

153 FERC ¶ 61,056
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Norman C. Bay, Chairman;
Philip D. Moeller, Cheryl A. LaFleur,
Tony Clark, and Colette D. Honorable.

Duke Energy Progress, Inc.

Project No. 2206-048

ORDER ON REHEARING AND CLARIFICATION

(Issued October 15, 2015)

1. On April 1, 2015, the Director of the Office of Energy Projects (Director) issued a new license to Duke Energy Progress, Inc. (Duke)¹ under sections 4(e) and 15 of the Federal Power Act (FPA)² for the continued operation and maintenance of the 108.6 megawatt (MW) Yadkin-Pee Dee Hydroelectric Project No. 2206, located on the Yadkin and Pee Dee Rivers in Anson, Montgomery, Richmond, and Stanly Counties, North Carolina. The Commission received two timely requests for rehearing, from Duke and from American Rivers together with the City of Rockingham, North Carolina (collectively, American Rivers). For the reasons discussed below, we grant rehearing in part and clarify the license in certain respects.³

I. Background

2. The Yadkin River flows 203 miles through North Carolina until it joins the Uwharrie River to form the Pee Dee River. The Pee Dee River then flows for another 230 miles to South Carolina's Winyah Bay and the Atlantic Ocean.

¹ *Duke Energy Progress, Inc.*, 151 FERC ¶ 62,004 (2015) (License Order).

² 16 U.S.C. §§ 797(e), 808 (2012).

³ American Rivers' rehearing request includes (for informational purposes) a petition for rehearing that it submitted to the National Marine Fisheries Service (NMFS). That petition set forth the issues and arguments pertaining to NMFS' statutory authority and the conditions it submitted pursuant to NMFS' authority and is not directed to the Commission.

3. The Commission issued an original 50-year license to construct and operate the Yadkin-Pee Dee Project in 1958, with a term expiring on April 30, 2008.⁴ The project consists of two hydroelectric developments: the Tillery development and the Blewett Falls Lake development.

4. The 84-MW Tillery development consists of Tillery Dam, which is located on the Pee Dee River at river mile (RM) 218, the 16-mile-long Tillery Lake located on the Yadkin and Pee Dee Rivers, an intake structure, a powerhouse that is integral with the dam and contains four generating units, and a spillway. The Tillery development operates as a peaking facility resulting in power flows varying from 1,500 cubic feet per second (cfs) up to 18,000 cfs throughout the day. From the Tillery development, water flows 19 miles down the Pee Dee River through the Tillery Reach before entering the Blewett Falls development. Under its previous license, the licensee was required to release a year-round continuous minimum flow of 40 cfs from Tillery Dam into the Tillery Reach.⁵

5. Downstream of the Tillery development, the 24.6-MW Blewett Falls development is located on the Pee Dee River and consists of a dam at RM 188.2, the 12-mile-long Blewett Falls Lake, a 300-foot-long forebay channel leading to a power house containing six generating units, a spillway, and a 900-foot-long tailrace that together with the forebay channel results in a 1,750-foot-long bypassed reach of the Pee Dee River. The Blewett Falls development operates in a block loaded mode with flows changing once or twice daily.⁶

6. Duke coordinates the operation of the Yadkin-Pee Dee Project with flow releases from Alcoa Power Generating, Inc.'s (Alcoa Power) upstream 209-MW Yadkin Project No. 2197, which consists of four developments on the Yadkin River: High Rock, Tuckertown, Narrows, and Falls. Inflows to the Tillery development depend on outflows

⁴ *Carolina Power & Light Co.*, 19 FPC 704 (1958).

⁵ This flow was typically provided via leakage through the spillway radial gates and/or the trash gate. Periodic measurements indicated that the actual minimum flow was 70 to 80 cfs. License Order, 151 FERC ¶ 62,004 at P 26.

⁶ 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).

from the peaking operation of the Yadkin Project's High Rock development and inflows from the unregulated Uwharrie River.

II. Relicense Proceeding

7. On April 26, 2006, Carolina Power & Light Company (Progress Energy) filed its relicense application, proposing to continue to operate the project as it had under its then-current license.⁷

8. American Rivers and the City of Rockingham (Rockingham) separately intervened in the proceeding and did not oppose the issuance of a new license to the licensee, but argued that the licensee's proposal to continue operating as it had in the past would be detrimental to aquatic species and recreation in the Tillery Reach.⁸ Minimum flow releases from the Tillery development into the Tillery Reach was an important issue in the relicensing proceeding. The relicense application proposed to release 330 cfs from the Tillery development. The U.S. Fish and Wildlife Service (FWS), pursuant to section 10(j) of the FPA, recommended that the licensee release from the Tillery development 800 to 1,000 cfs from May 16 to January 31, increasing to 1,500 to 1,800 cfs from February 1 through May 15. Throughout the proceeding, American Rivers and Rockingham supported FWS' recommended minimum flows. In addition, American Rivers and Rockingham proposed additional recreational flows from Tillery of 1,200 cfs during daylight hours on weekends and holidays each year from May 16 to September 15. To provide the recommended minimum instream and recreational flows, they suggested that Duke install a new turbine at the Tillery development capable of releasing 800 to 1,500 cfs.

⁷ Carolina Power & Light did business as Progress Energy Carolinas and was generally referred to as Progress Energy.

⁸ American Rivers and Rockingham actively participated in the relicensing proceeding. Initially, American Rivers and Rockingham filed comments separately. In addition to their separate motions to intervene, American Rivers filed comments on environmental scoping and Rockingham filed comments recommending environmental conditions for the Tillery Reach. Thereafter, American Rivers and Rockingham jointly filed comments regarding the Settlement Agreement, the draft EIS, and the final EIS; responses to the licensee's filings; and various motions discussed below that were filed after issuance of the final EIS. For informational purposes, American Rivers and Rockingham also filed their pleadings submitted in other related proceedings on the water quality certification, the fishways prescription, and the Biological Opinion.

9. In July 2007, Progress Energy filed a Comprehensive Settlement Agreement (Settlement Agreement).⁹ Although American Rivers and Rockingham participated in settlement negotiations, they declined to sign the agreement.
10. In September 2007, Commission staff issued a draft Environmental Impact Statement (EIS) that evaluated the potential effects on the environment associated with the relicensing of the two developments that make up the Yadkin-Pee Dee Project as well as the four developments that make up the upstream Yadkin Project. In April 2008, Commission staff issued a final EIS, recommending adoption of Duke's proposed flows.
11. The relicense application remained pending before the Commission, awaiting completion of consultation under the Endangered Species Act and NMFS' issuance of a Biological Opinion on the shortnose and Atlantic sturgeon.
12. On March 7, 2013, Progress Energy notified the Commission that it had changed its name to Duke Energy Progress, Inc., effective April 29, 2013.¹⁰ In this order, we refer to Progress Energy as Duke.
13. On April 29, 2013, NMFS filed a Biological Opinion for the project, which concluded that the proposed action is not likely to jeopardize the continued existence of shortnose sturgeon or Atlantic sturgeon. The Biological Opinion included an incidental take statement with five reasonable and prudent measures to minimize the take of

⁹ The Settlement Agreement signatories were Progress Energy; North Carolina Department of Environment and Natural Resources; North Carolina Wildlife Resources Commission; South Carolina Department of Health and Environmental Control; South Carolina Department of Natural Resources; Montgomery County, North Carolina; the Fairway Shores Homeowners 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.

¹⁰ The name change reflected the merger of Carolina Power & Light's holding company, Progress Energy, Inc., with Duke Energy Corporation, where Carolina Power & Light became an indirect subsidiary of Duke Energy Corporation and changed its name to Duke Energy Progress, Inc. (Duke). On February 4, 2014, the Commission amended the license accordingly. *Progress Energy Carolinas, Inc. and Duke Energy Progress, Inc.*, 146 FERC ¶ 62,098 (2014). On August 1, 2015, Duke became the limited liability company, Duke Energy Progress, LLC. On September 25, 2015, Duke Energy Progress, LLC filed an application to transfer the Yadkin-Pee Dee license from Duke to Duke Energy Progress, LLC.

shortnose and Atlantic sturgeon, along with 15 terms and conditions to implement the measures.

14. On July 24, 2013, American Rivers filed a motion to supplement the record with information regarding minimum instream flows, the merger of Progress Energy, Inc. and Duke Energy Corporation, an alternative to retrofit the turbines at the Tillery development, and recreational flows.

15. On December 23, 2013, Duke notified the Commission that, on that day, it had challenged the validity of one of the Biological Opinion's reasonable and prudent measures in U.S. District Court for the Western District of North Carolina. Duke requested that the Commission defer issuance of the new license pending resolution of its legal challenge.

16. On February 7, 2014, Duke renewed its request to defer its license, but alternatively asked the Commission to include a specific reopener to modify the license, as necessary, pending the outcome of the court proceeding should the Commission decide to issue the license.

17. On May 23, 2014, American Rivers filed a motion requesting that the Commission require a recreational flow study to be conducted in the summer of 2014 rather than within one year of license issuance as recommended by Commission staff's final EIS.

18. On June 23, 2014, six years after issuance of the final EIS, American Rivers filed a motion to supplement the development analysis in the final EIS to discuss the economics of its recommended minimum instream flows, recreational flows, and retrofit of the Tillery development turbines.

19. On September 2, 2014, the U.S. District Court approved a settlement agreement between Duke and NMFS regarding the Biological Opinion. The settlement agreement required NMFS to revise its Biological Opinion by February 2015. NMFS did not meet this deadline.

20. On April 1, 2015, Commission staff, under delegated authority, issued the license order granting a new 40-year license to Duke.¹¹ The license order authorized Duke to continue operating the Tillery development as a peaking plant, and required Duke to

¹¹ The license order found that the deferral of license issuance was not in the public interest because a deferral would unduly delay the implementation of environmental enhancement measures. License Order, 151 FERC ¶ 62,004 at P 115.

release from the Tillery development year-round continuous minimum flows of 330 cfs¹² and additional flows for recreational boating.

21. On April 22, 2015, NMFS issued a revised Biological Opinion that included an incidental take statement with three reasonable and prudent measures and six terms and conditions.

22. On May 1, 2015, American Rivers and Rockingham jointly (collectively, American Rivers) filed a request for rehearing. On that same day, Duke filed a request for rehearing.

III. Procedural Issue

23. Duke filed a motion for leave to file an answer and an answer to American Rivers' rehearing request. In response, American Rivers filed an answer to Duke's motion, requesting that the Commission deny the motion. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure prohibits answers to requests for rehearing unless otherwise ordered by the decisional authority.¹³ The record of this proceeding contains sufficient information to make a reasoned decision on the merits. We will therefore deny Duke's motion and reject its answer. American Rivers' answer to Duke's motion is dismissed as moot.

IV. Discussion

A. Duke's Request for Rehearing

1. Revised Biological Opinion

24. Ordering paragraph (F) of the license order states that the license is subject to the incidental take terms and conditions of the 2013 Biological Opinion submitted by NMFS under section 7 of the ESA. Those conditions are set forth in Appendix D to the license order. Ordering paragraph (F) of the license also reserves the Commission's authority to

¹² The license order requires Duke to release 725 cfs for a period of eight continuous weeks commencing as early as March 15, but no later than March 22, after the first passage of American shad above Blewett Falls Dam. The first passage will occur no later than spring of 2020 pursuant to the fishways prescription, which requires Duke to provide upstream fish passage using a trap, sort, and truck facility before the fifth spawning year after license issuance.

¹³ 18 C.F.R. § 385.213(a)(2) (2015).

modify the license as necessary to ensure consistency with any revised Biological Opinion terms and conditions.

25. On rehearing, Duke requests that we replace the terms and conditions of the 2013 Biological Opinion in Appendix D of the license order with the terms and conditions of the revised Biological Opinion, and delete the second sentence of ordering paragraph (F) that reserves the Commission's amendment authority. In addition, Duke requests that the Commission remove license Article 404, which requires a Shortnose and Atlantic Sturgeon Protection Plan. Duke states that license Article 404 carries out the 2013 Biological Opinion's requirement to implement an Aquatic Life Monitoring and Adaptive Management Plan, and that because the revised Biological Opinion does not require such a plan, Article 404 is no longer necessary.

26. Given that on April 22, 2015, NMFS filed the revised Biological Opinion that included an incidental take statement with revised reasonable and prudent measures and terms and conditions, we will replace Appendix D of the license order with Appendix D of this order, which will include the new terms and conditions of the revised Biological Opinion. We will also remove the second sentence in ordering paragraph (F) that reserves our authority to amend the license to include the revised Biological Opinion.

27. We will not, however, remove license Article 404 from the license order. License Article 404 does not merely implement the Aquatic Life Monitoring and Adaptive Management Plan in the 2013 Biological Opinion as Duke contends. Rather, to ensure Duke complies with the more general incidental take statement terms and conditions (e.g., monitoring water quality, quantifying available spawning habitat), license Article 404 requires Duke to file for Commission approval, a plan describing how it will implement those terms and conditions. As the revised incidental take statement also includes some of these more general requirements, Article 404 is still applicable. While we will not remove license Article 404, we will revise it to reflect NMFS' revised terms and conditions of the incidental take statement.

2. Minimum Flow

28. License Article 403 requires the licensee to release from the Tillery and Blewett Falls developments the minimum flows proposed in the Settlement Agreement and required by the project's water quality certification or inflows to the project, whichever is less.¹⁴ The required flows are contingent on the Tillery development receiving specified

¹⁴ Article 403 of the license, License Order, 151 FERC at 64,042. That article provides:

The licensee must provide minimum flows included in sections 2.1.3.2 (Blewett Falls Development) and 2.1.4.2 (Tillery Development) of the

(continued...)

minimum flow releases from Alcoa Power's upstream Yadkin Project.¹⁵ The minimum flow requirements of the license and the specified flows from the Yadkin Project are shown in Table 1 below.

29. To determine the inflow to the Tillery development, Duke states that it relies on information provided by Alcoa Power. Duke explains that every morning at approximately 12:00 a.m. Alcoa Power informs Duke of the anticipated, not actual, daily flows from the Yadkin Project's Falls development. Because Alcoa Power may modify the Yadkin Project's operations during the day, the actual releases from the Yadkin Project may be more or less than the anticipated flows. Only on the following morning at approximately 12:00 a.m., does Alcoa Power inform Duke of the preceding day's actual flows.

30. Thus, to ensure compliance with Article 403, Duke proposes to use the actual flow data from the Yadkin Project for the preceding day to calculate the outflow from the Yadkin Project. Duke also asks the Commission to approve its interim proposal to comply with Article 403 set forth in Table 1 below.¹⁶

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.

¹⁵ Water quality certification, section I.A. Alcoa Power has proposed these flows in the relicensing proceeding for its Yadkin Project. *See* Alcoa Power's May 5, 2007 settlement agreement at section 3.1.2.1, p. 3-5 (Accession No. 20070507-5011). The relicensing proceeding is pending before the Commission, so the Commission currently cannot require Alcoa Power to release these specified flows. As a result, in the event that Alcoa Power releases less than the specified flows, license Article 403 requires Duke to release the inflow to the Tillery development.

¹⁶ Table 1 is the table Duke submitted with our addition of Alcoa Power's proposed flow releases for the Yadkin Project.

Table 1. Interim proposal to comply with minimum flow requirements.

