will occur as soon as practicable in the next month, but no later than the 15th day of that month. Progress Energy's annual report shall indicate all periods where a “true-up” was required and show how and when the actual “true-up” occurred.

4. Other Stream Protection Measures

Progress Energy has agreed to conserve for purposes of stream protection various plots of land it owns along the Pee Dee River in the vicinity of the Project. Conservation is achieved through either donation of lands to the State of North Carolina or through the

placement of restrictive covenants on riparian lands and within shoreline buffer zones. These measures are described in detail in Section IV.

D. Low Inflow Protocol

Progress Energy agrees to comply with the requirements of the Low Inflow Protocol (LIP) dated February 2007, which was developed as part of the relicensing process. The complete text of the LIP is also attached as Appendix B for inclusion in the 401 Water Quality Certificate.

E. Implementation Schedule

Minimum instream flows will be commenced within 60 days of the receipt of a New License from FERC that is Final and Non-Appealable, assuming that APGI's new license has been issued prior to or concurrent with Progress Energy's license and that APGI has commenced, and continues, the releases specified in Section I.A.

II. Reservoir Water Levels

A. Blewett Falls

When inflows to Blewett Falls Reservoir are less than approximately 7,400 cfs, Progress Energy shall maintain a year-round water level regime at Blewett Falls Lake that allows for fluctuations of up to 6 ft, between elevation 172.1 and 178.1 ft, except for system emergencies and LIP. When flashboards are down, an additional 2 ft of drawdown to elevation 170.1 ft is necessary to safely replace the flashboards.

During the bass spawning season, April 15 to May 15, Progress Energy will limit water level changes to 2 ft to enhance bass spawning, except when additional reservoir storage is necessary to meet minimum flow release obligations (minimum flow releases will have priority over lake elevations) or if the flashboards fail. In either of the exceptions noted above, Progress Energy will endeavor to return to normal operations as soon as reasonably practical.

B. Tillery Plant

1. Water Levels

Progress Energy will follow a seasonally-based lake level management schedule at Lake Tillery during the term of the New License. From December 15 through March 1, lake level fluctuations will be limited to 3 ft between 274.3 [275.2 *National Geodetic Vertical Datum; NGVD*] and 277.3 [278.2 *NGVD*], unless use

of reservoir storage is needed to meet demand for electricity. If storage is needed for electrical generation purposes during this period, Progress Energy may use the storage available between elevations 272.3 ft [273.2 *NGVD*] and 277.3 ft [278.2 *NGVD*], resulting in a maximum fluctuation of 5 ft. When used for these power-related purposes, Progress Energy will normally cycle the reservoir within these elevation limits on a daily or multi-daily basis. Water fluctuations up to 8 ft may occur during system emergencies, and potentially be greater during LIP periods.

From April 15 to May 15, Progress Energy will limit lake level changes to 1.5 ft below the water surface elevation of the reservoir, as measured on April 15 for bass spawning (higher elevations are acceptable).

During all other periods of the year (except flood flow conditions), Progress Energy will maintain lake level fluctuations to generally within 2.5 ft of full pool (elevation 277.3 ft [278.2 *NGVD*] measured at Tillery Dam) on weekdays, and generally 1.5 ft of full pool on weekends and holidays.

2. Maintenance Drawdowns

Once in every 5-year period, Progress Energy will schedule a maintenance drawdown of up to 15 ft to occur on Lake Tillery within the September 15 to December 15 timeframe. This drawdown will allow Progress Energy to perform routine periodic maintenance and gate testing that cannot be accomplished when the lake level is higher.

3. Public Information on Water Levels

Progress Energy will add a projection of the expected daily water levels for the day on their existing 800-899-4435 public messaging service. For the first five years of the New License, Progress Energy will also provide an annual notice on November 15 alerting the public to the drawdown limits that apply between December 15 and March 1.

4. Emergency or LIP Water Level Variance

In the case of an LIP event, Lake Tillery and the other larger reservoirs in the basin will be called upon to use some of their storage to augment downstream flows in a coordinated manner. Management of flows and water levels during LIP events are contained in the LIP attached hereto as Appendix B.

C. Compliance Monitoring

Annual reports on lake level compliance will be submitted to the North Carolina Division of Water Quality (NCDWQ) and will include hourly readings of lake levels recorded at the both the Tillery and Blewett Falls dams.

D. Implementation Schedule

The new reservoir level management regime will be initiated within 120 days of the New License becoming Final and Non-Appealable.

III. Water Quality

A. Blewett Falls Plant

1. Tailwater Water Quality

Progress Energy shall meet dissolved oxygen standards by December 2011. The implementation schedule includes completion of field testing of DO enhancement options by December 2008, and completing successful implementation of the best suited DO enhancement technology by December 2011.

2. Compliance Monitoring

Progress Energy will provide monitoring of water temperature and dissolved oxygen. Temperature and DO monitoring will occur immediately below the end of the Blewett Falls tailrace with equipment installed by the Applicant in accordance with protocols approved by NCDWQ. Annual compliance reports will be prepared by Progress Energy and submitted to NCDWQ and FERC by April 15th of the following year.

B. Tillery Plant

1. Tailwater Water Quality

Progress Energy shall meet dissolved oxygen standards by December 2011. The implementation schedule includes completion of field testing of various DO enhancement options by December 2008, and completing successful implementation of the best suited DO enhancement technology by December 2011.

2. Compliance Monitoring

Progress Energy will provide continuous monitoring of water temperature and dissolved oxygen. Temperature and DO monitoring will occur below the Tillery Plant

with equipment installed by the Applicant, in accordance with protocols approved by NCDWQ. The final location of DO monitoring near the Highway 731 Bridge will be determined based upon further testing of DO enhancement technologies and resulting patterns of DO concentrations in the Tillery tailwater. Annual compliance reports will be prepared by Progress Energy and submitted to NCDWQ and FERC by April 15th of the following year.

C. Total Maximum Daily Load Processes

If, during the term of the new license, any Total Maximum Daily Load (TMDL) processes are required for the Yadkin-Pee Dee River (or its tributaries) within the Project Boundary of the Yadkin-Pee Dee Project or on the Pee Dee River immediately downstream of either Tillery Reservoir or Blewett Falls Reservoir, the Applicant will participate in these processes. Participation would be expected to include, for example, providing any existing water quality sampling or flow release data and participating in relevant stakeholder technical teams.

IV. Additional Stream Protection Measures

For the purpose of providing additional protection to stream and riparian habitats within the river corridor potentially affected by Project operations, Progress Energy will undertake certain measures as follows:

- (1) Omitted from this license;
- (2) the placement of restrictive covenants for conservation purposes on certain parcels of undeveloped land owned by Progress Energy adjacent to Project-affected waters; and
- (3) Omitted from this license.

Each of the measures referenced above are more fully described below.

A. Lands to Be Donated to the State of North Carolina

As per discussion in the order, this section has been omitted.

B. Lands Subject to a Restrictive Covenant

As per discussion in the order, the section dealing with the “Diggs Tract” has been omitted.

Within twenty four (24) months of the issuance of the New License that is Final and Non-Appealable, Progress Energy will also place a restrictive covenant for conservation purposes on Project lands it owns in the Grassy Islands area located at the upper reaches of Blewett Falls Lake, which are depicted in the attached Appendix D. This area contains large bottomland hardwood forests and an oxbow swamp with a large stand of Black Gum. These are highly valued wetland resources of regional significance. The restrictive covenant would be defined to permit only certain non-consumptive uses of the lands, including fishing, hunting, hiking, bird watching, and other low-density recreation activities. Prohibited activities will be identical to those described above for the Diggs Tract.

Within twenty four (24) months of the issuance of the New License that is Final and Non-Appealable, Progress Energy will place a restrictive covenant for conservation purposes on certain lands it owns near the mouth of the Uwharrie River, which are depicted in the attached Appendix D. The lands to be protected by a restrictive covenant include (1) those extending from Dutchman's Creek downstream to the tip of the peninsula on the south side of the mouth of the Uwharrie River, and (2) those at the upper end of the "bay," created by the above peninsula, that are classified as of December 2006 as Environmental/Natural Areas in the Shoreline Management Plan, stopping at the first tract of land classified as Impact Minimization Zone. The restrictive covenant will allow only certain non-consumptive uses of these lands, such as fishing, hunting, hiking, bird-watching, and other low-density recreation activities.

Except to accommodate the above allowable activities, the following shall be prohibited: filling, draining, flooding, dredging, impounding, clearing, burning, cutting or destroying vegetation, cultivating, excavating, erecting, overnight camping, constructing, releasing wastes, or otherwise doing any work within the buffer zone, introducing exotic species into the buffer zone (except biological controls pre-approved by NC DWQ); and from changing the grade or elevation, impairing the flow or circulation of waters, reducing the reach of waters, and any other discharge or activity requiring a permit under clean water or water pollution control laws and regulations, as amended. The following are expressly excepted from the prohibited activities: (a) cumulatively very small impacts associated with hunting, fishing, and similar recreational or educational activity, consistent with the continuing natural condition of the property; (b) removal or trimming of vegetation hazardous to persons or property; and (c) restoration or mitigation required under law. No permanent structures would be allowed.

Until these lands are protected by covenant, the Parties agree that interim land management by the Applicant will use reasonable efforts to conform to the following forestry management practices where timbering is scheduled:

- (1) For loblolly pine plantations that are 30 or more years old, thin to approximately 30 trees/acres.

- (2) For pine/hardwood mixed stands that are 30 or more years old, after consultation with NCWRC, thin to approximately 30 trees/acre.
- (3) For 15 to 30 year old stands of loblolly pine, thin to approximately 60 trees/acre.
- (4) Reserve the ability to clear-cut parcels up to 25 acres in size where best management practices would dictate (not including any environmentally significant areas), but only after consultation with NCWRC and DWQ.
- (5) Leave an undisturbed buffer of not less than 100 feet in width along the Pee Dee River and along both sides of any streams.
- (6) Predominantly hardwood stands will not be timbered.

The Applicant represents that it is responsible for providing reliable electric service to its customers within North and South Carolina. To that end, from time to time the Applicant constructs electrical transmission lines within its service area. The Applicant represents that such lines are located only after consideration of many factors, including potential impacts to homes, businesses, schools, roads, and other infrastructure; cultural and historic resources; sensitive environmental features and natural areas; and other factors. Nothing in this 401 Certification (1) is intended specifically to prohibit the Applicant from planning, designing, and constructing a transmission or distribution line through, over or across lands described above by this Certification, or (2) shall obviate any duty to obtain all necessary regulatory, environmental, or other approvals. The parties recognize that the rights, duties, obligations of this 401 certificate and the actions taken pursuant to this Certification (such as the preservation of lands described herein) may be considered in any proceeding regarding a transmission or distribution line.

Each party assumes responsibility for its own costs associated with the deed transfers and restrictive covenants described herein.

C. Lands to be Leased

As per discussion in the order, this section has been omitted.

V. Other Miscellaneous Protection, Mitigation and Enhancement Measures

A. Blewett Falls Plant

1. Shoreline Management

The shoreline management practice for Blewett Falls Lake will prohibit private access, except normal foot access, to the lake across Project lands except at the designated public access areas. By this measure, shoreline management shall focus on natural resource protection to preserve the largely undisturbed nature of the Blewett Falls impoundment. Additional written approval from DWQ is required for changes to the shoreline management plan.

2. Blewett Falls Lake Sediment Survey

Five years following the issuance of the New License that is Final and Non-Appealable, Progress Energy will conduct a sediment survey in Blewett Falls Lake and a gravel recruitment survey in the Blewett Falls tailwater. The gravel recruitment survey will repeat the study conducted by Progress Energy during the relicensing process. If results indicate that there is still no significant problem related to gravel recruitment, then Progress Energy will conduct another survey after an additional 10 years.

B. Tillery Plant

1. Implementation of Shoreline Management Plan

Progress Energy will implement and enforce the existing Tillery Shoreline Management Plan (SMP) approved by the FERC by order dated November 24, 2004.

Appendix B to the Certification

Low Inflow Protocol for the Yadkin & Yadkin-Pee Dee River Hydroelectric Projects

GOAL

The fundamental goal of this Low Inflow Protocol (LIP) is to take staged actions in the Yadkin- Pee Dee River Basin needed to delay the point at which available water storage in the Yadkin Hydroelectric Project (Federal Energy Regulatory Commission – FERC No. 2197) and the Yadkin-Pee Dee Hydroelectric Project (FERC No. 2206) (collectively, projects) reservoirs is fully depleted while maintaining downstream flows. This LIP is intended to provide additional time to increase the probability that precipitation will restore streamflow and reservoir water elevations to normal ranges. The amount of

additional time that is gained during implementation of this LIP depends on the diagnostic accuracy of the trigger points, the amount of regulatory flexibility available to operate the projects, and the effectiveness of the projects' operators and the water users in working together to implement required actions and achieve significant water use reductions. It is assumed that water users in the Yadkin-Pee Dee River Basin, not subject to this LIP, must comply with all applicable State and local drought response requirements.

More specifically, this LIP establishes procedures for adjusting operations during periods of low inflow to the Yadkin Hydroelectric Project owned and operated by Alcoa Power Generating Inc. (APGI) and the Yadkin-Pee Dee River Hydroelectric Project owned by Carolina Power & Light Company and operated by Progress Energy Carolinas, Inc. (PE) (collectively, Licensees) during the term of the new FERC licenses issued for these projects. The provisions of this LIP should be interpreted in a manner consistent with all other provisions of the new FERC licenses.

