

Bad Creek Revised
Study Plan Appendices
PART I
Appendices A and B

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Appendix A

Appendix A - PSP Comment
Summaries and Responses

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Response to Stakeholder Comments on PSP

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
1	11/3/2022	PSP Comments - General	In order for Commission staff to analyze all potential operating scenarios under any new license for the Bad Creek Project, all studies conducted as part of the Integrated Licensing Process (ILP) pre-filing period should analyze the effects of both existing operations and the construction and operation of the proposed Complex on any resources that could be affected by the project.	FERC	The RSP has been updated throughout to acknowledge studies will address effects of existing operations and construction and operation of the proposed expanded Project on potentially impacted resources. Most of the transmission line considerations related to interconnection of the Bad Creek project to the Duke Energy Carolinas, LLC (DEC) transmission system have focused on evaluation of the existing transmission corridor between the existing generating facility and DEC Jocassee Tie substation. To date, the DEC analysis considered general feasibility of line route options with the least negative impacts and effects to area sensitivities such as public lands, proximity to land uses and potential environmental/cultural resources.
2	11/3/2022	PSP Comments - General	Section 1.1.2, Bad Creek II Complex Description and Location, of the PSP also indicates that if additional land would be needed to construct the Complex, Duke Energy would conduct a transmission line siting study “under a separate schedule and process, to comply with requirements pursuant to The South Carolina Utility Facility Siting and Environmental Protection Act...” In other words, Duke Energy proposes to conduct at least a portion of its transmission line siting study, if needed, outside of the relicensing process. In the RSP, please include in the schedule the timing for conducting the portions of the transmission line siting study elements related to the relicensing proposal. In addition, Commission staff recommends that the results of all studies related to the relicensing proposal be filed at the earliest milestone of the ILP that they become available (i.e., with the Initial Study Report (ISR), Updated Study Report (USR), the preliminary licensing proposal (PLP), or no later than the license application). Providing all study reports with the ISR and/or USR allows stakeholders adequate time to review the results, and for Duke Energy to consider and include any environmental protection, mitigation, and enhancement (PM&E) measures associated with the study results in the PLP and license application.	FERC	The Duke Energy line routing study is a multi-phased, objective analysis that follows industry standards to identify a preferred route for greenfield transmission infrastructure. This methodology has been developed with a focus on transmission line development that avoids or mitigates impacts to environmental and land use sensitivities and follows a process that meets all applicable local, state or federal regulatory requirements, including those of the South Carolina Utility Facility Siting and Environmental Protection Act. The phases of the study utilize a technical approach to identify transmission constraints and opportunities, develop a network of alternative route corridors, analysis and comparison of the alternatives and selection of a preferred route. The process relies on publicly available datasets and field verification of existing conditions and includes outreach and engagement with external stakeholders including, but not limited to, local governments, civic organizations and property owners throughout the process. Implementation and execution of DEC's transmission line process is completed over several months to sometimes more than a year, depending on the complexity of the transmission line needs and the uniqueness of the project's study area. As noted in the previous comment response, this Project's study will not only include identification and analysis of greenfield transmission routes, but will also consider redevelopment and expansion of existing transmission corridors in the area to meet the interconnection needs. As noted in Section 1.2.3 of the RSP, Duke Energy will provide a status update on the execution or findings of this study in the Initial Study Report (ISR).
3	11/3/2022	PSP Comments - Visual	Section 6.2, Task 2 – Seen Area Analysis, of the proposed Visual Resources Study Plan, states that “[t]he initial Seen Area analysis will address the [p]roject reservoirs and directly associated facilities; [and] a subsequent viewshed analysis covering the new transmission corridor may be conducted if a new corridor is defined for the Bad Creek II Complex.” However, the goals of the study include addressing “the effects of continued project operations under the [e]xisting [l]icense as well as potential construction and operation of a second powerhouse during the [n]ew [l]icense term...”. Please provide information about the existing project operations and maintenance activities that affect visual characteristics, such as existing vegetation management treatments, as well as the potential changes to visual resources if the Complex is pursued. Further, the PAD indicates that Duke Energy currently envisions that the new transmission line for the Complex would be constructed parallel to the existing transmission lines within the existing transmission line ROW corridors. Therefore, we recommend that the initial viewshed (Seen Area) analysis include the existing project transmission line corridors.	FERC	The Visual Resources Study Plan has been revised to include characterization of existing project facilities and operations that may impact visual resources (Section 2) and to include the existing transmission corridor in the Seen Area Analysis (Sections 2 and 6.2). Clarification has been added to Section 6.1 of the Visual Resources Study Plan to note that the Existing Landscape Description will include characterization of existing vegetation management and project operations that impact visual resources.

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4	11/3/2022	PSP Comments - Visual	During the PSP meeting on September 7, 2022, Duke Energy explained that the majority of the spoils from the Complex would be bare/solid rocks, with a smaller volume of fine sediment (soil, sand, clay, small stones). Duke Energy also stated that it would develop an erosion and sediment control plan with provisions for revegetation of the spoil areas. Commission staff noted that because bare rock spoils would remain in a primary to early ecological succession state for longer than the spoils made up of fine sediment, and because the project area is forested with many areas dominated by deciduous trees, the viewsheds could vary seasonally during the short term (i.e., during and immediately after construction) and long term (years after construction). Staff requested clarification on whether tasks 3 and 4 of the proposed Visual Resources Study Plan, which include field investigations and a desktop assessment, would include evaluations both during the spring/summer when the leaves are on the deciduous trees, and during the fall/winter when the deciduous trees have lost their leaves, to assess the potential seasonal differences in the viewsheds. Therefore, staff recommends that Duke Energy clarify the timeframes for field investigations in the RSP.	FERC	Section 6.3 of the Visual Resources RSP has been revised to note that the field investigation will be conducted during leaf-off conditions. Duke Energy expects this will provide a conservative characterization of the visibility of existing and proposed project elements.
5	11/3/2022	PSP Comments - Recreation	Section 5.18(b)(5)(ii)(C) of the Commission's regulations requires that all proposed environmental measures must be provided in the final license application (FLA). Section 2, Goals and Objectives, of the proposed Recreational Resources Study Plan (recreation study plan) states that Duke Energy would update the Recreation Management Plan (RMP) and file it with the license application, or shortly thereafter. Please provide, at a minimum, an outline of the major recreation measures of the plan with the preliminary licensing proposal (PLP) and the FLA for stakeholder and Commission staff's review.	FERC	Duke Energy will provide an outline of the Recreation Management Plan with the Preliminary License Proposal (PLP) or Draft License Application (DLA) and Final License Application (FLA) for stakeholder and FERC review.
6	11/3/2022	PSP Comments - Recreation	In Section 3, Study Area, of the recreation study plan, multiple trails are discussed that connect to Duke Energy's section of the Foothills Trail. In order for staff to understand the location of these trails, please file a map with the FLA that includes the parking areas, trailheads, and access trails to the Foothills Trail and Coon Branch Spur Trail in relation to the project boundary.	FERC	A preliminary expanded Project Boundary is included in the RSP. A detailed map of the Foothills Trail and associated spurs, along with parcel boundaries, is included as Attachment 3 of the Recreational Resources Study Plan. Based on potential refinements from the Recreational Resources Study, Duke Energy will develop and provide a map with the PLP or DLA and FLA that clearly displays the location of the spur trails, parking areas, trailheads, and access trails to the Foothills Trail in relation to the Project Boundary (or expanded Project Boundary, if the Bad Creek II Complex is proposed).
7	11/3/2022	PSP Comments - Recreation	Section 6.2, Task 2 – Foothills Trail Corridor Conditions Assessment, of the recreation study plan, states that a professional trail builder will conduct an assessment from October 22 to October 23, 2022, of the "...trail head, shoulder, backslope, constructed structures (not including engineered bridges) and corridor condition." Attachment 1 to the recreation study plan includes an assessment form for recreation sites along the trail, but does not include a form specific to assessing the condition of the trail itself. In addition, no further detail on the methods of assessing the trail are provided in the study plan. Please provide: (1) additional details on how the condition of the trail will be assessed, including any template(s) of assessment form(s) that the trail builder would use; (2) any condition or maintenance issues that would be identified and tracked geospatially; and (3) the specific data, and level of detail (i.e., soil erosion, soil compaction, soil porosity, etc.), that is proposed for the final report on the Foothills Trail Corridor Conditions Assessment. Given stakeholders' comments to date, staff recommends that the assessment also include documentation of any drainage and erosion issues, as well as the locations of any littering or vandalism. If erosion is identified, it would be helpful to have notes on the possible cause(s) at each location.	FERC	Additional information regarding the Trail Corridor Conditions Assessment as requested by FERC staff was added to the Recreational Resources Study Plan.

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8	11/3/2022	PSP Comments - Recreation	On page 1 of the Recreation Site Inventory Form, it is unclear how the shoreline access condition will be evaluated. Please elaborate on the criteria that will be used to rank the relative shoreline access condition scores, and clarify whether the conditions of the recreation sites in Table 6-1 will be similarly evaluated. If so, please provide criteria for the assessment(s).	FERC	The Recreational Resources Study Plan (Recreational Site Inventory Form) was updated regarding the shoreline access and recreation site conditions evaluations.
9	11/3/2022	PSP Comments - Cultural	Section 2, Goals and Objectives, of the Cultural Resources Study Plan (cultural resources study), defines the area of potential effect (APE) as all lands within the FERC-approved project boundary and lands outside of this boundary where cultural resources may be affected by project-related activities. Section 2 also states that Duke Energy intends to further define the APE in consultation with the South Carolina State Historic Preservation Officer (South Carolina SHPO) and tribes as part of the cultural resources study. As a reminder, Duke Energy must document the concurrence of the South Carolina SHPO and relevant Tribal Historic Preservation Officers (THPOs) (where tribal lands are involved) on the APE. Please document concurrence in the revised cultural resources study plan, including describing the criteria for modifying the APE based on the results of any studies.	FERC	SHPO concurrence on the APE will be documented, including describing the criteria for modifying the APE. THPO concurrence will not be required as there are no tribal lands within or near the Project boundaries.
10	11/3/2022	PSP Comments - Cultural	Table 4-1, Previously recorded cultural resources within and adjacent to the project, of the cultural resources study lists 15 sites, of which 3 sites are potentially reported as eligible for inclusion in the National Register of Historic Places (National Register) and require additional evaluation. Additionally, the Lake Keowee (SHPO Site No. 0155) and Lake Jocassee (SHPO Site No. 0156) sites have not been evaluated for National Register eligibility. While the cultural resources study proposed for the Bad Creek relicensing implies that these two sites will be evaluated as part of the study, please confirm this component of the study in the RSP.	FERC	Based on consultation with Elizabeth Johnson, Deputy State Historic Preservation Officer (SHPO) with the South Carolina Department of Archives and History, Lakes Keowee and Jocassee are now considered to be ineligible for the National Register and no longer require consideration. Archaeological sites 38OC249 and 38OC250 will be evaluated for inclusion in the National Register.
11	11/3/2022	PSP Comments - Cultural	To the extent possible, we recommend that Duke Energy conduct National Register evaluations and assessments of project effects during the pre-application study period. National Register evaluations and assessments of effect aid Commission staff in evaluating the environmental impacts of the project on historic properties, as required under the National Environmental Policy Act. They are also important in resolving potential adverse effects to historic properties as required under Section 106 of the National Historic Preservation Act. National Register eligibility and assessment of effect must be determined in consultation with the South Carolina SHPO and tribal THPOs (where resources occur on tribal lands). Please include adequate time in the proposed schedule for such consultation.	FERC	Adequate time will be provided for National Register evaluations and assessments of project effects. All activities will be done in consultation with the SHPO. There are no tribal lands within the Project Boundary or study area so THPO concurrence will not be required.
12	11/3/2022	PSP Comments - Cultural	Section 6.2, Task 2 – Cultural Resources Survey of the APE, of the cultural resources study plan states that Traditional Cultural Properties (TCPs) will be identified in consultation with the Tribes. Because of the potential for overlap between TCPs and archeological sites, staff recommends that the RSP include identification of any colocation between potential TCPs and documented archaeological sites. While an archaeological site may not be eligible for listing on the National Register under the National Register criteria, it may be eligible for listing if it is associated with an eligible TCP.	FERC	In consultation with the Tribes, Duke Energy will identify TCPs and any overlap between TCPs and previously recorded archaeological resources regardless of their current National Register eligibility status.

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13	11/3/2022	PSP Comments - Recreation	The importance of preserving forever this Duke Energy section of Trail, known as the “crown jewel” section, cannot be overstated – and cannot be delayed. With great appreciation to Duke Energy for building and maintaining this Trail, now is the critical time for the Foothills Trail to be protected in perpetuity to ensure that future generations continue to have the opportunity to experience this amazingly special place and experience. The FTC’s priority interests are rebuilding, repairing, enhancing, expanding, and permanently protecting Duke’s 43-mile section of the Trail – to ensure that the exceptional experience provided by the entire Foothills Trail system continues for current and future generations... We applaud Duke Energy’s strong conservation ethic and their interest in continued support of the Trail, and we respectfully request inclusion of expanded studies, assessments and additional improvement measures as part of the Relicensing and Construction process for the expanding Bad Creek Complex. As drafted, the Proposed Recreation Study Plan is unlikely to capture accurate and appropriate recreation demands and will not adequately inform future recreation needs.	Foothills Trail	Comment noted and will be taken into consideration during future evaluation, development, and collaboration on any potential agreement(s) developed with stakeholders related to PM&E measures to be implemented in the new license term. Duke Energy believes that the objectives, tasks, and methods proposed in the Recreational Resources Study Plan comply with FERC’s ILP Study Criteria and are sufficient to inform the development of Duke Energy’s licensing proposal and evaluation of same by FERC and other agencies and stakeholders.
14	11/3/2022	PSP Comments - Recreation	COMMENT 1: The proposed goals and objectives included in Section 2 are overly limited and should be expanded to ensure recreational needs are provided for throughout the entire next license period. FTC asserts the goals and objectives of the Recreational Study for Bad Creek should be comparable to those offered by Duke for the KT Relicensing Project (20110826 Duke PSP). Suggested goals include: <ul style="list-style-type: none"> • Characterize current public recreation usage, activity, and satisfaction levels at the Project-related recreation; • Estimate future demand for and identify needs for expanded or enhanced trails and appurtenances of the Project-related recreation throughout the entire new license period; • Estimate current hiking and backpacking density and carrying capacity of the Project-related recreation that will provide high quality, wilderness-type experiences without causing ecological damage within these rare and sensitive habitats; • Create a comprehensive inventory of Trail infrastructure including construction details (plans, as-builts, costs, special considerations, etc.), current condition, previous and anticipated maintenance schedules, and associated costs, for all Project-related recreation; • Benchmark best practices for enhancing hiker and backpacker safety in the Project-related recreation; • Characterize the economic value of recreation generated by the Project; • Provide all data needed to inform revisions to the Recreation Management Plan (RMP). 	Foothills Trail	The goals of the RUN Study are to assess current recreation use and identify future recreation needs along the 43-mile segment of the Foothills Trail and associated access areas. Duke Energy plans to meet these goals by collecting data via the methods described in Section 6 of the RSP. Duke Energy is proposing to partner with Applied Trails Research to apply the recreation user data collected during the RUN Study to the information collected during the Foothills Trail Corridor Conditions Assessment, and pertinent cultural, environmental, and Rare, Threatened and Endangered (RTE) information to estimate current hiking and backpacking carrying capacity of the Foothills Trail. The study plan has been revised accordingly. While Duke Energy is proposing to conduct an inventory of amenities associated with the Trail, the inventory will not include information regarding construction details, previous and anticipated maintenance schedules, and associated costs. Figures identifying general site layout at access areas and major infrastructure along the trail will be included in the RUN Study report, as noted in Section 6.1.1. Maintenance will be addressed in the RMP. Benchmarking, maintenance planning, and discussions related to expansion of trails and appurtenances will be addressed during Protection, Mitigation and Enhancement (PM&E) discussions.
15	11/3/2022	PSP Comments - Recreation	COMMENT 2: The Duke Energy Proposed Study Plan Section 6.1.5 proposes a narrow and restricted analysis of population forecasts from very few – and only rural – counties. This is a much narrower evaluation than population discussed in the Original License Exhibit R, which notes that the “Project is located about midway between Atlanta, Georgia and Charlotte, North Carolina, with a 1970 population of about 3.5 million within a 100-mile radius.” The current discussion seems particularly limited when considering that projections are for the sprawling development from Atlanta, GA and Charlotte, NC will merge into a “mega-region” – Char-lanta, with Bad Creek near the epicenter, by 2060. This predicted explosion in the population will mean significantly higher recreational needs and cannot be ignored... The measures of usage proposed by Duke Energy are woefully inadequate to account for the populations and population growth within this entire customer base area. At a minimum, the population area should match that which was considered in the Original License Exhibit R – from Atlanta, GA to Charlotte, NC.	Foothills Trail	Duke Energy is proposing to modify the methodology for determining future recreation demand to include counties between the Foothills Trail and Charlotte, NC and the Trail and Atlanta, GA. The user survey form includes a question on the recreator’s county and state of residence. Based on the data collected, additional counties will be included in the future use analysis, based on the frequency in which they are reported. The study plan has been modified to account for this change in methodology.