Timeframe	Alcoa Power's Proposed Flow Releases for the Yadkin Project (cfs)¹⁷	Blewett Falls Continuous Minimum Flow Requirements (cfs)	Alcoa Power Actual Flow Release for Preceding Day (daily average, cfs)	Tillery Continuous Minimum Flow Release (cfs)	Blewett Falls Continuous Minimum Flow Release (cfs)
Feb. 1 to May 15	2000	2400	≥ 2400	330	2400
			< 2400	330	The higher of 925 cfs ¹⁸ or Alcoa Power's actual daily average flow release for preceding day
May 16 to May 31	1500	1800	≥ 1800	330	1800
			< 1800	330	The higher of 925 cfs or Alcoa Power's actual daily average flow release for preceding day
June 1 to Jan. 31	1000	1200	≥ 1200	330	1200
			< 1200	330	The higher of 925 cfs or Alcoa Power's actual daily average flow release for preceding day

¹⁷ See *supra* note 15.

¹⁸ Duke uses 925 cfs because it is the minimum flow from the Blewett Falls development required in Stage 3 of the Low Inflow Protocol.

31. The amount of inflow to the Tillery development is determined by releases from the Yadkin Project, as well as flows from the Uwharrie River (a tributary of the Pee Dee River). Duke's proposal to cover the period until the Yadkin Project is licensed, shown in the three right-hand columns of Table 1, does not consider the additional flows from the Uwharrie River when the daily average release from the Yadkin Project for the previous day is less than 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. Taking the Uwharrie River flows into account, as proposed in the settlement and shown in the two left-hand columns of Table 1, the ratio between the minimum flows that Duke must release at Blewett Falls and the flows needed from the Yadkin Project to meet those requirements is 1.2, rather than 1.¹⁹ Accordingly, we will modify Article 403 to clarify that, when Alcoa Power releases less than the assumed flows from the Yadkin Project, Duke must release from Blewett Falls 1.2 times the flow that Alcoa Power releases from its project.

32. Given that Duke does not receive data on the flows from the Yadkin Project on a real time basis, Duke may use the preceding day's data on releases from the Yadkin Project to calculate the flows that it must release.²⁰

33. The new Article 403 will provide:

The licensee must provide minimum flows required by sections I.B.4 (Blewett Falls Development) and I.C.3 (Tillery Development) of North Carolina Division of Water Quality's (DWQ) water quality certification in Appendix A. If the flows released from the Yadkin Project's Falls development are less than the flows specified in

¹⁹ We calculated the ratio factor by dividing Duke's minimum flows by Alcoa Power's minimum flows: $2,400 \text{ cfs} \div 2,000 \text{ cfs} = 1.2$; $1,800 \text{ cfs} \div 1,500 \text{ cfs} = 1.2$; $1,200 \div 1,000 \text{ cfs} = 1.2$.

²⁰ In any event, we anticipate that Alcoa Power will release the flows specified in its settlement agreement from May 16 through September 15. Alcoa Power operates its Yadkin Project in accordance with a 1968 headwater benefits agreement with the Yadkin-Pee Dee Project licensee. According to the 1968 agreement, Alcoa Power regulates weekly average stream flow from its Falls development to provide a flow not less than 1,500 cfs during the 10-week period preceding the recreation season to refill the reservoir by May 15 (approximately March 5 through May 14); 1,610 cfs from May 15 through July 1; and 1,400 cfs from July 1 through September 15. *See Carolina Power & Light Company*, 39 FPC 389 (1968).

section I.A of North Carolina DWQ's water quality certification, the licensee must release from the Blewett Falls development 1.2 times the average daily flow released on the preceding day from the Yadkin Project's Falls development, or 925 cfs, whichever is higher.

3. Dissolved Oxygen Requirements

34. The project's water quality certification (sections III.A and III.B) requires the licensee to comply with the state standards for dissolved oxygen in the Tillery and Blewett Falls tailraces. To implement this requirement, the licensee developed a Dissolved Oxygen Compliance Monitoring Plan, filed on January 20, 2012, and approved in license Article 402.

35. Duke states that its ability to meet dissolved oxygen requirements in the Tillery tailrace depends on inflows from the Yadkin Project. Duke explains that dissolved oxygen levels below the Tillery development may decrease during nighttime hours if inflow into the Tillery development is substantially reduced or interrupted. In order to comply with its dissolved oxygen requirements, Duke states that it must release a 330-cfs minimum flow, which may cause Duke to draw down Lake Tillery below levels specified in its water quality certification. Thus, Duke asks the Commission to not enforce the dissolved oxygen requirement in the water quality certification and to allow Duke to meet its dissolved oxygen requirements by providing the minimum flows required by the license until flow releases are needed to maintain the minimum elevation of Lake Tillery or to support generation demands in the event of a system emergency.

36. We are unclear as to when Duke will release less than 330 cfs at the Tillery development. There is no historical evidence in the record indicating that inflows to the Tillery development would drop below 330 cfs, unless during a severe drought, in which case the Low-Inflow Protocol (also required by the certification) would be implemented.²¹ The Low-Inflow Protocol identifies 330 cfs as the critical flow from the Tillery development. Further, as Table 1 shows above, Duke's interim proposal to comply with minimum flow requirements proposes to release 330 cfs at the Tillery development regardless of the amount of flow Alcoa Power releases from the Yadkin Project. Thus, Duke in all cases should be able to release 330 cfs to comply with the dissolved oxygen requirements below the Tillery development. In any case, we are

²¹ The Low-Inflow Protocol is attached to the water quality certification as Appendix B. As discussed below, because the license order incorrectly attached the Low-Inflow Protocol, we reattach the Low-Inflow Protocol to Appendix A of this order.

required as a matter of law to include in the license all conditions in the water quality certification²² and will not agree to not enforce them.

37. In the event that Duke cannot release such minimum flows to meet the dissolved oxygen requirements, Duke may file an explanation of noncompliance with the Commission, which Commission staff will take into consideration.

4. License Term

38. Section 15(e) of the FPA 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.²³ Our policy is to relate the length of the new license term to the amount of redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures that are authorized or required under the license. Thus, we grant 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.²⁴

39. Duke urges the Commission to extend the authorized 40-year license term to 50 years. Duke argues that it should receive a 50-year license term for the Yadkin-Pee Dee Project because it will annually expend more than a moderate amount of financial resources, \$3,114,589 or \$28,679 per installed MW, to implement the environmental enhancement measures under its new license.²⁵ Duke states \$28,679 per MW is equivalent on a dollar-per-installed megawatt spent by other licensees that the Commission determined warranted receiving 50-year license terms.²⁶

²² See *American Rivers v. FERC*, 129 F.3d 99 (2d Cir. 1997).

²³ 16 U.S.C. § 808(e) (2012).

²⁴ See *Southern California Edison, Co.*, 77 FERC ¶ 61,313, at 62,435 (1996).

²⁵ See Duke's Rehearing Request at 16. The license order estimates that annual cost to operate the project under the new license will be \$28.04/MWh. See License Order, 151 FERC ¶ 62,004, at P 225.

²⁶ Specifically, Duke cites the relicensing proceedings for the St. Lawrence-FDR Project No. 2000 and the Niagara Project No. 2216 as well as several others listed in

40. Duke adds that the Commission did not fully consider the costs it incurred in obtaining the new license, including those costs necessary to: complete the Settlement Agreement;²⁷ support the Commission's relicensing process by providing support at scoping meetings, answering additional information requests, and commenting on the draft and final EIS; prepare and defend the water quality certification; participate in a trial-type hearing with respect to the fishways prescriptions; prepare the Diadromous Fish Passage Plan Agreement; litigate the NMFS' 2013 Biological Opinion; and respond to the various filings in the proceeding. Finally, Duke also argues that the Yadkin-Pee Dee Project should receive a 50-year license term because the signatories to the Settlement Agreement support such license term length.

41. We deny rehearing on this issue and affirm the license order's determination that a 40-year license term for the Yadkin-Pee Dee Project is appropriate. In issuing the license for a 40-year term, the Director correctly determined that the license authorizes a moderate amount of new construction and new environmental enhancement measures (e.g., higher minimum flow releases from the Tillery and Blewett Falls developments, recreation flow releases from the Tillery development, and fisheries monitoring).²⁸ The new construction and environmental enhancement measures, while substantial, do not rise to a 50-year level.

42. Duke's comparison of its annual dollar-per-installed megawatt cost to those spent by licensees that received 50-year license terms in various relicensing proceedings is unavailing. A majority of the licenses cited by Duke refer to extensive new construction or environmental measures, such as pumped storage facilities, fish passage facilities, fish hatcheries, and minimum flows. We note that two of the license orders granted a 50-year license to coordinate the license terms of other projects in the watershed. Rather than supporting Duke's proposal, each of the cited relicensing orders demonstrates the highly fact-sensitive nature of choosing an appropriate license term based on the record before

Attachment C of its rehearing request. *See* Duke Request for Rehearing at 16-18, Attachment C.

²⁷ *See* Duke's Request for Rehearing at 18. While it is unclear what Duke means by its efforts to complete the Settlement Agreement, we assume that it means the cost incurred to negotiate the Settlement Agreement. If Duke intends for its efforts to complete the Settlement Agreement to mean the costs to implement the Settlement Agreement, the license order took those costs into consideration.

²⁸ License Order, 151 FERC ¶ 62,004 at P 232.

the Commission.²⁹ Each project is unique and comparing projects can be difficult. Therefore, we will not engage in a lengthy discussion of each of the license orders cited by Duke.

43. We disagree that the costs Duke states it spent in support of the relicensing process (e.g., preparing a relicense application, attending scoping meetings) should be considered in determining the appropriate license term. While we consider such costs to determine a project's economic benefits, they are not relevant in considering the appropriate license term. Rather, as explained above, the parameters that we consider to determine the license term are project redevelopment and environmental mitigation and enhancement costs.³⁰

44. The Settlement Agreement parties' support for a 50-year license also does not persuade us to extend the license term. While Duke is correct to point out that the Commission has granted 50-year license terms that were supported by relicensing settlement agreements, as we explained in our Settlement Policy Statement, "the Commission cannot automatically accept all settlements, or all provisions of settlements," and that "in reviewing settlements, the Commission looks not only to the wishes of the settling parties, but also at the greater public interest, and whether settlement proposals meet the comprehensive development/equal consideration standard."³¹ We will not extend a license term beyond that dictated by the extent of proposed new activities simply because the settlement parties have agreed to such a term.³² Instead, as explained above, the Commission considers a number of factors in establishing the term of a license, and, for the reasons stated above, affirms the Director's determination that a 40-year term is appropriate for the Yadkin-Pee Dee Project.

²⁹ We note that many of the orders cited by Duke are delegated orders and do not constitute precedent binding the Commission in future cases. *See Midwest Generation, LLC*, 95 FERC ¶ 61,231, at 61,799 (2001) (citing *Phoenix Hydro Corp.*, 26 FERC ¶ 61,389, at 61,870 (1984), *aff'd*, *Phoenix Hydro Corp. v. FERC*, 775 F.2d 1187, 1191 (D.C. Cir. 1985)).

³⁰ *Pub. Serv. Co. of Colorado*, 79 FERC ¶ 61,148, at 61,639 (1997).

³¹ *Settlements in Hydropower Licensing Proceedings Under Part I of the Federal Power Act*, 116 FERC ¶ 61,270, at PP 3-4 (2006) (*Settlement Policy Statement*).

³² *E.g., Northern Lights, Inc.*, 135 FERC ¶ 61,232, at 62,296 (2011).

5. Shoreline Management Plans

45. License Article 410 requires Duke to file within six months of license issuance a revised Lake Tillery Shoreline Management Plan (SMP).³³ In addition, license Article 411 requires Duke to file with the Commission, a separate Blewett Falls Lake SMP within one year of license issuance.

46. On rehearing, Duke requests to be allowed to prepare a single shoreline management plan for both Lake Tillery and Blewett Falls Lake. Duke states that one plan would be more reasonable, efficient, and in the public interest. Duke adds that if the Commission allows Duke to prepare a single plan, the Commission should also set a single filing date. Currently, the revised Lake Tillery SMP is due October 1, 2015, while the Blewett Falls Lake SMP is due April 1, 2016. Duke requests that the Commission require it to file the single plan two years from the issuance date of the license order. Duke explains that such deadline will allow it to coordinate the plan's development to be consistent with the measures developed pursuant to other license articles. For example, Article 410 requires the licensee to develop the Lake Tillery SMP in conjunction with the Goldenrod Monitoring and Protection Plan required by license Article 405 (to be filed by April 1, 2016) so that the provisions for protecting the species are consistent.

47. For the reasons provided by Duke, we will grant rehearing on this issue and will revise Article 410 to require Duke to file a single shoreline management plan for both Lake Tillery and Blewett Falls Lake. In order to allow Duke to coordinate the plan's development with other measures required by the license (e.g., goldenrod protection measures to be developed under Article 405's Goldenrod Monitoring and Protection Plan), the plan must be filed with the Commission two years from the issuance date of the license, i.e. April 1, 2017. In revising Article 410, we will also delete Article 411.

48. Duke requests that we clarify whether the Commission will require existing private access structures located on Blewett Falls Lake to be removed. Commission staff has no intention of requiring the removal of existing private structures. However, pursuant to the revised Article 410, Duke must include in the SMP a description of the permitting program for allowable structures on the shoreline.

³³ Commission staff approved the Lake Tillery SMP on October 9, 2012. *Progress Energy Carolinas, Inc.*, 141 FERC ¶ 62,021 (2012).

6. Miscellaneous Corrections and Clarifications

49. Duke requests that the Commission correct and clarify various provisions in the license order.
50. Ordering paragraph (B)(2) of the license order states that the normal pool elevation for the Blewett Falls Development is 179.0 feet National Geodetic Vertical Datum (NGVD). Duke points out that the correct normal pool elevation for the Blewett Falls Development is 178.1 feet NGVD. We will modify ordering paragraph (B)(2) accordingly.
51. License Article 301 requires the licensee to submit certain plans and specifications and obtain approvals 60 days before the start of “any construction.” Duke requests that we clarify what activities constitute “any construction,” specifically whether replacing flashboards, standards, air compressors, or valves, or maintaining facility access roads or embankments constitute construction.
52. Article 301 pertains to any new construction authorized by the license order, in this case the project’s fish passage facilities, or by a future license amendment. Maintenance activities like the ones described by Duke do not fall within the scope of Article 301.
53. License Article 401(a) requires Duke to submit its Hydraulic Model Study Plan as required by FWS’ fishways prescription for Commission approval within 12 months of license issuance. However, Duke states that the fishways prescription provides that Duke will perform that study during the final design phase of the trap, sort, and transport fish passage facility, which is anticipated to occur in late 2017. Thus, Duke requests that the Commission modify the deadline for the Hydraulic Model Study Plan to January 31, 2018.
54. We agree with Duke that the deadline in Article 401(a) unnecessarily hastens the submission of the Hydraulic Model Study Plan. Extending the deadline to January 31, 2018, will provide sufficient time for Commission review and approval while also being consistent with FWS’ fishways prescription requirements. Accordingly, we grant rehearing on this issue, and we will modify the deadline in Article 401(a).
55. License Article 401(b) requires Duke to file with the Commission certain reports required by the water quality certification and FWS’ fishways prescription so that the Commission may ensure that the licensee complies with license requirements. One of these reports includes the Annual Project Compliance Report, which Duke must file by March 15. The Annual Project Compliance Report is intended to include the project operational reports required by the water quality certification, including annual reports on Duke’s compliance with minimum flow releases at the Blewett Falls (certification

section I.B.4) and at Tillery (certification section I.C.3), and annual reports on lake level compliance at both the Blewett Falls and Tillery dams (certification II.C).

56. Duke requests that we modify the deadline for the Annual Project Compliance Report to March 31, which is the deadline in the water quality certification to file annual minimum flow compliance reports at Blewett Falls.³⁴ We agree and will revise the deadline in Article 401(b) for the Annual Project Compliance Report to March 31 to be consistent with the water quality certification requirement.