OVERVIEW

This LIP will be implemented during periods when there is not enough water flowing into the projects' reservoirs to meet the projects' Required Minimum Instream Flows while maintaining reservoir water elevations within Normal Operating Ranges. This LIP provides trigger points and operating procedures that the Licensees will follow for the projects. This LIP also specifies water withdrawal reduction measures for other water users in portions of the Yadkin-Pee Dee River Basin.

The Licensees will provide flow from storage in the projects' reservoirs to support hydroelectric generation and to provide Required Minimum Instream Flows in accordance with their respective new FERC licenses. During periods of normal inflow, reservoir water elevations will be maintained within their Normal Reservoir Operating Ranges. During times that inflow is not adequate to provide Required Minimum Instream Flows and maintain reservoir water elevations within their Normal Reservoir Operating Ranges, the Licensees will reduce releases for hydroelectric generation. If reservoir storage continues to drop and climatologic or hydrologic conditions worsen until trigger points defined in this LIP are reached, the Licensees will implement additional provisions of this LIP, including meeting with the designated agencies and water users to discuss the need for actions pursuant to this LIP. If conditions worsen, progressive stages of this LIP will allow additional use of the available water storage inventory, while conserving water storage volumes through required reductions in LIP Flows and required reductions in water withdrawals.

Implementation of this LIP and movement between the various stages are based on measurements of Stream Gage Three-Month Rolling Average Flow, U. S. Drought Monitor Three-Month Numeric Average, and the High Rock Reservoir water elevation.

The calculation of these triggers and specific thresholds associated with each stage are detailed in this LIP.

Recognizing that improvements to this LIP may be identified during the new FERC license period, this LIP will be re-evaluated as defined in Key Definitions, Facts and Assumptions No. 18.

KEY DEFINITIONS, FACTS, AND ASSUMPTIONS

1. Low Inflow Watch or Low Inflow Condition – A period of time when there is not enough water flow into the projects’ reservoirs to meet the projects’ Required Minimum Instream Flows while maintaining reservoir water elevations within Normal Reservoir Operating Ranges.
2. LIP Flows – For the purposes of this LIP, this term refers to the flows defined in Table 8.
3. Required Minimum Instream Flows – For the purposes of this LIP, this term includes the minimum flow requirements included in the new FERC licenses for the projects.
4. Public Information Obligations – The Licensees will develop and provide information on their respective websites to inform the public on reservoir water elevations, project releases, usability of public access areas, reservoir inflows, meteorological forecasts, Historic and Actual Stream Gage Three-Month Rolling Average Flow calculations, U.S. Drought Monitor Three-Month Numeric Average calculations, LIP status, YPD-DMAG meeting summaries, and implementation of maintenance or emergency operation plans.
5. Stream Gage Three-Month Rolling Average Flow – The three-month rolling average of streamflow will be calculated at the following USGS stream gages:
 - Yadkin River at Tadkin College (02116500)
 - South Yadkin River near Mocksville (02118000)
 - Abbotts Creek at Lexington (02121500)
 - Rocky River near Norwood (02126000)

This flow will be calculated on the last day of each month by averaging the monthly average of the current month and the two preceding months. The sum of the three-month rolling average for these four gage stations will be compared to the Historic Stream Gage Three-Month Rolling Average Flow for the corresponding period.

6. Historic Stream Gage Three-Month Rolling Average Flow – The daily flow for each of the four designated USGS stream gages has been used to calculate a monthly

average flow for the period of record 1974 through 2003. Because the USGS only began gaging flows for Abbotts Creek in 1988, the historical average for this gage will be based on the period 1988 through 2003. The historic three-month rolling average flow for each month of the year, presented in Table 1, was calculated on the last day of each month of the year by averaging the monthly average flow for each month and the preceding two months. The use of the period of record 1974 through 2003 to calculate the historic three-month rolling average flow will be evaluated every five years during the review of this LIP (see Key Definitions, Facts, and Assumptions No. 18).

Table 1. Historic Stream Gage Three-Month Rolling Average Flow

For Evaluation of Flow Trigger on:	Average of daily flows during:	Historic Three-Month Rolling Average Flow, cfs
January 1	Oct-Nov-Dec	4,000
February 1	Nov-Dec-Jan	5,200
March 1	Dec-Jan-Feb	6,250
April 1	Jan-Feb-Mar	7,700
May 1	Feb-Mar-Apr	7,550
June 1	Mar-Apr-May	6,850
July 1	Apr-May-Jun	5,350
August 1	May-Jun-Jul	4,200
September 1	Jun-Jul-Aug	3,600
October 1	Jul-Aug-Sep	3,200
November 1	Aug-Sep-Oct	3,300
December 1	Sep-Oct-Nov	3,550

7. Full Pond Elevation – Also referred to as “Full Pond,” this is the elevation of a reservoir (measured in feet, USGS datum [NGVD 1929]) that corresponds to the point at which water would first begin to spill from each reservoir’s dam if the respective Licensee took no action. This elevation corresponds to the lowest point along the top of the spillway (including flashboards) for reservoirs without flood gates; and to the lowest point along the top of the flood gates for reservoirs that have flood gates. The Full Pond Elevation for each projects’ reservoirs is listed in Table 2.

Table 2. Full Pond Elevations

Reservoir	Full Pond Elevation (feet, USGS datum - NGVD 1929)
High Rock	623.9
Tuckertown	564.7
Narrows	5098
Falls	332.8
Tillery	2782
Blewett Falls	178.1

8. Normal Reservoir Operating Range – The band of reservoir water elevations within which the Licensees normally attempt to maintain a given reservoir on a given day. Each reservoir has its own specific Normal Reservoir Operating Range, bounded by Full Pond Elevation and Normal Minimum Elevation. If net inflows to the reservoir are within a reasonable tolerance of the average or expected amounts, project equipment is operating properly, and if maintenance or emergency operation plans have not been implemented, reservoir water elevation excursions outside of the Normal Reservoir Operating Range should not occur. The new FERC license for the Yadkin Project includes operating curves that establish the Normal Reservoir Operating Range for each Yadkin Project reservoir.
9. Normal Minimum Elevation (NME) – The elevation of a reservoir (measured in feet, USGS datum [NGVD 1929]) that defines the bottom of the reservoirs Normal Operating Range for a given day of the year. NME for each of the projects' reservoirs is listed in Table 3.

Table 3. Normal Minimum Elevations (feet, USGS datum – NGVD 1929)

Month	High Rock	Tucker-town	Narrows	Falls	Tillery	Blewett Falls
Full Pond	623.9	564.7	509.8	332.8	278.2	178.1
January 1	613.9	561.7	504.8	328.8	273.2	172.1
February 1	613.9	561.7	504.8	328.8	273.2	172.1
March 1	Transition	561.7	504.8	328.8	275.7	172.1
April 1	619.9	561.7	504.8	328.8	275.7	172.1
May 1	619.9	561.7	504.8	328.8	275.7	172.1
June 1	619.9	561.7	504.8	328.8	275.7	172.1
July 1	619.9	561.7	504.8	328.8	275.7	172.1
August 1	619.9	561.7	504.8	328.8	275.7	172.1
September 1	619.9	561.7	504.8	328.8	275.7	172.1
October 1	619.9	561.7	504.8	328.8	275.7	172.1
November 1	Transition	561.7	504.8	328.8	275.7	172.1
December 1-15	613.9	561.7	504.8	328.8	275.7	172.1
December 15-31	613.9	561.7	504.8	328.8	273.2	172.1

10. Public Water System – For the purposes of this LIP, a Public Water System is any publicly or privately owned water system that supplies potable water to the public having an instantaneous withdrawal capacity of one million gallons per day or more, and withdraws from storage in the projects' reservoirs.
11. Non-Public Water User – For the purposes of this LIP, a Non-Public Water User is any publicly or privately owned water withdrawer that withdraws water for uses other than supplying potable water to the public, having an instantaneous

withdrawal capacity of one million gallons per day or more that withdraws from storage in the projects' reservoirs.

12. U.S. Drought Monitor – A synthesis of multiple indices, outlooks, and new accounts (published by the U.S. Department of Agriculture) that represent a consensus of federal and academic scientists concerning the drought status of all parts of the United States. Typically, the U.S. Drought Monitor indicates intensity of drought as D0-Abnormally Dry, D1- Moderate, D2-Severe, D3-Extreme and D4-Exceptional. The current U.S. Drought Monitor and explanatory material can be found at <http://www.drought.unl.edu/dm/monitor.html> [currently located at <http://droughtmonitor.unl.edu/>].
13. U.S. Drought Monitor Three-Month Numeric Average – If the U.S. Drought Monitor has a designation ranging from D0 to D4 as of the last day of a month for any part of the Yadkin-Pee Dee River Basin that drains to the Blewett Falls development, the basin will be assigned a numeric value for that month. The numeric value will equal the highest U.S. Drought Monitor designation (e.g., D0=0, D1=1, D2=2, D3=3 and D4=4) for any part of the Yadkin-Pee Dee River Basin draining to Blewett Falls development as of the last day of the month. A normal condition in the basin, defined as the absence of a drought designation, will be assigned a numeric value of negative one (-1). A rolling average of the numeric values of the current month and previous two months will be calculated by APGI at the end of the month and designated as the U.S. Drought Monitor Three-Month Numeric Average for purposes of this LIP.
14. Critical Reservoir Water Elevation – The reservoir water elevation (measured in feet, USGS datum [NGVD 1929]) below which a Public Water System intake, Non-Public Water user's intake, or hydropower plant located on the reservoir cannot operate under normal conditions. Critical Reservoir Water Elevations are defined in Table 4.

Table 4. Critical Reservoir Water Elevation

Reservoir	Critical Reservoir Water Elevation measured at the dam (feet USGS Datum - NGVD 1929)	Type
High Rock	599.9 (24 ft below full pool)	Hydropower Production
Tuckertown	560.7 (4 ft below full pool)	Public Water Supply
Narrows	486.8 (23 ft below full pool)	Public Water Supply
Falls	322.8 (10 ft below full pool)	Hydropower Production
Tillery	268.2 (10 ft below full pool)	Public Water Supply

Blewett Falls	168 (10.1 ft below full pool)	Public Water Supply/ Hydropower Production
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15. Critical Flow – The flows from the projects that are necessary to prevent long-term or irreversible damage to aquatic communities consistent with the resource management goals and objectives for the affected stream reaches and necessary to provide some basis level of water quality maintenance in affected river reaches. For the purposes of this LIP, the Critical Flows are defined as follows:
- Falls Development – the Critical flow from the Falls development is equal to 770 cfs measured on a daily average basis.
 - Tillery Development – the Critical flow from the Tillery Development is the same as required minimum instream flow as defined in the new FERC license for Yadkin Pee-Dee River Hydroelectric Project.
 - Blewett Falls Development – the Critical Flow from the Blewett Falls Development is 925 cfs measured on a continuous basis.
16. Organizational Abbreviations – Organizational abbreviations include Alcoa Power Generating Inc. (APGI), Progress Energy (PE), NC Department of Environment and Natural Resources (NCDENR), North Carolina Division of Water Resources (NCDWR), North Carolina Division of Water Quality (NCDWQ), North Carolina Wildlife Resources Commission (NCWRC), South Carolina Department of Natural Resources (SCDNR), South Carolina Department of Health and Environmental Control (SCDHEC), the United States Fish and Wildlife Service (USFWS), High Rock Lake Association (HRLA), Badin Lake Association (BLA), and South Carolina Pee Dee River Coalition (SCPDRC).
17. Yadkin-Pee Dee River Basin Drought Management Advisory Group (YPD-DMAG) – The YPD-DMAG is established to facilitate implementation and review of this LIP. Members of the YPD-DMAG agree to comply with this LIP. Membership on the YPD-DMAG is open to one representative from each of the following organizations:
- APGI
 - PE
 - NCDWR
 - NCDWQ
 - NCWRC
 - SCDNR
 - SCDHEC
 - USFWS

- Duke Power
- HRLA
- BLA
- Lake Tillery homeowners representation
- SCPDRC
- All owners of a Public Water System intake or a Non-Public Water User's intake that withdraw from storage in one of the projects' reservoirs.

The Licensees will share the responsibility to notify NCDWR of a Low Inflow Condition. NCDWR and SCDNR will share responsibility to coordinate with the YPD-DMAG including notifying, setting agendas, leading discussions, and providing call/meeting summaries. Regardless of the Low Inflow Condition, coordination will include a meeting convened annually by NCDWR during April to discuss issues relevant to this LIP. Membership in the YPD-DMAG may be expanded based on a consensus of the members or at the direction of FERC. The NCDWR will maintain an active roster of the YPD-DMAG, will prepare meeting summaries of all YPD-DMAG meetings.

18. Revising this LIP – During the new FERC license period, the YPD-DMAG will be convened by NCDWR and SCDNR at least once every five (5) years to review and, if necessary, update this LIP. Decisions on modifications to the Licensee's responsibilities under this LIP, if any, will be determined by consensus of the Licensees and the States of North Carolina and South Carolina (specifically NCDWR, NCDWQ, SCDNR, and SCDHEC) after consultation with other members of the YPD-DMAG. Proposed modification to the Licensee's responsibilities will be submitted to DWQ for review and approval as necessary. Modifications to the responsibilities of other members (not the FERC licensee) of the YPD-DMAG under this LIP, if any, will be determined by consensus of those members after consultation with the Licensees. Approved modifications will be incorporated through revision of this LIP. The YPD-DMAG may appoint an ad hoc committee to consider issues relevant to this LIP. An issue such as the substitution of a regional drought monitor for the U.S. Drought Monitor, if developed in the future, or proportional drawdown of storage reservoirs during LIP stages are examples of items that may be considered.
19. Consensus – The unanimous support of all parties, or at least no opposition from any Party.
20. Water Withdrawal Data Collection and Reporting – The owners of all water intakes impacted by this LIP are to comply with water use reporting requirements of the appropriate State Agencies. The YPD-DMAG can request and should receive relevant water use information from the appropriate state agency or directly from the owners of individual intakes.