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16a	11/3/2022	PSP Comments - Recreation	COMMENT 3: The general methods proposed in Section 6.1 are not appropriate for evaluating usage along a linear, long-distance hiking trail that is intended to provide a wilderness-type experience. The proposed methods present distinct challenges with capturing feedback from backpackers – the main intended use group - and will not provide adequate information to inform future needs. Additional, enhanced, and revised methodology should be provided to better capture the unique usage patterns and feedback along this unusual recreational feature... Providing forms for backpackers to self-complete at all campsites may increase responses from this critical target user group. [Pens/pencils and a box to leave completed forms should also be provided, to avoid asking backpackers to carry any extra weight while hiking.] Forms could also be made available to backpackers after completing a hike to fill out after returning home. Providing QR codes to access an online survey could be an option for day-use visitors at specific locations with a reasonable cell phone signal. Adding trail registers to access locations and campsites could be a simple solution to improve the accuracy of Trail and campsite usage data. This feature could also improve safety, by creating a record of a hiking group's information and intended plans. This is common practice at other strenuous day-hiking trailheads and would be an inexpensive, efficient option to expand data collection.	Foothills Trail	Duke Energy believes the proposed methodology for in-person survey collection is robust and will result in a significant number of surveys collected. However, Duke Energy agrees that due to the unique nature of the Trail, additional opportunities for hikers to complete surveys may be prudent. Duke Energy is proposing to provide QR codes at all Duke Energy-managed access areas so hikers can access the survey when survey clerks are not on-site. Surveys collected in-person provide important insight into a recreator's experience that day and Duke Energy is concerned that surveys accessed later (via QR code) could result in inaccurate or skewed data, since recreators may not have an accurate or complete recollection of their recreation experience as time passes. In addition, there is the opportunity for recreators to complete multiple surveys when accessed via QR code, thus skewing data results. For these reasons, completed surveys that were accessed via QR code will be analyzed separately from those collected in-person. Trail registers may be considered during PM&E discussions held later in the relicensing process as a long-term installation to help with ongoing usage estimates and for safety reasons. Duke Energy is not proposing to install trail registers on the Foothills Trail at this time.
16b	11/3/2022	PSP Comments - Recreation	A literature review should also be included that compares the Foothills Trail usage and appurtenances to other similar linear, long-distance trails providing a strenuous, wilderness-type experience. Paved trails, loop trails, or rail-trail conversions are unlikely to provide an appropriate comparison.	Foothills Trail	Duke Energy is not proposing to incorporate any outside data sources as part of this study, including but not limited to number of visitors to a Foothills Trail website. Duke Energy is interested in collecting information relevant to the Foothills Trail that will help inform future needs at the Trail and development of the RMP. Comparison of study results to information collected at other similar trails is not relevant. Stakeholders, including Foothills Trail Conservancy and other interested parties will continue to be consulted during the relicensing process and the RUN Study and feedback from stakeholders will continue to be considered in development of the RMP and any necessary PM&E measures.
17a	11/3/2022	PSP Comments - Recreation	COMMENT 4: Proposed timeframes and locations for Trail and Traffic Counters will not provide sufficient data for future decisions. These times should be expanded and should target peak usage times to determine if recreational needs are currently being met and if usage is exceeding the carrying capacity of the Trail. Proposed Trail Counter locations will underreport user counts, including backpackers, and proposed Traffic Counter locations are overly limited. In fact, none of the proposed Trail Counter locations are on the actual mainstem of the Trail. Although the Trail receives usage year-round, the proposal allows for less than a year of data collection. It also proposes to collect user surveys for only 360 total hours, or about 4.1% of the total 8,760 hours in a year.	Foothills Trail	Originally, Duke Energy was proposing to collect in-person surveys for 360 hours between March and November 2023, during daylight hours (Note: it is not feasible or safe for recreation clerks to collect surveys at night.) This accounts for approximately 11 percent of the total daylight hours during the study period. Having a recreation clerk on-site for 4-hour shifts over 30 days is industry-accepted methodology. Duke Energy is also proposing to conduct in-person surveys for an additional 120 hours between March and November 2023, during daylight hours, at the Horsepasture River Trail Access. A mix of weekdays, weekends, and holidays will be sampled between March and November to capture use during all day types. Typically, during RUN studies, only the "peak" recreation season (April-September) is sampled; however, Duke Energy extended the schedule to include spring and fall months, since these times are popular among hikers on the Foothills Trail. Duke Energy believes this level of effort will provide a robust sample size for accurate data analysis and decision making purposes. However, as noted, Duke Energy will also provide access to the recreation survey via QR code, thus increasing the timeframe in which surveys will be available to the public.

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17b	11/3/2022	PSP Comments - Recreation	...the Study Plan schedule proposed in Section 7 is not consistent with the schedule outlined in Section 6.1.2 Traffic and Trail Counts, which indicates that this data collection work began September 15, 2022. If Section 6.1.2 is accurate, then the study plan work began before stakeholder comments were received or considered and before FERC approval was granted. Recreation plans typically focus on peak usage periods. At a minimum, the PSP should provide the rationale for the selected days/times and that they will capture peak usage. If the selected days/times do not capture peak usage, justification should be provided for their selection.	Foothills Trail	Musterground Road access is only open to the public from September 15-January 15 and again from March 20-May 10. At the request of South Carolina Department of Natural Resources (SCDNR), who manages the adjoining Wildlife Management Property, data collection (via traffic counter) began at the Musterground Road Access point on September 15, 2022. If Duke Energy waited to begin data collection at Musterground Road on September 15, 2023, due to the ILP schedule, the RUN Report would be due (January 4, 2024) prior to the close of data collection at Musterground Road on January 15, 2024. Data collection will not begin at the remaining access points until March 2023. The schedule in Table 7-1 of the Recreational Resources Study Plan was revised to identify the timeframe more accurately for study tasks.
17c	11/3/2022	PSP Comments - Recreation	Trail Counters are currently proposed at eleven (11) total locations, including five (5) vehicle access locations, three (3) boat access locations, and three (3) spur trails. Depending on exact placement of the counter, it may only count individuals walking from a vehicle to the Trail, rather than walking on the actual Trail. The proposed spur trails are more likely to capture information from day-hikers, rather than backpackers who may not have time or energy to hike the extra miles offered by a spur trail. Additionally, the Coon Branch Spur Trail is not shown on the Official Map of the Foothills Trail, the Foothills Trail Guidebook, or the Foothills Trail Interactive Map. The Upper Whitewater Falls Loop Trail would be a more appropriate location for this Trail Counter... boat access to the Trail is less popular among backpackers... information from the boat access locations is unlikely to include backpacker usage. Rather than locate "at" the boat access locations, Trail Counters could be placed on bridges near these access locations. These bridges offer much needed river crossings for hikers and backpackers and are a draw to most types of Trail users. Additional traffic counters should be provided at the Upper Whitewater Falls Access and at the NC 281 gravel parking area to provide insight into how usage patterns may vary between these accesses and the Bad Creek Access and parking lot. This information is essential to evaluate available capacity at these lots to handle increased traffic that would directly result if the Bad Creek Access were temporarily closed due to construction of the proposed Complex II expansion. As the closest alternative for paved, off-road parking, the Upper Whitewater Falls Access would likely receive significant increases in vehicle and hiker counts. With the potential for this "temporary" closure to last five (5) years, this is a serious issue that should be closely evaluated. If Duke closes the Bad Creek access for any extended period of time then additional and comparable access locations must be installed to ensure there is no reduction in safe parking availability.	Foothills Trail	In the Recreational Resources Study Plan, Duke Energy has provided preliminary GPS points for the installation of traffic and trail counters; however, the final locations of counters may be adjusted in the field. In addition, Duke Energy is open to modifying the locations of these counters in consultation with the Recreation Resource Committee. Further, to assess impacts associated with the potential Bad Creek II Complex construction, Duke Energy will install a traffic counter at the Upper Whitewater Falls Trail Access parking area, pending approval from the U.S. Forest Service. Per Foothills Trail Conservancy's recommendations, trail counters will be located at the bridges or natural points of constriction near the boat-in access locations. The Recreational Resources Study Plan has been updated accordingly.
18	11/3/2022	PSP Comments - Recreation	COMMENT 5: The Parking Demand Analysis, outlined in Appendix 7, Section 6.1.4, needs to consider the extra demand placed on the Laurel Fork access parking by ATV users on the Horsepasture Road during hunting season. These ATV users will have a truck and trailer combination that takes up several parking spots, limiting the number of users able to park and utilize specific access location.	Foothills Trail	There is no parking area associated with Laurel Fork Creek Falls Spur Trail Access, as this is a boat-in access point only. However, the Laurel Valley Trail Access does have a parking area and a traffic counter will be installed at this site. To account for vehicles with trailers in the parking lot that may take up more than one parking space, Duke Energy will conduct spot counts at this site in conjunction with survey efforts. Spot counts will provide information on the number of spaces used at a given time. The Recreational Resources Study Plan has been updated accordingly.

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Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
19	11/3/2022	PSP Comments - Recreation	<p>COMMENT 6: The proposed locations and limited times for the User Survey are unlikely to capture adequate usage data from backpackers – who are one of the main intended users of this linear, long-distance trail. Additionally, the sample User Survey form included in Appendix 7, Attachment 2 is not appropriate for and will not capture important usage information associated with a linear, long-distance hiking and backpacking trail, which is intended to provide a wilderness-type experience. Significant revisions to the user survey form and enhanced data collection methods are needed.</p> <p>The plan proposes only three locations for User Survey collection, including two vehicle accesses and one boat access. The boat access location may present a unique challenge for communicating with users, depending on the specific location of the survey clerk... Collecting User Surveys from a broader range of locations would provide more complete information. FTC suggests adding User Survey locations at Sassafras Mountain Trail Access, the Upper Whitewater Falls Access, the NC 281 (gravel) access, as well as at campgrounds and during alternate hours (see Comment 3 for additional details.).</p> <p>The PSP proposes that User Surveys will be collected during a four-hour shift. However, a four-hour timeframe is far too narrow to capture full Trail usage. When beginning a hike, backpackers may arrive at the access location early to allow time to reach camp before the sunset. When ending a hike, backpackers may arrive at access locations later, after hiking a full day. And during a multi-day hiking trip, backpackers may pass through access areas at any time of day. Regardless of the timing of a four-hour shift, surveys are unlikely to capture many backpackers. However, these individuals are also the best source of information regarding needs and conditions of the Trail and appurtenances.</p>	Foothills Trail	<p>Duke Energy chose to collect user surveys at three access areas known to be very popular amongst recreators. In an effort to increase contact with hikers during the proposed survey timeframe, Duke Energy will also collect surveys at the Horsepasture River Trail Access. The Upper Whitewater Falls Access and the NC 281 access are not within the Duke Energy-managed portion of the Trail and therefore, Duke Energy is not proposing to collect user surveys at these areas. Recreation clerks will collect surveys at each site during 4-hour shifts. These shifts will occur at various times between 8:00 AM and 8:00 PM. It is not possible to capture all recreators, no matter when the shifts occur. Recreation clerks will collect as many surveys as possible during their time on site. In addition, hikers will have the opportunity to access the survey via the QR code. Duke Energy agrees with and has incorporated modifications to the user survey as noted in suggestions 1-3 and 5-8. Duke Energy proposes to keep question #8 (suggestion 4) of the survey to reference “today” since it’s best for survey respondents to report on their recreation experiences that day.</p>
20a	11/3/2022	PSP Comments - Recreation	<p>COMMENT 7: The site inventory proposed in Section 6.1.1 needs to be comprehensive, including all man-made infrastructure provided as a requirement of the Original License including, at a minimum, along the 43 miles of main trail, 8 access points, and the 4 spur trails. Additionally, evaluation metrics must have clearly defined criteria to ensure consistency of information.</p> <p>Requested information regarding Duke’s 43-mile section includes, but is not limited to:</p> <ul style="list-style-type: none"> -Summary of recreation-related requirements from the Original License and actions taken to meet those requirements, including specific measurables. -Status and durability of trail-related agreements with landowners. -Copies of all trail-related legal agreements (lease agreements, etc.). -Comprehensive inventory for all structures (e.g., parking lots, bridges, stairs, campsites), including, but not limited to structure name, structure material, year constructed, cost of installation, special considerations for construction (e.g., helicopter used for material delivery), expected lifespan, assessment of current condition, and maintenance records (including costs). -Current conditions, such as “trail tread” and “corridor condition”, must have clearly defined and useful metrics, not just an arbitrary scale with no explanation. Best practices for recreation studies typically include a narrative description of what evaluators are basing their judgement on, otherwise the results will be subjective and unrepeatable. -Additional standard metrics should be added to better evaluate trail conditions, for example assessing trail incision and noting the existence of parallel or unauthorized paths (e.g., people are stepping off the trail or trying to take short cuts). -Associated costs, including past land/easement procurement, trail and infrastructure construction, and trail and infrastructure repairs and maintenance. -Schedule of anticipated maintenance needs and costs. 	Foothills Trail	<p>Duke Energy is completing an inventory of the access areas along the Foothills Trail within the 43-mile segment and will document the type, number, and size of facilities and amenities (restrooms, parking areas, boat ramps, picnic shelters, etc.) at each access area. The inventory form is included in Attachment 2 of the Recreational Resources Study Plan (Appendix F). Detailed figures of the 43-mile segment of Trail, identifying parcel boundaries, property owners, access locations, spur trails and major structures are included as Attachment 3 to the Recreational Resources Study Plan. In addition, Duke Energy will conduct a trail corridor conditions assessment, which will document conditions of the linear portion of the trail, including major areas of erosion and drainage issues as well as other notable impacts and threats to the trail tread or corridor. Additional information on the trail corridor conditions assessment is provided in the Recreational Resources Study Plan. Maintenance schedules will be addressed in the RMP. Other information requested by FTC as part of the inventory (status and durability of trail-related agreements with landowners, trail-related legal agreements, etc.) is not directly relevant to the RUN Study.</p>

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
20b	11/3/2022	PSP Comments - Recreation	<p>COMMENT 7 (Continued): . . .Requested information regarding Duke's 43-mile section includes, but is not limited to:</p> <ul style="list-style-type: none"> -Potential need for acquisition of land and/or easements to ensure existence of Trail corridor in perpetuity for future generations, including projected costs. -Detailed map(s) of Duke's 43-mile Trail section should be added that includes, at a minimum, the following information: parcel boundaries, current property owner(s), access locations (from water and land), spur trails, land use, structures (e.g., parking lots, bridges, stairs, campsites), streams/wetlands, areas of concern (e.g., erosion, overused parking/campsites), and points of interest. -The history of compliance, including inspection reports should be included. For example, in 2000, FERC conducted an Environmental and Public Use Inspection (EPUI), which covered 24 miles of trail and identified a range of maintenance deficiencies that included trees across the trail, footbridges in need of repair, smaller bridges that had been washed out, loose handrails, missing footing steps, soil erosion, etc. -Erosion throughout the trail corridor is a serious concern. Within the last six years, the Trail has experienced several landslides that required rebuilding portions of the Trail. Records of erosion-related problems, best management practices (BMPs), maintenance, and repairs should be included. -The study should include an assessment of drainage issues along the Trail, spur trails, and in campsites. 	Foothills Trail	Please see response to Comment 20a.
21	11/3/2022	PSP Comments - Recreation	<p>COMMENT 8: The Recreation Site Inventory Form included in Appendix 7, Attachment 1 should be revised to capture appropriate and comprehensive information for this long-distance backpacking trail. Suggestions include, but are not limited to:</p> <ol style="list-style-type: none"> 1. Site Address – revise to Trail Mile 2. Road Access – include name of and distance to nearest paved and unpaved road access as well as boat access. 3. Parking (# of spaces): this is only applicable to Trail access locations/parking lots. 4. Shoreline Access Condition: this is only applicable to boat access locations. An additional question should be added to evaluate "Trail Conditions". 5. Camping: all locations have "primitive" sites only. More appropriate information would include: # tents that can be accommodated (remember, there are not tent pads that direct users to specific locations); add # of and height of bear cable(s); # primitive latrines; indicate problematic vegetation within campsites (e.g., there are several campsites with poison ivy or stinging nettle encroaching into middle of campsite areas. FTC understands it's not reasonable to eradicate these plants, but regular removal from normal travel areas should occur. 6. Remove Operations since all campsites are unmanned, year-round, and do not have fees. 7. Add criteria for non-campsite infrastructure. 8. Add question for listing observable recreation impacts and issues. For example, the current form may capture if trash cans are available, but not if they are in need of repair or maintenance. 	Foothills Trail	Duke Energy has revised the Recreation Site Inventory Form to include Suggestions 1-3 and 6. Suggestion 4 is not being adopted as trail conditions will be noted during the Trail Corridor Conditions Assessment. Suggestion 5 has been partially adopted. "Tent sites" was removed from the inventory form. Primitive sites will be evaluated on the size of the area available for camping, number and height of bear cable(s); and number of primitive latrines. Suggestion 7 was not adopted because non-campsite infrastructure is already included on the inventory form (see Amenities section). Presence/absence will be noted, along with any additional information (ADA amenities, broken or unusable amenities, etc.). Bridges and other infrastructure located along the trail will be evaluated during the Trail Corridor Conditions Assessment. Suggestion 8 was not adopted because there is already a space to indicate if any major repair issues are needed (see Amenities, Additional Information/ADA/Barrier Free).