57. Duke states that the water quality certification, in sections III.A.2 and III.B.2, requires Duke to submit annual compliance reports for dissolved oxygen and water temperature to the Commission and North Carolina DWQ by April 15 each year. Duke recommends that the Commission add this filing date to the Article 401(b) table. Inasmuch as the water quality certification already requires Duke to file a copy of the annual report with the Commission, there is no need to add the requirement to Article 401(b).

58. License Article 401(b) also requires Duke to file the Blewett Falls Lake Sediment Survey required by the water quality certification within five years of license issuance. Duke points out that, in the discussion of the license order, Commission staff stated that the new license does not require Duke to conduct the sediment survey. Therefore, Duke states the Commission should delete the Blewett Falls Lake Sediment Survey from the Article 401(b) table.

59. The license order's discussion on the Blewett Falls Lake Sediment Survey is incorrect. We cannot delete the requirement to file the Blewett Falls Lake Sediment Survey from license Article 401(b) because the survey is required by the water quality certification. Although condition 9 of the water quality certification does not incorporate the survey by reference,³⁵ the water quality certification explicitly spells out the Blewett Falls Sediment Survey as a settlement provision that is a condition of the certification (certification section V.A.2). Thus, we view the sediment survey as a condition of the

³⁴ The water quality certification does not establish deadlines for submitting the other project operation annual reports.

³⁵ The Blewett Falls Lake Sediment Survey is contained in section 2.6.1.2. of the Settlement Agreement, and certification condition 9 incorporates by reference certain provisions of the settlement, but excludes section 2.6, except for sections 2.6.1.1. and 2.6.2.1, which are the provisions for the shoreline management plans.

certification, and we must require it.³⁶ In any event, under the Settlement Agreement, Duke has agreed to conduct the survey (settlement section 2.6.1.2), and on rehearing Duke has offered to provide the Commission with a courtesy copy of the survey results.³⁷

60. Duke also seeks clarification of license Article 401(d), which requires Duke to file license amendment applications for certain changes to the license that necessitates prior Commission approval.

61. Specifically, license Article 401(d) states that certain fishways prescriptions and water quality certification conditions contemplate unspecified long-term changes to project facilities and operations. Article 401(d) purports to list all the conditions that contemplate such unspecified changes. However, this list is not meant to be all-inclusive, and it may confuse licensees as to whether a particular change to project design or operation would require a license amendment. To eliminate such confusion, we will amend Article 401(d) to delete the table and instead provide generally:

Certain conditions of North Carolina Division of Water Quality's certification in Appendix A and U.S. Fish and Wildlife Service's fishways prescription in Appendix B contemplate unspecified long-term changes to project operation or facilities for the purposes of complying with state water quality standards or mitigating environmental impacts (e.g., section III.B.C of the water quality certification requires the evaluation and potential modification to flows after five years). Such changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

62. Article 401(d) requires Duke to file a license amendment application before implementing changes to final project design or operation, such as changes to the final design or operation of fish passage facilities. Any changes that are contemplated by the license order, such as flow adjustments, do not require a license amendment.³⁸ Whether a

³⁶ Section 401(d) of the Clean Water Act provides that the water quality certification shall become a condition of any federal license that authorizes construction or operation of the project. 33 U.S.C. § 1341(a)(1) (2012).

³⁷ Duke Request for Rehearing at 28.

³⁸ Article 401(c), however, requires Duke to inform the Commission of any contemplated changes the project operation under the low-inflow protocol and minimum flows so that Commission staff may ensure compliance.

license amendment is required depends on the nature of the proposed change. If Duke is unsure as to whether a license amendment is required to implement a particular change, it should seek guidance from Commission staff.

63. Duke states that the first sentence of the third paragraph in Article 406 should be corrected by replacing, “The report identified in No. 7 above” with, “The report identified in No. 6 above.” We will revise Article 406 accordingly.

64. Article 408 states that Duke will install two vault toilets at the Swift Island Access Area, the Norwood Access Area, and the Lilly’s Bridge Access Area. On rehearing, Duke states that the license application did not propose to install two separate vault toilets at the above access areas but proposed to install at each access area a single vault toilet structure with one men and one women restroom. Thus, Duke requests that we correct Article 408 to replace “two vault toilets” with “one vault toilet structure with separate designated areas for men and women” in paragraphs (3)(a),(c), and (d). Duke’s request is reasonable, and thus, we will modify Article 408 accordingly.

65. Duke states that there are a number of minor errors and omissions in the water quality certification (Appendix A), including in the Low-Inflow Protocol, which is part of the water quality certification (attached to the license order as Appendix B to Appendix A). Duke is correct, and we will make the identified changes to the water quality certification and replace the attached Low-Inflow Protocol in Appendix A of the license order.

B. American Rivers’ Request for Rehearing

1. Procedural Matters and Arguments

a. Technical Conference

66. American Rivers argues that the record on certain issues is insufficient to support the relicense order and asks that the Commission hold a technical conference to “develop a work plan and procedures” for Commission staff to (1) evaluate the Dual Flow Analysis as part of the its Instream Flow Incremental Methodology (IFIM) study to evaluate fishery habitat availability, (2) require Duke to conduct a recreational flow study, (3) study the feasibility of American Rivers’ recommendation for Duke to install a new turbine at the Tillery development, and (4) supplement the EIS to incorporate the results of these studies. Because, as discussed below, we deny rehearing on these issues and find that the license order is supported by substantial evidence, American Rivers’ request for a technical conference is moot.

b. Delegation of Authority

67. American Rivers contends that the Director did not have the authority to issue the license because the license application was contested, and the Commission's regulations only authorize the Director to act on uncontested license applications. It argues that the plain meaning of uncontested means “not disputed or that all issues are agreed upon by both the parties,”³⁹ and while it did not object to the issuance of a new license, it objected to the sufficiency of the proposed license articles. Thus, because of this alleged procedural mistake, American Rivers requests that the Commission vacate the license order.

68. The Commission has delegated to the Director the authority to act on uncontested license applications.⁴⁰ Section 375.301(c) of the Commission's regulations defines an “uncontested” proceeding for purposes of the delegation regulations as one where no one has filed a motion to intervene “in opposition to the pending matter.”⁴¹ An intervention taking a different position from the licensee on particular issues, such as a project's impact on environmental and recreation resources, is not equivalent to opposing issuance of a license.⁴² American Rivers' and Rockingham's interventions thus did not render the application contested, and the Director had the delegated authority to act in this matter. Therefore, we deny rehearing on this issue.

c. Treatment of Motions

69. American Rivers argues that Commission staff violated the Administrative Procedure Act (APA)⁴³ by waiting until the license order to address motions it filed after issuance of the final EIS: a July 24, 2013 motion to supplement the record; a May 23, 2014 motion to undertake a recreational flow study; and a June 23, 2014 motion to supplement the development analysis in the final EIS.

³⁹ American Rivers' Rehearing Request at 20.

⁴⁰ 18 C.F.R. § 375.308(a)(1) (2015).

⁴¹ 18 C.F.R. § 375.301(c) (2015).

⁴² See *Elkem Metals Co.*, 45 FERC ¶ 61,044, at 61,157 (1988); *Robert W. Shaw*, 19 FERC ¶ 61,153, at 61,293 (1982).

⁴³ 5 U.S.C. §§ 551-59, 701-06, 1305, 3105, 3344, 5372, 7521 (2012).

70. American Rivers asserts that, rather than addressing these filings as comments in the license order, the Commission was required to act on these motions promptly (i.e., before issuance of the license).⁴⁴ American Rivers argues that Commission staff's "*sub rosa* denial"⁴⁵ of the motions was unreasonable and constrained American Rivers' ability to exhaust administrative review. Specifically, American Rivers states that because rehearing of the license order is the first opportunity to respond to Commission staff's treatment of those motions, if the Commission's order on rehearing were to include a new rationale or authority but not change the substance of the new license, American Rivers would have to seek judicial review without exhausting administrative review.

71. The Commission has the discretion to determine the best procedures to address the issues before it,⁴⁶ and we frequently carry motions, particularly ones filed late in the proceeding, with the case, addressing them when we issue a merits order. The license order's treatment of American Rivers' motions as comments was reasonable. The motions predominantly reiterated the comments that American Rivers and Rockingham had made in previous filings, which had been generally addressed in the final EIS and in the license order. In any event, if the Commission had acted on the motions before issuing the license, which American Rivers argues should have been done, such action would have been interlocutory.⁴⁷ Interlocutory orders are not subject to appeal under our regulations, which provide only for appeals from final staff action, unless irreparable injury would be sustained by the failure to entertain it.⁴⁸ Thus, American Rivers could not seek judicial review of staff's actions until license order issuance, eliminating any

⁴⁴ American Rivers adds that the Commission staff's late denial of their motions violated section 555 of the APA, which requires prompt notice of denial. 5 U.S.C. § 555 (2012).

⁴⁵ American Rivers' Rehearing Request at 21.

⁴⁶ See *PPL Montana, LLC*, 139 FERC ¶ 61,231, at n.87 (2012) (citing *Tennessee Gas Pipeline Co. v. FERC*, 972 F.2d 376, 381 (D.C. Cir. 1992) ("The agency is entitled to make reasonable decisions about when and in what type of proceeding it will deal with an actual problem"); *Nader v. FCC*, 520 F.2d 182, 195 (D.C. Cir. 1975) ("[T]his court has upheld in the strongest terms the discretion of regulatory agencies to control the disposition of their caseload"))).

⁴⁷ An interlocutory action is one that does not impose an obligation, deny a right, or fix some legal relationship as a consummation of the administrative process.

⁴⁸ *Halecrest Co.*, 38 FERC ¶ 61,312, at 62,106 (1987).

benefit of addressing their motions earlier. Because we deal here with all of the issues raised by American Rivers, it retains ability to seek judicial review and is not aggrieved by the timing of our action.

d. Amendment of License Application

72. On rehearing, American Rivers renews its argument that Commission staff should have required Duke to amend its license application to reflect the merger of the parent companies, Progress Energy, Inc. and Duke Energy Corporation. Specifically, it argues that as a result of the merger, the Yadkin-Pee Dee Project is now part of a fleet of hydropower projects and will serve twice as many customers than it was serving before the merger.⁴⁹ It argues that Duke should have been required to amend its license application to reflect this information,⁵⁰ and the license order was required to take these facts into account when addressing sections 15(a)(2)(C) and (D) of the FPA, which require the Commission to examine Duke's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service, and Duke's need for the project's power to serve its customers over the short and long term, respectively.⁵¹

73. The information to which American Rivers cites would not affect, and indeed is unrelated to, the license order's determinations under section 15(a)(2)(C) and (D) of the FPA. To determine whether a license applicant is capable of operating the project to provide efficient and reliable electric service in the future, we look to the license applicant's past record and any plans for improving the efficiency or reliability of the project structures. Here, the license order discussed Duke's monitoring of structural

⁴⁹ American Rivers points to a Joint Dispatch Agreement entered into pursuant to section 205 of the FPA by Duke Energy Corporation and Progress Energy, Inc., on behalf of Duke Energy Carolinas, LLC and Duke, to among other things allow Duke and others to achieve efficiencies by jointly dispatching their generation facilities to serve their loads. *Duke Energy Corp. et al.*, 139 FERC ¶ 61,193, at P 6 (2012). The Commission approved the agreement with certain conditions in 2012. *Id.*

⁵⁰ American Rivers cites to section 16.10(a) of the Commission's regulations, which requires applicants for new licenses to provide information on project reliability and need for power. 18 C.F.R. § 16.10(a)(1)-(2) (2015). However, American Rivers does not explain how requiring Duke to amend its license application would have altered the results of this proceeding.

⁵¹ 16 U.S.C. § 808(a)(2)(C)-(D) (2012).

movement or stress, seepage, uplift, and potential equipment failure at the project, as well as Duke's inspection and maintenance of project structures to ensure the project operates reliably into the future.⁵²

74. When examining whether a project will provide power needed under the public interest standard, the Commission looks to more than the power produced by the individual project, but to such factors as whether there is a regional need for power, and whether the project will provide diversification to the region's generation.⁵³ Here, the license order explained that this project will aid in supplying energy for the forecasted growing demand in the region.⁵⁴ In sum, the information provided by American Rivers would not affect our section 15 analysis, and we thus deny rehearing on this issue.⁵⁵

2. Comprehensive Development and Substantial Evidence

75. American Rivers argues that the Yadkin-Pee Dee license is not best adapted to a comprehensive plan of development, as required by sections 10(a)(1) and 15(a)(2) of the FPA. American Rivers further argues that the comprehensive development findings in the license order are arbitrary and capricious because they are not supported by substantial evidence, as required by section 313(b) of the FPA.

⁵² License Order, 151 FERC ¶ 62,004, at P 216.

⁵³ *City of Spearfish, S. Dakota*, 136 FERC ¶ 61,042, at P 4 (2011) (citing *Boise Cascade Corp.*, 36 FERC ¶ 61,135, at 61,331 (1986); *Niagara Mohawk Power Corp. and Erie Boulevard Hydropower, L.P.*, 89 FERC ¶ 61,207, at 61,633 (1999)).

⁵⁴ License Order, 151 FERC ¶ 62,004 at P 218.

⁵⁵ Even if it were the case that Duke should have amended its application, doing so would not have required re-noticing the application or other significant procedural actions; that would only be the case if there were a material amendment that effectively created a new project proposal. See *Erie Boulevard Hydropower, L.P.*, 131 FERC ¶ 61,036 (2010); *reh'g denied*, 134 FERC ¶ 61,205, *reh'g denied*, 136 FERC ¶ 61,044 (2011); *summarily aff'd, Green Island Power Authority v. FERC*, No. 11-1960 (2d Cir. Sept. 25, 2012). Thus, the fact that no amendment was filed did not materially affect American Rivers.

a. Comprehensive Plan

76. American Rivers claims that the license order does not contain or constitute a “plan,” within the meaning of FPA section 10(a)(1) because it fails to specify desirable future conditions for the beneficial uses during the term of the new license. American Rivers argues that the license order’s omission of desired future conditions is inconsistent with the Commission’s analysis in *Power Authority of the State of New York*⁵⁶ which stated that the Commission was required to analyze the future effects of reasonable alternatives pursuant to the National Environmental Policy Act of 1969 (NEPA).

77. As explained in *Appalachian Power Company*⁵⁷ and *Alabama Power Company*⁵⁸ where similar arguments were made, section 10(a)(1) of the FPA⁵⁹ requires that projects licensed by the Commission be best adapted to “a comprehensive plan for improving or developing a waterway,” taking into account all beneficial uses of the waterway (e.g., waterpower development; protection, mitigation, and enhancement of fish and wildlife; irrigation; flood control; water supply; and recreation). Section 10(a)(1) does not require the Commission to prepare a single comprehensive plan that sets goals for achieving desired future conditions against which an application is measured. Nor does it require that the license order itself constitute such a comprehensive plan.⁶⁰

78. Section 10(a)(1) requires the Commission to develop a record in the proceeding on all aspects of the beneficial public uses relating to the comprehensive development of the waterway or waterways involved. That is what Commission staff did here in the Yadkin-Pee Dee relicensing proceeding. An extensive record was developed, which contains information and analyses on relevant issues and resources, including: archaeological and historic resources, erosion, sedimentation, recreation, socioeconomics, native and exotic

⁵⁶ American Rivers’ Request for Rehearing at 32-33 (citing *Power Authority of the State of New York*, 25 FERC ¶ 61,084, at 61,284 (1983) (Power Authority)).