21. Drought Response Plan Updates – All Public Water Supply System owners and Non-Public Water Users subject to this LIP will review and update their drought response plans, or develop a plan if they do not have one, to ensure compliance and coordination with this LIP, including the authority to enforce the provisions outlined herein. Nothing in this LIP is intended to prevent Public Water System owners or Non-Public Water Users from taking more restrictive actions or from complying with any applicable law or regulation.

22. Relationship Between this LIP and Maintenance and Emergency Plans – Maintenance and emergency plans outline the general approach the Licensees will take under certain maintenance, emergency, equipment failure and other situations to continue practical and safe operation of the projects; to maintain operations consistent with the new FERC license-conditions to the maximum extent possible; and to communicate with resource agencies and the affected parties. Under these plans, temporary modifications to Required Minimum Instream Flow releases, and the Normal Reservoir Operating Ranges are allowed. Lowering projects' reservoir water elevations caused by situations addressed under maintenance and emergency plans will not invoke implementation of this LIP. Also, if this LIP has already been implemented at the time that a situation covered by these plans is initiated, the Licensee may suspend implementation of this LIP until the maintenance or emergency situation has been eliminated. Notification will be provided by the Licensees to the State Agencies as soon as practicable.

PROCEDURE

A Low Inflow Watch or Low Inflow Condition, as specifically defined below, will be triggered by the combination of conditions defined in Table 5. This LIP will be implemented at Stage 0 and, if the combination of conditions becomes more severe, the stage will increase in one stage increments. The Licensees and other water users will follow the procedure set forth in this section regarding communications and adjustments to flows and other water demands.

Table 5. Summary of LIP Triggers

Stage	High Rock Reservoir Elevation		US Drought Monitor Three-Month Numeric Average		Stream Gage Three-Month Rolling Average as a percent of the Historical Average
	< NME minus 0.5 f	and	any	or	any
OR					
0	< NME	and either	0	or	<48%

1	<NME minus 1 ft	and either	1	or	<41%
2	<NME minus 2 ft	and either	2	or	<35%
3	<NME minus 3ft	and either	3	or	<30%
4	<1/2 of (NME minus Critical Reservoir Water Elevation)	and either	4	or	<30%

The LIP Flows set forth in Table 6 will be initiated on a monthly basis and are designed to equitably allocate the impacts of reduced water availability in accordance with the goal of this LIP. Initiation of this LIP will be based on analysis of the trigger conditions on the first day of each month. The High Rock Reservoir water elevation as of midnight between the last day of the previous month and the first day of the current month will be used in combination with the U.S. Drought Monitor Three-Month Numeric Average and the Stream Gage Three-Month Rolling Average Flow to determine the need to declare a low inflow Watch or change the stage of low Inflow Conditions.

Table 6. LIP Flows,⁽¹⁾ cfs.

Stage	High Rock (daily average maximum flow target)			Falls ⁽²⁾ (daily average flow target)			Blewett Falls ⁽²⁾ (continuous flow target ⁽³⁾)		
	Feb 1- May 15	May 16-31	June 1- Jan 31	Feb 1- May 15	May 16-31	June 1- Jan 31	Feb 1- May 15	May 16-31	June 1- Jan 31
0	2000	1500	1000	2000	1500	1000	2400	1800	1200
1	1450	1170	900	1450	1170	900	1750	1400	1080
2	1080	950	830	1080	950	830	1300	1150	1000
3	770	770	770	770	770	770	925	925	925
4	Additional measures may be determined by consensus of the Licensees and State Agencies. NCDWQ approval of any additional measures will be required.								
¹ Consistent with the goal of this LIP to conserve water while maintaining downstream flows, projects will be operated to achieve the target flows to the extent practicable as a first priority and to supplement inflows equitably from the storage reservoirs as a second priority. ² The LIP flow values shown in the table above reflect flow targets. The values cannot be met exactly as shown and will likely vary slightly on a real time basis from the values shown here. It is expected that the variances from the target flows will be minimal. In Stages 0-2, the releases from Blewett Falls will be within 5% of the target as measured at the USGS Rockingham gage. In stages 3-4, the releases from Blewett Falls will be between 900-950 cfs, as measured at the USGS Rockingham gage. ³ Local inflows to Blewett Falls Reservoir may be large even during extended low inflow									

conditions. If, at any time during the implementation of the LIP, local inflows to Blewett Falls Reservoir are large enough to fill Blewett Falls Reservoir to full pond, the Downstream Licensee may temporarily increase Blewett Falls' generation to avoid spill.

Stage 0 – Low Flow Watch:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages, and will declare a Stage 0 Low Inflow Watch for the month if the following conditions are present on the first day of the month.

- If the High Rock Reservoir water elevation is below the NME minus 0.5 ft. under any inflow or drought condition

OR

- The High Rock Reservoir water elevation is below its NME.

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to zero.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 48% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 0 Low Inflow Watch is declared:

1. The Licensees will notify, via email, the NCDWR of a Stage 0 Low Inflow Watch as soon as practicable, but no later than three business days after the declaration.
2. The NCDWR will activate the YPD-DMAG and initiate monthly meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.

- e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
- f. Public communications.

Stage 1 – Low Inflow Condition:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages, and will declare a Stage 1 Low Inflow Condition for the month if the following conditions are present on the first day of the month.

- The prior month LIP condition was Stage 0;

AND

- The High Rock Reservoir water elevation is more than 1 ft. below the NME;
AND EITHER
 - The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 1.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 41% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 1 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of a declaration of a Stage 1 Low Inflow Condition via email as soon as practicable, but no later than two business days after the declaration.
 - b. Implement LIP Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 1 Low Inflow Condition is declared. To meet the LIP Flows for Stage 1:

- APGI will supplement Project Inflows by drawing first from Narrows Reservoir until the Narrows Reservoir drawdown below its NME matches the High Rock Reservoir drawdown below its NME at the time that the Stage 1 Low Inflow Condition is declared.
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis below the Normal Minimum Elevation (NME).
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
- c. Update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with weekly updates on reservoir water elevations and inflow of water into the projects' reservoirs.
2. If they have not already done so, NCDWR will coordinate with SCDNR to conduct monthly meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
- a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.
3. Owners of Public Water System intakes will complete the following activities within 14 days after a Stage 1 Low Inflow Condition is declared:
- a. Notify their water customers of the low inflow condition through public outreach and communication efforts.
 - b. Request that their water customers implement voluntary water use restrictions, in accordance with their drought response plans. At this stage, the goal is to reduce water withdrawals by approximately 5% from the amount that would otherwise be expected. These restrictions may include:

- Reduction of lawn and landscape irrigation to no more than two days per week (i.e., residential, multi-family, parks, streetscapes, schools, etc.).
 - Reduction of residential vehicle washing.
- c. Provide a status update to the YPD-DMAG on actual water withdrawal trends and discuss plans for moving to mandatory restrictions, if they are required.
4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after a Stage 1 Low Inflow Condition is declared:
- a. Notify their employees and/or customers of the low inflow condition,
 - b. Request that their employees and customers conserve water through reduction of water use, electric power consumption, and other means, and
 - c. Institute in-house conservation consistent with their drought management plan and minimize consumptive uses to the extent feasible.

Stage 2 – Low Inflow Condition:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages, and will declare a Stage 2 Low Inflow Condition for the month if the following conditions are present on the first of the month.

- The prior month LIP condition was Stage 1;

AND

- The High Rock Reservoir water elevation is more than 2 ft. below the NME;

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 2.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 35% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 2 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of a declaration of a Stage 2 Low Inflow Condition via email as soon as practicable, but no later than two business days after the declaration.
 - b. Implement LIP Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 2 Low Inflow Condition is declared. To meet the LIP Flows for Stage 2:
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis.
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
 - c. Update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with updates twice per week on reservoir water elevations and inflow of water into the system.
2. NCDWR will coordinate with SCDNR to conduct monthly meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.
3. Owners of Public Water System intakes will complete the following activities within 14 days after a Stage 2 Low Inflow Condition is declared:

- a. Notify their water customers of the continued low inflow condition and movement to more stringent mandatory water use restrictions through public outreach and communication efforts.
 - b. Require that their water customers implement mandatory water use restrictions, in accordance with their drought response plans. At this stage, the goal is to reduce water withdrawals by approximately 10% from the amount that would otherwise be expected. These restrictions may include:
 - Limiting lawn and landscape irrigation to no more than one day per week (i.e., residential, multi-family, parks, streetscapes, schools, etc.).
 - Eliminating residential vehicle washing.
 - Limiting public building, sidewalk, and street washing activities, except as required for safety and/or to maintain regulatory compliance.
 - Limiting construction uses of water such as dust control.
 - Limiting flushing and hydrant testing programs, except to maintain water quality or other special circumstances.
 - Eliminating the filling of new swimming pools.
 - Enforce mandatory water use restrictions through the assessment of penalties.
 - Encourage industrial/manufacturing process changes that reduce water consumption.
 - c. Provide a status update to the YPD-DMAG on actual water withdrawal trends.
4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after a Stage 2 Low Inflow Condition is declared:
- a. Notify their employees and/or customers of the low inflow condition through public outreach and communication efforts.
 - b. Request that their employees and customers conserve water through reduction of water use, electric power consumption, and other means.
 - c. Institute in-house conservation consistent with their required drought management plans and minimize consumptive uses to the extent feasible.

Stage 3 – Low Inflow Condition:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages, and will declare a Stage 3 Low Inflow Condition for the month if the following conditions are present on the first of the month.

- The prior month LIP condition was Stage 2;

AND

- The High Rock Reservoir water elevation is more than 3 ft. below the NME;

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 3.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 30% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 3 Low Inflow Condition is declared:

1. The Licensees will:

- a. Notify NCDWR of a declaration of a Stage 3 Low Inflow Condition via email as soon as practicable, but no later than 48 hours after the declaration.
- b. Implement LIP Flows to designated Critical Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 3 Low Inflow Condition is declared. To meet the Critical Flows:
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis.
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
- c. Update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.

- d. Provide Public Water System intake owners and Non-Public Water Users with bi-weekly (twice each week) updates on reservoir water elevations and inflow of water into the system.
 - e. Continue participation in monthly or more frequent meeting or conference calls of the YPD-DMAG.
 2. NCDWR will coordinate with SCDNR to conduct monthly YPD-DMAG meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.
 3. Owners of Public Water System intakes will complete the following activities within 14 days after a Stage 3 Low Inflow Condition is declared:
 - a. Notify their water customers of the continued low inflow condition and movement to emergency water use restrictions through public outreach and communication efforts. At this stage, the goal is to reduce water usage by approximately 20% from the amount that would otherwise be expected.
 - b. Restrict all outdoor water use.
 - c. Implement emergency water use restrictions in accordance with their drought response plans, including enforcement of these restrictions and assessment of penalties.
 - d. Prioritize and meet with their commercial and industrial large water customers and meet to discuss strategies for water reduction measures including development of an activity schedule and contingency plans.
 - e. Prepare to implement emergency plans to respond to water outages.
 4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after a Stage 3 Low Inflow Condition is declared:
 - a. Continue informing their customers of the low inflow condition through public outreach and communication efforts.

- b. Request that their customers conserve water through reduction of water use, electric power consumption, and other means.

Stage 4 – Low Inflow Condition:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages, and will declare a Stage 4 Low Inflow Condition for the month if the following conditions are present on the first of the month.

- The prior month LIP condition was Stage 3;

AND

- The High Rock Reservoir water elevation is less than 606.9 ft. USGS (November 1 through March 1), or less than 609.9 ft. USGS (April 1 through October 1);

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 4.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 30% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 4 Low Inflow Condition is declared:

1. The Licensees will notify NCDWR via email as soon as practicable, but no later than 48 hours after the declaration.
2. NCDWR will request a meeting of the YAD-DMAG within 5 days after the declaration of the Stage 4 Low Inflow Condition for discussion to determine if there are any additional measures that can be implemented to:
 - a. Reduce water withdrawals, reduce water releases from the projects or use additional reservoir storage without creating more severe regional problems.
 - b. Work together to develop plans and implement any additional measures identified above.

- c. Communicate conditions to the public.

Additional measures may be determined by consensus of the Licensees and State Agencies with NCDWQ approval as necessary.

Recovery from LIP Stages

Recovery from this LIP will be triggered by any of the three following conditions:

- Condition 1: All three triggers associated with a lower numbered LIP Stage are met.
OR
- Condition 2: High Rock Reservoir water elevations return to at or above the NME PLUS 2.5 ft.
OR
- Condition 3: High Rock Reservoir water elevations return to at or above the NME for 2 consecutive weeks.