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Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
22	11/3/2022	PSP Comments - Recreation	<p>COMMENT 9: The Original Project License's Exhibit R (1980) called for certain amenities such as parking, toilet areas, etc. and these amenities should have been built and providing benefits for decades. Discrepancies from Exhibit R should be listed and an explanation provided for the deficiency. The missing amenities may have been intended to help protect the natural areas, waters, lands and visual features of The Trail, the Blue Wall lands and the surrounding Blue Ridge Escarpment. For example, Exhibit R (page 53) indicates that a "single latrine building constructed over a percolating pit according to applicable health regulations will be provided near each camp area." However, no such facilities exist near camp locations. Instead, thousands of hand-dug individual pit "toilets" have been created in and around the existing camping areas. The impact of continuing these current unsafe and unsanitary practices may be degrading water quality of nearby streams throughout the Blue Ridge Escarpment and impacting Lakes Jocassee and Keowee. Additional amenities and enhancements should be provided to mitigate for Duke not meeting those commitments within a reasonable timeframe. This should include additional camping areas, sanitary and appropriate toilets, and additional features to enhance the health, safety, and enjoyment of Trail users.</p>	Foothills Trail	<p>Duke Energy does not have a complete historical record indicating why certain amenities were not developed as required by Exhibit R. However, Duke Energy plans to inventory existing amenities at both the access areas and on the linear portions of the Trail. The RUN Study will help to inform if additional facilities are needed on the Trail and should be incorporated into the RMP, as necessary. Duke Energy will also develop necessary PM&E measures later in the relicensing process in consultation with stakeholders.</p>

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
23	11/3/2022	PSP Comments - Recreation	<p>COMMENT 10: Copies of legal documents should be provided and complete information should be presented clearly, accurately, and consistently throughout text and figures.</p> <p>A. Copies of all MOU and legal documents related to the Trail, access, and/or appurtenances should be provided to the stakeholders to provide transparency.</p> <p>B. A copy of the 1996 Duke Power Company Lake Management Foothills Trail Maintenance Program Policy and Procedures, which is referenced in Appendix 7, Section 3 should be provided to FERC and stakeholders.</p> <p>C. The Study Area described in Appendix 7, Section 3 should specifically include all Project lands and waters that are utilized for access to or use of the Trail, in addition to the non-Projectlands and waters. For example, visitors currently utilize Bad Creek Road to access the popular Bad Creek Access parking lot, including kiosk and two (2) portable toilets (aka port-a-potties). These areas must be included in the Study Area, should be labeled on all relevant maps, and any impacts or potential temporary (five-year) closures during construction should be evaluated.</p> <p>D. Figure 3-2 includes some inaccuracies: the Bad Creek Hydro Project Trail Access is labeled with the "Spur Trail" icon but should also include the "Trail Access" icon as it is a popular location for parking and accessing the main Trail. Trail features that appear on the map should be labeled, whether or not they are provided by Duke. For example, the Upper Whitewater Falls Trail Access is missing and should be added. Musterground Road access is not shown – details about forest road access, including general schedule, should be included. The current wording for boat access locations may create confusion; by saying "Boat Access Only" it may incorrectly convey that the location is only accessible by boat when, in fact, these locations are accessible by foot (by hiking the main Trail) as well. We suggest revising these to "Boat Access to Trail" and "Boat Access to Spur Trailhead".</p> <p>E. Figure 3-3 should include labels for the Lower Whitewater Falls Spur Trail, the Bad Creek Hydro Project parking area, and the Bad Creek Spur Trail should be indicated in yellow and labeled. Additionally, Musterground Road should be shown and labeled.</p> <p>F. Appendix 7, Section 4 states that "no facilities other than the small segment of trail are located within the existing Project Boundary. However, Figure 3-3 appears to show at least a portion of Bad Creek Road, the Bad Creek Hydro Project Trail Access (parking lot), and the entrance to Musterground Road, each located at least partially within the Project Area. A more detailed figure should be provided that clearly shows each of these features, accurate and complete labels, and the location of the proposed Project Boundary.</p> <p>G. Throughout the Recreation PSP, references are made to spur trails – sometimes referred to as 3 miles and others as 4 trails. A list of spur trails, including mileage, and a map showing locations should be included to clarify and support clear communication.</p>	Foothills Trail	<p>A. and B. Pertinent documents related to continued management of the Foothills Trail will be included in the RMP;</p> <p>C. The Recreational Resources Study Plan does include the Bad Creek Trail Access Area in the study area, and associated amenities will be included in the site inventory. Potential impacts to the Bad Creek Trail Access Area as a result of the potential Bad Creek II Complex construction will be evaluated;</p> <p>D., E., and F. Figures in the Study Plan were revised for clarity as they relate to Duke Energy-managed facilities, and will be further updated, as needed, in the ISR;</p> <p>G. Spur trails are identified in Section 3 and shown in the revised Figure 3-2. Mileage of the spur trails will be included in the RUN Study report.</p>
24a	11/3/2022	PSP Comments - Recreation	<p>COMMENT 11: Rather than just evaluate current use, Section 6.1.6 must provide consideration of future needs for expanded, enhanced, or modified recreation resources to serve the regional population. Given the important and pristine habitats throughout the Trail corridor, it is especially important to consider the carrying capacity of the current recreation resources and evaluate if expanded options are needed to provide adequate recreation opportunities while avoiding ecological damage. These results should be used to inform collaborative decisions with the Recreational Resource Committee to update the Recreational Management Plan.</p>	Foothills Trail	<p>The future recreation use analysis has been expanded to include additional counties as reported in the recreation user surveys. The Trail's carrying capacity will be evaluated. PM&E measures will be considered and developed as necessary later in the relicensing process in consultation with stakeholders.</p>

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Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
24b	11/3/2022	PSP Comments - Recreation	In the current draft, Duke states that “Information collected during the RUN Study could [emphasis added] be used to develop an updated Recreation Management Plan...” FTC asserts that Duke should use the knowledge gained from this study and, furthermore, that updates to the RMP must be done in collaboration with the Recreation Resource Committee. Additionally, Duke should host a public meeting to allow all interested individuals, including those unable to fully participate in the stakeholder meetings, to provide input regarding the study results and proposed future plans.	Foothills Trail	As Duke Energy and the Resource Committees discussed during the PSP comment review meeting on November 17, 2022, Duke Energy intends to develop an updated Recreation Management Plan in consultation with stakeholders in conjunction with this relicensing. Duke Energy further notes that remaining phases of the ILP process include multiple opportunities for interested members of the public to participate in meetings (e.g., Initial and Updated Study Report meetings) and provide comments on the Draft and Final License Applications, as well as the NEPA document that FERC will prepare after the Final License Application is filed.
24c	11/3/2022	PSP Comments - Recreation	As built, there are extremely limited options for hiking the Duke section of Trail. The addition of access locations, spur trails, and building connecting trails to nearby trail systems would significantly expand single and multi-day options for use. For example, the original Project application included a spur trail to Lake Toxaway and to Panthertown Valley. It was never constructed. This spur trail would provide important connections and should be built. Additional spur trails to vehicle access locations in NC’s Gorges State Park should be added or improved in order to allow more options for users to experience the interior segments of these spectacular areas.	Foothills Trail	Comment noted and will be taken into consideration during future evaluation, development, and collaboration on agreement(s) with stakeholders related to PM&E measures to be implemented in the new license term.
24d	11/3/2022	PSP Comments - Recreation	Additional enhancements should be considered to ensure continued safety of Trail users and wildlife. With expanding development, shrinking bear habitat, and more people on our trails, it’s no surprise that bear encounters are increasing in our area. Some campsites throughout the Trail feature metal “bear bag cables”, installed by FTC, for simplifying hanging food bags. These are a welcome and much appreciated addition; however, the combination of multiple people’s food weight can make the cables fairly ineffective – with reports of the food bags hanging nearly at a human’s eye level, which is likely accessible to many bears. Some National Parks and long-distance trails in bear territory provide bear proof lockers at designated campsites to simplify proper food storage and enhance safety for humans and bears. This option should be considered for campsites throughout the Trail as a preventive safety measure.	Foothills Trail	Comment noted and will be taken into consideration during future evaluation, development, and collaboration on agreement(s) with stakeholders related to PM&E measures to be implemented in the new license term.

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
25a	11/3/2022	PSP Comments - Recreation	<p>COMMENT 12: This Project is both (1) a license renewal including a 30-40 year extension for the existing Bad Creek Pumped Storage Facility, and (2) a new and second Pumped Storage Project which will practically double the power production of the Bad Creek Project. Impacts of the potential construction of the Complex II must be fully evaluated and additional mitigation should be provided both for the significantly increased capacity as well as for the construction impacts that may last up to five (5) years and cause significant disruption to use of popular recreation features.</p> <p>These two distinct proposals clearly justify expanded recreational studies and increased PM&E for recreation needs – including additional features and increased and protected acreage; and most importantly, the permanent protection of the Trail, the Trail corridor and the related lands, streams and vistas along the Blue Ridge Escarpment.</p> <p>Evaluating the potential expansion of the Trail corridor width is of particular importance to maintain the current nearly-wilderness user experience. Currently, Duke’s large parcels of undeveloped land are providing buffer from human encroachment, as well as critical habitat that supports the resiliency of wildlife and birds, which are a valuable part of the Trail experience. If surrounding lands are developed, the Trail corridor could provide the only connection between critical habitats... Consideration must be given to the increased importance of the Trail corridor should the surrounding land develop within the next 50 years. The Recreation Study should fully evaluate the necessary width to maintain or enhance the current Trail experience, including existence of large predator mammals and birds.</p>	Foothills Trail	<p>The Foothills Trail’s carrying capacity will be evaluated as part of the Recreation Study Plan. Potential impacts to recreation access, including the Foothills Trail and associated access areas, Musterground Road Access, and the Whitewater River Cove, that would be due to potential construction of the Bad Creek II Complex will be evaluated in the RUN Study report. Due to the limited expansion of the Project Boundary proposed, significant impacts to the Foothills Trail are not expected. Evaluation of ecological and water quality impacts from construction of the Bad Creek II Complex will be evaluated and addressed in the Aquatic Resources and Water Resources Studies, and/or the PLP or DLA.</p> <p>For the benefit of relicensing participants not familiar with the original Bad Creek Project construction, during the 1990s, extensive areas previously held by Duke Energy were conveyed or sold at below-market values to state and federal agencies to manage for conservation and public recreation. Duke Energy now has limited landholdings adjoining the Foothills Trail. Relative to original construction of the Bad Creek Project, the scale of disturbance and resource impacts due to construction of the Bad Creek II Complex are significantly reduced. It is not, therefore, Duke Energy’s expectation that protection, mitigation, and enhancement measures for recreation enhancement outside of the Project Boundary, comparable to those of the original license, will be merited or required. Nevertheless, these comments noted and will be taken into consideration during future evaluation, development, and collaboration on agreement(s) with stakeholders related to PM&E measures to be implemented in the new license term.</p> <p>As a point of clarification, Duke Energy notes that based on FERC policy and the level of investment in the existing Project over the current license term, and potentially factoring in Project expansion with the addition of the Bad Creek II Complex, the new license will be sought for a 40 to 50-year term.</p>
25b	11/3/2022	PSP Comments - Recreation	<p>Appendix 7, Section 3 indicates that “the study will also include an evaluation of recreation use in Whitewater Cove that may be temporarily affected if the Bad Creek II Complex is constructed.” All impacts to recreation by the construction, including access to Bad Creek Road, the Bad Creek Hydro Project Trail Access (parking lot), the Bad Creek Spur Trail, and use of Musterground Road should be fully evaluated. If the Bad Creek II Complex is constructed, additional mitigation should be provided both for the significantly increased capacity as well as for the construction impacts that may last up to five years and cause significant disruption to use of this popular parking lot, Trail access, and spur trail.</p>	Foothills Trail	<p>Please see response to comment 25a.</p>
25c	11/3/2022	PSP Comments - Recreation	<p>The Whitewater River Cove Recreational Public Safety Evaluation, outlined in Appendix 7.6.4, should also evaluate potential impacts of the Bad Creek II Complex, including during construction, on fishing throughout the impacted area. This should include both temporary and permanent impacts due to changes in flows, water quality, or habitat that may have impacts on fish health, populations, or behaviors.</p>	Foothills Trail	<p>Duke Energy expects that public access to Whitewater River Cove will be temporarily prohibited during major construction activities for the Bad Creek II Complex.</p> <p>Objectives of the Aquatic Resources Study includes assessing changes to pelagic and littoral aquatic habitat in Lake Jocassee resulting from the expanded underwater weir in Whitewater River Cove and additional discharge, as well as evaluation of potential direct impacts to aquatic habitat from construction activities and weir expansion related to the Bad Creek II complex. The Aquatic Resources and Water Resources studies will evaluate changes in flow volumes and velocities, water quality, and impacts to shoreline habitat (in the vicinity of the proposed inlet/outlet structure) and trout lake habitat, therefore, these issues will not be addressed through the Recreation Study.</p>

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Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
25d	11/3/2022	PSP Comments - Recreation	Appendix 7, Section 4 conveys that potential closure of the Bad Creek Hydro Project Trail Access parking area would not impact Trail access without actual evaluation of these potential impacts. At best, it's premature to make this statement without data from the study. Additionally, as the most secure parking area, it is quite popular and provides important access to the Trail. Alternate parking areas may consist of a gravel lot on the side of a remote highway, where vandalism and theft are common [...] Additionally, the next access point is 2.3 miles to the west and has an estimated 1,000 feet elevation change, adding an estimated 2.5 hours of "Strenuous" hiking. For those hiking a portion of the Trail, this may significantly impact trip plans and limit opportunities, especially for those relying on this access to make the "middle" section of the Trail more accessible. At a minimum, all potential impacts must be evaluated during the study to understand the severity and to inform decisions regarding mitigation requirements. All short-term, long-term, and permanent impacts of the potential construction of the Bad Creek II Complex should be fully evaluated.	Foothills Trail	Comments noted and will be taken into consideration during future evaluation, development, and collaboration on any potential agreement(s) developed with stakeholders related to PM&E measures to be implemented in the new license term.
26	11/3/2022	PSP Comments - Recreation	COMMENT 13: FTC should be given an opportunity to be represented during the conditions assessment. Our valuable in-depth knowledge and unique insight regarding Trail and infrastructure concerns will enhance these evaluations. Duke has verbally indicated the desire to transition maintenance throughout Duke's 43-mile section of the Trail to FTC. As such, it is particularly relevant for FTC representatives to participate in the conditions assessment to better understand the extent of current conditions and anticipated maintenance, including site specific challenges associated with infrastructure projects located in this Trail section with extremely limited vehicular access. The Foothills Trail Conservancy welcomes the opportunity to negotiate with Duke Energy any maintenance arrangements which will provide long-term continuance of the quality of the Foothills Trail, trail corridor and infrastructure.	Foothills Trail	While Duke Energy recognizes that FTC has intimate knowledge of the Trail, an independent third-party consultant will be engaged to conduct the Trail Corridor Conditions Assessment. This will prevent the influence of any recognized or unrecognized biases regarding the Trail's condition. The FTC will continue to have opportunities to be involved in the relicensing process and consultation on recreation-related matters. While Duke Energy may consider transitioning maintenance of the 43-mile trail segment to the FTC in the future, no plans for that transition are currently underway. If this situation arises in the future, Duke Energy will engage in negotiations with FTC and/or other interested parties to develop legal agreements associated with that transition as appropriate.
27	11/2/2022	PSP Comments - Aquatic	The size and swim speeds of target species used to model the estimated entrainment at the Project do not correspond with the Barwick et al. (1994) study; specifically threadfin shad. With the incorporation of the high swim speeds as data elements in the desktop model, the results concluded that the species would likely not be entrained. The SCDNR disagrees that the model accurately depicts the average size range and swim speeds of target species in Lake Jocassee and requests the desktop model be rerun with data points more representative of the existing fish population. The SCDNR also requests that the source of the data incorporated into the model be provided in the report.	SCDNR	A revised table and brief description will be shared with the Aquatic Resource Committee during the Consultation on Entrainment meeting to be scheduled Q1-Q2 2023, per Task 1 of the Aquatic Resources Revised Study Plan. However, updates to the table do not affect the overall results of the report, as entrainment rates are based on site-specific hydroacoustic returns collected at the Bad Creek intake.
28	11/2/2022	PSP Comments - Recreation	The SCDNR finds the currently proposed number of survey days [(N=10)] to be insufficient in capturing the recreational use of Whitewater Cove and recommends increasing the number of survey days to twenty days. Surveying the cove for twenty days would capture approximately twenty percent of the recreational use throughout the designated time period and would be more representative of the recreational use that will be impacted by the construction of the Bad Creek II Complex.	SCDNR	Duke Energy is adopting SCDNR's request to double the number of survey days from 10 days to 20 days. The Recreational Resources Study Plan has been updated accordingly.
29	11/2/2022	PSP Comments - Water	The SCDNR continues to have concerns regarding the impacts of spoil materials at the Project due to the proposed construction of the Bad Creek II site and looks forward to working with Duke Energy to minimize impacts to streams and wetlands. At this time, the SCDNR does not offer any additional comments on the Water Resources PSP.	SCDNR	Comment noted. Duke Energy has added a brief discussion to the RSP (Section 1.2.3) to describe the parallel Clean Water Act Section 404 permitting process anticipated for the Project as presently proposed.