⁵⁷ 132 FERC ¶ 61,236, at PP 14-16 (2010).

⁵⁸ 141 FERC ¶ 61,127, at PP 18-21 (2012).

⁵⁹ 16 U.S.C. § 803(a) (2012).

⁶⁰ See *LaFlamme v. FERC*, 945 F.2d 1124, 1128 (9th Cir. 1991) (stating that “[t]he record supports the Commission’s conclusion that it satisfied the FPA’s requirement of developing a comprehensive plan for the Project, despite the fact that no document entitled “Comprehensive Plan” was prepared or filed.”)

aquatic vegetation, fishery resources (including fish spawning and rearing, as well as fish entrainment), instream flows, drought and flood management, non-project water withdrawals, and water quality. Commission staff's draft and final EISs reflect a thorough evaluation of the record as to the potential environmental effects on these resources of relicensing the project under the various alternatives. Moreover, the license establishes a comprehensive set of operational and environmental measures, together with reservations of the Commission's authority to require changes to the project if future circumstances warrant, that ensures that the project will be operated through the term of its license in a manner that appropriately balances developmental and non-developmental interests.

79. As we stated in the license order, 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 resources in question.⁶¹ To the extent that state or federal resource agencies develop such a plan, section 10(a)(2)(A) of the FPA requires the Commission to consider the extent to which a project would be consistent with the plan, but does not mandate preparation of such a plan by the Commission itself or require that a project actually be consistent with the plan.⁶² The final EIS identified four comprehensive plans on the restoration of anadromous fishery resources and two on recreation in the Yadkin and Pee Dee Rivers. These plans, which were filed with the Commission pursuant to section 2.19 of the regulations,⁶³ were fully considered by Commission staff.

80. We also fail to see how *Power Authority* applies to American Rivers' argument. As stated above, American Rivers cites *Power Authority* to demonstrate that the Commission analyzes the future effects of reasonable alternatives pursuant to NEPA. An analysis of future effects of reasonable alternatives under NEPA, however, is unrelated to American Rivers' argument that we should set goals to achieve desired future conditions at a project site pursuant to section 10(a) of the FPA.

⁶¹ See License Order, 151 FERC ¶ 62,004 at P 155.

⁶² See *Eastern Texas Electric Cooperative, Inc.*, 140 FERC ¶ 61,228, at P 53 (2012).

⁶³ 18 C.F.R. § 2.19 (2015).

b. Specific Resource Issues

81. American Rivers objects to the license conditions relating to minimum instream flows and recreational flows released to the Tillery Reach. American Rivers argues that these conditions do not comply with the comprehensive development standard of section 10(a)(1) of the FPA and are unsupported by substantial evidence.

82. As explained below, we deny rehearing on these issues. The FPA recognizes the numerous beneficial public uses of the waterways and gives the Commission broad guidelines to apply in its hydroelectric licensing decisions. In deciding whether or under what conditions to issue a license, our task is to fashion license conditions that will achieve what in our judgment is an optimal balance between, and among, the various developmental and environmental public interest uses of the affected waterway. The FPA does not require the Commission to have perfect information before taking a licensing action, or finding all environmental concerns to be definitively resolved before issuing a license.

83. An extensive record was developed for this relicensing proceeding, including studies, analyses, federal and state agency and other stakeholder consultation, and information on the resources at issue here. Commission staff's draft and final EISs reflect a thorough evaluation of the record as to the potential environmental effects on these resources of relicensing the project under the no action alternative, licensee's proposal, and staff's recommended alternative. Therefore, Commission staff had sufficient information with which to proceed and make decisions supported by substantial evidence. The license order demonstrates that Commission staff considered all the germane factors and the record of the proceeding (e.g., the license order and the EISs) provided a reasoned explanation to support the license order's decisions. Contrary to American Rivers' argument, a determination that there is substantial evidence to support a particular decision does not mean that other evidence in the record that could support a different conclusion is not valid or must be refuted.

84. American Rivers submitted information and arguments to support its recommendations and proposed license conditions. These were addressed in both the draft and final EISs, and where Commission staff did not recommend adopting a measure proposed by American Rivers, it explained why. After issuance of the final EIS, American Rivers filed various motions raising new arguments regarding the sufficiency of the record, and they were addressed in the license order. American Rivers reargues many of these arguments in its rehearing request.

i. Minimum Instream Flows

85. As noted above, during relicensing, American Rivers supported FWS' recommended minimum flows for the Tillery Reach of 800 to 1,000 cfs from May 16 to

January 31 to benefit native fish and improve aquatic habitat in the reach, and 1,500 to 1,800 cfs from February 1 through May 15 to improve American shad spawning. The license order found that FWS' recommended flows would not sufficiently increase the percentage of the maximum habitat that would be available under these flows to justify the higher costs of releasing such flows. Thus, the license order approved Duke's proposed flows of 330 cfs from May 16 through January 31, and 725 cfs during the February 1 through May 15 shad spawning season.⁶⁴

86. American Rivers makes several arguments to challenge the required minimum instream flows, which we discuss below.

(a) Methodology to Assess Instream Flow

87. Duke used the Instream Flow Incremental Methodology (IFIM) to evaluate how incremental changes in flow affect fish habitat in the project reaches. To quantify fish habitat over a given range of flows, Duke used a series of computer models called the Physical Habitat Simulation System (PHABSIM).

88. There are several possible outputs of the PHABSIM model that determine available habitat, including Weighted Useable Area, Index C, and Dual Flow Analysis. Weighted Useable Area is an estimate of the area of suitable habitat that is available to a species and/or life stage per unit length of a stream at a given flow. Index C is a summary statistic from a large amount of weighted usable area data. It is derived from the values at the low end of the range of habitat quality to isolate the flow conditions that limit habitat quality. In Dual Flow Analysis, typically used for analyzing hydroelectric project peaking operations, the availability of suitable physical habitat (weighted usable area) is estimated for the minimum and maximum flows over a time series. For each unit of time in the analysis, the worst of the two results is kept and the better result discarded to estimate the combined limitation on habitat quality.

89. Duke analyzed the PHABSIM data using Index C and provided a limited Dual Flow Analysis, whereas Commission staff assessed Duke's instream flow study using Weighted Useable Area.⁶⁵

⁶⁴ See License Order, 151 FERC ¶ 62,004 at P 33. The 725-cfs minimum flow is not required until American shad are first passed above Blewett Falls Dam.

⁶⁵ See final EIS at 109-19.

90. First, American Rivers disputes Commission staff's methodology for analyzing instream flow data. American Rivers argues that the license order failed to complete an instream flow study because Commission staff interpreted the instream flow study results using Weighted Useable Area and Index C instead of Dual Flow Analysis, which American Rivers contends is the most reliable scientific method for analyzing instream flows that are affected by peaking operations. American Rivers also states that Commission staff should have required Duke to disclose its PHABSIM models so that staff could validate the study results.

91. As an initial matter, we note that Commission staff did not use Index C to analyze Duke's IFIM results. While the final EIS discussed Index C, the discussion merely recited the analyses conducted by Duke and provided context for staff's analysis. Instead, Commission staff used Weighted Useable Area to analyze the IFIM results, which we conclude was appropriate.

92. Commission staff selected Weighted Useable Area to assess the instream flow study because it enabled staff to study a whole suite of species across a range of sites. The parties to the relicensing were interested in a number of aquatic species, including federally endangered Atlantic and shortnose sturgeon, and several other species of concern⁶⁶ and target species.⁶⁷ Thus, the ability to assess multiple species at once facilitated Commission staff's review. In total, Commission staff studied 29 life stages at flows ranging from 70 cfs to about 17,000 cfs.⁶⁸

93. Dual Flow Analysis is used to assess habitat availability where there is a potential tradeoff between the high- and low-flow limiting factors. Where, as here, the high (i.e., peaking) flow is established, and the focus is on the low flow, there is no reason to

⁶⁶ See final EIS at 104. The federal species of concern include alewife, Carolina redhorse, yellow lampmussel, and Carolina creekshell.

⁶⁷ See *id.* The target species include American shad, hickory shad, blueback herring, striped bass, and American eel.

⁶⁸ See *id.* at 109. The 29 species/life stages/habitat types included a range of anadromous and resident fish species (e.g., American shad, striped bass, sturgeon, and golden and robust redhorse), their specific life stages (i.e., spawning and rearing), general and specific habitat types that could apply to several species (e.g., "deep slow generic cover"), and juvenile aquatic insects and other invertebrates (macroinvertebrates) including mayflies (ephemeroptera), stoneflies (plecoptera), and caddisflies (trichoptera), which are frequently used to gage stream health.

perform a Dual Flow Analysis. Throughout the relicensing proceeding, stakeholders' focus on enhancement efforts was identifying appropriate minimum flows, and limiting or eliminating peaking operations was never an issue.⁶⁹ For these reasons, staff's use of maximum Weighted Useable Area methods was appropriate, and there was no need to use a Dual Flow Analysis.

94. We also deny American Rivers' request for the Commission to require Duke to disclose its PHABSIM model. The PHABSIM program is standard and is generally available, so that, while we did not require Duke to provide it, American Rivers could have readily obtained it. Moreover, in its final instream flow report that accompanied its license application, Duke disclosed its input data and the results so that American Rivers could have challenged any information it believed to be incorrect. It did not.

(b) Section 10(j) Consistency Determination

95. Section 10(j) of the FPA requires the Commission to include license conditions based on recommendations of the federal and state fish and wildlife agencies for the protection of, mitigation of adverse impacts to, and enhancement of fish and wildlife.⁷⁰ When the Commission believes that a recommendation is inconsistent with the purposes and requirements of the FPA or other applicable law, the Commission and the agency must attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency. If there is no resolution, section 10(j)(2) requires the Commission to explain why the recommendation is inconsistent with applicable law, and how the conditions the Commission does impose will meet the section 10(j) standard.⁷¹

96. The license order concluded that FWS' recommended minimum instream flows were inconsistent with the public interest standard of section 4(e) and the comprehensive planning standard of section 10(a) of the FPA.⁷²

⁶⁹ We note that NMFS similarly found it was appropriate to use Index C and Weighted Useable Area in this instance where the stakeholder team focused on the lower end of the habitat duration curve. *See* NMFS May 14, 2015 Letter to American Rivers at 2. (Accession No. 20150831-4004, filed with the Commission on August 31, 2015).

⁷⁰ 16 U.S.C. § 803(j) (2012).

⁷¹ *Id.* (j)(2).

⁷² License Order, 151 FERC ¶ 62,004 at P 135.

97. American Rivers argues that substantial evidence does not support the license order's inconsistency finding. American Rivers states that the cost to implement a recommendation does not make a 10(j) recommendation inconsistent with the FPA. In support, American Rivers cites the Commission's project economics policy in *Mead Corporation, Publishing Paper Division (Mead Corporation)*⁷³ and other Commission precedent that require mitigation measures that reduce economic benefits of project power. American Rivers adds that the license order does not address its evidence that a license alternative that includes FWS' recommended flows would be economic under *Mead Corporation*.⁷⁴ In addition, American Rivers argues that Commission staff does not demonstrate that the minimum flows required by the license order will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources as required by section 10(j)(2)(B) of the FPA.

98. We disagree. Commission staff found that Duke'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).⁷⁵ Commission staff also found that FWS' higher recommended year-round flows would not result in significantly more habitat than Duke's proposed flows, providing only a 15 percent increase from Duke's proposed flows.⁷⁶ With regard to the spring high (or spawning) flow, staff found that Duke's

⁷³ 72 FERC ¶ 61,027 (1995) (*Mead Corporation*).

⁷⁴ American Rivers also argues that Commission staff did not disclose the method it used to weigh the benefits of the recommended minimum instream flows relative to the cost. While unclear, this argument appears to imply that Commission staff should have compared the economic value of the recommended minimum instream flows with the cost of those flows. Although Commission staff's analysis did not place a dollar value on these resources, the analysis does consider the relative benefits and costs of the proposed and recommended environmental measures in order to allow the Commission to make an informed licensing decision. Moreover, we do not agree that basing our analysis on assigning dollar values to all uses of the waterway is feasible or appropriate. The valuing the monetary worth of a resource use is difficult and controversial, and in any event, monetary worth is only one measure of value and should not be the singular determinant in balancing competing uses in the public interest. See *Southern California Edison Co.*, 77 FERC ¶ 61,313, at 62,446 (1996).

⁷⁵ License Order, 151 FERC ¶ 62,004 at P 132.

⁷⁶ *Id.*

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.⁷⁷ FWS' 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, Commission staff concluded that the additional shad spawning habitat under FWS' flows was not needed because spawning habitat would not be a limiting factor in American shad recovery in the Tillery Reach for the foreseeable future.⁷⁸

99. The license order explained that Duke's proposed flows would have an annual cost of \$850,570.⁷⁹ Providing FWS' flows on the other hand would have an annual cost of \$1,227,500.⁸⁰ The license order thus properly concluded that the incremental increase in available aquatic and American shad spawning habitat provided by FWS' higher flows did not justify the costs, and FWS' recommendation was thus inconsistent with the equal consideration and comprehensive development standards of FPA sections 4(e) and 10(a)(1).⁸¹

100. It is common Commission practice to reject 10(j) conditions in cases where, in the judgment of the Commission, the benefits from the recommendation are not commensurate with the cost.⁸² While the Commission in appropriate cases may find that environmental measures that severely erode or eliminate the project's economic benefits are needed to achieve the appropriate balance of development and environmental values, the Commission may also find that an expensive mitigation measure that will yield only minor benefits is inconsistent with its balancing of development and environmental values.⁸³

⁷⁷ *Id.* P 133.

⁷⁸ *Id.*

⁷⁹ *Id.* P 134.

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *See, e.g., Idaho Rivers United v. FERC*, 189 Fed. Appx. 629, 633 (9th Cir. 2006).

⁸³ *See, e.g., Mead Corporation*, 72 FERC at 61,071 n.20.

101. Further, neither the Federal Power Act nor *Mead Corporation* requires the Commission to analyze the impact on project economics of every recommendation, let alone those that Commission staff has rejected. While the Commission's license orders analyze the effect of various alternatives on project economics, 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 alternative sources to project power, such as fossil fuels.⁸⁴ Project economics is just one of a number of factors that the Commission balances in reviewing a license application.

102. Indeed, American Rivers misreads *Mead Corporation*. That case simply explains how the Commission makes a "snapshot" determination of an estimate of project economics. Project economics are "by no means" the determinative public interest consideration, and "a finding of negative economic benefits does not preclude issuance of a license."⁸⁵ It is up to the applicant to decide whether to accept the license under the conditions we require. Moreover, while we consider the benefits of proposed environmental measures with respect to their costs, we do not impose a pure economic balancing test. In other cases, we may require a measure that has serious adverse impacts on project economics, if we conclude that the measure serves an important purpose. Conversely, we will not necessarily require a measure that appears to have little environmental benefit just because it is relatively inexpensive and will not significantly hurt a project's bottom line.

103. The license order demonstrates how the measures required by the license will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by this project. The license order includes minimum flow requirements and other measures, including 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. In addition, the license includes reservations of the Commission's authority to require changes to the license should future conditions warrant. In conducting its analysis, Commission staff considered all the information in the record of the proceeding. American Rivers does not provide evidence why the license's measures will not adequately protect, mitigate damages to, and enhance fishery resources in the Tillery Reach, other than its argument that the methodology for assessing the PHABSIM data is not the best scientific method, which we address above. Thus, we conclude that the license order provided a reasonable explanation supported by substantial evidence and is consistent with the requirements of sections 4(e), 10(j), and

⁸⁴ *Mead Corporation*, 72 FERC at 61,068.