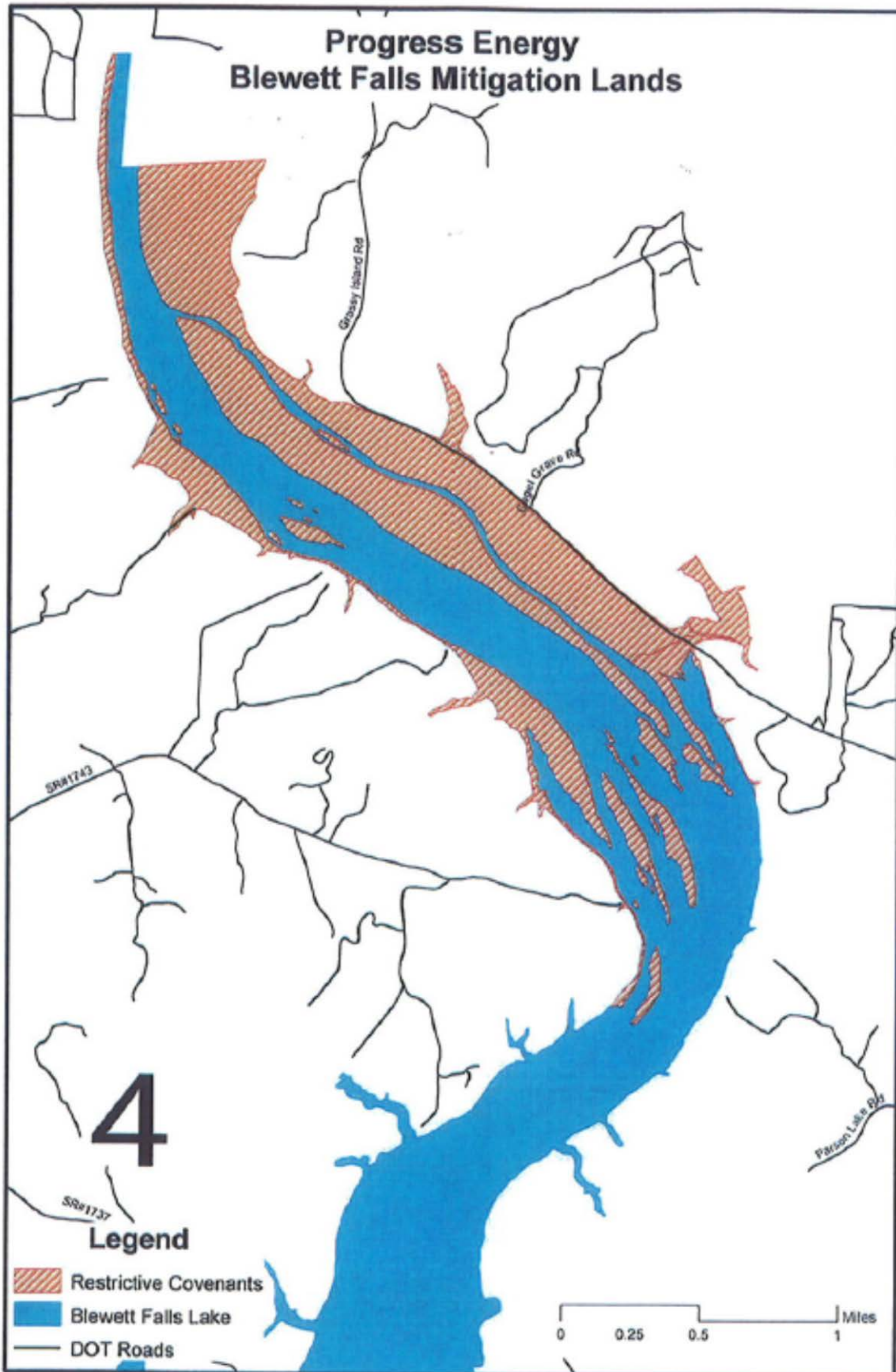
When any of these three conditions occurs:

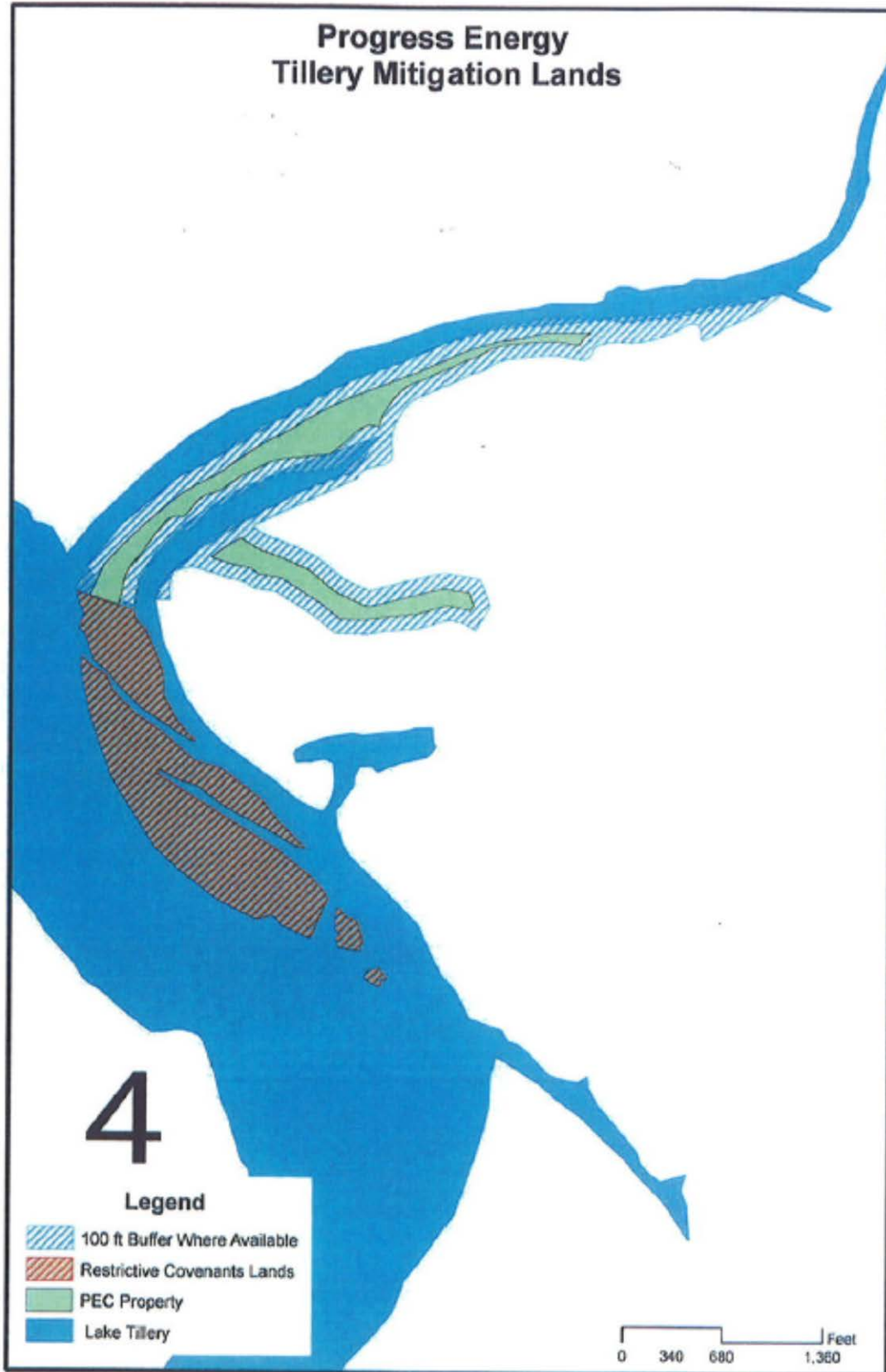
1. The Licensees will take the following action:
 - a. Condition 1: The LIP recovery will be a general reversal of the staged approach described above.
 - b. Condition 2: The LIP will be discontinued.
 - c. Condition 3: The LIP will be discontinued.
2. The Licensee will notify the NCDWR via email within 3 business days following attainment of any of the conditions necessary to return to a lower stage of this LIP. Changes to less restrictive Stages will be made:
 - a. Condition 1: on the first of each month if a slow recovery is indicated: or
 - b. Condition 2: immediately if High Rock Reservoir elevations are at or above the NME PLUS 2.5 ft.
 - c. Condition 3: immediately if High Rock Reservoir elevations are at or above the NME for 2 consecutive weeks.
3. The Licensees will update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.

**Figure showing location of the Buchanan Mitigation Lands
has been omitted**

**Figure showing location of the Almond Mitigation Lands
has been omitted**

**Figure showing location of the Diggs Tract
has been omitted**





**Figure showing location of the land between Morrow Mountain State Park
and the Pee Dee River has been omitted.**

APPENDIX B**U.S. Department of the Interior, Fish and Wildlife Service Fishway Prescription
for the Yadkin-Pee Dee Hydroelectric Project (No. 2206), December 10, 2007**

In general, the prescription requires two things (*see* the final prescription, herein, for details):

1. PE [Progress Energy Carolinas, Inc.]²³¹ shall pass American shad and American eel upstream and downstream of its project dams (Blewett Falls and Tillery) in accordance with the Modified Prescription. The passage of the two species shall be phased in over time so that the effectiveness of the technologies employed can be evaluated and adjusted as appropriate, based on the results of monitoring and the unique nature of the Pee Dee River. Subject to Section 7.0 of the prescription, unless adjusted by the RMT [Resource Management Team], the fish passage facilities, measures, and monitoring committed to by PE in the Agreement [Yadkin-Pee Dee River Diadromous Fish Passage Plan Agreement]²³² represent the full obligation of PE for passage of American shad and American eel for the term of the new project license for the Yadkin-Pee Dee River Project (FERC No. 2206). Blueback herring will also be passed incidental to target species during TST operations, so long as the incidental passing of blueback herring does not interfere with or in any way impact PE's provision of safe, timely and effective passage of American shad or American eel, which is the primary purpose of this Modified Prescription.
2. A Resource Management Team (RMT) shall be established in accordance with Section 6.0 of the prescription and shall provide guidance to the licensee during the term of the license in accordance with other provisions of this Modified Prescription.

²³¹ On February 4, 2014, after the U.S. Fish and Wildlife Service issued its section 18 Fishway Prescription for the Yadkin – Pee Dee Project, the Commission amended the license to change the licensee's name from Progress Energy Carolinas, Inc. to Duke Energy Progress, Inc. *See Progress Energy Carolinas, Inc.*, 146 FERC ¶ 62,098 (2014).

²³² FWS's fishway prescription, as presented herein, is consistent with the specific measures and conceptual drawings included in the Yadkin-Pee Dee River Diadromous Fish Passage Plan Agreement filed with the Commission on January 17, 2008.

§ 1.0 General Terms

1. PE shall pass American shad and American eel upstream and downstream of its Project dams (Blewett Falls and Tillery) in accordance with this Modified Prescription. The passage of the two species shall be phased in over time so that the effectiveness of the technologies of the technologies employed can be evaluated and adjusted as appropriate, based on the results of monitoring and the unique nature of the Pee Dee River. Subject to Section 8.0, unless adjusted by the RMT, the fish passage facilities, measures, and monitoring studies committed to by PE in the Agreement represent the full obligation of PE for passage of American shad and American eel for the term of the new project license for the Yadkin-Pee Dee River Project (FERC No. 2206). Blueback herring will also be passed as an incidental species during trap, sort, and transport operations, so long as the incidental passing of blueback herring does not interfere with, or in any way impact, PE's ability to provide safe, timely and effective passage of American shad or American eel, which is the primary purpose of this Modified Prescription.
2. A Resource Management Team ("RMT") shall be established in accordance with Section 6 below, and shall provide guidance to the licensee during the term of the license in accordance with other provisions of this Modified Prescription.
3. Unless the language of this prescription is expressly to the contrary, the terms of this prescription shall be construed consistently with the terms of the Yadkin-Pee Dee River Diadromous Fish Passage Plan Agreement ("Agreement"), signed by Progress, the Service [U.S. Fish and Wildlife Service; FWS], NMFS [National Marine Fisheries Service], SCDNR [South Carolina Department of National Resources] and NCWRC [North Carolina Wildlife Resources Commission], and filed of record with this modified prescription.

§ 2.0 Passage for American Shad

4. PE shall provide safe, timely and effective upstream and downstream passage for American shad at the Blewett Falls Development that shall be operational in the fourth spawning season after License Issuance for the Project, but not before 2012. Upstream and downstream passage phases, operational schedules, and preliminary facility designs are described in Sections 2.2 and 2.3 below. Based on existing information and knowledge of spawning and maturation habitats within the Yadkin-Pee Dee River, the Service has identified two distinct riverine reaches that contain spawning and maturation habitat for initial transport passage of American shad:
 - (1) above Blewett Falls Dam, and
 - (2) above Tillery Dam but below Falls Dam (inclusive of tributaries for both river reaches).

5. Beginning the fifth spawning year after License Issuance, but not before 2013, PE shall provide American shad access to the reaches identified in Paragraph 3, above, using the trap, sort and truck ("TST") facility described in Section 2.2 for successive, four-year periods, to assess the reproductive and outmigrant recruitment success of each reach. The two identified reaches may be revised based on new information as determined by the RMT, if there are scientific data to support such recommendations, or in accordance with the authority reserved by the Service in Section 7 below. A downstream passage structure shall be installed and operational at the Blewett Falls Development concurrently with installation and operation of the Phase I upstream passage structure as described in section 2.2.
6. PE shall use the first year of the trap operation, as identified in Section 2.2, as a test (shakedown) period to refine the trap and truck operation (e.g., likely catch composition, sorting efficiency, handling methodology, and transport times to the two reaches). Shad transported during the first operational season shall be released in the reach above either Blewett Falls Dam or Tillery Dam, at a specific site(s) to be determined the RMT.