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
30a	11/3/2022	PSP Comments - Water	<p>[The Study Plan] states that there are no anticipated adverse effects to water resources or water quality due to existing operations, but that the only anticipated adverse effects would be the result of the construction of Complex II. Upstate Forever still questions the legitimacy of this statement considering that no historic water quality data has been collected for the upper reservoir and associated tributaries.</p> <p>Section 6.3.7 of the PAD provided a summary of existing water quality data collected for waters within the Project Boundary and vicinity but is limited to only the upper reservoir and lower reservoir. No water quality data is included for Bad Creek or West Bad Creek, which are tributaries of the Bad Creek reservoir, Howard Creek, which receives seepage flows from the Main Dam and West Dam, or Whitewater River, which is the receiving water from daily Project operations (as well as the location of a submerged weir designed to minimize the effects of Project operations on lake stratification, protect cold-water fish habitat, and dissipate energy from discharged water). In addition, neither the upper reservoir nor its tributaries have historically been monitored for water quality, which is an erroneous oversight providing no baseline water quality data for waters in the Project vicinity.</p> <p>To assess the potential impacts to water resources and water quality resulting from the construction and operation of Complex II, this Study plans to use "existing data" but does not provide any details on the which data sources will be used for this analysis, such as SCDHEC, USGS, SCDNR, or data collected by Duke. Please clarify in the RSP the data sources and how they are relevant to the Study.</p>	Upstate Forever	<p>Duke Energy stated in the PSP there are no <u>additional</u> adverse effects anticipated due to existing Project operations; Duke Energy acknowledges that there were adverse effects created by the original Project.</p> <p>As previously stated in the PSP, water quality monitoring in the Upper Reservoir is neither safe (due to rapid, large fluctuations in water level elevation and typically continuous Project operation) nor meaningful, given the short retention time of water in the Upper Reservoir. Due to pumping and generating cycles, retention time of the water in the Upper Reservoir is very short, ranging from a maximum of approximately 3 days if only a single pump-turbine unit were operating to a minimum of approximately 10 hours with the proposed addition of the Bad Creek II Complex. Bad Creek and West Bad Creek streams, which were mostly inundated through creation of the Upper Reservoir, contribute negligible flow to Bad Creek Reservoir. Water quality in the Upper Reservoir reflects the water quality of the water pumped from Lake Jocassee. This is why only water quality monitoring in the Whitewater River Cove of Lake Jocassee is proposed (the Upper Reservoir directly discharges to Whitewater River Cove).</p> <p>There are historical datasets that include water quality conditions in Howard Creek and impacts from the original construction, therefore, Duke Energy has revised Task 1 of the Water Resources Study Plan to include a summary of available historical water quality from Howard Creek.</p> <p>Sources of data used for the water quality summary will be a combination of Duke Energy, Clemson University, and SCDHEC data/information. This clarification has been added in the RSP.</p>
30b	11/3/2022	PSP Comments - Water	<p>According to the current implementation of the Waters of the US (WOTUS), Pre-2015 Regulatory Definition and Practice, the Bad Creek Reservoir is included under WOTUS and Waters of the State (WoS) protections because it was formed by the impoundment of two free-flowing rivers or streams, Bad Creek and West Bad Creek, and as such regulatory designations do apply. More information is needed for these Project-related water resources to better understand its impact on existing watershed health. Please provide a rationale for excluding these significant water resources and include measures for updating and collecting water quality data in the RSP.</p>	Upstate Forever	<p>Duke Energy acknowledged in the PSP that the Upper Reservoir is likely included under WOTUS/WOS because it was formed from impounded streams (i.e., these streams are now submerged). The only waterbody the reservoir directly interacts with is the Whitewater River Cove, therefore, Duke Energy will monitor water quality in this arm of Lake Jocassee, as described in Duke Energy's response to Comment 30b.</p>
30c	11/3/2022	PSP Comments - Water	<p>The Study neglects to assess the impacts of the current project independently related to climate change. Increases or decreases in precipitation could have noticeable impacts on lake levels and therefore operation of the current facility and downstream facilities. SC has seen a dramatic increase in the frequency and intensity of extreme weather events over the past several decades, including flooding and drought. This Study should attempt to assess climate-related impacts to water resources and project operations.</p>	Upstate Forever	<p>Duke Energy will include an expanded treatise of recent climate data, trends, and patterns and potential related impacts to the Project in the License Application (Exhibit E); however, there is no intent to include this information as part of the Water Resources Study.</p>
30d	11/3/2022	PSP Comments - Water	<p>Duke's current proposed study area focuses only on the Whitewater River Cove. Additional modeling beyond the length of the Cove should be evaluated to determine the extent of increased flow velocities, vertical mixing, and water quality impacts associated with the operations of Bad Creek II on Lake Jocassee, including but not limited to shoreline erosion.</p>	Upstate Forever	<p>The 2-D hydraulic model will help determine the geographic scope of the CFD model; it will be used to assess how far potential impacts of the additional inlet/outlet structure could extend downstream. Duke Energy will tailor the CFD modeling effort based on the furthest downstream extent of impacts predicted by the 2-D model.</p>

Response to Stakeholder Comments on PSP

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
30e	11/3/2022	PSP Comments - Water	Upstate Forever continues to have concerns regarding the impacts of spoil materials and upland fill resulting from the proposed construction of Bad Creek Complex II ("Complex II"). [...] Upstate Forever continues to stress that impacts to water resources resulting from construction should be avoided regardless of stream conditions, and that to minimize impacts Duke should consider alternatives such as removing the spoils to another location entirely for proper disposal. [...] Due to the sheer magnitude of these spoils, off-site material disposal for the excavated materials should be the only consideration to avoid impacting streams and wetlands in the project area unless such disposal methods can be justified.	Upstate Forever	Areas preliminarily identified for the spoil locations were selected to optimize re-use of original spoil areas, proximity to access roads, and topography (i.e., limited by terrain) and identified upland spoil locations may all be used wholly or partially, dependent on which areas are being excavated or graded at the time. A spoil disposal alternative analysis (including evaluation of offsite disposal) will be carried out, as required for the Clean Water Act Section 404 permit and associated 401 water quality certification. At that time, all stream impacts will be identified, field verified, and evaluated; any disturbance to streams would require targeted studies (including jurisdictional determination for wetlands and streams) to determine impacts.
31	11/3/2022	PSP Comments - Aquatic	During the Meeting hosted by Duke Energy on September 7, the SC Department of Natural Resources ("DNR") commented on the size and swim speeds of target species used to model the estimated mortality for impingement and entrainment in the Desktop Entrainment Study ("DES") included in the Pre-Application Document ("PAD"). Specifically, DNR voiced concerns that surrogate fish species used in the DES misrepresent existing species and provides erroneous results. We agree with DNR that the DES should be updated using appropriate input data that will provide more reliable results.	Upstate Forever	A revised table and brief description will be shared with the Aquatic Resource Committee during the Consultation on Entrainment meeting to be scheduled Q1-Q2 2023, per Task 1 of the Revised Study Plan. However, updates to the table do not affect the overall results of the report, as entrainment rates are based on site-specific hydroacoustic returns collected at the Bad Creek intake.
32	11/3/2022	PSP Comments - Visual	The proposed Visual Resources Study Plan... primarily concerns the visibility of the Project and its potential impact on the quality of recreation experiences on Project related resources such as Lake Jocassee. However, other factors such as lighting standards at the Project can affect resources besides recreation, including but not limited to bird migration, aquatic species behavior, and noise pollution. . Upstate Forever recommends that Duke update this Study to assess visual impacts due to lighting on other resources based on International Dark Sky standards. Further, we also recommend that Duke Energy consider seeking the highest designation through the International Dark Sky Places conservation program for the Project and the surrounding lands, which are also owned by Duke Energy. Such a designation would be the first and only such designation in SC and likely the first landscape-scale project achieved by a utility that addresses light pollution, and would provide benefits to wildlife and ecosystems, recreation, and human health.	Upstate Forever	The Visual Resources Study Plan has been revised to add that Duke Energy will evaluate relevant existing management plans or guidance documents related to lighting. Duke Energy notes that lighting at the existing Project is minimal (limited to that required for safety and security), so lighting impacts are expected to be primarily limited to the construction phase for the Bad Creek II Complex.
33a	11/3/2022	PSP Comments - Recreation	Due to the exclusionary nature of the Bad Creek Pumped Storage Facility, and because there is no recreational access to the Bad Creek reservoir, there is considerable emphasis on off-project recreation opportunities well outside the Project area... This Study should include an audit of all facilities and infrastructure provided as a requirement of Exhibit R of the original license... we are concerned that the Recreational Resources Study will not adequately capture the current conditions of the Trail, its ability to provide high-quality recreation experiences, or its capacity to meet the escalating rate of demand.	Upstate Forever	Please see response to Comment 13.

Response to Stakeholder Comments on PSP

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
33b	11/3/2022	PSP Comments - Recreation	Upstate Forever is concerned that the proposed methods of the RUN Study will fall short of accurately accounting for the demand and expectations of visitors to the area. We believe the Recreation Use Survey captures only limited information and its design appears outdated. Specifically, the survey instrument assumes visitors are from nearby counties and states and discounts the notion that some visitors travel here from other countries. Furthermore, the specific question related to visitors' primary reasons for visiting are in an awkward order that may lead to unintended responses (e.g., what's the difference between "boating" and "canoeing/kayaking" and why are they not listed together?). In general, the instrument will only measure what is asked and does not encourage responses that may be unique to the recreation experience such as trail conditions, campsite conditions, and general feelings of security and well-being, among other things.	Upstate Forever	The user survey has been revised to include additional questions and modify some of the existing questions (e.g., a prompt for recreator's country, state, and county of residence is included on the survey form in Attachment 4 of the Recreational Resources Study Plan). As noted, the future recreation use analysis will be expanded to include additional counties as reported in the recreation user surveys.
33c	11/3/2022	PSP Comments - Recreation	A meaningful and intentional Recreational Resource Study should include consideration for some or all of the following: 1. An endowment provided to the Foothills Trail Conservancy for ongoing management and maintenance of the Foothills Trail system; 2. Fee-simple donations of land to be included in the Foothills Trail system, or to State resource agencies for various purposes, including recreation, habitat management, and water quality protection; 3. Conservation easements on lands owned by Duke Energy, which would protect the Foothills Trail corridor, or allows for other recreation opportunities (a conservation easement would limit specific land development practices but would allow for recreation uses and facilities, and would reserve rights to Project related activities), including the 6,700-ac tract surrounding the Project; 4. Expand the Foothills Trail system to connect with other trail systems, including the Palmetto Trail at Stumphouse Tunnel, the Panthertown trail system, the Tuskaseegee, the Art Loeb Trail, and the Appalachian Trail; 5. Designation through the International Dark Sky Places conservation program for the Project and the surrounding lands, creating the first of its kind in the State and expanding on the world-class distinction; and 6. Providing a financial contribution to the Oconee County Conservation Bank, which would then be used to protect additional lands in the County near the Project boundary.	Upstate Forever	Comments noted and will be taken into consideration during future evaluation, development, and collaboration on any potential agreement(s) developed with stakeholders related to PM&E measures to be implemented in the new license term. Duke Energy notes that these comments pertain primarily to potential PM&E measures outside of the Project Boundary and potentially outside the scope of the new license; as such, no modifications are required or proposed to the Recreational Resources Study Plan to address these potential PM&E measures.
33d	11/3/2022	PSP Comments - Recreation	Poor land and water management leads to poor recreation experiences. Therefore, it is just as important for Duke Energy to develop a land management plan that supports the recreation activities as it is to develop a recreation management plan that supports the natural resources. We believe this Study should include an evaluation of habitat quality and, similarly, a determination of the existing carrying capacity and an estimation of future carrying capacity that minimizes impacts to recreation resources, thereby maximizing benefits to both users and existing species.	Upstate Forever	Duke Energy is proposing to partner with Applied Trails Research to apply the recreation user data collected during the RUN Study to the information collected during the Foothills Trail Corridor Conditions Assessment, and along with pertinent cultural, environmental and RTE information to estimate current hiking and backpacking carrying capacity of the Trail. The Recreational Resources Study Plan has been revised accordingly. In addition, land management in the vicinity of the Trail will be addressed in the PLP or DLA and a detailed figure that identifies landowners in the vicinity of the Trail will be developed.

Response to Stakeholder Comments on PSP

Comment No.	Date	PSP Reference	Summary of Comment	Stakeholder	Response
33e	11/3/2022	PSP Comments - Recreation	This Study should include an analysis of current project construction, operation, and maintenance activities on ecological communities and rare, threatened, and endangered species, as well as its effects on potential habitats. Furthermore, we believe this should be expanded to include the effects of non-native, invasive, and noxious species on ecological communities and potential habitat areas as well. Habitat and corridor protection is one of the most critical needs for the protection and preservation of species... Duke Energy should examine past habitat availability, current habitat availability, and determine trends for habitat loss or creation through the term of the new license based on the identified trends. This information can then be used to identify target values for habitat protection and restoration in and near the Project.	Upstate Forever	Information regarding existing and proposed construction, operation, and maintenance activities and impacts (i.e., on wildlife, rare, threatened, endangered species, invasive species, and ecological communities) will be provided in the PLP or DLA (Exhibit E).
33f	11/3/2022	PSP Comments - Recreation	The impacts of climate change should also be evaluated and discussed. Wildlife habitat corridors may be necessary for species migration due to climate change and should be of particular interest throughout the life of the proposed new license.	Upstate Forever	Recent climate change data, trends, and patterns will be discussed in the PLP or DLA. Associated impacts to resources, where there is a nexus with Project construction or operation, will also be considered.

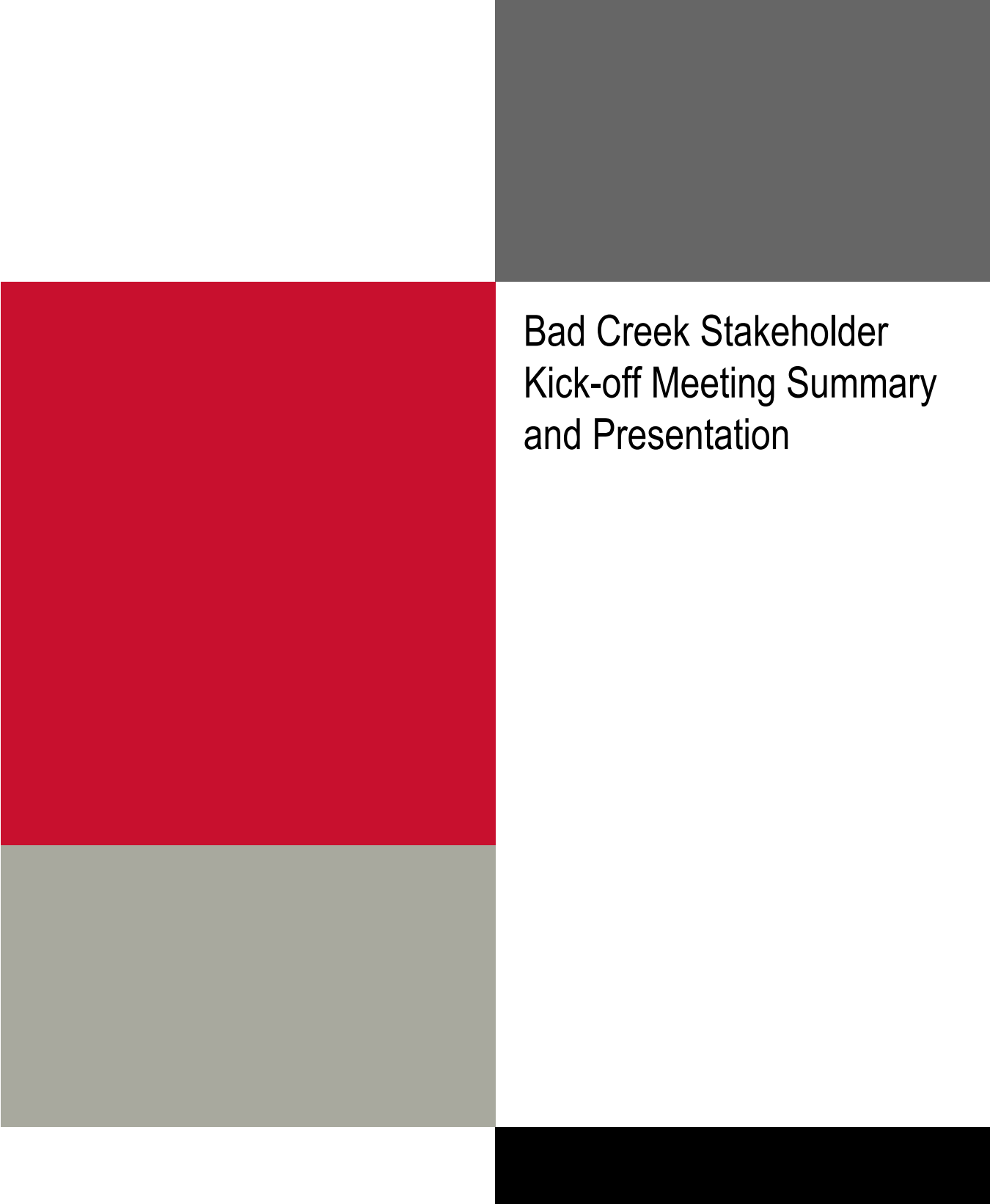
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Appendix B

Appendix B - Correspondence

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Bad Creek Stakeholder
Kick-off Meeting Summary
and Presentation

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Meeting Summary

Project: Bad Creek Pumped Storage Project (FERC No. 2740)

Subject: Bad Creek Relicensing Stakeholder Team Kick-off Meeting

Date: Tuesday, May 31, 2022

Location: Duke Energy - Greenville Office
425 Fairforest Way Room 100
Greenville, SC 29607

Attendees: Elizabeth Miller (SC DNR)
Rowdy Harris (SCPRT)
Sue Williams (Advocates for Quality Development)
Gerry Yantis (Advocates for Quality Development)
Phil Mitchell (Fisher Knob HOA)
Andrew Gleason (Foothills Trail Conservancy)
Bill Ranson (Foothills Trail Conservancy)
Glen Hilliard (Foothills Trail Conservancy - Advisor)
Dale Wilde (Friends of Lake Keowee Society)
Wes Cooler (Naturaland Trust)
Andy Douglas (SC Wildlife Federation)
Chris Starker (Upstate Forever)
Erika Hollis (Upstate Forever)
Michael Abney (Duke Energy)
Jennifer Bennett (Duke Energy)
Ed Bruce (Duke Energy)
Jeff Lineberger (Duke Energy)
Christy Churchill (Duke Energy)
John Crutchfield (Duke Energy)
Lynne Dunn (Duke Energy)
Paul Keener (Duke Energy)
Maverick Raber (Duke Energy)
Alan Stuart (Duke Energy)
Nick Wahl (Duke Energy)
Ben Williamson (Duke Energy)
Sarah Kulpa (HDR)
Maggie Salazar (HDR)

Overview

This meeting summary provides documentation of the Duke Energy Carolinas, LLC Bad Creek Pumped Storage Project (Project) stakeholder meeting in support of the Project relicensing. The meeting was held in person at Duke's office in Greenville, SC. A copy of the presentation and a copy of the sign-in sheets are attached to this meeting summary (Attachments 1 and 2).