⁸⁵ *Id.*

10(a)(1) of the FPA. We also note that FWS has not sought rehearing of the license order and question American Rivers' standing to raise issues that the agency submitting the conditions in question did not.

ii. Recreation Flows

104. The license order requires Duke to release 1,750 acre-feet of water per year from Lake Tillery for recreational purposes during the recreation season (May 15 through September 15), in addition to the other required minimum instream flows. Duke may increase its recreation flows up to but no higher than 1,950 acre-feet of water per year under certain conditions. The minimum and maximum recreation flow releases at the Tillery development are included in section 2.1.4.3 of the Settlement Agreement, which is included as a condition of the license by condition 9 of the water quality certification.⁸⁶ License Article 406 requires Duke, within one year of license issuance, to file for Commission approval a Recreation Flow Release Plan for the Tillery Reach showing how the licensee will allocate the recreation flow and describing the flow-dependent recreational use types, such as motorized jon boats,⁸⁷ non-motorized boats (i.e., canoe and kayak), and angling.⁸⁸

105. On rehearing, American Rivers challenges Commission staff's support for these recreational flows and the Recreation Flow Release Plan. It reasserts some of the same arguments it raised before the underlying order: that Commission staff relied on an incomplete instream recreational flow study that did not analyze recreational demand and capacity and was not field verified, and did not analyze the suitability of flows for non-motorized boating (e.g., canoes) and water contact activities (e.g., swimming); that Commission staff should have required Duke to conduct the recreation flow release study before license issuance; and that Commission staff should have evaluated the economic benefits of recreation on the Tillery Reach.

106. In addition to these previously raised arguments, American Rivers also claims that Commission staff arbitrarily found, without adequate evidentiary support, that the

⁸⁶ Condition 9 of the certification incorporates by reference the provisions of the settlement agreement, with certain exceptions. The recreation releases in section 2.1.4.3. of the settlement are not excluded.

⁸⁷ A jon boat is a flat-bottomed boat suitable for fishing and hunting.

⁸⁸ Duke must develop the plan in consultation with Rockingham and specified federal and state agencies.

recommended recreational flows would not be in the public interest because the flows may reduce the foraging habitat for the great blue heron rookery. Ultimately, American Rivers wants the Commission to adopt its recommendation to release 1,200 cfs (i.e., roughly 2,380 acre-feet) for recreational use during daylight hours on weekends and holidays each year from May 16 to September 15.

107. We deny rehearing on these issues. Because the recreational flows are a condition of the water quality certification, we could not modify those flows even if we found, which we do not, that higher recreation flows would be in the public interest. While the Commission may impose additional water quality conditions that do not conflict with or weaken the protections provided by the water quality certification,⁸⁹ contrary to American Rivers' assertions, requiring greater recreational flows would conflict with the water quality certification, which prohibits recreational flow releases above 1,950 acre-feet.⁹⁰

108. Regardless, Commission staff found that the required recreation flows along with Recreation Flow Release Plan will be in the public interest under section 10(a) of the FPA.⁹¹ The Commission's policy with respect to recreational development at licensed projects is set forth in section 2.7 of the Commission's regulations.⁹² Its key provision is that the "Commission will . . . seek, within its authority, the ultimate development of [recreation] resources . . ." To this end, the Commission expects licensees to "develop suitable public recreational facilities upon project lands and waters and to make provisions for adequate public access to such facilities and waters . . ." ⁹³

109. The extent of a licensee's obligation to provide recreation at any particular project is based on the Commission's judgment as to what is reasonable in light of the facts present in that case.⁹⁴ The requirement to provide for the ultimate development of these

⁸⁹ *Snoqualmie Indian Tribe v. FERC*, 545 F.3d 1207, 1219 (9th Cir. 2008).

⁹⁰ See section 2.1.4.3. of the Settlement Agreement, incorporated by reference by condition 9 of the water quality certification (" . . . any modification [to recreation flows] shall not consider increasing the amount of water above 1,950 acre-feet").

⁹¹ See final EIS at 313-14.

⁹² 18 C.F.R. § 2.7 (2015).

⁹³ 18 C.F.R. § 2.7(b) (2015).

⁹⁴ See, e.g., *Georgia Power Co.*, 31 FERC ¶ 61,014, at 61,027 (1985).

resources does not mean, as American Rivers implies, that all recreational demand must be satisfied.⁹⁵ To determine what amount of recreational resources is reasonable, the Commission evaluates recreation at the project as a whole and examines the recreation available outside of the project boundary. Here, Commission staff evaluated the existing recreation within the project boundary and the project area, the proposed recreation enhancements, and the proposed recreation flow releases from the Tillery development.

110. Relying on the licensee's instream flow study, the final EIS found that 671 cfs would be suitable for the downstream navigation of jon boats. These flows can be provided using the 1,750 acre-feet to 1,950 acre-feet of water (884 or 985 cfs, respectively)⁹⁶ dedicated each year to recreational uses, when allocated in combination with intervening flows from the tributaries and minimum instream flows released from the Tillery development.⁹⁷

111. We disagree that Commission staff should have required Duke to conduct a field study to confirm that 671 cfs is suitable for downstream navigation. In conducting its analysis, staff considered all the information in the record of the proceeding and concluded that 671 cfs would be sufficient. We agree with staff that there was no need for additional study.

112. American Rivers argues that Commission staff should have considered future recreational demand and carrying capacity. We disagree. Commission staff is not required to study, nor do we see the value in studying, future recreational demand and carrying capacity when the evidence shows there is low demand and minimal capacity constraints for the Tillery Reach. The licensee's recreation assessment estimates that there are 3,413 user-days of recreation per year at three study sites on the Tillery Reach (i.e., Tillery Canoe Portage, Tillery Tailrace Fishery Access Area (Tailrace Access), and Highway 109).⁹⁸ Bank fishing is the predominant recreational activity with 921 user

⁹⁵ See *New York State Electric & Gas Corp.*, 128 FERC ¶ 61,256, at P 22 (2009).

⁹⁶ One cfs equates to 1.98 acre-feet.

⁹⁷ See final EIS at 201.

⁹⁸ To determine the total annual user days for the Tillery Reach, we added the total annual user days for the Tillery Canoe Portage, Tailrace Access, and Highway 109 sites provided in Tables E7-6 and E7-7 of the license application. See April 26, 2006 Relicense Application at "Recreational Resources," Exhibit E7, 22.

days per year, swimming has 20, and canoeing has 2.⁹⁹ Further, the Recreation Assessment found that the greatest capacity reached at these sites was 65 percent at the Tillery Canoe Portage on Memorial Day weekend and 53 percent during April weekends at the Tailrace Access. Otherwise, capacity remained about 30 to 37 percent.¹⁰⁰ Notwithstanding the low recreational use, there are eight other project recreation opportunities that the public may access.

113. We also disagree with American Rivers that Commission staff was required to assign dollar values to recreational benefits in the Tillery Reach.¹⁰¹ The critical factors in Commission staff's refusal to impose greater recreational flows was the limited existing use and the increased power expenses that would result, not Commission staff's failure to appreciate non-power values.¹⁰² Further, valuing the monetary worth of a resource use can be difficult and controversial, and in any event, monetary worth is only one measure of value and should not be the singular determinant in balancing competing uses in the public interest.¹⁰³

114. American Rivers points out that Commission staff, without providing evidentiary support, noted in the license order that American Rivers' recommended increased flows may affect the great blue heron rookery immediately downstream from the Tillery dam. Commission staff's discussion on impacts to the great blue heron rookery, however, was not a basis for its decision. Rather, Commission staff found that even if the water quality certification did not require certain recreational flows, American Rivers' recommended

⁹⁹ To determine the total annual user days for bank fishing, swimming, and canoeing on the Tillery Reach, we added the total annual user days for the Tillery Canoe Portage, Tailrace Access, and Highway 109 sites provided in Tables E7-8 and E7-9 of the license application. See April 26, 2006 Relicense Application at "Recreational Resources," Exhibit E7, 24 to 25.

¹⁰⁰ See April 26, 2006 Relicense Application at "Recreational Resources," Exhibit E7, 1-57 to 1-58,

¹⁰¹ See *Conservation Law Foundation v. FERC*, 216 F.3d 41, 46-47 (D.C. Cir. 2000).

¹⁰² *Id.* at 47.

¹⁰³ See *Southern California Edison Co.*, 77 FERC 62,446.

flows were not in the public interest because of the low recreational use and the cost of the recommended flows.¹⁰⁴

115. We disagree with American Rivers' argument that Commission staff should have required the recreational flow study, including studying non-motorized boating, before the Director issued the license order. It is common Commission practice to include a license condition that requires a licensee to monitor future recreational demand, so long as such license articles are not used as a substitute for reasoned pre-licensing decision-making.¹⁰⁵ The information in the record was sufficient to support staff's conclusion.

116. We also disagree with American Rivers that Commission staff should have analyzed, or required Duke to study pursuant to license Article 406, the suitability of the flows for swimming and other water contact activities. Neither section 10(a)(1) nor our regulations require us to evaluate every possible recreational use within a project boundary.¹⁰⁶ As noted above, there is low demand for swimming in the Tillery Reach: only 20 swimming user days per year. Therefore, in this particular case, there is little to no added benefit to be gained by requiring a determination on the suitability of the flows for swimming and other water contact activities.

3. Retrofit Alternative

117. American Rivers criticizes the license order's evaluation of its recommendation to require Duke to replace or modify an existing turbine at, or add a new turbine to, the Tillery development (Tillery development retrofit). American Rivers states that the Tillery development retrofit would allow Duke to generate with FWS' higher recommended minimum flows, and thus enhance aquatic habitat and recreational use of the Tillery Reach. Specifically, it argues that the license order failed to adequately analyze the Tillery development retrofit, violated NEPA and section 10(a)(1) of the FPA by evaluating the retrofit as a recommendation instead of a discrete action alternative,¹⁰⁷

¹⁰⁴ License Order, 151 FERC ¶ 62,004 at P 165.

¹⁰⁵ See *PP&L Montana, LLC*, 97 FERC ¶ 61,060, at 61,323 (2001).

¹⁰⁶ See *Public Service Company of Colorado*, 82 FERC ¶ 61,334, at 62,320 (1998).

¹⁰⁷ Section 102(2)(C)(iii) of NEPA requires federal agencies to include with every recommendation for a proposed major federal action, a detailed statement that discusses, among other things, alternatives to the proposed federal action. 42 U.S.C. § 4331(2)(C)(iii) (2012). Similarly, section 102(2)(E) of NEPA requires federal agencies to study, develop, and describe appropriate alternatives to recommended courses of

(continued...)

and violated section 15(a)(2)(F) of the FPA by not comparing the cost effectiveness of the proposed project with that of the Tillery development retrofit. Below, we discuss and deny rehearing on each of these issues.

118. American Rivers first introduced its recommendation to install a new turbine at the Tillery development in its late comments on the draft EIS, stating that the draft EIS did not evaluate the costs of installing a turbine capable of releasing flows in the range of 800 to 1,500 cfs.¹⁰⁸ FWS filed a similar timely comment on the draft EIS, recommending that Duke install a turbine capable of releasing 800 to 1,000 cfs. Neither American Rivers nor FWS provided specific information regarding the new turbine.¹⁰⁹

119. Using the information available, the final EIS adequately considered the recommendation to retrofit the Tillery plant turbines and discussed the reasons for rejecting the recommendation.¹¹⁰ The final EIS stated that such a turbine would reduce aeration and increase potential fish entrainment and mortality.¹¹¹

action in any proposal that involves unresolved conflicts concerning alternative uses of available resources. *Id.* § 4331(2)(E).

¹⁰⁸ American Rivers' December 7, 2010 Comments on Draft EIS at 22.

¹⁰⁹ As the Court stated in *Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc.*, "administrative proceedings should not be a game or a forum to engage in unjustified obstructionism by making cryptic and obscure reference to matters that "ought to be" considered and then, after failing to do more to bring the matter to the agency's attention, seeking to have that agency determination vacated on the ground that the agency failed to consider matters." 435 U.S. 519, 553-54 (1978). Mere mention of the hydraulic capacity of the desired turbine without supporting information on such other matters as whether or not such a turbine would even be technically feasible to install and operate at the project, is not sufficient enough information for us to consider the measure for analysis. "[C]omments must be significant enough to step over a threshold requirement of materiality before any lack of agency response or consideration becomes of concern." *Portland Cement Assn. v. Ruckelshaus*, 486 F.2d 375, 394 (D.C. Cir. 1973), *cert. denied sub nom., Portland Cement Corp. v. Administrator*, 417 U.S. 921 (1974).

¹¹⁰ *See* final EIS at 120.

¹¹¹ *Id.*

120. In June 2013, over five years after issuance of the final EIS, American Rivers filed information on the technical feasibility of installing the new turbine at the Tillery development,¹¹² and in June 2014, American Rivers filed information on the project economics of the new turbine.¹¹³ Notwithstanding the untimely nature of these filings, the license order considered the new information and discussed the recommendation to install a new turbine at the Tillery development. The license order found that a retrofit would be expensive and would reduce the value of the power as the project would generate energy continuously, reducing the volume of water available to generate during peak hours.¹¹⁴ Citing the final EIS, the license order stated operating a turbine continuously would reduce aeration and increase the potential for fish entrainment and mortality.¹¹⁵

121. Furthermore, the license order explained that retrofitting the turbines would only be beneficial if Commission staff required American Rivers' proposed minimum instream flows and recreational flows.¹¹⁶ As stated above, Commission staff rejected the American Rivers' flows because the recommended minimum instream flows would provide limited habitat benefits, and low recreational demand does not support the proposed recreational flows. Thus, because retrofitting the turbines at the Tillery development would serve no purpose, the license order rejected the recommendation and no further analysis was required.

122. American Rivers argues that the license order's discussion of the Tillery development retrofit was inadequate. It argues that the license order should have assessed the net economic benefit of the project under *Mead Corporation*, and that the license order's finding that the new turbine would increase the risk of fish entrainment is inconsistent with the record. We disagree. As we discuss above, *Mead Corporation* does not require Commission staff to analyze the project economics of recommendations on project operations, let alone those that Commission staff rejected. In addition, the license order's finding on fish entrainment risk is supported by the record. Operating the

¹¹² American Rivers' July 24, 2014 Motion to Supplement the Record.

¹¹³ American Rivers' June 23, 2014 Motion to Supplement the Developmental Analysis in the final EIS.

¹¹⁴ License Order, 151 FERC ¶ 62,004 at P 197.

¹¹⁵ *Id.*

¹¹⁶ *Id.* P 198.

turbines continuously, rather than on a peaking basis, exposes fish to greater risk of entrainment and mortality simply because the project operates continually with a volume of water passing through the turbines.

123. We also disagree with American Rivers' contention that NEPA requires Commission staff to analyze in the license order the Tillery development retrofit as a discrete action alternative. NEPA places no such obligation on the Commission. NEPA requires the Commission to prepare an environmental document that considers the potential environmental impacts of a proposed action and reasonable alternatives. In this case, Commission staff prepared draft and final EISs that did just that, and the information in those documents assisted the Commission in fashioning an appropriate license order.

124. The final EIS considered the Tillery development retrofit as a recommendation rather than an alternative because the operation of the Tilley plant is just one element of the existing environment that has the potential to be directly or indirectly affected by the proposed action. As discussed below, American Rivers' additional information did not require Commission staff to supplement the final EIS, and therefore, did not require Commission staff to further analyze the Tillery development retrofit under NEPA. Even so, Commission staff analyzed the additional information in the license order. The final EIS' consideration, and the license order's discussion, of the Tillery development retrofit were more than adequate.