§ 2.1 American Shad Population Monitoring

7. Monitoring will be conducted by PE with the guidance of the RMT. A detailed monitoring plan and implementation schedule will be completed by PE for approval by the RMT within nine months after License Issuance. Components of the plan shall include conducting weekly monitoring in the Blewett Falls tailwater area downstream to U.S. Highway 74 and fish passage monitoring pursuant to Sections 2.2 and 2.3, below. Monitoring will be conducted during the period of March 1 to May 31, and will begin when the fish begin to arrive upstream of Highway 74, as determined by the RMT. The monitoring program shall assess: 1) the relative abundance and population characteristics of American shad in the tailwaters reach, 2) the location and congregation of fish in the tailwaters reach, 3) the timing, peaks, and duration of the spawning run relative to water temperature, and 4) upstream and downstream passage effectiveness as indicated in sections 2.2 and 2.3. Monitoring techniques may include electrofishing, recreational creel survey, telemetry, mark and recapture techniques, and upstream and downstream passage counts by visual or electronic means.
8. All monitoring described in this section shall be conducted by PE or its consultants in cooperation with the Agencies. PE may contract with the appropriate entities for completion of monitoring studies as approved by the RMT.
9. PE shall report and discuss with the RMT any changes to the monitoring activities that should occur within a given year due to factors beyond its control (e.g., extreme flooding, equipment failure, etc.). PE will provide annual reports of results of the

monitoring. As determined by the RMT, PE will modify passage facilities and associated measures as practicable to ensure safe, timely and effective passage, based upon monitoring results and other new information.

§ 2.2 Upstream Passage of American Shad

10. This Modified Prescription includes a two-phase upstream passage approach beginning with a Phase I shad trap, sort, and transport (TST) facility at the Blewett Falls Development, which is upgradeable to a volitional facility as Phase II (as defined in Paragraph 20).

Phase I

11. PE shall design, construct, and operate a TST facility in the tailrace of the Blewett Falls powerhouse for the purpose of trapping pre-spawn American shad and transporting them via truck to the two reaches of the Yadkin-Pee Dee River watershed identified in Paragraph 3 above. Attached Figures 1-4,²³³ provided by PE, show the approximate location and approved design concept for the TST facility at Blewett Falls Dam. The Service concurs with the layout and preliminary design concept for the TST facility. PE will perform a hydraulic model study of the TST facility with pumped attraction flow during the final design stage to verify that effective internal and external flow fields are created under operating conditions anticipated during the upstream migration period. The model study plan shall be developed in cooperation with NMFS and the Service, and the study results will be submitted to NMFS and the Service for review and comment. The Phase I facility and operation shall have the capacity, including sufficient traps, sorting tanks and trucks, to handle a spawning season minimum of 35,000-40,000 shad. Any material change in the preliminary design of the TST facility must be approved by the RMT.

12. PE will obtain the approval of the Service, in coordination with the RMT, of the final facility design, construction, and operation details. A preliminary review of the proposed designs submitted by PE appeared adequate to execute successful safe, timely, and effective fish passage at the project.

13. PE shall operate the Blewett Falls TST facility for a period not to exceed ten weeks (expected operational window to be within the March 1 through May 31 timeframe) of each year or until the RMT agrees to discontinue that year's operations. The initiation

²³³ Figures 1-4 have been omitted here for brevity. These figures can be found in the section 18 Fishway Prescription filed by the U.S. Department of the Interior – U.S. Fish and Wildlife Service's (FWS) on December 10, 2007.

of passage activities will be triggered when fish are present in the Blewett Falls tailwaters to a sufficient degree to initiate passage activities as determined by the RMT. PE will transport up to the target number of shad, described in the table contained in Paragraph 16, or as modified by the RMT, and transport and release the fish into the specified river reach or reaches during this period, as long as a sufficient number of fish is available for transport at the TST location. Any fishes captured in excess of those needed for transport will be marked and released downstream of Blewett Falls Dam, as specified by the RMT.

14. Preliminary target number goals of American shad have been estimated from a desktop GIS assessment of potential spawning habitat for the two river reaches in the watershed described above in Paragraph 3. Revised target number goals may be established by the RMT using the results from the field-based habitat assessment study (as described in Section 7.0 of the Agreement) to be funded and carried out by the Service. For the 2013 to 2025 period, interim target numbers of fish to be transported into the identified river reaches will be established for the fish passage program, but shall not exceed the preliminary target numbers without the consent of the RMT. These interim target numbers of fish establish a range of fish that can be transported into the reaches during this period. The target numbers of fish to be transported after 2025 will be evaluated during the 2025 assessment and adjusted as necessary by the RMT based on the fish passage studies and the final target number goals established for the river basin.
15. PE shall operate the TST facility to optimize capture of American shad during the peak spawning runs that occur each year. PE shall release the trapped shad at specified release site(s) in each of the two river reaches in accordance with the RMT's identification of the release sites to be used in each of the two reaches. A Fishway Operations and Maintenance Plan shall be developed by PE for approval by the RMT, and shall incorporate all operational details and responsibilities, including, but not limited to, those described in this Modified Prescription. The Fishway Operations and Maintenance Plan shall be completed prior to the first operational year of the Phase I fish passage program, and shall be updated annually, if necessary, in coordination with the RMT.
16. During each season of operation of the TST facility, PE shall collect data and information from a sub-sample of the captured fish, including length, weight, sex, body condition, and age classes of spawning fish. PE will also record the water temperature and oxygen levels in the water at the time the fish are collected. This information will be provided to the RMT and FERC in the fish passage program report (See Section 6.4).
17. Beginning in 2013, or five spawning seasons after license issuance, whichever comes later, PE shall trap and transport adult American shad into the two river reaches set

out in Paragraph 3 (above). Initial transport of shad shall be to the reach above the Tillery reservoir, unless modified by the RMT. Subsequent decisions regarding timing, target numbers to be transported, and number of shad that could be supported based on a preliminary desktop GIS estimate of available habitat in each reach will be determined by the RMT. A projected schedule for this activity, unless modified by the RMT, is set out in the table below. As part of this activity, an RMT- approved study will be conducted by PE to evaluate movement and reproduction of adult American shad in each reach. This study may include techniques such as radiotelemetry of released adults and egg/larval sampling in each reach. If supported by the results of the study, the facility will be modified as practicable by PE.

River Reach Location	Years of American Shad Trap & Transport	Interim Target Number of Shad to be Transported to Each Reach	Number of Shad that could be Supported based on Preliminary Desktop Estimate of Available Habitat in Each Reach
REACH TWO Above Tillery Dam (Yadkin River/ Uwharrie River)	2013-2016	17,000-20,000	16,877
REACH ONE Above Blewett Falls Dam (Pee Dee)	2017-2020	35,000-40,000	150,773

18. At such time as either NMFS or the Service exercises its reservation of authority and prescribes passage for American shad at the Alcoa Power Generating, Inc. (APGI) project (Project No. 2197), should such prescription include the construction of a fish passage facility at Falls Dam; Progress Energy agrees to transport sufficient shad to the reach above Tillery Dam (as determined by the Service and NMFS, after providing notice to the RMT) to provide for restoration of the fishery upstream of Falls Dam, consistent with the Restoration Plan, but not to exceed 100,000 fish. If, during the life of the new license, NMFS or the Service makes a prescription for American shad at one or more of the APGI dams in Project No. 2197 that is ultimately vacated on appeal by the federal courts (or withdrawn by the agency), PE may reduce the number of adult shad it transports annually above Tillery Dam to 20,000, unless the RMT determines otherwise.

19. Consistent with Paragraphs 3, 4 and 5, PE shall continue trap and transport of pre-spawning American shad into either or both identified river reaches from 2012 (or

four years after License Issuance, whichever comes later) to 2025, subject to certain requirements related to the onset of volitional passage described in Paragraph 20 below. In accordance with the Agreement, in 2025, a comprehensive assessment of the fish passage program will be conducted and at that time modifications concerning the scope of trap and transport activities within these river reaches may be recommended by the RMT, or prescribed by NMFS or the Service.

20. After the eight-year study period, the adult American shad trapped annually will be released into either one, or both, of the identified reaches based upon the recommendations of the RMT. If in any given year the number of adult American shad available at Blewett Falls for trap and transport are below the target number for each river reach within a given year, the RMT will prioritize which release sites will receive fish based on the estimated number of available adult shad to be collected in the trap at Blewett Falls Dam. This prioritization shall emphasize moving adult American shad above Blewett Falls Dam as the first priority, as it contains the most available habitat.

Phase II

21. By 2025, Progress Energy shall provide volitional passage at the Blewett Falls Development through the addition of a flume extending from the Phase I trap to the forebay canal, unless NMFS and the Service agree, based on recommendations to PE from the RMT, that such volitional passage should be delayed or foregone. The final volitional passage design must be approved by NMFS and the Service prior to 2025. However, the Service approves of the conceptual designs submitted by PE for the volitional passage flume (Figures 8-10)²³⁴ based on preliminary review of the design by our fishway engineer. The RMT may, based on its evaluation of the eight-year study, determine that Progress Energy shall provide volitional passage before 2025, but sooner than 2022.
22. Once the volitional facilities are in place and operational, the trap, sort and transport facility at Blewett Falls Dam tailwaters shall be retained for the duration of the license term as the means for capturing and moving fish in the Yadkin-Pee Dee watershed above Tillery Dam (Reach 2 as defined in paragraph 3), unless the RMT recommends otherwise or NMFS or the Service exercises reserved FPA Section 18 authority per Section 7.0. After volitional passage is initiated, trap and transport will continue for the term of the license, with fish transported to Reach 2 (above Tillery Dam) as determined by the RMT and required in this Modified Prescription.

²³⁴ Figures 8-10 have been omitted here for brevity. These figures can be found in the section 18 Fishway Prescription filed by FWS on December 10, 2007.

§ 2.3 Downstream Passage For American Shad

23. PE shall install and operate a safe, timely and effective downstream passage facility substantially in conformance with the attached preliminary design (Figure 5)²³⁵ and approved by NMFS and the Service at the Blewett Falls Development concurrently with installation and operation of the Phase I upstream passage facility described in Section 2.2. The downstream passage structure shall be operational in 2012, or the fourth year after License Issuance, whichever comes first. The first year of operation of the downstream passage facility will coincide with the first year of upstream passage activities at Blewett Falls. PE will use the first year of the downstream passage facility operation as a test shakedown period to determine the optimal setup and operation to pass fish downstream. During this test period, the licensee will also evaluate sampling techniques for counting outmigrating juvenile American shad and establish a downstream fishway effectiveness evaluation methodology for approval by the RMT. PE will modify the operations of the facility as necessary based upon the results of the test period as determined by the RMT.
24. The downstream passage facility shall be primarily designed to provide protection for outmigrating young-of-year American shad and will be evaluated as one of the downstream passage technologies for silver American eel. The preliminary design shown in Figure 5 will be utilized following approval by NMFS and the Service. The proposed design has been determined by NMFS and the Service to be acceptable; however if monitoring studies show its location needs to be modified in order to effectively provide downstream guidance and passage of shad, then relocation of the fish diversion boom to the forebay canal vicinity in a more angled configuration (45 degrees to flow field vectors with the surface collector (gulper) at the downstream end) will be necessary. The depth of the boom shall be between five and nine feet to provide more effective guidance for downstream migrant American shad.
25. PE shall consult NMFS and the Service on the final design, construction, and operation details of the downstream passage structure. The Service has preliminarily approved the design concept proposed by PE in order to provide PE with a reasonable assurance that the design concept will not undergo substantial change upon review of the final design. The final design must be approved by NMFS and the Service.
26. The Blewett Falls downstream passage facility will be a mobile barge system (or "gulper") that will be towed and anchored in place at the west wing dam abutment at the existing fish ladder structure during the outmigration season for juvenile

²³⁵ Figure 5 has been omitted here for brevity. These figures can be found in the section 18 Fishway Prescription filed by FWS on December 10, 2007.

American shad (Figure 5). Provisions will be made for the construction of a stilling basin located downstream of the dam to allow fish to re-orient and safely exit the structure downstream. PE shall also install a surface curtain with a depth of no less than 5 feet and no more than 9 feet with sufficient angle at the entrance to the Blewett Falls intake canal to help guide outmigrating juveniles to the passage structure. Generally, the operating season is expected to be during the period of late summer (September) to early winter (December). However, the expected period of outmigrating juvenile shad may vary from year to year, depending on environmental conditions, and it is likely that the RMT will gain experience in predicting the season of outmigration over time. Therefore, PE will conduct an outmigration study during the first three years of active downstream passage of juvenile shad. Based on the results of this study, and with the concurrence of the RMT, PE may adjust the season of operation of the downstream passage facility so as to best coincide with the bulk of the out migration run, while minimizing the operating time.

27. PE shall report and discuss with the RMT any deviations in the operating season of the Blewett Falls downstream passage facility due to factors beyond the control of PE (e.g., extreme flooding, equipment failure, etc.). PE shall be responsible for promptly documenting and reporting of any deviations in the downstream fish passage program to the RMT and FERC in the fish passage report (See Section 6.4).
28. PE shall provide an estimate of the number of juvenile American shad outmigrating at the Blewett Falls downstream passage facility each year. PE shall also compile annual population information that includes the length, weight, and body condition of a representative sub-sample of captured outmigrating juveniles. This information will be provided to the RMT and FERC in a fish passage program report (See Section 6.4).

§ 3.0 Passage for American Eel

29. PE shall provide timely, safe and effective passage for American eels at its project dams. Restoration efforts for American eel on the Yadkin-Pee Dee River will initially focus on passage in the river basin between Blewett Falls Dam and Tillery Dam, inclusive of all tributaries.