Welcome and Introductions

Alan Stuart welcomed participants, reviewed the agenda, and introduced the purpose of the meeting. Individuals provided an introduction and signed in. A. Stuart noted that the U.S. Fish and Wildlife Service and the S.C. Department of Health and Environmental Control will participate in the core stakeholder group, but could not attend this meeting. Chris Starker asked if the cultural resource agencies and Tribes will participate. A. Stuart confirmed the tribal entities to which Duke and FERC have reached out (Eastern Band of Cherokee Indians, Catawba Indian Nation, United Keetowah Band of Cherokee Indians, Cherokee Nation of Oklahoma, and also noted that Dr. Wenonah Haire (Catawba Indian Nation Tribal Historic Preservation Officer) asked for a copy for the Pre-Application Document (PAD) which was sent. A. Stuart thanked participants who had returned and completed the stakeholder “application” he recently distributed.

Participants introduced themselves and described their role/interest in the relicensing, including:

- Fisher Knob HOA – 21 homeowners, shared access road off Highway 130, concerned about access during construction and interest in developing a secondary access road
- Upstate Forever – multiple issues, including focus on clean water
- Naturaland Trust – ownership of 500 acres in the vicinity of Lake Jocassee and in the vicinity of the Bad Creek-Jocassee transmission corridor
- Advocates for Quality Development – focus on sustainable and quality development in Pickens and Oconee Counties
- Friends of Lake Keowee Society – natural resource education, environmental monitoring
- SC Wildlife Federation – preservation and habitat protection and enhancement, adopt-a-stream programs

Safety Moment

A. Stuart presented a safety moment on distracted driving.

Project Overview

A. Stuart familiarized participants with the Project location. As a follow-up to a question raised during the Scoping Meeting about alternate pumped storage sites previously studied by Duke Energy, A. Stuart presented the approximate locations of the Coley Creek and Limber Pole project tracts. Duke Energy retains ownership and development rights of these parcels for future pumped storage development. A. Stuart explained that Duke expects to retain these rights, because future generation and storage needs are uncertain, but does not have any active plans for their development. A. Stuart noted that the Foothills Trail goes through the Coley Creek tract. Wes Cooler asked what the boundaries shown on the presentation slide represent, and A. Stuart noted that it is just the parcel boundary, not a particular project or reservoir boundary and pointed out the conceptual dam locations on the figure. A. Stuart noted that Coley Creek Project Tract is likely the Long Spur Ridge site brought up by Chris Starker in the Scoping Meeting. A. Stuart noted that Duke had put together a pre-filing application for Coley Creek 20-30 years ago but it was never filed with FERC. Jeff Lineberger clarified that the size of the project boundary scaling is not to scale on the figure shown but is generally accurate depicting the potential locations, however Lake Jocassee is a prime location for pumped storage due to the elevation and rainfall.

A. Stuart updated the group on the ongoing Bad Creek powerhouse upgrades.

A. Stuart provided examples of Relicensing (or Settlement) Agreements including both “off-license” (i.e., outside of FERC jurisdiction and project boundary) and “in-license” agreements. A. Stuart noted that a settlement agreement with the stakeholders is a desirable outcome for this relicensing.

A. Stuart reviewed the Integrated Licensing Process (ILP) process and reasoning for choosing this regulatory process instead of the Traditional Licensing Process (TLP).

A. Stuart noted that Duke Energy is anticipating making a decision in 2024 (prior to the license application filing) on whether to advance the development proposal for the Bad Creek II Complex, but that Duke Energy could change direction before or after that time. In the event that the license issued by FERC (expected 2027) includes provisions for construction and protection, mitigation and enhancement measures (PME) for Bad Creek II, and the project is then cancelled by Duke, Duke would pursue an amendment of the license to remove these conditions. A. Stuart noted that a cost benefit analysis will be internally reviewed for the Bad Creek II Complex at multiple points over the next few years, and cost could inhibit the viability of the project expansion. However, A. Stuart clarified that at this point, construction of the Bad Creek II Complex is a good path forward for storing more energy needed to meet Duke’s generation needs for current and future renewable generation.

A. Stuart reinforced that this group will be the core stakeholders and reviewed expectations, including time commitments, agreement (not signing) with the terms of a charter, and process efficiency. Specific Resource Committee meetings will be set up by Duke Energy resource specialists. Meeting summaries will be taken and shared with the larger stakeholder group. A. Stuart reviewed the Resource Committee Duke leads:

- Lead Technical Manager – John Crutchfield
- Aquatics – Mike Abney and Nick Wahl
- Cultural Resources – Christy Churchill
- Recreation & Aesthetics – Jennifer Bennett
- Water Quality – Maverick Raber
- Operations – Lynne Dunn and Ed Bruce
- Wildlife & Botanical – Mike Abney and Scott Fletcher

A. Stuart clarified that the Proposed Study Plans will be worked on this year. Sarah Kulpa noted that baseline terrestrial surveys had been performed in support of the PAD, and detailed species surveys are not proposed for the ILP, because project construction isn’t scheduled to begin until 2027. Where detailed species (or wetlands) surveys are required by regulatory agencies, Duke would expect to perform those at an appropriately close interval prior to disturbance.

A. Stuart told the group that a secure SharePoint site will be used for sharing files, reviews, and document control. S. Kulpa reminded the group of the public website and noted the SharePoint site would be internal to the core stakeholder group. HDR will provide technical support/troubleshooting for SharePoint access. Access is easier if individuals have a Microsoft online/365 account. A. Stuart suggested a virtual tutorial for using SharePoint. A. Stuart noted that correspondence logs will be maintained through the relicensing. A. Stuart hopes to do quarterly newsletters so that stakeholders can share with their constituents.

A. Stuart noted that site visits to (tours) the Bad Creek facility are starting to being held again now that the COVID pandemic is subsiding. Availability of Duke Energy's group bus is necessary for scheduling. Interested individuals and organizations should contact Duke.

A. Stuart reviewed the overall relicensing schedule and provided milestones and important comment periods for the stakeholders, FERC staff, and Duke Energy.

Dale Wilde noted that FOLKS support the Bad Creek II Complex, however recommended Duke Energy to increase their public engagement and information sharing, so misinformation is not spread. A. Stuart agreed and noted that the public website is a means to disseminate information to anyone who wants it. A. Stuart will look into public meetings or an additional education campaign further internally.

A. Stuart added that later in the process, Duke Energy would likely engage a professional facilitator for stakeholder meetings (similar to role of Ken Kearns – now retired – in the Keowee-Toxaway relicensing). Duke has not yet identified a facilitator and welcomes suggestions from the group.

J. Lineberger noted that the relicensing process is much different than when the Bad Creek Project was originally constructed.

A. Stuart noted that the next stakeholder meeting would be in near the near future, but date is TBD. Greenville will likely be the meeting point since there are people coming from Charlotte, NC and Charleston, SC. Resource Committee group leads will schedule the meetings and provide next steps. Virtual (Teams) meetings will also be utilized to increase stakeholder team meeting efficiencies and reduce travel.

A. Stuart asked the group for identification of representative and alternative/or agency contacts by June 14, 2022 and sign up for Resource Committees by June 23, 2022.



Attachment 1

Attachment 1 – Meeting
Presentation

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Bad Creek Hydroelectric Project (FERC No. 2740)

Relicensing Stakeholder Kick-off Meeting

May 31, 2022

MEETING AGENDA

- Welcome
- Safety Moment
- Introductions
 - Duke Energy
 - Consultants
 - State and Federal Agencies
 - Local and County Governments
 - Non-Governmental Organizations
- Bad Creek Project and Relicensing Process Presentation
- Lunch (provided)
- Relicensing Process Next Steps/2022 Detail Schedule Review
- Open Discussion
- Action Items
- Adjourn

Safety Moment – Distracted Driving

Every day about 8 people in the U.S. are killed in crashes reported to involve a distracted driver.

Stay focused and avoid phone calls and text messages

If you need to read directions, pull over

Don't reach for items while driving

Make all adjustments before driving (mirrors, phone holder, seat position, etc.)

Keep your emotions in check

Introductions



- Duke Energy
- Consultants
- State and Federal Agencies
- Local and County Governments
- Non-Governmental Organizations

Today's Objectives



Introduce Relicensing in Detail

Background Information
Integrated Licensing Process
Duke's Relicensing Process

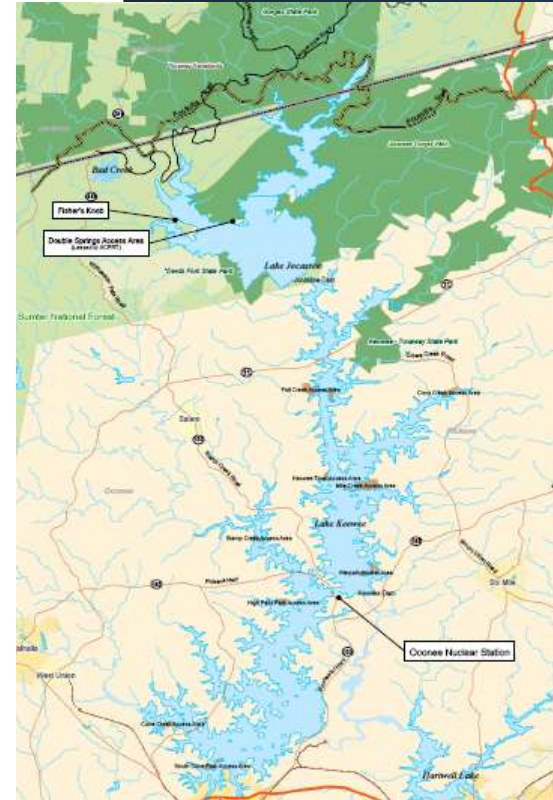


Request Participation

Process Input/Feedback
Stakeholder Team
• Resource Committees

BC Project - Overview

- Single Development
 - Oconee County, SC
- Original License Issued 1977
- License Application Due July 31, 2025



3/2017

281

NC/SC State Line

130

Bad Creek Reservoir

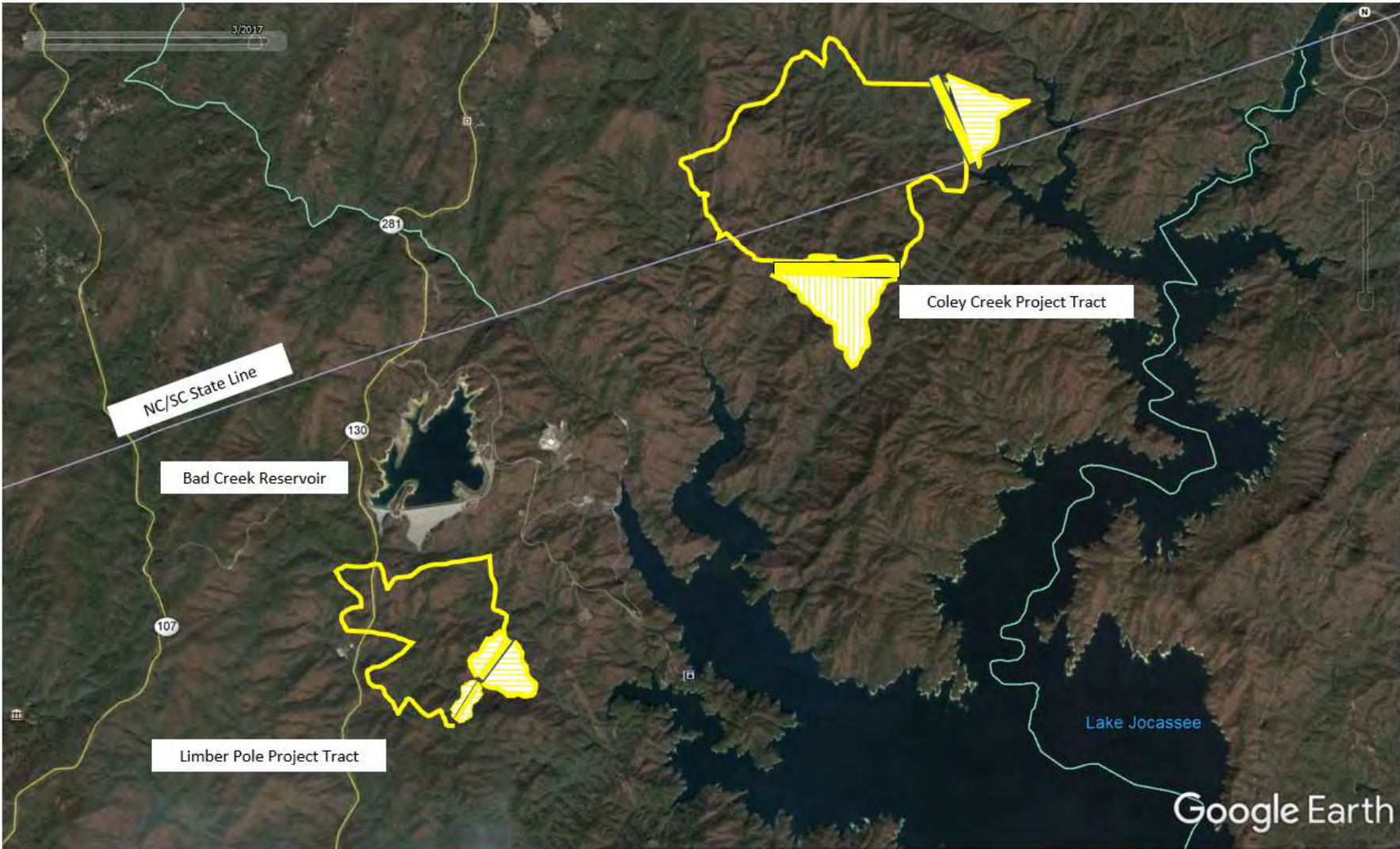
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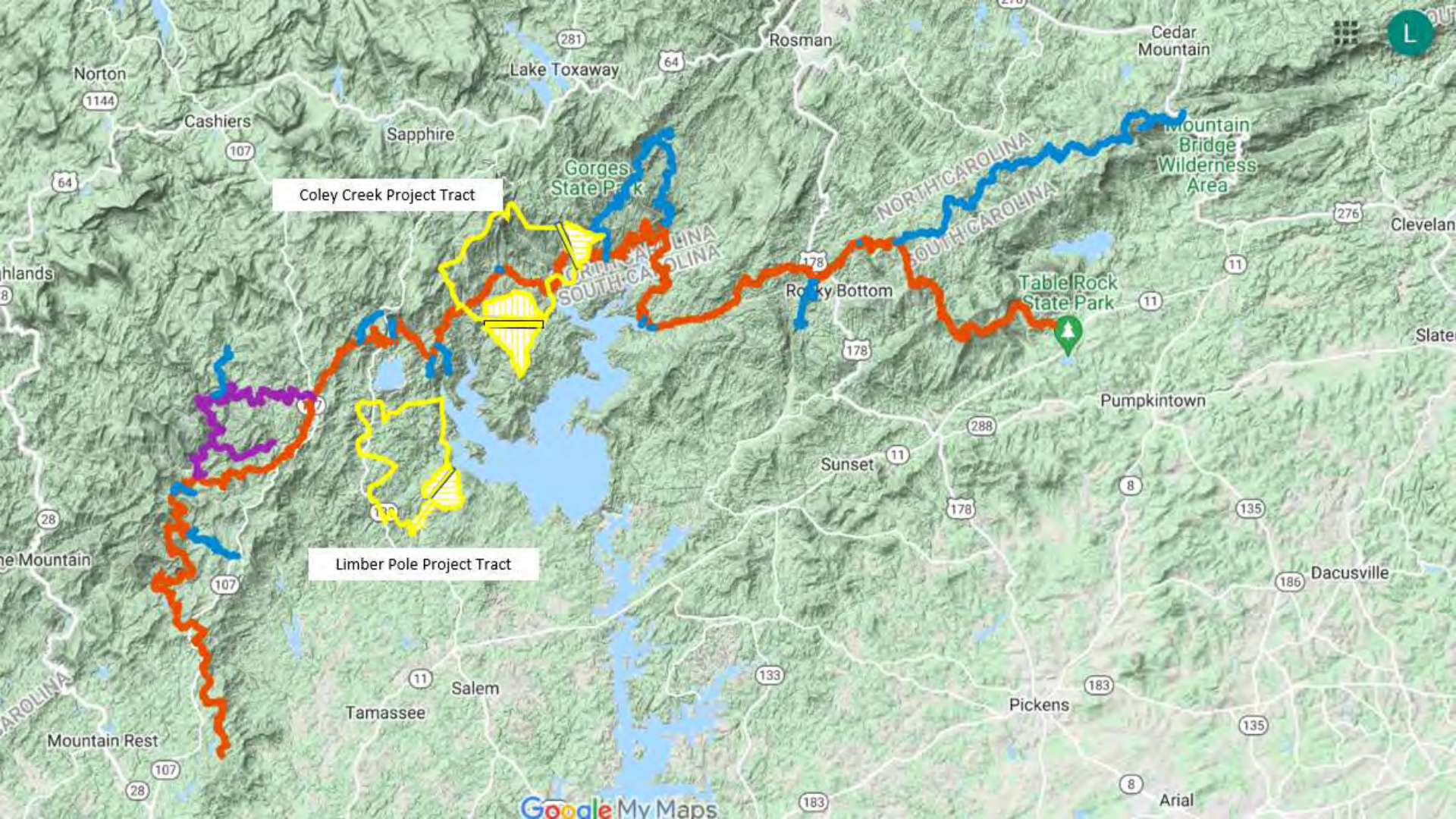
Limber Pole Project Tract