125. In any event, calling American Rivers' recommendation an alternative would be inconsequential under NEPA. Even if Commission staff considered the recommendation to retrofit the turbine(s) as a discrete alternative, NEPA permits agencies to eliminate alternatives from detailed analysis so long as they "briefly discuss the reasons for having been eliminated,"¹¹⁷ which Commission staff did in this case. Commission staff evaluated the environmental impacts and the feasibility of the recommendation along with the proposed project, determined that the recommendation would provide no environmental advantage over the proposal, and then, eliminated the recommendation.

126. American Rivers similarly argues that because the license order did not consider its proposals as discrete action alternatives, the license order violated section 10(a)(1). In support, American Rivers cites *Scenic Hudson Preservation Conference v. Federal Power Commission*,¹¹⁸ where the United States Court of Appeals for the Second Circuit

¹¹⁷ 40 C.F.R. § 1502.14(a) (2015).

¹¹⁸ *Scenic Hudson Preservation Conference v. Federal Power Commission*, 354 F.2d 608, 620 (2d Cir. 1965) (*Scenic Hudson*).

found that section 10(a)(1) requires the Commission to seriously consider all feasible alternatives.

127. Section 10(a)(1) does not require the Commission to consider recommendations as discrete action alternatives, nor does American Rivers explain how the section 10(a)(1) analysis would be improved by implementing its preferred approach. The analytical approach we have taken here, which is the same approach the Commission has employed for decades, provides full consideration of a sufficient number of feasible alternatives and enables us to make an informed decision.

128. Further, *Scenic Hudson* does not apply here. While that case indeed stands for the general proposition that the Commission should consider feasible alternatives, it was decided before the passage of NEPA, and before the Commission established procedures, including environmental scoping, the issuance of one or more NEPA documents, and provisions for extensive public notice and opportunity for comment. Given that American Rivers did not avail itself of the many opportunities to provide detailed information about the Tillery retrofit when the subject could have been considered by all stakeholders and reviewed in the EIS, but instead waited until a very late stage in the proceeding, we do not believe that the retrofit could be considered a feasible alternative under *Scenic Hudson*.

129. We also deny rehearing on American Rivers' argument that the license order's analysis violated section 15(a)(2)(F) of the FPA, which requires that the Commission determine, "[w]hether the plans of the applicant will be achieved, to the greatest extent possible, in a cost effective manner."¹¹⁹ American Rivers argues "to the greatest extent possible" means that the Commission must confirm a project's net economic benefit by comparing the economic benefits of the proposed project with economic benefits of every proposed modification recommended by a third party. Thus, it argues that the license order violated section 15(a)(2)(F) because it did not compare the annual net benefit of the Tillery development retrofit to Duke's proposal to determine the cost-effectiveness of the project.

130. American Rivers is incorrect. Neither this section nor Commission policy requires the Commission to determine or compare the cost effectiveness of a modification of a proposal recommended by a third party to that of a proposed project.¹²⁰ Only when there

¹¹⁹ 16 U.S.C. § 808(a)(2)(F) (2012).

¹²⁰ The cases that American Rivers cites do not persuade us. We are unclear as to the relevancy of the cases, *Lockhart Power Com.*, 132 FERC ¶ 62,096 (2010) and *James River-New Hampshire Electric Inc.*, 68 FERC ¶ 61,174 (1994) to American Rivers'

(continued...)

are competing applications does section 15(a)(2) require the Commission to compare the factors set forth in section 10 and section 15(a)(2) of the FPA.

4. Compliance with the National Environmental Policy Act of 1969

131. On rehearing, American Rivers contends that the final EIS violates the requirements of NEPA because the final EIS did not include mitigation measures; and Commission staff did not supplement the final EIS with the information provided in American Rivers' post-final EIS motions.

a. Mitigation Measures

132. Implicit in NEPA is the expectation that an EIS contain "a reasonably complete discussion of possible mitigation measures," and that these measures "be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated."¹²¹ Section 1502.14(f) of Council on Environmental Quality's (CEQ) regulations implementing NEPA requires federal agencies to include appropriate mitigation measures not already included in the proposed action or alternatives.¹²²

133. American Rivers argues that the final EIS does not show that Commission staff developed or considered any mitigation measures to enhance fishery resources. We disagree. The final EIS identifies, and the license order requires, several mitigation measures to address impacts on fishery resources, including measures for dissolved oxygen, minimum instream flows, and fish passage.¹²³

134. American Rivers also argues that the license order should have considered compensatory mitigation for fishery resources (that is, cash payments to compensate for

argument. Further, while *Wisconsin Public Service Corp.*, 43 FERC ¶ 62,042 (1988), does evaluate the cost to modify the project, the case is delegated and therefore does not constitute binding Commission precedent. See *Midwest Generation, LLC*, 95 FERC ¶ 61,231, at 61,799 (2001).

¹²¹ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352-53 (1989).

¹²² 40 C.F.R. § 1502.14(f) (2015).

¹²³ Moreover, an agency need not conclude that all impacts require mitigation; NEPA does not constrain an agency from concluding that other values outweigh the environmental costs of a proposed action. See *Robertson v. Methow Valley Citizens Council*, 490 U.S. at 371.

harm to fish).¹²⁴ It is well established that the Commission cannot require compensatory mitigation where it has not been shown by substantial evidence that entrainment mortality has had a significant adverse effect on the fishery population.¹²⁵ Neither the record nor American Rivers provides such evidence. Therefore, compensatory mitigation will not be required here.

b. Supplement to the final EIS

135. CEQ regulations implementing NEPA require that a supplement to an EIS be prepared when an agency makes “substantial changes in the proposed action that are relevant to environmental concerns;” or when there are “significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.”¹²⁶

136. American Rivers argues that Commission staff violated NEPA regulations by not supplementing the final EIS despite American Rivers’ post-final EIS motions supplementing the record. American Rivers points to the CEQ guidelines that state “[a]s a rule of thumb, if the proposal has not yet been implemented, EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in section 1502.9 compel preparation of an EIS supplement.”¹²⁷

137. In this case we find no evidence of new information or changed circumstances requiring a supplemental EIS, despite Commission staff issuing the final EIS over seven years ago. In *Marsh v. Oregon Natural Resources Council*,¹²⁸ the Supreme Court

¹²⁴ American Rivers argues that the Commission must also require compensatory mitigation under section 10(a)(1) of the FPA.

¹²⁵ See *City of New Martinsville v. FERC*, 102 F.3d 567, 572 (D.C. Cir. 1996); *Allegheny Energy Supply Co., LLC*, 109 FERC ¶ 61,028 (2004). American Rivers relies on the Commission’s decision in *Ohio Power Co.*, 71 FERC ¶ 61,092 (1995). However, that decision preceded the Commission’s current practice, which was adopted in the *New Martinsville* case.

¹²⁶ 40 C.F.R. § 1502.9(c)(1) (2015).

¹²⁷ See *Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations*, 46 Fed. Reg. 18026 (March 23, 1981), Question 32 at p. 18,036. The CEQ criteria compelling a supplemental EIS are set forth in note 12.

¹²⁸ *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360 (1989).

rejected the notion that an agency must prepare a supplemental EIS every time new information comes to light. Rather, the Court said the decision to prepare a supplemental EIS turns on the value of the new information to the still pending decision-making process.¹²⁹ The Court added:

In this respect the decision whether to prepare a supplemental EIS is similar to the decision whether to prepare an EIS in the first instance: If there remains “major Federal actio[n]” to occur, and if the new information is sufficient to show that the remaining action will “affec[t] the quality of the human environment” in a significant extent not already considered¹³⁰

138. Not every new circumstance requires a supplemental EIS. Rather, “the new circumstance must present a *seriously* different picture of the environmental impact of the proposed project from what was previously envisioned.”¹³¹ We therefore deny rehearing on this issue.

5. Exclusion of Non-Project Related Water Quality Certification Conditions

139. Section IV of the water quality certification requires Duke to donate or lease to the State of North Carolina certain parcels of undeveloped, non-project land bordering the Pee Dee River and to place restrictive covenants on non-project lands. The license order omitted these provisions, explaining that those certification conditions are beyond the scope of the license and unrelated to the project.¹³² North Carolina DWQ did not seek rehearing of these omissions.

140. On rehearing, American Rivers argues that the omission of these non-project related certification conditions from the license order was arbitrary and capricious and violated section 401 of the Clean Water Act. As an initial matter, it appears that

¹²⁹ *Id.* at 374.

¹³⁰ *Id.*

¹³¹ *Sierra Club v. Froehlke*, 816 F.2d 205, 210 (5th Cir. 1987) (emphasis in original).

¹³² License Order, 151 FERC ¶ 62,004 at P 93.

American Rivers, which is not the entity that issued the water quality certification, lacks standing to raise this issue.

141. In any case, the parties to the relicensing settlement agreed that provisions pertaining to land grants, protections, and conveyances involving non-project lands are outside of the Commission's jurisdiction.¹³³ Given that North Carolina Department of Natural Resources, the parent of North Carolina Division of Water Quality (the water quality certifying agency) was one of the settling parties (and that it did not seek rehearing here), we conclude that the state agency included the provisions in questions in the certification either inadvertently or as a matter of administrative convenience, but did not expect us to include them in the license or to enforce them.¹³⁴

6. Endangered Species Act and Best Available Science

142. American Rivers renews its argument that the Biological Opinion relied on incorrect metrics, i.e., Index C and Weighted Useable Area, to identify available habitat and to define appropriate minimum flows for the Tillery Reach. American Rivers argues that because the regulations implementing ESA require the action agency to provide the best scientific and commercial data available and take all necessary measures to ensure that its action will not jeopardize the continued existence of endangered species, the

¹³³ See Licensee's July 30, 2007 Settlement Agreement at 5. ("The Parties to the CSA consider the land grants, protections and conveyances involving non-Project lands between Progress and specified Parties to be essential elements of the CSA, although outside of FERC's jurisdiction."). Even American Rivers previously stated in regards to the land swap provisions, "the Commission may not consider side agreements which are outside of its licensing jurisdiction in its review of an offer of settlement." American Rivers, *et al.* August 23, 2007 filing at 16.

¹³⁴ While *American Rivers, Inc. v. FERC* (cited by American Rivers, indeed stands for the proposition that the Commission must include water quality certification conditions in licenses, it does not hold that certifications can expand the Commission's jurisdiction. In the analogous context of mandatory section 4(e) conditions, we have declined to include in licenses conditions that are contrary to law. See, e.g., *Southern California Edison Company*, 78 FERC ¶ 61,110 (1997). Further, we have concluded that such conditions do not apply to lands outside project boundaries. See, e.g., *Pacific Gas and Electric Company*, 115 FERC ¶ 61,320, at P 15 (2006)).

Commission should have provided NMFS with an instream flow study using Dual Flow Analysis.¹³⁵

143. American Rivers fails to recognize the substantive and procedural responsibilities that ESA section 7(a)(2)¹³⁶ imposes and the interdependence of federal agencies acting under that section. Although a federal agency is required to ensure that its action will not jeopardize the continued existence of listed species or destroy or modify their designated critical habitat, it must do so in consultation with the appropriate agency, in this case, NMFS. Because NMFS is charged with implementing the ESA, it is the recognized expert with regard to matters of listed species and their habitat.¹³⁷

144. American Rivers provides no new information that NMFS did not take into account. NMFS received Duke's instream flow study, which American Rivers acknowledges, includes Duke's Dual Flow Analysis. In addition, NMFS by letter responded to American Rivers' petition for rehearing before NMFS, stating American Rivers' arguments did not warrant any changes to the Biological Opinion.¹³⁸ In that same letter, NMFS explained that it participated in the state and federal agencies stakeholder group that worked with Duke and its consultants to develop and implement the instream flow study.¹³⁹

145. American Rivers filed extensive and identical comments with NMFS on the draft Biological Opinion,¹⁴⁰ and is essentially rearguing factual issues that NMFS had before it

¹³⁵ American Rivers' Request for Rehearing at 92 (citing *Roosevelt Campobello International Park Commission et al. v. U.S. Environmental Protection Agency*, 684 F.2d 1041 (1st Cir. 1982)).

¹³⁶ 42 U.S.C. § 1536(a)(2) (2012).

¹³⁷ See *City of Tacoma, Washington v. FERC*, 460 F.3d 53, 75 (D.C. Cir. 2006) (finding that expert agencies such as NMFS have greater knowledge about the conditions that may threaten listed species and are best able to make factual determinations about appropriate measures to protect the species).

¹³⁸ NMFS May 14, 2015 Letter to American Rivers at 1. (Accession No. 20150831-4004, filed with the Commission on August 31, 2015).

¹³⁹ *Id.* at 2.

¹⁴⁰ American Rivers et al. April 11, 2012, Comments on Draft Biological Opinion at 10.

in preparing the final and revised Biological Opinions. The Commission will not substitute its judgment for that of NMFS, 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 the listed species, or to destroy or adversely modify their critical habitat.

C. Conclusion

146. For the reasons discussed above, we grant Duke's request for rehearing in part and grant its request for clarification, and we deny American Rivers' request for rehearing.

The Commission orders:

(A) The request for rehearing filed May 1, 2015, by Duke Energy Progress, Inc. is granted as set forth below, and is denied in all other respects.

(B) The request for rehearing filed May 1, 2015, by American Rivers and the City of Rockingham, North Carolina, is denied.

(C) Duke Energy Progress, Inc.'s motion for leave to file an answer to American Rivers and the City of Rockingham, North Carolina's request for rehearing is denied, and its answer is rejected.

(D) American Rivers and the City of Rockingham, North Carolina's answer to Duke Energy Progress, Inc.'s motion is dismissed as moot.

(E) The normal pool elevation in the description of the Blewett Falls development in ordering paragraph (B)(2) is corrected to read 178.1 feet NGVD.

(F) Ordering Paragraph F is revised to read as follows:

(F) This license is subject to the incidental take terms and conditions of the Biological Opinion issued April 17, 2015, by the National Marine Fisheries Service under section 7 of the Endangered Species Act, as those conditions are set forth in Appendix D to this order.

(G) The following is added after the first paragraph of section I.B.3 of North Carolina Division of Water Quality's water quality certification's in Appendix A of the license order:

In an effort to properly manage water during unusually low flow conditions, Progress Energy shall participate in a Low Inflow Protocol (LIP) (see Section I.D). Minimum instream flows may be

reduced during these LIP periods in order to conserve water resources during periods of low flow in the watershed.

(H) The low-inflow protocol in Appendix B to Appendix A of the license issued April 1, 2015, for the Yadkin Pee-Dee Hydroelectric Project No. 2206 is replaced with the low-inflow protocol in Appendix A to this order.

(I) Appendix D to the license issued April 1, 2015, for the Yadkin-Pee Dee Hydroelectric Project No. 2206 is replaced with Appendix D to this order.

(J) Article 401 is modified by: (a) amending the deadline for the Hydraulic Model Study Plan in the Article 401(a) table to January 31, 2018; (b) amending the annual deadline for the Annual Project Compliance Report in the Article 401(b) table to March 31 each year; and (c) revising Article 401(d) to read as follows:

Certain conditions of North Carolina Division of Water Quality's certification in Appendix A and U.S. Fish and Wildlife Service's fishways prescription in Appendix B contemplate unspecified long-term changes to project operation or facilities for the purposes of complying with state water quality standards or mitigating environmental impacts (e.g., section III.B.C of the water quality certification requires the evaluation and potential modification to flows after five years). Such changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

(K) Article 403 is revised to read as follows:

The licensee must provide minimum flows required by sections I.B.4 (Blewett Falls Development) and I.C.3 (Tillery Development) of North Carolina Division of Water Quality's (DWQ) water quality certification in Appendix A. If the flows released from the Yadkin Project's Falls development are less than the flows specified in section I.A of North Carolina DWQ's water quality certification, the licensee must release from the Blewett Falls development 1.2 times the average daily flow released on the preceding day from the Yadkin Project's Falls development, or 925 cfs, whichever is higher.