§ 3.1 Upstream Passage for American Eel

30. No later than one year following License Issuance, PE shall initiate a three-year monitoring study below Blewett Falls Dam to determine specific sites or locations for American eel congregations to allow effective placement of passage devices in locations best suited to encounter eels. PE shall submit a study plan for review and approval by the RMT prior to commencing the study. Measures shall include placement of standard eel ramps or traps for monitoring size, seasonality, and location of juvenile eels at the base of the dam and in tailrace areas. Captured eels shall be

passed upstream into Blewett Falls Lake to provide access to upstream reservoir and riverine habitats.

31. Following the monitoring study for American eel, and no later than the fifth year following License Issuance, PE shall design, construct, and operate a lift structure (eel lift) at the Blewett Falls Dam spillway to provide for upstream passage of American eel. Figures 6 and 7 show the preliminary engineering details of the eel lift which will be located on the face of Blewett Falls Dam.²³⁶ Recommendations on the exact placement of the lift will be made by the RMT after a review of the results of a three-year study on elver migration movements in the vicinity of the dam. These studies will be completed by 2011. PE shall begin operation of the eel lift structure in 2013 or the fifth year after License Issuance. Interim passage shall be provided with the standard eel ramp traps used during the siting study.
32. PE shall obtain approval from the Service [*and NMFS*] on the final design, construction, and operation details of the eel lift structure. The Service has preliminarily approved the design concept as proposed by PE in order to provide PE with a reasonable assurance that the preliminary design concept will not undergo substantial change upon review of the final design.
33. Generally, the operating season for the Blewett Falls eel lift is expected to be from March 15 through June 15 of each year. However, the expected period of upstream migrating eels can vary from year to year, depending on environmental conditions, and it is likely that the RMT will gain experience in predicting the season of eel migration over time. Therefore, with concurrence of the RMT, PE may adjust the season of operation of the Blewett Falls eel lift to take into consideration the patterns of migrating elvers (e.g., nocturnal migration movements) and other information or experience gained over time.
34. PE will prepare an annual report on the operation of the eel lift structure. PE will collect annual population information on numbers, lengths, and weights of migrating elvers passed at the lift structure by sampling the migrating population. This information will be provided to the RMT and FERC in a fish passage program report (See Section 6.4).
35. Passage of juvenile eels above Blewett Falls Dam will initially focus on the reach between Blewett Falls Dam and Tillery Dam. Sufficient time will be allowed for the eels to occupy the available habitats upstream of Blewett Falls Dam prior to

²³⁶ Figures 6 and 7 have been omitted here for brevity. These figures can be found in the section 18 Fishway Prescription filed by FWS on December 10, 2007.

consideration of moving eels upstream of Tillery Dam. Eels will either be passed directly into Blewett Falls Lake at the eel passage structure or translocated by PE to selected locations in the reach based on RMT recommendations.

36. Beginning in 2022 and continuing through 2024, PE shall conduct annual monitoring of the eel population in the river reach from Blewett Falls Lake to Tillery Dam, and also below Blewett Falls Dam for comparative purposes. This monitoring will assess utilization of the habitat upstream of Blewett Falls Dam by eels relative to habitat availability. The monitoring study and resulting report will be prepared by PE with review and approval by the RMT. The final report will be issued by December 31, 2024.
37. In 2025, the RMT will assess the effectiveness of the eel passage program, including necessary measures to pass eels above Tillery Dam. The assessment will evaluate the results of the eel passage program at Blewett Falls Dam; the annual monitoring study results; and the current understanding of eel population dynamics and eel passage technology at hydro projects.
38. As part of the 2025 assessment, the RMT will provide a recommendation regarding eel passage above Tillery Dam to PE. If the RMT reaches a consensus on the method or methods, the selected method(s) will be immediately employed by PE, and continue to be used for the duration of the license period, or until better methods are recommended by the RMT. If the RMT cannot reach a consensus, the matter will be resolved as indicated in Paragraph 49.

§ 3.2 Downstream Passage for American Eel

39. Five years after License Issuance, PE shall prepare and submit to the RMT for review and approval a study plan to evaluate the provision of safe, timely and effective downstream passage for American eels. The plan shall incorporate an alternatives analysis of silver eel downstream passage under various options. Options for downstream passage will be evaluated in priority order to be determined by the RMT, considering existing information on cost, efficiency, survival, mortality and other appropriate factors. A full range of options shall be included for consideration by the RMT, including, but not limited to: operational changes (e.g., seasonal nighttime shutdowns, or other changes); seasonal use of full depth screens and a bypass system; use of conventional weirs, fyke nets or other trapping devices to capture silver eels in reservoir tributaries, or along the shoreline, upstream of the dam; or use of the same Blewett Falls downstream passage facility for American shad to also pass American eels downstream of Blewett Falls Dam. After the RMT approves the plan, PE will implement the study. Trapping or other appropriate techniques may be used to intercept out-migrating adult silver eels in the Blewett Falls Lake headwaters and truck them downstream of the dam. The study plan and resulting report will be

reviewed and approved by the RMT. The study results and subsequent testing of optional methodologies will be used by PE and the RMT to evaluate downstream eel passage during the 2025 assessment period.

40. PE shall support RMT partnership efforts on evaluating downstream passage of American eel by coordinating on-site logistics and Project operations during any field assessment studies of American eel undertaken by the RMT. The goal of these assessments will be to develop a reliable, long-term method for safe and effective downstream eel passage at Blewett Falls and Tillery dams.
41. In the 12th year following license issuance, the RMT will recommend one or more methods of downstream eel passage for Blewett Falls Dam to PE. If the RMT reaches a consensus on the method or methods, the selected method(s) will be immediately employed by PE, and continue to be used for the duration of the license period, or until better methods are recommended by the RMT. If the RMT cannot reach a consensus, the matter will be elevated to a Policy Team pursuant to paragraph 49 of this prescription. If the Policy Team cannot reach a consensus decision, the Service may exercise its reserved right to prescribe a method for downstream passage of American Eel.
42. PE shall operate the RMT-selected (or agency-prescribed) downstream passage structure for American eel passage during the annual time frame determined appropriate by RMT studies conducted on silver eels migrating from the reservoir tributaries, or along reservoir shorelines (downstream migration of adult silver eels is expected to be the greatest during October 1 through December 15 of each year). It is anticipated that silver eel outmigrations may begin within 6-10 years of the initiation of upstream passage at Blewett Falls, and 6-10 years following upstream passage at Tillery (as appropriate). Therefore, sampling of outmigrating silver eels shall begin no earlier than six years and no later than ten years after upstream passage.
43. PE will operate the capture facilities or passage structure(s) during nighttime hours, especially during new moon periods and significant rain events, when silver eel movement is expected to occur. PE may adjust the operating season for downstream eel passage, with recommendation and concurrence by the RMT, if eel passage data support the adjustment.

§ 4.0 Comprehensive Fish Passage Agreement

44. PE and the Service, in conjunction with NMFS, SCDNR and NCWRC, shall conduct a comprehensive assessment of the progress of the Yadkin-Pee Dee River diadromous fish restoration and passage program in 2025. The comprehensive assessment shall address the following important considerations, at a minimum:

- a) Status and trends of target species populations and upstream migrations in the lower Pee Dee River (below Blewett Falls Dam), as determined by monitoring studies,
- b) Assessment of accessible spawning and rearing habitats in the river basin, including but not limited to the initial designated reaches for transport passage,
- c) Upstream and downstream passage performance and effectiveness,
- d) Outmigration status and trends for target species, including relative young-of-year production in the study reaches,
- e) Assessment of factors limiting or affecting diadromous fish restoration, and
- f) Assessment of the need for future restoration actions and monitoring efforts for the duration of the Project license.

PE will consult with the RMT regarding details of the comprehensive assessment study plans, methodology, and reporting.

If the RMT determines it, PE will modify passage facilities as needed based upon the results of the assessment.

§ 5.0 Other Target Species

45. The first year of the initial passage operation of the Blewett Falls TST facility will provide an opportunity to determine suitable methods to sort, handle, and document other species of fish that may be collected in the fish trap, including other diadromous species of fish and endangered, threatened, and rare native species. Based on this trial period, the RMT will develop a written protocol by the end of 2013, or earlier, for handling other fish species. This protocol will be used by PE and the RMT for handling other fish species during each year of passage operation and will be modified as necessary. Other species of fish that are collected will either be released below the Blewett Falls Development or turned over to the appropriate state or federal resource agency for further study. Specific safe handling and data collection procedures for the federally-listed (as endangered) shortnose sturgeon and Atlantic sturgeon will be developed and included as part of the protocol. In addition, PE will be responsible for obtaining the pertinent state or federal permits for shortnose sturgeon or any other identified endangered, threatened, or rare fish species that may be captured in the upstream trap and sort passage facility. Any incidental take or scientific research permits will be coordinated with NMFS and the Service consistent with the Endangered Species Act and applicable agency procedures. These permits

typically have stipulations regarding the handling and release of such species, and the written protocol will be consistent with stipulations outlined in the permit(s).

§ 6.0 Fish Passage Program Organization and Reporting

§ 6.1 Yadkin-Pee Dee River Project Diadromous Fishery Resource Management Team

46. Consistent with the Agreement, a Resource Management Team (“RMT”) will be formed to guide PE in implementation of the specific fish passage measures and monitoring described herein. The initial members of the RMT include the Service, NMFS, NCWRC, SCDNR, and PE. With the concurrence of all RMT members, other individuals and organizations with relevant expertise may provide technical assistance as requested, and participate in the RMT meetings, but will not be members of the RMT and will not participate in making recommendations to PE.

§ 6.2 RMT Meetings

47. The RMT will meet at least once per year at a location to be determined by the RMT. PE will be responsible for supporting the RMT and coordinating the logistics of the annual meeting. The purpose of the annual meeting will be to review the fish passage program and ongoing diadromous fish implementation activities; make any necessary adjustments to monitoring programs or other planned activities; and discuss any issues that are affecting schedule or costs of studies, planned activities, or any other factor that impacts the diadromous fishery resource. PE or an RMT-designated agency representative shall prepare meeting summaries and circulate the summaries within five working days, for comment and approval by the full RMT membership.

§ 6.3 RMT Function and Decision Making

48. The RMT will be responsible for providing comprehensive guidance about restoration efforts, including monitoring and adjusting the overall fish passage program and evaluating progress towards achieving the Restoration Plan goals. PE will be responsible for day-to-day decisions regarding fish passage and related study logistics and will consult with RMT members, as necessary, to resolve any daily issues that might arise during the passage program activities. Experts on fish passage and diadromous fish restoration may be invited by the RMT to provide advice and technical assistance to aid the restoration efforts. The RMT will also be responsible for making recommendations to PE regarding new or modified fish passage facility designs; operational details; and additional study needs based on the available scientific data and management experience.

49. Any decisions or participation within the RMT of personnel from the NMFS or the Service do not override or relinquish the agencies' statutory authority under federal law. The RMT members shall be deemed the authorized representatives of their respective agency or company to serve on the RMT. The RMT members agree to make a good faith effort to arrive at decisions by consensus of the group. Consensus, as used herein, is defined as each party of the RMT being able to accept the decision.
50. If the RMT is unable to arrive at a consensus decision in the group, the issue will be referred to a Policy Team. The Policy Team will include the appropriate management level personnel within each respective organization that has authority to make decisions regarding the overall policy and direction of that organization. An individual RMT member shall not also serve as a Policy Team member; however, each party in the RMT will be represented on the Policy Team. In the event the Policy Team is unable to reach agreement, NMFS and the Service will resolve outstanding issues under their authority pursuant to Section 18 of the FPA, and any other applicable law.

§ 6.4 Reporting and Documentation

51. To document the status of the diadromous fish restoration program, an annual progress report will be prepared by PE. PE will actively seek input from the RMT on the report contents. PE will take the lead in preparing the draft report, which will then be subject to approval by NMFS and the Service, in coordination with the RMT.
52. To establish a permanent archive, PE will submit this report on an annual basis to the RMT for approval and will file the final report with FERC. These reports will help document the progress of the restoration program and serve as a monitoring tool for the fish passage program at the Project. The report will include the results of the Blewett Falls tailwater population monitoring efforts and an assessment of American shad and American eel passage activities. Additionally, the report will include any data collected during the incidental passing of the blueback herring as described in Paragraph 1 above. Any monitoring programs or studies concerning diadromous fish species or their use of the fish passage facilities at the Project, undertaken by an agency and made available to PE, will be filed as addendums to this report. After the annual assessment, but no later than March 31 of the following year, a draft report will be provided to the RMT for review. However, an interim report on upstream passage of shad will be provided to the RMT no later than December 31. A copy of the annual assessment and the final report will be filed with FERC by May 31 of the year following the annual assessment, unless otherwise approved by the RMT.
53. PE will provide a synopsis of all monitoring program results (conducted or prepared pursuant to Sections 2.1, 2.2, 2.3, 3.1, 3.2, and 4.0) in a comprehensive, interpretive fish passage assessment report, which will be for use by the RMT in the 2025

assessment. The RMT will establish the outline and contents of the report. PE's report shall make recommendations to the RMT for any additions or adjustments to the fish passage program. NMFS and the Service will review and comment on the report. After the NMFS and the Service comments have been addressed, the final report shall be filed with FERC by PE no later than December 31, 2025. The RMT will use the report to make recommendations back to PE. The Service [*and NMFS*] will consider the report before any exercise of their reserved FPA Section 18 authority, as described in Section 7.0 of this prescription.