Coley Creek Project Tract

Lake Jocassee

Google Earth





Coley Creek Project Tract

Limber Pole Project Tract

BC Powerhouse

- 1,400 MW Authorized Installed Capacity
- 4 - Pumped/Generator Turbines
 - Francis Style
 - Maximum Hydraulic Capacity = 19,760 cfs (Gen Mode)
 - Unit rotation speed = 300 rpms (Gen mode)



Existing Upated Bad Creek – Maximum Flow

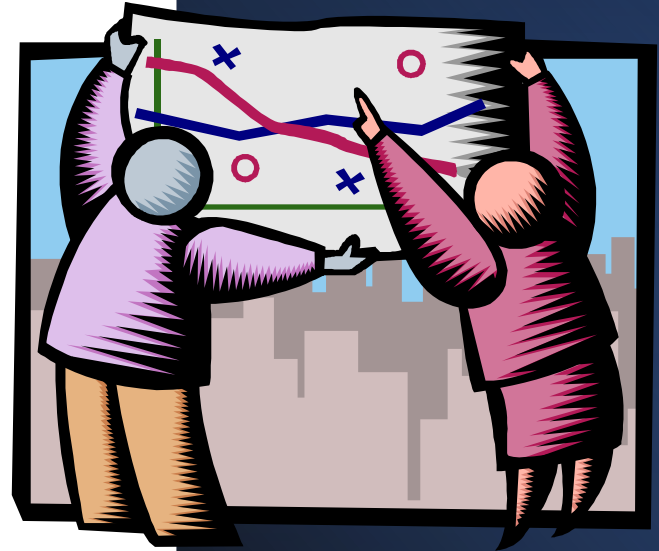
Item	Turbine Mode	Pump Mode
Duration (hours)	20	26
MWh	30,379	38,803
Maximum Power (MW)	1,695	1,595

Existing Upated Bad Creek – Best Efficiency

Item	Turbine Mode	Pump Mode
Duration (hours)	23	26
MWh	31,440	38,803
Maximum Power (MW)	1,426	1,595

Duke Energy's Relicensing Roles

- File a timely & complete application
 - Conduct studies
 - Maintains schedules
 - Prepares documents
- Convener
 - Sponsors Stakeholder Team
 - Coordinates Resource Committees

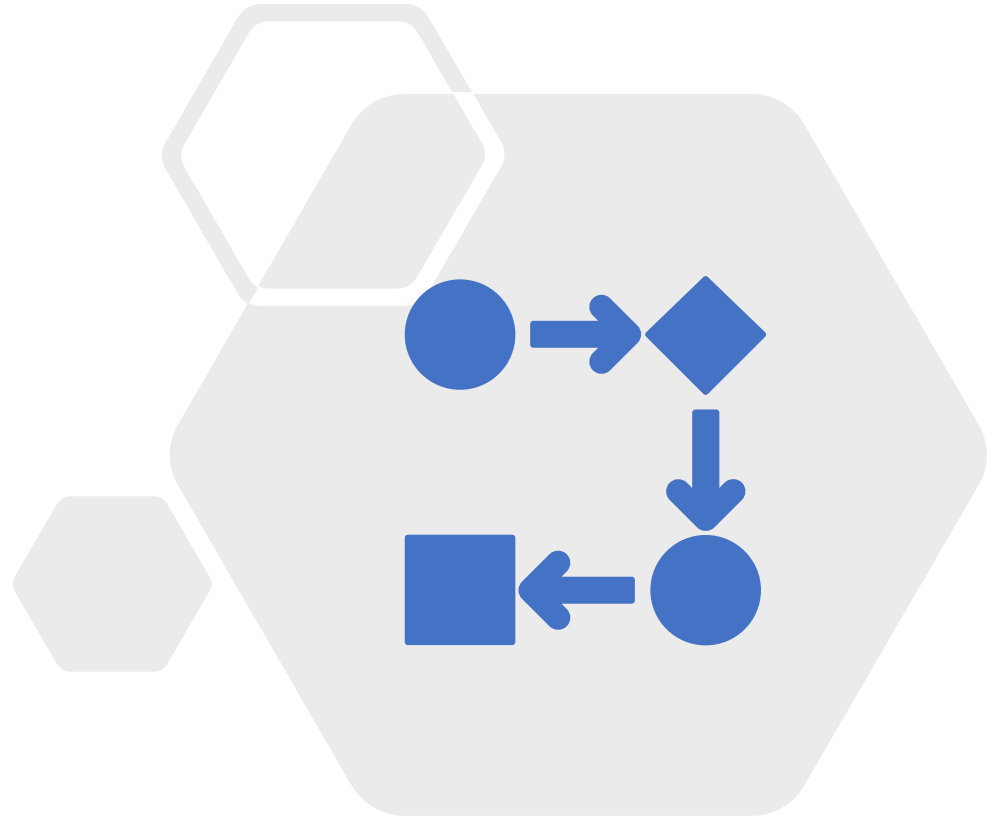


Stakeholder Interests

- Sustainable, cost-effective solutions
- Cooperation
- Mutual-gain negotiations
- Relicensing Agreement



The Relicensing Process



Integrated Licensing Process (ILP)

ILP	TLP/ALP
Rigid timeline	Process can linger
PAD	First Stage Consultation Document
Scoping early in process	Scoping after license application is filed
Study Plan approval by FERC	No study approval

ILP Lessons Learned



Stay ahead of the process



Understand the process and schedule



Study criteria

Objective of study

Resource management goals
OR Public interest considerations

Existing data and reason more is needed

Project nexus

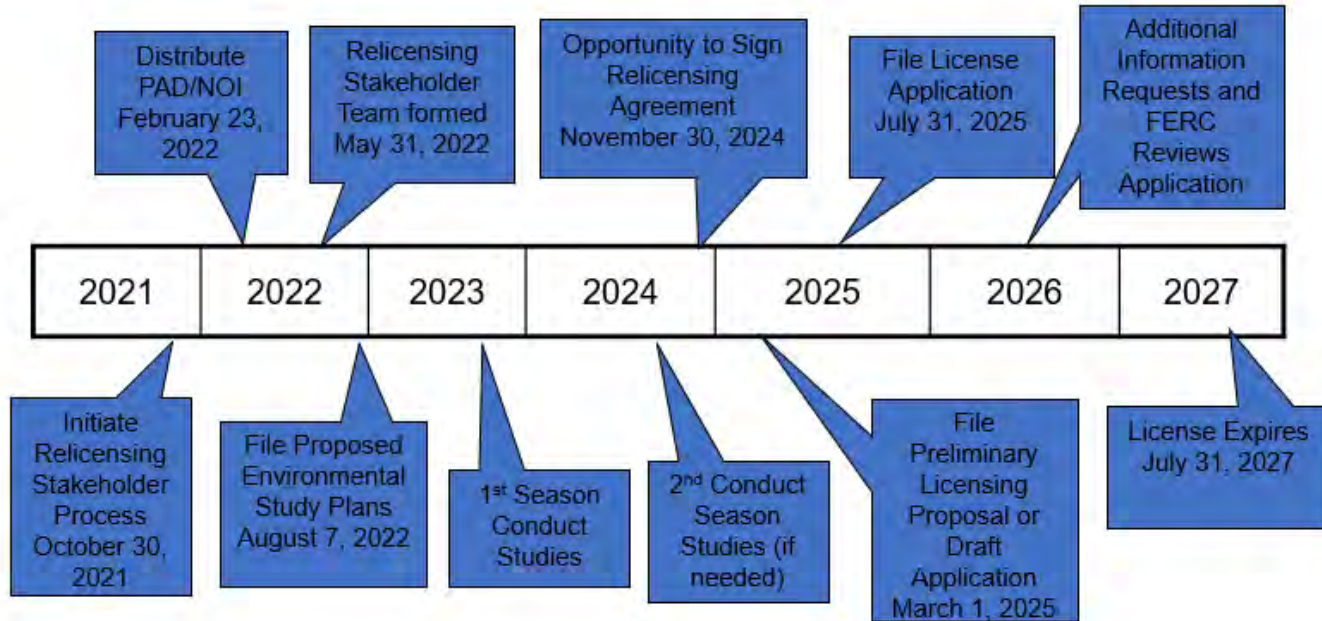
Methodology

Cost considerations



Be efficient with communications & meetings

Bad Creek ILP Relicensing Timeline Overview





RELICENSING
STAKEHOLDER
TEAM

FEDERAL AGENCIES

- U.S. Fish and Wildlife Service
- U.S. Forest Service – Sumter National Forest

SOUTH CAROLINA STATE AGENCIES

- South Carolina Department of Archives and History
- South Carolina Department of Health and Environmental Control
- South Carolina Department of Natural Resources
- South Carolina Department of Parks, Recreation & Tourism

TRIBES

- Catawba Indian Nation
- Eastern Band of Cherokee Indians

LOCAL GOVERNMENT

- Oconee County

NON-GOVERNMENTAL ORGANIZATIONS

- Advocates for Quality Development
- Fishers Knob Homeowners Association
- Foothills Trail Conservancy
- Friends of Lake Keowee Society
- Naturaland Trust
- South Carolina Wildlife Federation
- Upstate Forever

Expectations for Stakeholders



5-year time commitment

Quarterly meetings transition to monthly

Resource Committee Meetings more frequent and as needed



Charter

Attendance requirements

Conduct in and out of meetings



Process Efficiency

Electronic communications & tools

Efficient use of meeting time

Virtual Meetings ok so long as they are productive and useful in keeping deadlines.

Relicensing Agreements (RA)

- Optional
- Resolve all substantial issues
- Legally binding contracts
- Duke RAs
 - Keowee-Toxaway
 - Nantahala
 - Tuckasegee
 - Catawba-Wataree



Electronic Communications

Communications Protocol

Objectives

- Efficient dissemination of information
- Limit paper consumption
- Maintain consultation record

Primary Communications
Channels will be Electronic

Electronic Communications

- Meeting notices, agenda, summaries, study plans, study reports – Email & Website
- Quarterly Newsletters- Email
- Information Requests will be funneled through respective Resource Committee
- Study reports – Email & Website*
- Preliminary Licensing Proposal, License Application – Website and DVD*

* *Hard copies available to agencies and tribes upon written request*

BC Relicensing: Resource Committees

- Lead Technical Manager (John Crutchfield)
- Aquatics (Mike Abney and Nick Wahl)
- Cultural Resources (Christy Churchill)
- Recreation & Aesthetics (Jennifer Bennett)
- Water Quality (Maverick Raber)
- Operations (Lynne Dunn and Ed Bruce)
- Wildlife & Botanical (Mike Abney and Scott Fletcher)

Study Request Criteria

Describe Describe the goals and objectives of each study proposal and the information to be obtained.

Explain If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Explain If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

Study Request Criteria (cont.)

Describe Describe existing information concerning the subject of the study proposal, and the need for additional information.

Explain Explain the nexus between project operations and effects on the resource to be studied, and how the study results would inform the development of license requirements.

Explain Explain how any proposed study methodology is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

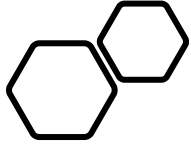
Study Request Criteria (cont.)

Describe Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

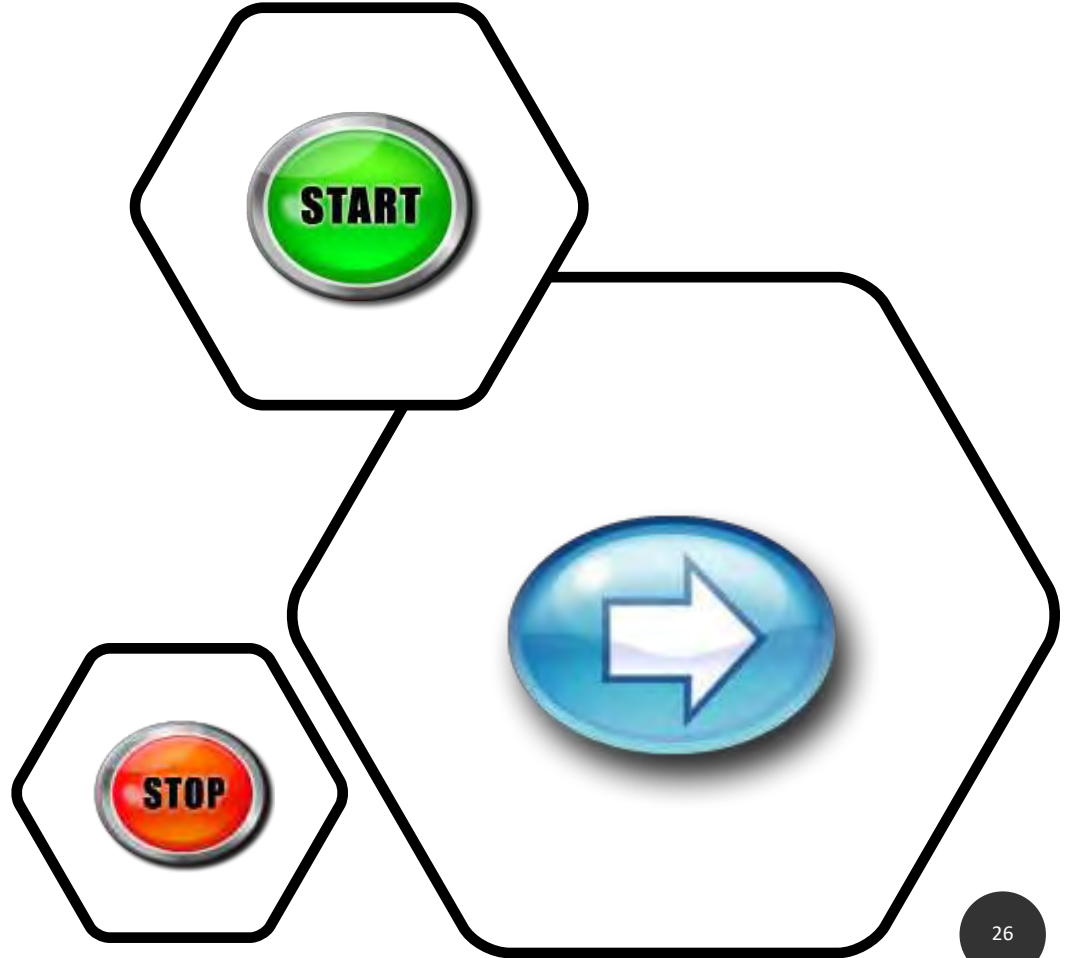
Study Plan Criteria

The potential applicant's proposed plan must include with respect to each study:

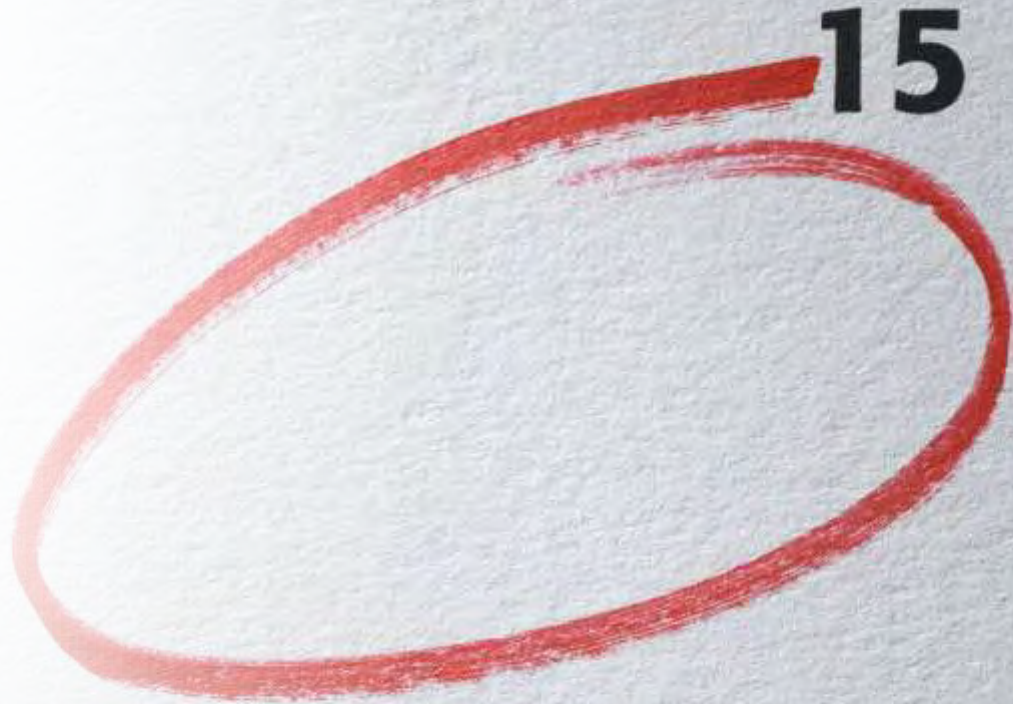
1. A detailed description of the study and methodology used
2. A schedule for conducting the study
3. Provisions for periodic progress reports
4. If the potential applicant does not adopt a proposed study, an explanation of why the study was not adopted.