(L) Article 404 is revised to changing "April 29, 2013," to "April 17, 2015," to reflect the issuance date of National Marine Fisheries Service's revised Biological Opinion and incidental take terms and conditions.

(M) The sentence beginning with "The report identified in No. 7 above" in Article 406 is revised to read "The report identified in No. 6."

(N) The phrase “two vault toilets” in paragraphs 3(a), (c), and (d) of Article 408 are revised to read “one vault toilet structure with separate designated areas for men and women.”

(O) Article 410 is revised to read as follows:

Article 410. Shoreline Management Plan. Upon license issuance, the licensee must continue to implement the Lake Tillery Shoreline Management Plan approved by the Commission on October 9, 2012. The licensee also must implement the requirements of ordering paragraph (B) and ordering paragraph (C) of Commission staff’s Order Modifying and Approving Updated Shoreline Management Plan (141 FERC ¶ 62,021 (2012)). The current plan must remain in place until the licensee is notified by the Commission that the Shoreline Management Plan (SMP) required by this article is approved.

Within two years of license issuance, the licensee must file with the Commission for approval, a SMP to protect the scenic quality of, and environmental resources at, the Yadkin Pee-Dee Hydroelectric 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 Lake Tillery development and the Blewett Falls development, including maps that delineate each project boundary;
- (3) A map or maps that show the undeveloped project land (i.e., at the confluence of the Uwharrie River) along Lake Tillery that is subject to a restrictive covenant, as required by the water quality certification;
- (4) A map or maps that show the undeveloped project land in the Grassy Islands area at Blewett Falls Lake that is subject to a restrictive covenant, as required by the water quality certification;
- (5) A description of the permitting program for allowable structures at the shoreline, including permit application procedures, monitoring, and enforcement provisions;

(6) To protect the bald eagle, a provision to include:

(a) a survey for bald eagle nests before conducting or permitting activities (e.g., construction, alteration of shorelines or wetlands, installation or expansion of docks and marinas) within each project boundary that may disturb 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 it 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 the 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.

(7) A provision to revise the *North Carolina Natural Heritage Program Rare Plant and Animal Species Maps*, and any subsequent updates of the map that must be clearly labeled with Docket No. 2206, marked "Privileged," and filed separately with the Commission.

(8) An identification of the licensee's contact information and a provision for any updates;

(9) A provision to review and update the 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 licensee must develop the SMP in conjunction with Article 405, Yadkin River Goldenrod Monitoring and Protection Plan, so that provisions for protecting the species are consistent.

The SMP must be developed after consultation with the FWS, North Carolina WRC, the North Carolina Department of Environment and Natural Resources, the North Carolina State Historic Preservation Office, and the Catawba Indian Nation. 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. The licensee must not begin implementing the plan until it 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.

Within 2 years of license issuance, the licensee must file, for the Tillery development and the Blewett Falls development, 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).

(P) Article 411 is removed from the license order.

By the Commission.

(S E A L)

Kimberly D. Bose,
Secretary.

APPENDIX A

Appendix B to the Water Quality Certification 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.

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 6.
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 Yadkin 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	509.8
Falls	332.8
Tillery	278.2
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 DO-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 DO 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

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 basic 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 Licensees' 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 Licensees' responsibilities will be submitted to DWQ for review and approval as necessary. Modifications to the responsibilities of other members (not the FERC licensees) 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 ft	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.								
<p>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.</p> <p>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.</p> <p>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.</p>									

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:
 - APCI 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.
 - 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 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.
 - 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

* Less than one half of the distance between the NME and the Critical Reservoir Water Elevation.

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

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 22, 2015****Reasonable and Prudent Measures (RPM)**

1. All potential adverse impacts to sturgeon during the construction and operations of the TST 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 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). In addition, sturgeon found stranded in the vicinity of project facilities or by field crews implementing RPM No. 3 must be collected and reported.
3. FERC and/or the applicant must monitor the effects of the project and ensure that take limits are not exceeded through the following means:
 - a. A spawning and incubation habitat characterization assessment will be performed to determine the amount of suitable sturgeon spawning and incubation habitat created as a result of the spring minimum flow requirements and the actual flows provided by the Project under the new license. The applicant will conduct an in-field study to validate the Instream Flow Incremental Methodology ("IFIM") model predicted habitat (within the application limits of the model) in the 88-mile stretch of the Pee Dee River from Blewett Falls Dam RM 188.2 (302.88 rkm) to Florence, SC, at the U.S. Highway 76/301 Bridge RM 100.2 (161.25 rkm) (see Figure 11). Based on this study, a map, complete with tables and cross-sectional views at selected transects will be developed depicting the available sturgeon spawning and incubation habitats created under the new minimum flow regime required by the new license. The quantity of habitat provided by flows above the minimum flow requirements will also be provided.
 - b. Water quality monitoring equipment will be installed at the Jones Creek Shoal¹⁴¹ (located between RM 177.2 (285.17 rkm) and RM 177.6 (285.82

¹ This shoal was identified in the Instream Flow Incremental Methodology

(continued...)

rkm), approximately 11 river miles downstream of Blewett Falls Dam RM 188.2 (302.88 rkm)) to track trends of D.O. and temperature at this location in the Yadkin-Pee Dee River. This water quality monitoring will provide a better understanding of the changes in D.O. and temperature, as well as any seasonal variations, at this location. This location has been chosen because it is easy to access and is adjacent to suspected suitable sturgeon habitat; however, it is also located outside of the water quality zone of influence of Project operations.

- c. A sturgeon movement study will be performed utilizing telemetry tracking to assess spring sturgeon habitat use patterns, focusing on the area between the Blewett Falls Dam to Cheraw, SC (near the Highway 1 Bridge RM 164.8 (265.22 rkm)). This river segment spans what is defined in the IFIM Study as Reach 2 (lower Piedmont area); however, the existing network of telemetry receivers will be utilized throughout the entire 88-mile stretch from Blewett Falls Dam RM 188.2 (302.88 rkm) to Florence, SC, at the U.S. Highway 76/301 Bridge RM 100.2 (161.25 rkm) (Figure 11).
- d. Additionally, monitoring of sturgeon behavior, sturgeon abundance trends, and the composition of associated spawning habitat substrates will be performed using side scan and DIDSON sonar techniques. This methodology will provide supplemental information that should prove useful in determining habitat usage, distribution, and relative abundance of adult sturgeon in various habitat areas by both tagged and untagged sturgeon.

Terms and Conditions

In order to be exempt from liability for take prohibited by Section 9 of the ESA, FERC, and Duke Energy must comply with the following terms and conditions, which implement the RPMs described above. These terms and conditions are non-discretionary.

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

(“IFIM”) Study as containing diverse habitats and the applicant believes this is the location closest to the base of Blewett Falls Dam with the greatest probability of supporting sturgeon spawning under the new license flow regime.

at the Blewett Falls Dam or any other in-water work conducted by the licensee in the Action Area:

- 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 ft 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; NCDWQ BMP Manual: <http://portal.ncdenr.org/web/wq/ws/su/bmp-manual>
- b. Fish passage structures at the Blewett Falls Dam should be designed such that it is likely to 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. This Opinion serves as the permitting authority for any NMFS-approved endangered species monitoring personnel to perform capturing, holding and handling, genetic tissue sampling, tagging, and anesthetization as outlined in this Opinion. However, it may be done only by personnel with prior sturgeon capture and tagging experience or training, or whom hold a valid sturgeon research permit (obtained pursuant to Section 10 of the ESA, from NMFS Office of Protected Resources, Permits Division) authorizing capturing, holding and handling, genetic tissue sampling, tagging, and anesthetization, either as the permit holder, or as designated agent of the permit holder.
 - b. Any handling of sturgeon captured in the fish passage facility will comply with the Handling and Holding and Standard Research Methods found on pages 15-19 of the NMFS's Protocol for Use of Shortnose, Atlantic, Gulf, and Green Sturgeons (Attachment A)
http://www.nmfs.noaa.gov/pr/pdfs/species/kahn_mohead_2010.pdf.
 - c. A tissue sample shall be taken per Attachment A.
 - d. All sturgeon handled shall be scanned for a PIT 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.
 - e. Notification of all sturgeon captures in the fish passage facility shall be provided to NMFS at the following e-mail address within 24 hours: takereport.nmfsser@noaa.gov. This opinion's issuance date, title, and identifier number (SER-2009-5521) shall be referenced in the notification. Details shall be provided on the surrounding events of the capture (e.g., date, time, flow conditions, operational status of the fish passage facility, etc.) and the release condition of the fish.

- f. If a lethal take in the fish passage facility occurs or if field crews implementing RPM No. 3 encounter a dead sturgeon, the carcass must be collected and stored on ice or frozen as quickly as possible. NMFS must be contacted immediately thereafter to report the lethal take or the salvage event. Reports should use the sturgeon salvage form (Attachment F). Reports should be directed to Ryan Hendren, (Ryan.Hendren@noaa.gov or (727) 551-5610) with a copy to takereport.nmfsser@noaa.gov. The carcass must be preserved until sampling and disposal procedures are discussed with NMFS.
3. To comply with RPM No. 3a regarding habitat availability, FERC shall require the applicant to do the following:

By the end of Calendar Year¹⁴² (CY) 2 following issuance of the new license, the existing IFIM model results and real-time streamflow data collected from the USGS gage near Rockingham, NC (USGS Gage #02129000) will be used to determine habitat availability at flows of 2,400 cfs (spring spawning period February 1 through May 15) in the portion of the Yadkin-Pee Dee River extending from Blewett Falls Dam RM 188.2 (302.88 rkm) to Florence, SC, at the U.S. Highway 76/301 Bridge RM 100.2 (161.25 rkm) (see Figure 11). Aerial imagery substrate mapping conducted during the IFIM Study will be reviewed and will provide habitat information to aid in selection of areas for substrate characterization. To determine whether substrate and habitat conditions are different from those predicted by the IFIM modeling effort, field reconnaissance of habitat conditions will be performed during a 2-month period in the spring spawning season at 5 discrete locations in the 88-mile IFIM Study area (Reaches 1 and 2) to observe substrate types and to measure depths and velocities under the minimum flow requirements established for the new license.¹⁴³ The field data collected will be used to validate the IFIM modeling results, taking into account the accuracy of the model under the various applications and to provide confirmation of habitat conditions and substrate composition under the new flow

¹⁴² Calendar Year is defined as the first full year after receipt of the new license. For example, if the new license is issued in May 2015, Calendar Year 1 would begin on January 1, 2016, and end on December 31, 2016.

¹⁴³ This assumes inflow conditions are such that a sustained minimum flow release is possible for completion of the field measurements. If inflow is either too high or too low in the first 2 CY, the applicant will request an extension from FERC for completion of this task.

regime. A report of the results will be provided to NMFS by the applicant within 180 days of the completion of field data collection activities.

Additionally, an annual report will be provided to NMFS by the applicant quantifying the amount of sturgeon habitat created during the spring spawning period of each CY for the term of the new license, along with actual flow data from the Project, as measured at the USGS gage near Rockingham, NC (Gage #02129000). Habitat calculations (provided in acres) will be developed from the validated IFIM model and will utilize the mesohabitat assessment results to develop the approximate total habitat in the 88 miles of river (Reaches 1 and 2) for that year. For comparison purposes, similar calculations will be made for the amount of habitat created under the 2,400 cfs minimum flows. Taken together, the data should reveal the quantity of habitat provided by flows above the minimum flow requirements. This information will be provided in a tabular and graphical format (i.e., tables, maps with cross-sections) to show the changes as they relate to sturgeon habitat (i.e., acreage created, difference between flows). Operations under maintenance and emergency conditions, as defined by the new license, the Low Inflow Protocol ("LIP"), and periods when USGS Gage #02129000 is out of service, will not be included in the calculations; however, they will be discussed in the annual report and the duration of the specific event will be noted.

4. To comply with RPM No. 3b, regarding water quality, FERC shall require the applicant to do the following:

The applicant will work with USGS to install continuous water quality monitoring equipment at the Jones Creek Shoal, which is located approximately 11 miles downstream of the Blewett Falls Hydro Station (between RM 177.2 (285.17 rkm) and RM 177.6 (285.82 rkm), Figure 12) to measure D.O. and temperature. The applicant will consult with USGS to ensure the goals and objectives of the water quality monitoring are clearly defined and will rely on USGS expertise in recommending a monitoring station location and configuration that will provide representative temperature and D.O. conditions for this location in the river. Prior to installation of the monitoring equipment, the applicant will confer with NMFS regarding the USGS monitoring station recommendation.

Continuous water quality monitoring data will be collected in a manner consistent with the methods currently used by USGS at the upstream compliance gage (USGS Gage #0212880025) for the 401 Water Quality Certification during the typically lower D.O. periods of the year (May through November). The monitoring equipment will be installed and operational by the end of the first full CY following FERC's issuance of a new license for the Project. Real-time data will be collected at this site in conjunction with T&C 5(a) and 5(b) below, and will be made available to NMFS via the USGS website. Real-time data shall be

considered provisional until USGS performs any corrections and conducts their Quality Assurance/Quality Control (“QA/QC”) inspections. The applicant will provide an annual report of the data to NMFS and will include USGS calibration QA/QC records (profile data), monthly highs, lows, and averages, and will identify what the flows were during these readings for the May – November monitoring season. Special events (e.g., LIP, floods, etc.) will be identified within the report.

If USGS determines unsuitable conditions exist for establishing a real-time continuous water quality monitoring station at this location, the applicant will coordinate with NMFS to either choose an alternative location or implement an alternative approach (e.g., a continuous monitor such as a HOB0®¹⁴⁴ type data logger installed in conjunction with a telemetry receiver in RPM 5) for characterizing D.O. and temperature.

5. To comply with RPM No. 3c, regarding monitoring of sturgeon behavior, sturgeon abundance trends, and the composition of associated spawning habitat substrates, FERC shall require the applicant to do the following:
 - a. This Opinion serves as the permitting authority for any NMFS-approved endangered species monitoring personnel to perform capturing, holding and handling, genetic tissue sampling, tagging, and anesthetization as outlined in this Opinion. However, it may be done only by personnel with prior sturgeon capture and tagging experience or training, or who hold a valid sturgeon research permit (obtained pursuant to Section 10 of the ESA, from NMFS Office of Protected Resources, Permits Division) authorizing capturing, holding and handling, genetic tissue sampling, tagging, and anesthetization, either as the permit holder, or as designated agent of the permit holder.
 - b. The applicant will enlist the services of SCDNR (or another qualified entity upon approval by NMFS in the event that SCDNR is unable to perform the work) to conduct a telemetry study to monitor the movement of adult sturgeon in coordination with other telemetry studies performed by SCDNR in the Yadkin-Pee Dee River Basin. Year-round monitoring will occur in

¹⁴⁴ HOB0® data loggers are product line of Onset Computer Corporation. These data loggers or others similar to them are rugged, portable, field deployable devices capable of monitoring a specific attribute (e.g., dissolved oxygen, pH, conductivity, temperature) at a specific interval or continually during its deployed time in the field.

the 88-mile stretch of river downstream of Blewett Falls Dam RM 188.2 (302.88 rkm) to Florence, SC, at the U.S. Highway 76/301 Bridge RM 100.2 (161.25 rkm) (Figure 11), with a focus on the 23-mile stretch of river from Blewett Falls Dam to Cheraw, SC, near the Highway 1 Bridge RM 164.8 (265.22 rkm) (IFIM Study Reach 2, see Figure 12). The migration monitoring will be conducted by collecting and tagging adult sturgeon during April-September with internal VEMCO® acoustic transmitters. Gravid females caught will not be tagged, males and non-gravid females may be tagged. The target numbers of sturgeon to be tagged each year for each species are described in Table 9. The initial tagging will occur yearly from CY 2 through CY 6 (5 consecutive years of tagging) with each year building on the total number of tagged sturgeon in the available population. Tagging details are described below.

