Hydropower Project Summary

NANTAHALA RIVER, NORTH CAROLINA

NANTAHALA HYDROELECTRIC PROJECT (P-2692)

Photo: Susan Jones, courtesy of American Whitewater

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Hydropower Reform Coalition

and

River Management Society

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This project is located on the Nantahala River and two tributaries, Dicks Creek and White Oak Creek, in western North Carolina. The Nantahala River is one of the most popular recreational rivers in the United States. Beyond its picturesque setting and level of difficulty suited perfectly to unguided canoes, kayaks and rafts, the Class II-III section of the Nantahala has been a recreational mecca for decades rooted in its longstanding history of predictable flow from the Nantahala Dam operated by Nantahala Power and Light, now Duke Energy.

The Class IV-V bypassed section of the river was ignored until paddlers's skills and equipment encouraged exploration and, eventually, regular use. The new license includes scheduled releases to this upper reach.

Signatories to the Nantahala agreement are: Duke, American Whitewater, Big Choga Homeowners Association, Carolina Canoe Club, Eastern Band of Cherokee Indians, Mountain Shadows Homeowners Association, Nantahala Community, Nantahala Gorge Association, Nantahala Highlands Estates Property Owners Association, Nantahala Outdoor Center, Nantahala Racing Club, Natural Resources Conservation Service, North Carolina Council of Trout Unlimited, North Carolina Department of Environment and Natural Resources, North Carolina Wildlife Federation, North Carolina Wildlife Resources Commission, Southwestern North Carolina Resource Conservation & Development, Swain County Economic Development Commission, Swain County Soil &Water Conservation District, U. S. Fish and Wildlife Service, and the Forest Service.

A. SUMMARY

1. License application filed February 20, 2004.
2. License Issued: February 8, 2012.
3. License expiration: January 31, 2042. The original license, issued February 6, 1981, expired February 28, 2006. The project operated under an annual license until the current license was issued.
4. Waterway: Nantahala River and two tributaries, Dicks Creek and White Oak Creek.
5. Capacity: 43.2 MW.
6. Licensee: Duke Energy Carolinas, LLC.
7. Counties: Macon and Clay.
8. Project area: The project boundary encompasses about 2,203.69 acres, including 41.0 acres of the Nantahala National Forest, administered by the U.S. Forest Service
9. Project Website: http://www.duke-energy.com/lakes/nantahala/hydroelectric-relicensing.asp.

10. Project Facilities:
    a. Nantahala Development
        - A 1,605 acre reservoir at maximum normal reservoir elevation, 3,012.2 feet mean sea level (msl), with usable storage capacity of 126,000 acre-feet.
        - An earth and rock fill dam 1,042 feet long and 250 feet high
        - A 16-foot diameter bypass channel,
        - 5.6 mile power conduit
        - A reinforced concrete powerhouse 88 feet long, 51 feet high containing one 43.2 MW generating unit.
        - A tailrace section from the base of the generating station to the Nantahala River that is 450 feet long.
        - Transmission lines are not included.

    The Nantahala development bypasses a 9.3-mile-long stream reach (bypassed reach) of the Nantahala River between the Nantahala dam located at river mile 22.6 and the Nantahala powerhouse located at river mile 13.3.

    b. Dicks Creek Development
        - The concrete gravity Diamond Valley dam measuring 39 feet long, 4 feet high, maintain a negligible size reservoir at elevation 3,048 feet msl;
        - A 300 foot long, 12-inch-diameter pipeline from Diamond Valley Dam to the Dicks Creek reservoir;
        - The concrete gravity Dicks Creek reservoir with crest elevation at 3,027.6 feet msl topped by flashboards that are 3 feet high;
        - A 0.2 acre Dicks Creek reservoir with no usable storage; and
        - Steel conduit measuring 3,870 feet long, 24 inch diameter extending from Dicks Creek dam to a junction with the Nantahala power conduit.

    Flows are no longer diverted from Dicks Creek reservoir. Flow impounded by the Dicks Creek dam are passed downstream of the dam through Dicks Creek and into the Nantahala River bypassed reach.

    c. White Oak Creek Development
        - A concrete gravity dam measuring 115 feet long, 16 feet high;
        - A spillway section forms the crest of the dam at elevation 3,025.2 feet msl topped by 7-foot-high flashboards;
        - A 1.1-acre reservoir with no usable storage; and
        - A tunnel 2,045 feet long connected to a steel pipeline 9,400 feet long and 52 inches in diameter that connects to the Nantahala power conduit.

The White Oak development bypasses a 2.2-mile-long section of White Oak Creek from the White Oak dam to the Nantahala River.