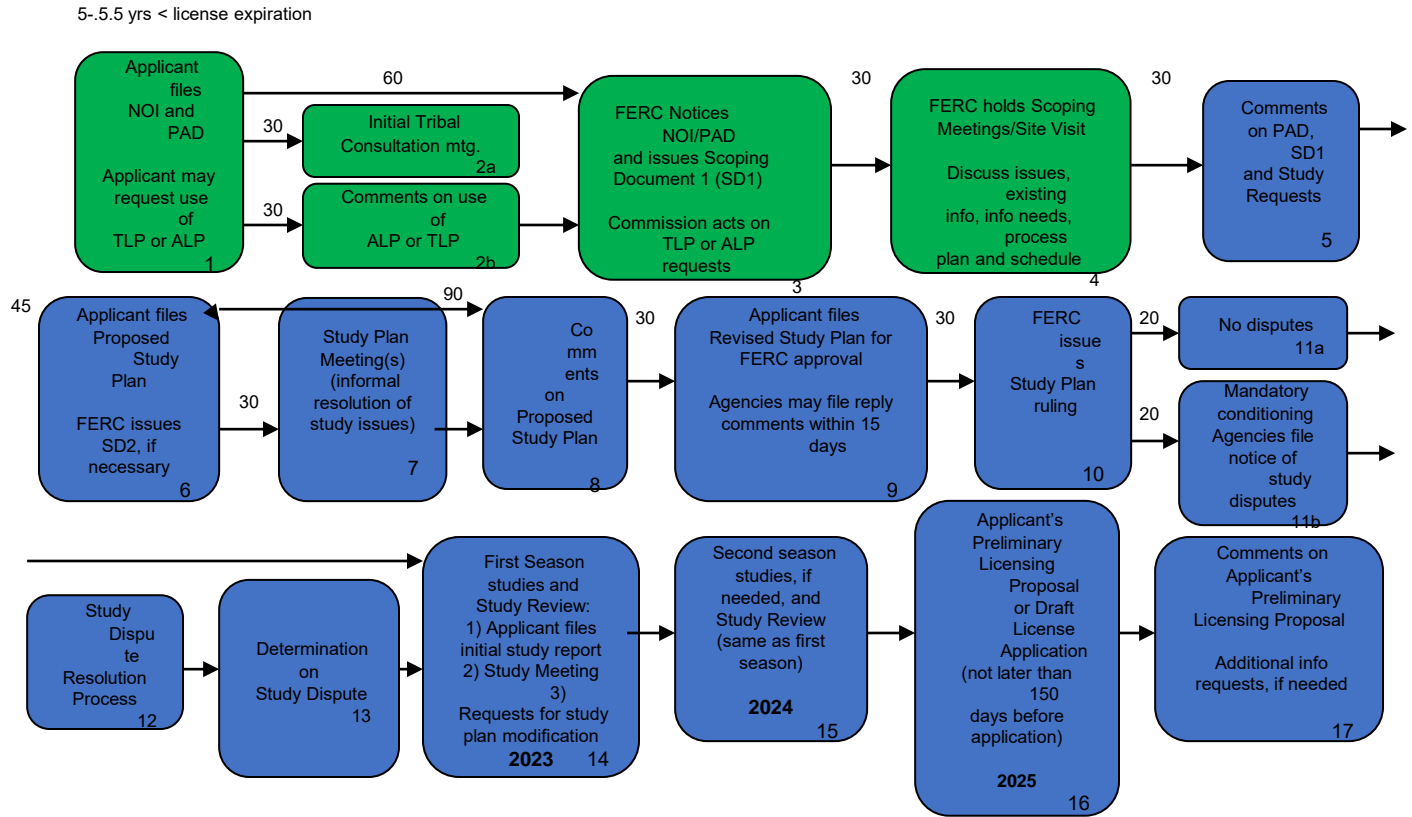
Process Improvements



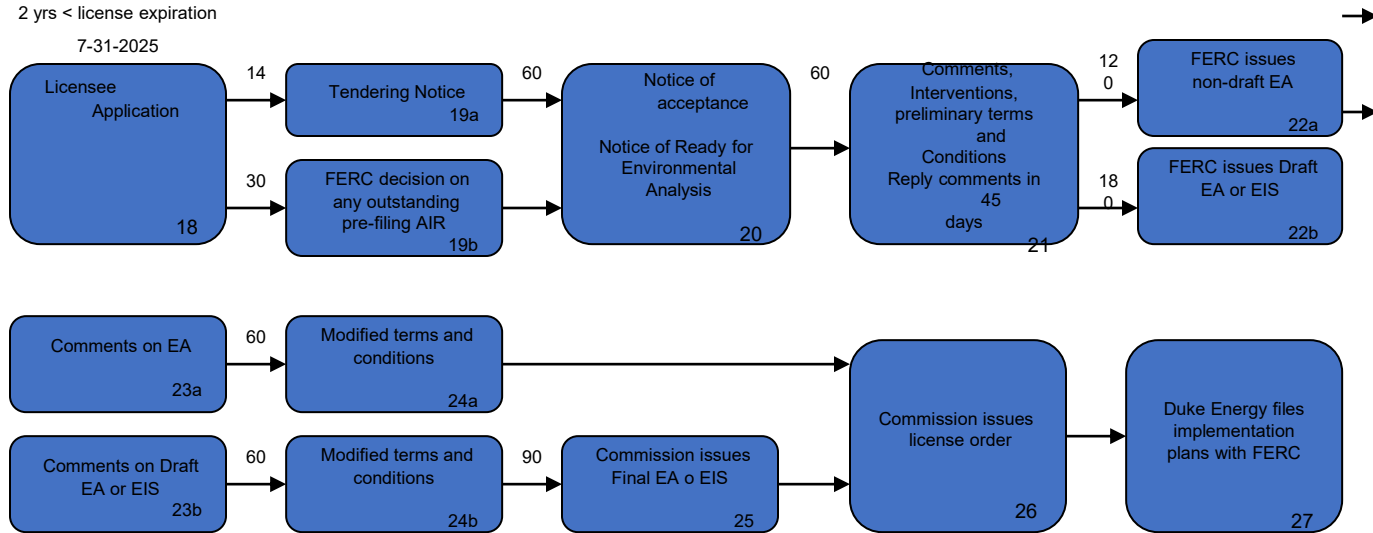
Relicensing
Process
Detail
Schedule



Bad Creek ILP: Pre-Application Activities



Bad Creek ILP: Post-Application Activities



Bad Creek Relicensing Dates
 2023: Filing of PAD
 2025: Filing of License Application
 2027: Existing License Expires

Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) (18 CFR §5.5(d))	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting (18 CFR §5.7)	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) (18 CFR §5.8(a))	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit (18 CFR §5.8(b)(viii))	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on PAD, SD1, and Study Requests (18 CFR §5.9(a))	Licensee Stakeholders	Within 60 days following Notice of NOI/PAD and SD1	June 23, 2022
Issue Scoping Document 2 (SD2), if necessary (18 CFR §5.10)	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) (18 CFR §5.11)	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting (18 CFR §5.11(e))	Licensee	Within 30 days following filing of PSP	Sep 6, 2022
Comments on PSP (18 CFR §5.12)	Stakeholders	Within 90 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) (18 CFR §5.13(a))	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP (18 CFR §5.13(b))	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination (18 CFR §5.13(c))	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Season of Studies (18 CFR §5.15)	Licensee	-	Spring-Fall 2023
File Study Progress Reports (18 CFR §5.15(b))	Licensee	Quarterly	Spring 2023 -Fall 2024
File Initial Study Report (ISR) (18 CFR §5.15(c))	Licensee	Pursuant to the Commission-approved study plan or no later than 1 year after Commission approval of the study plan, whichever comes first	Jan 4, 2024

Action Items

- Formal Request
 - Stakeholder Team Representative & Alternate OR Agency contact(s) (June 14, 2022)
- Resource Committees Formed (June 23, 2022)



Questions

Contact

BC Relicensing Project Manager

Alan Stuart

Alan.Stuart@duke-energy.com

980.373.2079



Attachment 2

Attachment 2 – Sign-In Sheet

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Bad Creek Relicensing (FERC No. 2740)
Stakeholder Team Kick-off Meeting
May 31, 2022



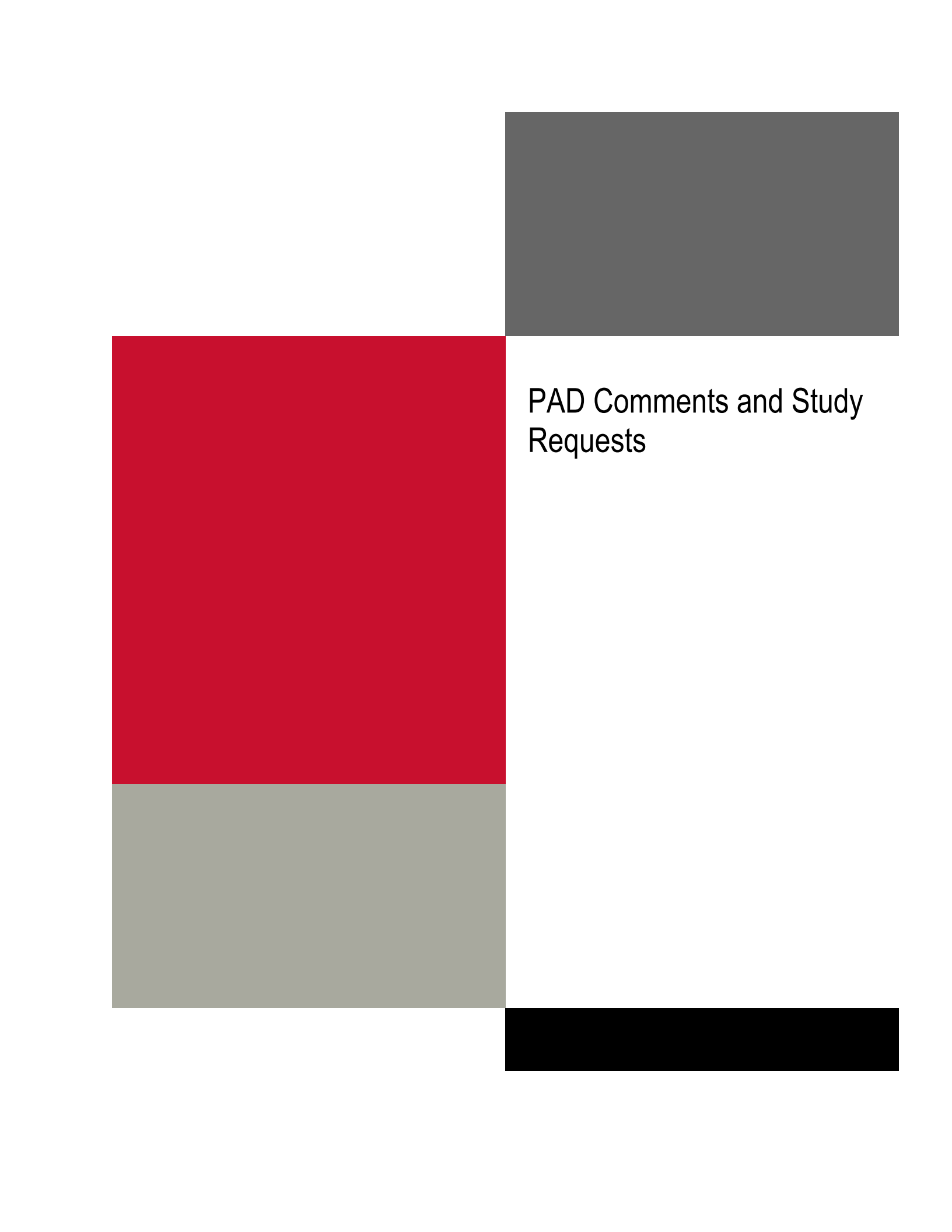
NAME	AFFILIATION	PRIMARY PHONE NUMBER
Bill Ranson	Foothills Trail Conservancy	864.325.1702
Andrew Gleason	Foothills Trail Conservancy	864-546-1589
Elizabeth Miller	SCDNR	843-953-3881
WES COOLER	NATURAL LAND TRUST	864.918.3826
Dale wilde	Friends of Lake Keowee	207-604-6539
John Crutchfield	Duke Energy	919-757-1095
Chris Starker	Upstate Forever	864-250-0500 x115
Erika Hollis	Upstate Forever	864-250-0500 x117
PHIL MITCHELL	FISHER KNOB HOMEOWNERS ASSOC AT BAD CREEK	864-614-9481
Nick Wahl	Duke Energy	980-875-4705
Maggie Salazar	HDR	610-299-0959
Sarah Kulpa	HDR	315-415-8703
Michael Abney	Duke Energy	704-975-4358
Ed Bruce	Duke Energy	704-607-3734
Jennifer Bennett	Duke Energy	828-Sue-3160.



Bad Creek Relicensing (FERC No. 2740)
Stakeholder Team Kick-off Meeting
May 31, 2022



NAME	AFFILIATION	PRIMARY PHONE NUMBER
Lynne Dunn	Duke Energy	910-412-1338
Paul Keener	Duke Energy	704.215.0559
Christy Churchill	Duke Energy	204 925 2008
Glenn Hilliard	Foothills Trail Conservancy	(678) 958-6258
Gerry Yantis	AQD - Advocates for Quality Development	571-205-3254
Sue Williams	AQD	619-892-8660
Andy Douglas	SC Wildlife Fed	864 380 6983
Jeff Lindeberg	Duke Energy	704-564-5613
MAVERICK RABER	DUKE ENERGY	919-698-2522
BEN WILLIAMSON	DUKE ENERGY	770-362-4857
Roudy Harris	SCPRT	864-992-2328
		219-128



PAD Comments and Study
Requests

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Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, D.C. 20426

Re: EPA comments on Notice of Intent to File License Application; Filing of Pre-Application Document (PAD), Commencement of Pre-filing Process, Request for Comments on the PAD and Scoping Document, and Identification of Issues and Associated Study Requests for Bad Creek Pumped Storage Project (FERC P-2740), Oconee County, South Carolina.

Dear Secretary Bose:

The U.S. Environmental Protection Agency (EPA) has reviewed the referenced Scoping Document, Pre-Application Document (PAD), and Notice of Intent (NOI) consistent with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and the EPA's authority under Section 309 of the Clean Air Act. The Federal Energy Regulatory Commission (FERC) proposes to issue a new license for the Bad Creek Pumped Storage Project (P-2740). The existing FERC license expires on July 31, 2027. The proposed project is located at Lake Jocassee, Oconee County, South Carolina. The Bad Creek Pumped Storage is operated by Duke Energy, and Duke Energy is proposing to construct a new power complex that includes a new four-unit underground powerhouse adjacent to the existing Bad Creek Powerhouse. The addition of the proposed Bad Creek II Complex would add 1,400-MW to the current capacity of 1,400-MW for a total of 2,800-MW.