§ 7.0 Reserved Authority

54. The Service hereby reserves authority to modify the Section 18 fish passage prescriptions for the Project, as recognized by PE in the Agreement. Any time prior to the 2025 Assessment that material new information is obtained or developed, including that contained in public comments submitted in response to FERC's Draft Environmental Impact Statement or the prescriptions by the Service and NMFS, that demonstrates the need for changes to the Fish Passage Plan or a Fishway Prescription, such information will be presented to the RMT for consideration. However, nothing in the Agreement obligates the Service or NMFS to await the RMT's action prior to exercising their FPA Section 18 authority.
55. The Commission shall include the following conditions in any license it may issue for the Yadkin-Pee Dee Hydroelectric Project:

Pursuant to section 18 of the Federal Power Act, as amended, the Secretary of the Department of Interior, exercises his authority under section 18 by reserving the authority to prescribe the construction, operation and maintenance of such fishways as deemed necessary, including measures to evaluate the need for fishways, and to determine, ensure, or improve the effectiveness of such fishways. This reservation includes authority to prescribe fishways for existing riverine fish species, and any fish species to be managed, enhanced, protected, or restored in the basin during the term of the license.

APPENDIX C

U.S. Department of Commerce, National Marine Fisheries Service Fishway Prescription²³⁷ for the Yadkin-Pee Dee Hydroelectric Project (No. 2206), February 5, 2008

Section 6. Modified Prescription for Fishways

A. Basis for the Modified Prescription

.....omitted for brevity.

B. General Terms and Conditions for Fishways

1. Prescribed fishways shall be constructed, operated, and maintained at the Licensee's expense to provide safe, timely, and effective passage for designated target species.
2. Agency Resource Management Team (RMT). The licensee shall establish an interagency team to provide guidance to the licensee and to coordinate implementation of fish passage measures, fishery resource monitoring programs, and other studies consistent with the Fish Passage Agreement.²³⁸ The initial RMT includes FWS, NMFS, WRC [North Carolina Wildlife Resources Commission], DNR [South Carolina Department of Natural Resources], and Progress Energy.²³⁹ NMFS recommends the RMT be established within six months after issuance of the license.

²³⁷ NMFS' fishway prescription is consistent with the specific measures and conceptual drawings included in the Yadkin-Pee Dee River Diadromous Fish Passage Plan Agreement filed with the Commission on January 17, 2008, which is generally duplicated in the attachment to Appendix B (FWS's fishway prescription) of this order. NMFS presents the Fish Passage Agreement in its entirety as Appendix A to its February 5, 2008 fishway prescription, and the associated conceptual fish passage designs in Appendix C to its fishway prescription.

²³⁸ NMFS' reference to the Fish Passage Agreement is to the Yadkin – Pee Dee River Diadromous Fish Passage Plan Agreement, which Progress Energy (now Duke Energy) filed with the Commission on January 17, 2008.

²³⁹ On February 4, 2014, after the National Marine Fisheries Service issued its section 18 Fishway Prescription for the Yadkin – Pee Dee Project, the Commission amended the license to change the licensee's name from Progress Energy Carolinas, Inc. to Duke Energy Progress, Inc. See *Progress Energy Carolinas, Inc.*, 146 FERC ¶ 62,098 (continued)

3. Agency Review and Approval of Plans. All fish passage design and construction, operations and maintenance, hydraulic modeling, and monitoring plans must be approved by NMFS and the interagency RMT. NMFS approval is required for all plans, specifications, and actions under the authority of Section 18 of the Federal Power Act.
4. Access to Project Developments and Records. The Licensee shall grant reasonable access to Project premises, fishways, and related records so that NMFS and RMT agency personnel may evaluate fishway performance, inspect fishway facilities, and help to optimize facility performance based upon those evaluations and inspections.
5. Post-Construction Evaluation. The Licensee shall complete, within 6 months after completion of fishway construction, a post-construction evaluation for review and approval by NMFS and the RMT. The purpose of the post-construction is to identify and correct any fish delay, loss, injury, mechanical, structural, or hydraulic problems that may be present. This evaluation may be incorporated into the Operation, Monitoring and Maintenance plan described in Section 6.
6. Operation, Monitoring and Maintenance Plan. A Fishway Operations, Monitoring and Maintenance Plan shall be completed by the Licensee following review and approval by NMFS and the RMT prior to the first operational year of the initial fish passage system at Blewett Falls Dam. The Plan shall be updated annually as necessary in coordination with and subject to approval of NMFS and the RMT. The Plan shall incorporate all operational details and responsibilities and will ensure the fishways will operate effectively prior to and during the diadromous fish migratory periods.
7. Seasonal Operation Periods. Upstream and downstream fishways shall be operational during the migration period for target species, consistent with the Operations, Monitoring and Maintenance Plan and the Fish Passage Agreement.

C. Fishways for American shad

1. The Licensee shall provide safe, timely, and effective upstream passage for American shad at the Blewett Falls Development and be fully operational for the fourth spawning season after issuance of the new hydropower license by the Commission.
2. The conceptual design for the initial upstream fishway is a permanently installed trap and sorting facility with truck transport to designated upstream habitats (conceptual

(2014).

designs are in Appendix C.²⁴⁰ Consistent with the Fish Passage Agreement, the initial fishway shall be fully upgradeable when required by NMFS to a full-capacity volitional lift with exit to the forebay level, and a fish counting station. Functional designs and construction schedules for the volitional fishway shall be subject to approval by NMFS.

3. The initial upstream fishway operating period shall be for a period not to exceed ten weeks during the anticipated spawning run dates of March 1 through May 31.
4. The initial fishway design and operating transport capacity shall be 40,000 shad. Blueback herring may be passed as a secondary priority, or returned to the tailwater area, in order to reduce interference with passage objectives for American shad.
5. The Licensee shall perform a hydraulic model study with pumped attraction flow during the final design stage to verify that effective internal and external flow fields are created under operating conditions anticipated during the upstream migration period.
6. The Licensee shall provide safe, timely and effective downstream passage protection facilities concurrently with installation of the upstream fishway at Blewett Falls Development.
7. The conceptual design for downstream passage protection is a floating fish collector system as shown in the conceptual design (Appendix C).²⁴¹ The final downstream passage design shall be approved by NMFS.
8. Operation of the initial upstream passage and downstream passage protection facilities shall be in accordance with the Operation, Monitoring and Maintenance Plan (Section B.6) and the Fish Passage Agreement (Appendix A²⁴²).

D. Fishways for American Eel

1. The Licensee shall provide safe, timely and effective upstream passage for American eels at the Blewett Falls Development no later than the fifth year after issuance of the new hydropower license by the Commission.

²⁴⁰ See Appendix C to NMFS' February 5, 2008 Modified Fishway Prescription.

²⁴¹ *Id.*

²⁴² See Appendix A to NMFS' February 5, 2008 Modified Fishway Prescription.

2. The conceptual design provides for a standard eel lift at the spillway (Appendix C).²⁴³ The final design and location for the upstream fishway shall be approved by NMFS.
3. The Licensee shall provide safe, timely and effective downstream passage for American eels in the 12th year after issuance of the new license, as recommended by the interagency RMT or prescribed by NMFS under Section 18 of the FPA.

Section 7. Reservation of Authority to Modify Fish Passage Prescriptions

The Commission shall include the following condition in any license it may issue for the Yadkin-Pee Dee River Hydropower Project:

The National Marine Fisheries Service expressly reserves its authority under §18 of the Federal Power Act, as amended, to prescribe fishways, or such additional fishways, or to modify existing fishways at those locations and at such times as it may subsequently determine are necessary to provide for effective (safe, timely, convenient) upstream and downstream passage of diadromous fish through the Project facilities. Upon approval by NMFS of such plans, designs and implementation schedules pertaining to fishway construction, operation, maintenance and monitoring as may be submitted by the applicant/licensee in accordance with the terms of the license articles containing such fishway prescriptions, or upon any other relevant information, NMFS may modify its fishway prescriptions in order to respond to a need to provide effective fish passage. This reservation includes authority to modify or prescribe fishways for any fish species under NMFS management responsibility to be managed, enhanced, protected, or restored in the basin during the term of the license.

Also, authority is reserved for the National Marine Fisheries Service to modify these Prescriptions for Fishways at any time before license is issued, as well as any time during the term of any license issued, after review of new information or for other pertinent reasons.

²⁴³ See Appendix C to NMFS' February 5, 2008 Modified Fishway Prescription.

APPENDIX D

Reasonable and Prudent Measures and Terms and Conditions included in the National Marine Fisheries Service's Biological Opinion for the Relicensing of the Yadkin-Pee Dee Hydroelectric Project (No. 2206), April 29, 2013

REASONABLE AND PRUDENT MEASURES

1. All potential adverse impacts to sturgeon during the construction and operations of the TST [Trap-Sort-Transport] fish passage facility or during other construction activities or maintenance of the Blewett Falls Dam are to be minimized to the greatest extent practicable.
2. Sturgeon captured or injured at the Blewett Falls Dam in the TST fish passage facility during the term of the license must be handled appropriately, as detailed by current NMFS protocol (Attachment A).²⁴⁴
3. Water quantity must meet or exceed levels needed for shortnose and Atlantic sturgeon habitat availability in the Action Area over the full term of the new license.
4. Water quality in the Action Area must be monitored to meet water quality standards as outlined in the FEIS over the full term of the new license.
5. A Comprehensive Monitoring and Adaptive Management Plan must be developed in consultation with the RMT [Resource Management Team] and NMFS to monitor the projects effects on the shortnose and Atlantic sturgeon populations' habitat and the populations size over the full term of the new license and identify and correct any unforeseen effects, and to confirm NMFS assumptions on the effects of the YPDHP [Yadkin – Pee Dee Project] on shortnose and Atlantic sturgeon.

TERMS AND CONDITIONS

1. To reduce adverse effects to sturgeon per RPM No. 1, FERC shall implement the following conditions for the protection of sturgeon:
 - a. During construction of the fish passage facility or during any maintenance at the Blewett Falls Dam or any other in-water work conducted by the licensee in the Action Area:

²⁴⁴ See Attachment A to NMFS' April 29, 2013 Biological Opinion.

- i. No in-water work in the river on the downstream side of Blewett Falls Dam, within 500 yards of the dam or power station, may occur between February 1 and April 30 of any year. This does not apply to emergency work (*i.e.*, work that cannot wait until after the time restriction.).
 - ii. If a sturgeon is seen within 100 yards of the active daily construction/maintenance operation, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of sturgeon. Operation of any mechanical construction equipment shall cease immediately if a sturgeon is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
 - iii. Appropriate erosion and turbidity controls shall be utilized during any in-water work carried out by the applicant in the Action Area to limit contaminant laden sediments from entering the water.
 - iv. No construction debris shall be allowed to enter the water.
 - v. Construction shall be conducted according to current best management practices (BMPs) for the State of North Carolina (*i.e.*, North Carolina Department of Transportation, BMP for Construction and Maintenance Activities and NCDWQ [North Carolina Division of Water Quality] BMP Manual:
<http://portal.ncdenr.org/web/wq/ws/su/bmp-manual>).
 - b. Fish passage structures at the Blewett Falls Dam must be designed such that they exclude sturgeon (shortnose and Atlantic).
 - c. NMFS personnel (or its delegated representative) must be granted access to the fish passage records and facilities upon request.
 - d. An operations and inspections report of the TST operation must be prepared and submitted to NMFS annually. It must include at a minimum the:
 - i. identity and quantity of the sturgeon species captured,
 - ii. hours of operations,
 - iii. maintenance schedule,
 - iv. operational issues, if any, and
 - v. proposed/recommended modification(s), if any.
2. To comply with RPM No. 2, FERC shall implement the following special conditions for the protection of sturgeon:
 - a. Any handling of sturgeon will comply with the NMFS' Protocol for Use of Shortnose, Atlantic, Gulf, and Green Sturgeons (Attachment A)
http://www.nmfs.noaa.gov/pr/pdfs/species/kahn_mohead_2010.pdf.
 - b. A tissue sample shall be taken of any sturgeon handled or stranded, per Attachment A.

- c. All sturgeon handled shall be scanned for a PIT [Passive Integrated Transponder] tag; codes shall be included in the take report submitted to NMFS. The PIT tag reader shall be able to read both 125 kHz and 134 kHz tags. Sturgeon without PIT tags will have one installed per guidance in Attachment A and included in the take report submitted to NMFS.
 - d. If any sturgeon are captured, injured, or killed during the term of the new license, notification of take shall be provided to NMFS at the following e-mail address within 24 hours: (takereport.nmfs@noaa.gov); and this opinion's issuance date, title, and identifier number (SER-2009-5521) shall be referenced in the correspondence.
 - e. If a lethal take occurs, the carcass should be frozen and NMFS contacted immediately to provide instructions for shipping and preparation. NMFS requests all shortnose or Atlantic sturgeon interactions are reported to Kelly Shotts, (Kelly.Shotts@noaa.gov or (727) 551-5603). This report should be documented by completing the sturgeon salvage form (Appendix 5). Specimens or body parts of dead shortnose or Atlantic sturgeon should be preserved – preferably on ice or refrigeration – until sampling and disposal procedures are discussed with NMFS.
3. To comply with RPM No. 3 regarding habitat availability, FERC shall require the applicant to:
 - a. Accurately and regularly monitor water quantity (flows) in the Action Area over the life of the license and determine the amount of habitat (WUAs) consistently available to sturgeon and ensure flows meet levels specified in the FEIS [also found in Section 3.1.4.1, (Table 1 and 2) and Section 3.1.4.3 (Table 4) of this opinion].
 - b. Quantify available spawning and early rearing habitat (*i.e.*, habitat suitable for successful egg attachment and fry development) under the new flow regime in the Action Area beginning one year after of the issuance of the new license to establish a reliable environmental baseline. Spawning and early rearing habitat shall be identified and monitored by the applicant in consultation with the RMT and approved by NMFS within 6 months of the issuance of the license.
 4. To comply with RPM No. 4, regarding water quality, FERC shall require the applicant to:
 - a. Accurately monitor water quality, including but not limited to D.O., pH, conductivity, and temperature, in the Action Area over the life of the license.
 - b. Monitoring stations shall be identified by the applicant in consultation with the RMT and approved by NMFS within 6 months of the issuance of the license. These stations should target locations where water temperatures are likely to be highest and D.O. concentrations lowest.