B. IMPORTANT PROVISIONS AND REQUIREMENTS IN LICENSE

1. *Recreational Flows for the Nantahala River* [Reference: License Article 405]
   a. 606 cfs will be released according the following schedule:

Period	Schedule
2nd Monday in March through March 31	10:00 am to 3:00 pm, 7 days per week
April	10:00 am to 4:00 pm, 7 days per week
May through Labor Day, except as noted below	9:00 am to 5:00 pm, 7 days per week
The Saturday & Sunday immediately preceding Memorial Day	9:00 am to 6:00 pm
The Saturday & Sunday immediately preceding Labor Day	9:00 am to 6:00 pm
September after Labor Day (Sunday through Friday)	10:00 am to 4:00 pm, 6 days per week
September after Labor Day (Saturday)	9:00 am to 5:00pm, 1 day per week
October (Sunday through Friday)	10:00 am to 3:00 pm, 6 days per week
October (Saturday)	9:00 am to 5:00 pm, 1 day per week

   b. Up to 70 hours per calendar year of additional recreational releases will be available from generation at or above the best efficiency flow to the main stem of the Nantahala River to support major whitewater races, and additional recreational releases will be considered on a case-by-case basisto support other special events.

   c. Additional requests to temporarily alter the Normal Generation Schedule to support recreation will be considered as much as possible, considered on a case-by-case basis. The Licensee shall consider requests that would shift the hours of generation to different times or reduce the total hours of releases to conserve available water supply.

Nantahala River Bypassed Reach

The following release schedule will accompany a traffic plan, and construction of improved parking areas immediately above and below the Cascades section near river mile 16.5 on the Nantahala River Bypassed Reach. The following schedule reflects flows and flow arrival times immediately below the confluence of White Oak Creek with the Nantahala River.

2. *Recreational Flow Releases at Nantahala Dam* [Reference: License Article 406]

When	Dates	Target Flow (cfs)	Hrs	Times
One spring Saturday	One weekend between April 15 and 30	250	6	10 am to 4 pm
One spring Sunday		350	6	10 am to 4 pm
Four summer afternoons	Between June 15 and August 31	250 (each)	3 (each)	4 pm to 7 pm
One fall Saturday	One weekend between September 15 and 30	300	7	10 am to 5 pm
One fall Sunday		425 / 250	3 / 2	10 am to 3 pm 3 pm to 5 pm

Actual release dates shall be determined annually by the interested parties per Article 407 of the Settlement Agreement. Duke Energy may temporarily modify the recreational releases from Nantahala Dam as identified above if required by conditions beyond the company's control or by operating emergencies or maintenance needs.

Monitoring

In October, after the first and second seasons of releases, Duke Energy will convene a meeting to discuss any proposed changes based on monitoring conducted in accordance with the Settlement Agreement, to identify any significant adverse impacts to fisheries callused by these recreation flow releases. If the parties agree in writing to permanent schedule changes, the changes will take effect as agreed unless FERC approval is required. Otherwise, Duke Energy shall develop and submit to FERC a request in whatever form is necessary to effect such change, and the change will be implemented according to FERC approval.

3. *Evaluation of Recreational Flows* [Reference: License Article 407]

In year six of the license (2018), Duke Energy shall convene a meeting with the North Carolina Wildlife Resources Commission, the North Carolina Division of Water Resources, the U.S. Fish and Wildlife Service, the U.S. Forest Service, American Whitewater, Carolina Canoe Club, Nantahala Gorge Association, and Trout Unlimited to discuss any modifications to the recreation flow releases, after five years of releases into the Nantahala River bypassed reach. By October 31, 2018 (year six of the license) and every six years thereafter during the term of the

license (2024, 2030, and 2036), Duke Energy shall file with the Commission a report that summarizes the meeting and includes recommendations for FERC approval of any modification to the scheduled recreation flows prior to implementation.

4. *Safety Assessment.* [Reference Article 301]
   Duke Energy shall submit a report to FERC describing the probability of operating spillway gates and activating fuse plugs more often, in light of higher reservoir target levels at the Nantahala development.

5. *Public Safety Plan*. [Reference Article 304]
   If changes are needed to the project's Public Safety Plan as a result of the installation of new flow devices, they shall be submitted to FERC..

6. *Reservoir Level Management.* [Reference Article 401]
   The licensee shall operate the Nantahala Project according to the reservoir level management provisions to protect the aquatic and recreation resources in the Nantahala River and to provide downstream flows.

7. *Recreation Plan* (Reference Article 402]
   Duke Energy will develop a Recreation Plan to enhance recreation resources, including:
   a. Project-Wide
      - Installation of a wildlife viewing platform at either the Big Choga Access Area or the Rocky Branch Access Area;
      - Installation of two kiosks to inform the public about public access and safety;
      - A description of soil erosion and sediment control measures to be used where ground-disturbing activities are proposed;
      - A provision for trash removal from the project recreation sites;
      - A discussion of how the needs of people with disabilities were considered in the planning and design of recreation facilities;
      - An evaluation of existing signage at recreation sites for accuracy of information and a description of any proposed revisions, and any proposed new signage;
      - A schedule for construction of new facilities; and
      - A provision for the continued operation and maintenance of all project recreation sites. The plan shall include appropriate site drawings, specifications, and a map or maps showing the type of recreation facilities and their location in relation to the project boundary.