The network of SCDNR telemetry receivers in the river reach below Blewett Falls Dam down to the Highway 1 Bridge at RM 164.8 (265.22 rkm) (Reach 2, Figure 12) will be expanded with ten additional VEMCO VR2W receivers (specific locations to be determined) to assist in monitoring movement and habitat utilization by sturgeon in this reach of the Yadkin-Pee Dee River, which in turn should help determine what biological functions these habitats may serve (e.g., staging, spawning, etc.). This distribution of receivers assumes the continued maintenance and monitoring by SCDNR of the existing telemetry network in the Yadkin-Pee Dee River, specifically those in IFIM Study Reach 1 (from Cheraw RM 164.1 (264.09 rkm) to Florence, SC, at the U.S. Highway 76/301 Bridge RM 100.2 (161.25 rkm) (Figure 11)). If there are significant changes in the Reach 1 existing telemetry network (e.g., modification of monitoring and maintenance intervals, removal of telemetry receivers, discontinued use, etc.), the applicant will coordinate with SCDNR and NMFS on the potential to reposition some of the additional 10 receivers in Reach 2 to locations in Reach 1 to ensure continued monitoring coverage of the 88-mile stretch of river below Blewett Falls Dam.

Telemetry tracking will begin in CY 2 and will continue through CY 10 of the new license (9 years) to mark a sufficient number of the spawning adults and to monitor for their presence throughout the year. The applicant and/or SCDNR will use their best efforts to tag up to 20 of each sturgeon species (Atlantic and shortnose) with acoustic tags each year for 5 years, with the exception of the first 2 years, where up to 50 Atlantic sturgeon will be tagged each year (see Table 9).

The capture of sturgeon for monitoring will be conducted via anchored gill nets and/or trammel nets. Monitoring personnel must comply with the

following conditions related to the manner of taking:

1. *Capturing:*

- i. The applicant and/or applicant's 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 and decreasing the duration of net sets.
- ii. Location (GPS), temperature, D.O., 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 D.O. levels > 4.0 mg/L at the deepest depth sampled by the gear while deployed.
- iv. Netting may take place between 32°F and 80.6°F (0°C and 27°C), netting activities below 32°F or above 80.6°F (0°C or above 27°C) is not permitted.
- v. At water temperatures above 77°F < 80.6°F (25°C < 27°C), nets may be set for up to one hour duration and must be tended.
- vi. At water temperatures above 68°F < 77°F (20°C < 25°C), nets may be set for up to two hours duration and must be tended.
- vii. At water temperatures above 59°F < 68°F (15°C < 20°C), nets may be set for up to four hours duration and must be tended.
- viii. At water temperatures between 32°F < 59°F (0 < 15°C), nets may be fished for up to 10 hours and must be tended.
- ix. All netting effort 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.

2. *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, dart/floy tagging, genetic tissue sampling, weighing, measuring and/or photographing may be done prior to release.
- v. When sturgeon are on board 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 D.O. levels remain above saturation.
- vi. The total handling time while onboard must not exceed 20 minutes, unless fish have not recovered from anesthesia or stressed condition.
- vii. The total holding time of sturgeon after removal from capture gear until they are returned to the water, must not exceed 2 hours, except when water temperatures exceed 80.6°F (> 27°C); then holding time must not exceed 30 minutes, unless fish have not recovered from stress.
- viii. During onboard handling, sturgeon must be supported using a sling or net; and handling should be minimized throughout the procedure.
- ix. Smooth rubber gloves should be worn when handling sturgeon to

reduce abrasion of skin and removal of mucus.

- x. 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.
- xi. Sturgeon are extremely sensitive to chlorine; therefore, thorough flushing of holding tanks that have been sterilized with bleach is required between sampling periods.

3. *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 Ryan Hendren (727) 551-5610. Samples must be submitted within 6 months after collection.
- iii. The applicant and/or applicant's authorized agent may not transfer biological samples to anyone other than NMFS the USGS, or another certified laboratory without obtaining prior written approval from NMFS. Any such transfer will be subject to such conditions as NMFS deems appropriate.
- iv. *A Biological Sample Certification, Identification and Chain of Custody Form* (Attachment D) must accompany shipments of genetic tissue samples to the U.S. Geological Survey (USGS), Leetown Science Center (Aquatic Ecology Branch), in Kearneysville, West Virginia, or another certified laboratory approved by NMFS. Samples must be submitted to the archive within 6 months after collection. Prior to air shipping tissue samples preserved in 95% 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.
- v. *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.

- vi. The applicant will be responsible for the cost of extracting the DNA from the tissue sample and analyzing the genetic samples collected throughout the project to determine river of origin.

4. *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. Previously PIT-tagged fish must not be retagged. Sturgeon without PIT tags will have one installed per guidance in Attachment A and included in the take report submitted to NMFS.
- ii. 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.
- iii. 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. Photographs would be taken to document the healing rate and tag retention of all recaptured animals. Should the monitoring reveal more than minor damage at the tag insertion points, the practice would be reevaluated by NMFS and the opinion would be potentially modified removing the tags' further use.
- iv. Between tagging, fin clipping, or other surgical procedures, instruments should be changed or disinfected and gloves changed between each fish sampled to avoid possible disease transmission or cross contamination.
- v. To ensure proper closure of surgical incisions, a single uninterrupted suturing technique should be applied.

- i. The total weight of all tags used to mark fish must not exceed 2% of the sturgeon's total body weight unless otherwise authorized by the Protected Resources Division.
- ii. 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.

5. *Anesthetization:*

- i. Monitoring personnel performing anesthesia on shortnose or Atlantic sturgeon must have first received supervised training on sturgeon or another surrogate species before doing so. The monitoring personnel must report this training to the Protected Resources Division prior to the activity.
- ii. When preparing fresh solutions of MS-222 to anesthetize shortnose or Atlantic sturgeon, monitoring personnel must saturate the solution with dissolved oxygen, buffering it to neutral pH using sodium bicarbonate.
- iii. Monitoring personnel may use MS-222 at concentrations up to 150 mg/L when anesthetizing shortnose or Atlantic sturgeon for implanting acoustic transmitters.
- iv. Should monitoring personnel encounter a sudden reflex reaction while performing a surgical procedure on an anesthetized sturgeon, the procedure should be stopped and the level of anesthesia reevaluated before proceeding.
- v. Only non-stressed animals in excellent health should be anesthetized.
- vi. When anesthetizing sturgeon in bath treatments, monitoring personnel must use restraint (e.g., netting) to prevent animals from jumping or falling out of the container.
- vii. When inducing anesthesia on shortnose or Atlantic sturgeon, monitoring personnel must observe fish closely to establish the proper level of narcosis.

- viii. Researchers must observe shortnose or Atlantic sturgeon closely during anesthetic recovery; and sturgeon must be fully recovered prior to release.
- ix. All researchers are required to wear protective clothing, gloves, and goggles when handling MS-222 powder.
- x. Unused MS-222 solutions must be disposed of safely using state adopted procedures.

6. *Incidental Mortality of Sturgeon:*

- i. If a greater incidence of mortality or serious injury occurs during capture and tagging than authorized, additional captures and tagging procedures should cease temporarily. NMFS PRD 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 will grant authorization to resume monitoring activities based on review of the incident depending on the circumstances or else suspend monitoring activities.
 - ii. 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)
- c. The applicant will conduct side scan sonar/hydroacoustic (DIDSON) surveys to monitor distribution and overall abundance trends of adult sturgeon during the 2 peak months of spawning activity in the spring. The following 4 areas will be surveyed as determined by the results of the telemetry monitoring (T&C 5a) in CY 2-5:
- (A) the Blewett Falls tailrace area RM 188.2 (302.88 rkm) (approximately 0.2 miles, Figure 12);
 - (B) the Jones Creek Shoal area between RM 177.2 (285.17 rkm) and RM 177.6 (285.82 rkm) (approximately 0.4 miles, Figure 12) if the applicant determines the area is feasible for the equipment; if not, the applicant and NMFS will agree on an alternative location;
 - (C) the area between approximately 1.2 miles above the Cashua Ferry

Road/ SC Highway 34 Bridge RM 121 (194.73 rkm) and the I-95 Bridge RM 113 (181.85 rkm) (approximately 8.1 miles, Figure 11);

- (D) the area between the N. Main Street Bridge/Society Hill RM 151 (243.01 rkm) and Yadkin-Pee Dee River telemetry receiver 31 RM 138.5 (222.89 rkm) (approximately 12.4 miles, Figure 11).

Note: It may not be feasible to utilize the side scan sonar over the full length of the areas identified above. Depending on the results of the baseline side scan sonar performed in CY 2, monitoring sites may be relocated or modified in order to acquire useful data.

Three of the 4 monitoring locations specified above (sites B, C and D) are located within potential sturgeon spawning areas (e.g., shoals, gravel areas) in Reach 1 or 2 of the IFIM Study. The Blewett Falls Tailrace (site A) will be surveyed to determine the presence/absence of sturgeon in the tailrace. The 4 areas will be sonar-surveyed every 2 weeks during the 2 peak months of spawning activity in the spring as determined by the CY 2-5 telemetry monitoring. Side-scan sonar surveys will be used to locate sturgeon and the data collected will be used to estimate trends in the sturgeon usage of existing and newly-created habitat areas. The accompanying DIDSON system multibeam sonar data will be used, in conjunction with the telemetry data, to verify and assess sturgeon migration patterns and overall population trends. These data, taken together, should provide additional information as to what biological functions the surveyed habitats may serve (e.g., staging, spawning, etc.).

The first side-scan/ DIDSON sonar monitoring will be performed in CY 2 after receiving the new license and the results of this first round of monitoring will be used to establish the baseline conditions of the substrate in the potential habitat areas. The first round of monitoring will also be used to adjust survey locations, if necessary. The next monitoring periods will occur in CY 6, 7, 8, 9 and 10 of the new license. The survey results will be used to document habitat substrate characteristics at the potential spawning areas described above and to document the presence and behavior of sturgeon in the surveyed areas.

Data collected from sonar surveys in CY 2 and 6-10 (T&C 5b) combined with telemetry data from CY 2-10 (T&C 5a) will be used to establish the baseline conditions that exist at the initiation of the minimum flows and enhanced water quality requirements of the new FERC license. At the end of the baseline monitoring period, the applicant will wait 4 years and will

resume a 10-year monitoring program in CY 15 (CY15-24) of the new license utilizing the same methodology outlined in T&C 5a and 5b, with tagging and monitoring beginning in CY 15 (see Tables 28 & 29).

At the end of the first 10-year monitoring program, NMFS will evaluate data between the baseline and first 10-year monitoring periods. If NMFS determines that the data between the baseline and first 10-year monitoring periods do not indicate a need for reinitiation of consultation, then Duke Energy will wait 4 years (i.e., no monitoring in CY 25-28) and will conduct a second 10-year monitoring period beginning in CY 29, utilizing the same methodology outlined above in T&C 5a and 5b, with tagging and monitoring beginning in CY 29 (See Table 29).

If NMFS determines that the data between the baseline and first 10-year monitoring periods **do** indicate a need for reinitiation of consultation, NMFS will confer with FERC and Duke Energy to assess what factors may be contributing to the lack of success in enhancing sturgeon habitat utilization and improving population trends for either sturgeon species. Those factors determined by NMFS, in consultation with Duke Energy and FERC, to be related to Project operations will be evaluated during reinitiation of consultation to determine if any corrective actions need to be implemented.

Table 28. Sturgeon Monitoring Timeline (Baseline and First 10-Year Monitoring Periods)

Target Number of Tags Applied	CY	Task		
	1	-	-	-
20 SNS ¹ + 50 AS ²	2	Tag	Telemetry	Side Scan
20 SNS + 50 AS	3	Tag	Telemetry	-
20 SNS + 20 AS	4	Tag	Telemetry	-
20 SNS + 20 AS	5	Tag	Telemetry	-
20 SNS + 20 AS	6	Tag	Telemetry	Side Scan
	7	-	Telemetry	Side Scan
	8	-	Telemetry	Side Scan
	9	-	Telemetry	Side Scan
	10	-	Telemetry	Side Scan
	11	wait	-	-
	12	wait	-	-
	13	wait	-	-
	14	wait	-	-
20 SNS + 50 AS	15	Tag	Telemetry	-
20 SNS + 50 AS	16	Tag	Telemetry	-
20 SNS + 20 AS	17	Tag	Telemetry	-
20 SNS + 20 AS	18	Tag	Telemetry	-
20 SNS + 20 AS	19	Tag	Telemetry	-
	20	-	Telemetry	Side Scan
	21	-	Telemetry	Side Scan
	22	-	Telemetry	Side Scan
	23	-	Telemetry	Side Scan
	24	-	Telemetry	Side Scan
	25	wait	-	-
	26	wait	-	-
	27	wait	-	-

¹ SNS – shortnose sturgeon

² AS – Atlantic sturgeon

Table 29. Monitoring Scenario if trends do not indicate a need for reinitiation of consultation.

Target Number of Tags Applied	CY	Task		
	28	wait	-	-
20 SNS ³ + 50 AS ⁴	29	Tag	Telemetry	-
20 SNS + 50 AS	30	Tag	Telemetry	-
20 SNS + 20 AS	31	Tag	Telemetry	-
20 SNS + 20 AS	32	Tag	Telemetry	-
20 SNS + 20 AS	33	Tag	Telemetry	-
	34	-	Telemetry	Side Scan
	35	-	Telemetry	Side Scan
	36	-	Telemetry	Side Scan
	37	-	Telemetry	Side Scan
	38	-	Telemetry	Side Scan
	39	-	-	-
	40	-	-	-

6. Reporting

1. Reports:

- i. The applicant must submit annual reports, summarizing monitoring results from T&Cs 3, 4, and 5 for each study year to NMFS and FERC. Report must include genetics for all captured Atlantic sturgeon. Genetics data will be discussed on a yearly basis with NMFS and the applicant to insure the capture and tagging portion of the monitoring is providing the appropriate type of data. Adjustment of the monitoring will be coordinated with the applicant and/or the applicants agent should the data suggest that the location is capturing more non-Carolina DPS fish than is/will be allowed in the ITS for non-lethal or lethal limits of Atlantic sturgeon. The applicant will contact NMFS to consult on possible changes to monitoring location

³ SNS – shortnose sturgeon

⁴ AS – Atlantic sturgeon

or design. Detailed data supporting the annual report must be made available electronically to NMFS on request. Any papers or publications resulting from the monitoring work must also be provided to NMFS and FERC, when they are issued or published.

- ii. Annual 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.
- iii. 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. Notification and Coordination

- i. The applicant and/or SCDNR (or other qualified agent) must provide written notification of planned field work to the Assistant Regional Administrator for Protected Resources Division. Such notification must be made at least 2 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 (for example: PI, CI, veterinarian, boat driver, safety diver, animal restrainer, assistant "in training") of participants. 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 SCDNR 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 Protected Resources Division may be contacted for assistance with coordinating with Section 10 Permit Holders.