5. To monitor the projects effects on the shortnose and Atlantic sturgeon populations' habitat and the populations size over the full term of the new license and identify and correct any unforeseen effects of the YPDHP's operations on shortnose and Atlantic sturgeon as stated in RPM No. 5, FERC shall require the applicant to:
- a. Develop an Aquatic Life Monitoring and Adaptive Management Plan (ALMAMP) in consultation with the NCDWQ and RMT and approved by NMFS. Benthic macroinvertebrate monitoring will measure the response of the aquatic community to increased minimum flows in the Action Area. The ALMAMP will identify issues affecting shortnose and Atlantic sturgeon and implement corrective measures to YPDHP operations. ALMAMP monitoring will be used to establish and detect changes in spawning habitat and availability. The ALMAMP:
 - i. Must be developed in consultation with the RMT and submitted for NMFS' approval no later than 6 months after issuance of the new license.
 - ii. Must be implemented no later than 1 year after issuance of the new license.
 - iii. Must document the amount of sturgeon spawning and early rearing habitat available in the Action Area.
 - iv. Must address how adaptive management would be included operationally over the life of the license.
 1. This would include a mechanism that would allow results from the monitoring to feed into decisions governing operation of the project activities and mitigation actions.
 - v. Monitoring results must be presented to NMFS in an annual report which shall include a summary of all ALMAMP monitoring data along with any resulting operational changes, due on October 1st. Reports may be submitted to NMFS at the following e-mail address: (takereport.nmfsser@noaa.gov) or by hard copy mailed or faxed to the NOAA Southeast Regional Office, Assistant Regional Administrator, Protected Resources Division, National Marine Fisheries Service, 263 13th Avenue South, St. Petersburg, Florida 33701, phone (727) 824-5312; fax (727) 824-5309. This opinion's issuance date, title, and identifier number (SER-2009-5521) shall be referenced in the correspondence. This must include monitoring results from T&Cs 3 and 4. Once NMFS receives this report, we will respond within 30 days to notify FERC and the applicant what the take authorization is for the following year.
 1. Data supporting this report must be made available electronically to NMFS on request.
 - b. Annually monitor the projects effects on the shortnose and Atlantic sturgeon populations over the full term of the new license. The population monitoring:

- i. The monitoring will be conducted via anchored gillnets, trammel nets and trawling. Monitoring personnel must comply with the following conditions related to the manner of taking:
 - a. *Capturing*:
 - i. The applicant and/or applicants authorized agent must take all necessary precautions ensuring shortnose sturgeon and Atlantic sturgeon are not harmed during capture, including use of appropriate net mesh size and twine preventing shutting gill opercula, restricting anchored gillnets, trammel nets and trawl activities and decreasing the duration of net sets as outlined in Section 3.5.
 - ii. Location (GPS), temperature, DO [dissolved oxygen], gear used for capture (*e.g.*, mesh size, net type), soak time, species captured, and any mortalities should be measured and recorded (at the depth fished) each time nets are set to ensure appropriate values according to the conditions in Section 3.5. The monitoring results must be made available to NMFS in annual reports or upon request.
 - iii. Gear may be deployed only in waters where DO levels > 4.0 mg/L at the deepest depth sampled by the gear while deployed.
 - iv. Netting may take place between 0°C and 28 °C, netting activities below 0°C or above 28 °C is not permitted.
 - v. At water temperatures above 25°C < 28°C, nets may be set for up to one hour duration and must be tended.
 - vi. At water temperatures above 20°C < 25°C, nets may be set for up to two hours duration and must be tended.
 - vii. At water temperatures above 15°C < 20°C, nets may be set for up to four hours duration and must be tended.
 - viii. At water temperatures between 0 < 15°C, nets may be fished for up to 10 hours and must be tended.
 - ix. All monitoring will be conducted during daylight hours only.
 - x. If a net becomes snagged on bottom substrate, debris, etc., it must be untangled immediately to reduce potential stress on captured animals.
 - b. *Holding and Handling*:
 - i. After capture and during processing, sturgeon must be handled carefully and kept in water as much as possible to reduce stress.
 - ii. After removal from capture gear, monitoring personnel must hold sturgeon in floating net pens or in onboard live wells while shielding them from direct sunlight.
 - iii. To accommodate larger catches, if applicable, monitoring

- personnel must carry secondary net pen(s) in the monitoring vessel; overcrowded fish must be transferred to spare net pens, or else released.
- iv. Sturgeon overly stressed from capture must be resuscitated and/or allowed to recover inside a net pen or live well and released without further handling. However, at the discretion of the monitoring personnel, PIT tagging, external tagging, genetic tissue sampling, weighing, measuring and/or photographing may be done prior to release.
 - v. When sturgeon are onboard a monitoring vessel, flow-through holding tanks must allow for total replacement of water volume every 15 minutes. Backup oxygenation of holding tanks with compressed oxygen is also necessary to ensure DO levels remain above saturation.
 - vi. The total holding time of sturgeon after removal from capture gear until they are returned to the water, must not exceed 30 minutes, unless fish have not recovered from stress.
 - vii. During onboard handling, sturgeon must be supported using a sling or net; and handling should be minimized throughout the procedure.
 - viii. Smooth rubber gloves should be worn when handling sturgeon to reduce abrasion of skin and removal of mucus.
 - ix. Sturgeon must be allowed to recover before being released to ensure full recovery; and each should be treated with an electrolyte bath prior to release to help reduce stress and restore slime coat.
 - x. Sturgeon are extremely sensitive to chlorine; therefore, thorough flushing of holding tanks that have been sterilized with bleach is required between sampling periods.
- c. *Genetic Tissue Sampling:*
- i. Care must be used when collecting genetic tissue samples (soft fin clips). Instruments should be changed or disinfected and gloves changed between each fish sampled to avoid possible disease transmission or cross contamination of genetic material.
 - ii. Submission and archival of genetic tissue samples must be coordinated with Julie Carter at the NOAA-NOS tissue archive in Charleston, SC (843) 762-8547. Samples must be submitted within six months after collection.
 - iii. The applicant and/or applicants authorized agent may not transfer biological samples to anyone other than NMFS without obtaining prior written approval from NMFS. Any

such transfer will be subject to such conditions as NMFS deems appropriate.

d. *Tagging Conditions:*

- i. PIT tags must be used to individually identify all captured fish not previously tagged. Prior to placement of PIT tags, all sturgeon handled shall be scanned for a PIT tag and visually inspected to ensure detection of fish previously tagged; codes shall be included in the take report submitted to NMFS. The PIT tag reader shall be able to read both 125 kHz and 134 kHz tags. Sturgeon without PIT tags will have one installed per guidance in Attachment A and included in the take report submitted to NMFS. Previously PIT-tagged fish must not be retagged.
- ii. Monitoring personnel must not insert PIT or Dart/Floy tags on juvenile shortnose sturgeon less than 300 mm in total length.
- iii. All unmarked shortnose and Atlantic sturgeon less than 300 mm in total length would be tagged using 11.9 mm x 2.1 mm PIT tags injected using a 12 gauge needle at an angle of 60° to 80° in the dorsal musculature (left and just anterior to the dorsal fin) with the copper antenna oriented up for maximum signal strength. No fish would be double-tagged with PIT tags. The last step after injecting PIT tags would be to verify and record the PIT tag code with a tag reader. PIT tags may also be inserted under scutes after discussing with NMFS.
- iv. Numbered Dart tags should be anchored in the dorsal fin base by inserting forward and slightly downward from the left side to the right through the dorsal pterygiophores.
- v. T-bar anchor (Floy) tags should be inserted at the dorsal fin base in the musculature just forward and slightly downward (from the left side to the right) locking into the dorsal pterygiophores of the dorsal fin. After removing the injecting needle, the tags would be spun between the fingers and gently tugged to be locked in place. To document tag retention of these tags, recapture data would be cross referenced with PIT tag results reported to NMFS in annual reports. No juvenile fish less than 300 mm in total length would be T-bar tagged.
- vi. Between tagging or fin clipping, instruments should be changed or disinfected and gloves changed between each fish sampled to avoid possible disease transmission or cross contamination.

- vii. The total weight of all tags used to mark fish must not exceed 2 percent of the sturgeon's total body weight unless otherwise authorized by the Protected Resources Division.
- e. *Incidental Mortality of Sturgeon:*
 - i. If a greater incidence of mortality or serious injury occurs than authorized, NMFS Protected Resources Division must be consulted within 24-hours to determine the cause of mortality and to discuss any remedial changes in monitoring methods. The Protected Resources Division could grant authorization to resume permitted activities based on review of the incident depending on the circumstances, or else suspend monitoring activities.
- f. *Reports:*
 - i. The applicant and/or applicants authorized agent must submit annual, final, and incident reports, and any papers or publications resulting from the monitoring authorized herein to the Protected Resources Division.
 - ii. Reports may be submitted to NMFS at the following e-mail address: (takereport.nmfsser@noaa.gov) or by hard copy mailed or faxed to the NOAA Southeast Regional Office, Assistant Regional Administrator, Protected Resources Division, National Marine Fisheries Service, 263 13th Avenue South, St. Petersburg, Florida 33701, phone (727) 824-5312; fax (727) 824- 5309. This opinion's issuance date, title, and identifier number (SER-2009-5521) shall be referenced in the correspondence.
 1. Written incident reports related to serious injury and mortality events or to exceeding authorized takes, must be submitted to the Assistant Regional Administrator, Protected Resources Division within 24-hours of the incident. The incident report must include a complete description of the events and identification of steps that will be taken to reduce the potential for additional monitoring- related mortality or exceedance of authorized take.
 2. An annual report must be submitted to the Assistant Regional Administrator, Protected Resources Division by October 1st for the duration of the license. The annual report describing activities conducted during the previous permit year must follow the format in Attachment C.
 3. Careful and detailed records must be kept on the time of recovery and other responses from handling, tissue

sampling, tag retention and healing, and condition and health of any sturgeon.

4. A Biological Sample Certification, Identification and Chain of Custody Form (Attachment D) must accompany shipments of genetic tissue samples to the NOAA-NOS archive in Charleston, South Carolina. Samples must be submitted to the archive within six months after collection. Prior to air shipping tissue samples preserved in 95 percent ethanol, monitoring personnel should satisfy the brief online training requirement offered by the Office of Environmental Health and Safety. See example instructions at: www.unh.edu/ehs/pdf/Shipping-Ethanol-Solutions.pdf.
5. A Field Collection Report appearing in Attachment D(b) should also accompany multiple genetic tissue samples (hard copy or spreadsheet) when shipping to the archive.
6. Environmental sampling data (*e.g.*, DO, temperature, net set duration, and other data associated with capture) must be recorded (Attachment E) and be made available to NMFS in annual reports or when requested periodically.
7. Specimens or body parts of dead sturgeon should be individually preserved – preferably on ice or refrigeration – until sampling and disposal procedures are discussed with NMFS. The take should be documented by completing the sturgeon salvage form (Attachment F).
8. The Southeast Regional Office point of contact for shortnose or Atlantic sturgeon interactions is Kelly Shotts, (Kelly.Shotts@noaa.gov or (727) 551-5603). All species related questions will be directed to her attention.
9. Monitoring results must be submitted to NMFS within one month of monitoring events. Baseline population estimates must be calculated after the fifth year monitoring event, using Huggins closed-capture model in Program MARK as used in similar monitoring studies on the Altamaha River in Georgia (Huggins 1989; Huggins 1991; Schueller and Peterson 2010). Report will be written in a standard scientific paper format, (*i.e.*, Title, Abstract, Table of Contents, Introduction, Equipment and Methodology, Results and Discussion, Conclusions, References and Citations, and Appendices). The report will be submitted to NMFS within 6 months of the fifth monitoring event.

- g. *Notification and Coordination:*
- i. The applicant and/or applicants authorized agent must provide written notification of planned field work to the Assistant Regional Administrator for Protected Resources Division at the address listed below. Such notification must be made at least two weeks prior to initiation of any field trip/season and must include the locations of the intended monitoring and/or survey routes, estimated dates of monitoring, and number and roles (*e.g.*, PI, CI, veterinarian, boat driver, safety diver, animal restrainer, assistant “in training”) of participants. NOAA Southeast Regional Office, Assistant Regional Administrator, Protected Resources Division, National Marine Fisheries Service, 263 13th Avenue South, St. Petersburg, Florida 33701, phone (727) 824-5312; fax (727) 824-5309. This opinion’s issuance date, title, and identifier number (SER-2009-5521) shall be referenced in the correspondence.
 - ii. To the maximum extent practical, the applicant and/or applicants authorized agent must coordinate monitoring activities with activities of Section 10 Permit Holders conducting the same or similar activities on the same species, in the same locations, or at the same times of year to avoid unnecessary disturbance of animals. The Southeast Regional Office may be contacted at the address listed above for information about coordinating with Section 10 Permit Holders.