   b. Rocky Branch Access Areas
      - Continue to provide a boat ramp;

- Develop a bank fishing area;
- Install a toilet;
- Install lighting to minimize effects on fish and wildlife resources; and
- Pave the parking area for approximately 50 to 60 vehicles with trailers.

c. Big Choga Access Areas

The improvements planned are the same as those at Rocky Branch with one exception: the parking area is to accommodate 30 to 40 vehicles with trailers.

d. Nantahala River Bypass Reach

Duke Energy is to construct a barrier-free fishing site with parking, based on a plan that incorporates input from the U.S. Fish and Wildlife Service, North Carolina Wildlife Resources Commission, the North Carolina Division of Parks and Recreation, North Carolina Natural Heritage Program, and the U.S. Forest Service. Plans will coordinate with the Virginia spiraea Management Plan required under Article 415, so that recreation enhancements do not conflict with the species and its associated habitat.

8. *Public Information at the Nantahala Project* [Reference Article 403]
The licensee shall continue to provide information on reservoir levels for the Nantahala reservoir and recreation flows for the Nantahala River bypassed reach and special messages on its telephone system.

9. *Minimum Flows and Minimum Flow Plan* [Reference Article 404]
A plan was developed to maintain minimum flows required for the project:
   a. A total of 8 cubic feet per second (cfs) from the White Oak Creek power conduit into Dicks Creek from November 1through May 31 and, after installation of the second valve referenced in this Article, a total of 16 cfs into Dicks Creek from June 1 through October 31; and
   b. 8 cfs from the White Oak Creek dam (after installation of the minimum flow device required by this Article) or the inflow into White Oak Creek reservoir, whichever is less, into White Oak Creek at the base of the dam from January 1 through December 31.
   c. Dicks Creek is to be maintained as free flowing with outflow from the base of Dicks Creek dam being equal to inflow into Dicks Creek Pond.

The minimum flows may be temporarily modified if required by conditions beyond the control of the licensee, for short periods during annual inspection and repair events, or operating emergencies and maintenance needs.

10. *Virginia spiraea Management Plan.* [Reference Article 415]
A Management Plan shall be filed with FERC to protect the Virginia spiraea species at the Nantahala Hydroelectric Project.

11. *Shoreline Management Plan* shall be filed with FERC as a measure to protect the scenic quality and environmental resources at the project.

12. *Sediment Management Plan* shall be filed if it is determined that sediment needs to be removed.

13. *Operation Compliance Monitoring and Reporting* will be completed for reservoir level management provisions, minimum flow releases and recreation flow releases from the Nantahala Project.

14. *Woody Debris and Trash Management Plan* shall be filed to pass downstream large woody debris collected at the Nantahala dam to improve aquatic habitat in the Nantahala River.

C. OTHER PROVISIONS

1. *Water Quality Certification conditions by North Carolina Division of Water Quality (NCDWQ)*
   The State's certification includes:
   a. requirement to implement best management practices for waste, spoil, solids, or fill within wetlands, waters, or riparian areas;
   b. measures regarding sediment and erosion control in wetlands or waters;
   c. requirement to identify and report existing and proposed consumptive uses of Nantahala Project waters to the NCDWQ;
   d. statement that the certification does not grant or affirm any property right or any right of use in any waters;
   e. requirement to maintain compliance with state water quality standards; and
      - incorporation by reference of the Nantahala agreement Sections 1.0
      - (Reservoir Level), 4.0 (Minimum Flow), 7.0 (Shoreline Management), 9.0 (Sediment Management), and 13.0 (Compliance Monitoring and Reporting), Attachment B (Low Inflow Protocol), and C(Hydro Project Maintenance & Emergency Protocol), respectively.

2. *Section 4(e) Findings and Conditions*
   The Forest Service 4(e) minimum streamflow condition requires Duke to:
   a. provide minimum flows into the bypassed reaches, as follows: from the White Oak Creek power conduit, 8 cfs into Dicks Creek from November 1 through May 31, and after installation of a second valve, 16 cfs into Dicks Creek from June 1 through October 31; and from White Oak Creek dam, 8 cfs or the inflow into White Oak Creek reservoir, whichever is less, into White Oak Creek from January 1 through December 31;

b. maintain Dicks Creek as free-flowing with outflow from the base of Dicks Creek dam being equal to inflow into Dicks Creek reservoir;
c. develop a Minimum Flow Plan;
d. temporarily modify minimum flows if required by conditions beyond Duke's control or by operating emergencies; and
e. calibrate flow valves and meter minimum flows from the White Oak power conduit.

D. MAP

There are two convenient ways to become familiar with this project on the Hydropower Reform Coalition website, www.hyroreform.org.

1. Go directly to the project page Nantahala P-2692.

2. To understand the geographical context of the project, visit the *On Your River* section of the site. This link will take you to section for rivers in the South. Zoom in until you can see the western tip of North Carolina with the blue marker locations are not completely overlapping, and mouse over the blue markers. P-2592 is one of two second-most-western markers.