We appreciate the opportunity to comment. If you have any questions regarding our comments, please contact Maria R. Clark at clark.maria@epa.gov or 404-562-9513.

Technical Issues and Recommendations:

5.6.3.3 Rock and Soil Disposal Areas: the PAD states that Duke Energy is presently evaluating areas within the project boundary and property owned by Duke Energy to dispose excavated earth and additional rock.

Recommendation: The EPA strongly encourages Duke Energy and FERC to mitigate these impacts by reusing these materials and find other projects in the area that might need fill material, such as old mines, roads, and superfund sites. Further, we strongly recommend avoiding disposing spoil material into water bodies and wetlands.

Additionally, we recommend adding all Duke's owned properties in the vicinity of the project on a map that could be considered for disposal of spoil material such as Figure 6.1-2. This information could help the public recommend sensible mitigation or further alternatives.

6.1.2 Climate: the PAD includes 30-year climate data for the Oconee County, South Carolina, for the years of 1971-2000 and 1981-2010.

Recommendation: we recommend including more recent data.

6.2.5 Known or Potential Adverse Effects: the PAD states that a geotechnical investigation was conducted for the proposed project, and the final report is expected by early 2023.

Recommendation: The EPA understands that geological issues such as high-in-situ stresses were encountered during the construction of the existing powerhouse, and the EPA recommends including studies regarding possible secondary impacts to the existing powerhouse from proposed excavations. Additionally, if such investigations disclosed probable hazards, then please include mitigations to ensure the existing project's stability.

6.4.2.2.4 Summary of Entrainment Study: the PAD includes results of studies regarding fish entrainment. While the PAD noted that consultations were also conducted with resource agencies and Duke Energy received no objections, we noticed that the PAD's observations described that major die-offs occurred when drawdown was extended.

Recommendation: The EPA recommends exploring worldwide hard mitigation technologies (besides operational guidelines) that could be applied to prevent/minimize entrainments. Further, the proposed project poses an additional burden to these fisheries.

Additional recommendations to include in the proposed studies:

- Figure 6.3-5. Lake Jocassee Daily Water Surface Elevation shows the elevations from May 1, 1975, to December 31, 2020. This figure is not clear, please add an additional graph showing the years instead of the "Day of Year."
- Duke Energy has sufficient time to avoid impacts or mitigate impacts. We recommend pursuing additional innovations to help mitigate water quality, and cumulative impacts.
- Please include information on the existing weir such as possible impacts from spoil dumping. Include how the future dumping could impact Lake Jocassee and the weir as a whole.
- Spoil dumping would impact water quality and would impact species. We recommend developing studies in the areas Duke Energy deemed to be ideal for dumping spoil including water bodies and any wetlands.
- We recommend including water quality baseline data for the Bad Creek Reservoir. We believe is important to have this data to compare future data and make accurate determinations and decisions based on data.
- The EPA recommends disclosing construction and operational emissions. We recommend best management practices and potentially implementing a Clean Diesel Policy to minimize mobile sources of emissions during construction. See the following suitable resources:
 - <https://www.epa.gov/dera/reducing-diesel-emissions-construction-and-agriculture>
 - <https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-emissions-air-pollution-nonroad-diesel>



United States Department of the Interior



FISH AND WILDLIFE SERVICE

176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

June 8, 2022

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A,
Washington, DC 20426

Re: COMMENTS on Notice of Intent to File License Application; Filing of Pre-Application Document (PAD), Commencement of Pre-filing Process, Request for Comments on the PAD and Scoping Document, and Identification of Issues and Associated Study Requests for Bad Creek Pumped Storage Project (FERC No. 2740), Oconee County, South Carolina. FWS Log No. 2022-0030610

Dear Ms. Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the Federal Energy Regulatory Commission's (Commission) April 22, 2022, Notice of Intent (NOI) to File License Application, Filing of Pre-Application Document (PAD), Commencement of Pre-filing Process, Request for Comments on the PAD and Scoping Document, and Identification of Issues and Associated Study Requests for the above-referenced hydroelectric project. The following comments are submitted in accordance with the provisions of the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e) and the Federal Power Act (16 U.S.C. 803(a) and (j)).

The Bad Creek Pumped Storage (Project) is located in Oconee County, South Carolina, about eight miles north of the Town of Salem. The project facilities consist of an upper reservoir, a main dam, a west dam, an east saddle dike, a water conveyance system, an underground powerhouse, access roads, and voltage transformation facilities. The project has a total installed capacity of 1,400 megawatts (MW). The total average annual generation of the project is about 1,884,685 megawatt-hours (MWh). The project does not occupy Federal lands.

By letter dated February 23, 2022, Duke Energy Carolinas (Duke Energy) filed a NOI and PAD for a new license for the Project. The current Project license was issued August 1, 1977, and is set to expire on July 31, 2027. In its PAD filed with the Commission, Duke Energy declared its intent to apply for a New License for the Project using the Integrated Licensing Process (ILP) as defined under FERC Regulations (18 CFR Part 5).

During the relicensing process Duke Energy proposes to analyze the potential to develop a Bad Creek II Complex (Complex). The Complex would consist of a new: (a) upper reservoir inlet/outlet structure, (b) water conveyance system, (c) underground powerhouse, (d) powerhouse access tunnels, (e) lower reservoir inlet/outlet structure, (f) switchyard, (g) transformer yard, and (h) transmission line. The Complex powerhouse would include four new, reversible pump-turbine units with an installed generating capacity between 106 MW and 425

MW, and a starting capacity between 308 MW and 372 MW for pumping. Average annual generation for the project would increase by up to 25,856 MWh.

COMMENTS ON SCOPING DOCUMENT 1

3.2.2 Proposed Environmental Measures

Duke Energy has identified several preliminary studies and environmental protection, mitigation, and enhancement measures (PM&E) in its PAD. We are in agreement with all of the PM&E measures proposed.

Terrestrial Resources and Threatened and Endangered Species

Regarding the second bullet, the Service looks forward to working with Duke Energy to determine the need for pre-construction surveys, and/or conservation measures to protect threatened and endangered (T&E) species and at-risk species (ARS). Several of the ARS are on the Service's National Listing Workplan (<https://www.fws.gov/project/national-listing-workplan>) to be assessed for listing during the same time frame as the ILP. If any of these species are listed or proposed for listing during that time the Service will notify Duke Energy and work with them to ensure proper protection measures are in place.

Regarding the third bullet and the northern long-eared bat (NLEB), on March 23, 2022, the Service published a proposal to reclassify the NLEB as endangered under the Endangered Species Act of 1973, as amended. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). If the final determination is to reclassify to endangered, that reclassification would go into effect 30 days later, which would be sometime during December 2022. The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species.

The Service does not yet know what impact this proposed up-listing will have on tree clearing and similar activities, but we look forward to working with Duke Energy to minimize impacts. Similarly, there is potential for additional bat species to be listed during the ILP.

4.1. Resource Issues.

The Service agrees with the outline of issues that you propose to include in the Environmental Assessment.

4.1.4 Threatened and Endangered Species

It should be noted that the Service does not have any records of the Indiana bat within Oconee County, South Carolina and we believe this species does not need to be included in the list of T&E species to be analyzed.

5.0 Proposed Studies

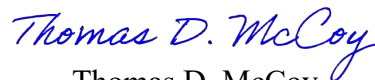
The Service agrees with the Duke Energy's proposed studies and have no additional study requests.

COMMENTS ON THE PAD

The Service has reviewed the PAD, with a focus on sections with relevance to our interests and authority. In general, it is a comprehensive document that meets purposes and content requirements set forth in §5.6 of FERC's Regulations (18 C.F.R. §5.6).

The Service appreciates the effort put into the development of the PAD and of Scoping Document 1. We look forward to working with the Commission and its staff, Duke Energy, and others throughout the process to meet our collective goals. If you have any questions, please contact Ms. Melanie Olds at (843) 300-0413 or at melanie_olds@fws.gov, and reference FWS No. 2022-0030610.

Sincerely,



Thomas D. McCoy
Field Supervisor

ec: eFile
Alan Stuart, Duke Energy
Elizabeth Miller, SCDNR
John Faustini, USFWS Regional Hydrologist and FERC Hydropower Coordinator

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
June 16, 2022

OFFICE OF ENERGY PROJECTS

Project No. 2740-053 – South Carolina
Bad Creek Pumped Storage Project
Duke Energy Carolinas, LLC

Via FERC Service

Alan Stuart
Duke Energy Carolinas, LLC
Mail Code EC-12Q
526 S. Church Street
Charlotte, NC 28202

**Reference: Staff Comments on the Pre-Application Document and Study Request
for the Bad Creek Pumped Storage Project**

Dear Mr. Stuart:

We have reviewed the Pre-Application Document (PAD) for the relicensing of Duke Energy Carolinas, LLC's (Duke Energy) Bad Creek Pumped Storage Project No. 2740-053 (Bad Creek Project), filed on February 23, 2022, and participated in the scoping meetings for the project during the week of May 16, 2022.

Based on our review of the PAD and the scoping meetings, we need additional information and clarification on the material presented in the PAD. The additional information (see the attached Schedule A) should be filed with the proposed study plan on or before August 7, 2022. If the requested information is not readily available, the proposed study plan should discuss Duke Energy's plans for gathering the information prior to filing the final license application. We are also requesting a study related to environmental justice (Schedule B).

If you have any questions, please contact Navreet Deo at (202) 502-6304, or navreet.deo@ferc.gov.

Sincerely,

Stephen Bowler, Chief
South Branch
Division of Hydropower Licensing

Attachments: Schedule A
Schedule B

SCHEDULE A ADDITIONAL INFORMATION REQUESTS

General

1. The PAD includes several maps of the existing project facilities, proposed facilities, and areas of potential affect if Duke Energy Carolinas, LLC (Duke Energy) decides to pursue the Bad Creek II Complex (Complex) as part of its relicensing proposal. To facilitate review of the existing project facilities and resources, as well as the facilities and resources that could be affected by the construction, operation, and maintenance of the Complex, please file the following geographic information system (GIS) data layers shown in the PAD, if available: (1) existing project features layout with callout labels (figure 5.4-12; and figure 2 in Appendix E); (2) proposed Complex features layout with callout labels (figure 5.4-13; and figure 2 in Appendix E); (3) potential spoil locations relative to surface waters with spoil area labels and surface water impact callout labels (figure 6.3-7); (4) the estimated riparian and littoral zones from the desktop analysis, and wetlands from the field assessment with callout labels (figure 6.6-2); (5) protected species habitat polygons and photo location points (figure 6.6-4); and (6) Foothills Trail layer, parking area and connector trail to the Foothills Trail in the Bad Creek Project boundary, other recreational facilities in the project vicinity, and the state and federal land layers (figure 6.8-1).

Project Facilities and Operation

2. Section 5.4 of the PAD provides a description of existing project facilities. However, for some project features we need additional detail (i.e., composition, dimension, etc.) to gain a more complete understanding of project facilities and operation. To assist us in our analysis, please provide: (1) the composition, method of repair, and frequency of repair, of the Bad Creek Project dam (main dam) flashboards; (2) the length (feet) of the Bad Creek Upper Reservoir (upper reservoir) intake channel; (3) the length and composition of the upper reservoir dewatering dam; (4) the width (feet) of each of the two, sluice gates located in the upper reservoir dewatering dam, as well as a description of the gates' operation, uses, and frequency of use; (5) the total number, dimensions (i.e., length and height)), and clear bar spacing (inches) of the trash rack structure(s) attached to the steel lift gates in the lower reservoir (Lake Jocassee)¹ inlet/outlet structure; (6) the dimensions (i.e., length and diameter) and composition of the manifold tunnel as part of the larger water conveyance system; (7) the number, length, composition, and uses of, the secondary penstocks; (8) the dimensions (i.e., height

¹ The Keowee-Toxaway Relicensing Agreement includes operating provisions and protection, mitigation, and enhancement measures associated with the Keowee-Toxaway Hydroelectric Project No. 2503 (Keowee-Toxaway Project). Lake Jocassee, the Bad Creek Project's lower reservoir, is part of the Keowee-Toxaway Project.

and width) of each of the four draft tube gates; and (9) the number, length, and voltage (V) of the project generator lead(s).

3. Section 5.4.5 of the PAD describes an existing, submerged weir that is not part of the licensed project facilities. However, the PAD states that the weir helps minimize the effects of project operation on the natural stratification of Lake Jocassee and cold-water fish habitats by preventing warm water discharged by the project from mixing with cool water in the lower layers of the lake. So that we have a full understanding of project facilities and operation, please clarify: (1) the composition and dimensions (feet) of the weir; (2) if the weir is used for normal project operation; and (3) if the weir is enclosed by the existing project boundary, or will be enclosed within the project boundary, as part of Duke Energy's relicensing proposal.

4. Section 5.4.12 of the PAD states that the total maximum hydraulic capacity of the four, reversible pump-turbine units is 19,760 cubic feet per second (cfs), when the project operates in generation mode. So that we can have a full understanding of any differences between pumping and generating, please clarify: (1) the total maximum hydraulic capacity of the units when operating in pumping mode; and (2) provide the minimum and maximum hydraulic capacity of each of the pump-turbine units in both generation and pumping modes.

5. Section 5.6 of the PAD describes potential changes to project facilities and operation that would result from the current proposal to construct and operate a second powerhouse as part of the new Complex. The proposal includes four new, variable-speed pump-turbine units, which would increase both the generating and pumping capacity of the project. The Complex would also include a new water conveyance system consisting of additional inlet/outlet structures for both the upper and lower reservoirs.

The PAD also states that while the existing license authorizes operation of the upper reservoir within a 160-foot fluctuation band (between 2,310 feet mean sea level (msl) and 2,150 feet msl), as of January 1995 the upper reservoir surface elevation is maintained within a 60-foot band (between 2,310 feet msl and 2,250 feet msl).

Please clarify whether operation of the proposed Complex features, specifically use of the additional pump-turbine units, would result in any changes to the upper reservoir water surface fluctuation band.

Fisheries and Aquatic Resources

6. Section 6.3.7 of the PAD provides information about existing water quality monitoring data associated with the project. However, the PAD does not indicate whether any water quality monitoring has been conducted in Howard Creek or at the

project discharge structure. So that we have a full understanding of all aquatic resource monitoring conducted at the project, please describe any water quality monitoring that has occurred in Howard Creek or at the project discharge structure during the current license term, and if so, please file the data in Microsoft Excel, or a similar format.

7. Section 7.1.2.2 of the PAD indicates that operation of the proposed Complex would not result in additional water level rise in Lake Jocassee compared to existing operation. However, the same section does not indicate whether the Complex would result in additional lowering of the water level in Lake Jocassee. So that we have a full understanding of proposed project operation, please describe whether the Complex would result in lower water levels in Lake Jocassee compared to existing operation, and if so, please estimate the magnitude of any additional changes in water level.

Terrestrial Resources and Threatened and Endangered Species

8. Section 6.1.3 of the PAD describes the land uses within the Bad Creek Project boundary based on the U.S. Geological Survey's National Land Cover Database. Table 6.1-3 and figure 6.1-3 show land uses at the upper reservoir (excluding the full transmission line corridor), including 3.7 percent of land categorized as "cultivated crops" which appear to be located immediately adjacent to the main dam. However, in other project figures, such as 5.4-1 and 5.4-2, this same area appears to be rock and/or barren land that is part of the dam, surrounded by forested land. In addition, table 6.1-3 and figure 6.1-3 show 2.0 percent of land within the project boundary (excluding the full transmission line corridor) categorized as "hay/pasture" in various pockets surrounding the shoreline of the reservoir and the transformer yard and switchyard. However, in other figures in the PAD, these areas appear to be maintained as lawn areas or part of earthen dams. Please clarify the land uses immediately adjacent to the main dam and confirm whether any cultivated crops or hay/pasture areas occur within the project boundary.

9. Section 6.5.3 of the PAD indicates that Duke Energy maintains vegetation: (1) in project access areas on an as needed basis; (2) in the existing transmission line corridor on a regular basis; and (3) on the faces of the project dams in accordance with the FERC-approved Dam Safety Surveillance and Monitoring Plan. The PAD does not provide any other detail about vegetation management at the project. To facilitate review of existing project operation and maintenance activities that affect terrestrial resources, please provide a detailed description of the management of native and non-native invasive²

² Section 6.5.2.2 of the PAD lists invasive species of concern in South Carolina and specifies that non-native invasive plants, such as Japanese honeysuckle, Japanese knotweed, Japanese stiltgrass, multiflora rose, princess tree/royal paulownia, and tree-of-heaven, were observed during Duke Energy's 2021 field surveys of the existing project transmission line corridor.

vegetation (i.e., any manual, mechanical, chemical, and/or biological) that occurs along project access roads, within the transmission line corridor right-of-way, the area surrounding upper reservoir, and adjacent to other project facilities. If herbicides are used to control vegetation within the project boundary, please provide the location(s), schedule(s), and method(s) of application (e.g., foliar and stump/stem/vine).

10. Section 6.7.1.3.4 of the PAD discusses the potential for monarch butterflies and their habitats to occur within the project boundary. The PAD indicates that during Duke Energy's reconnaissance field surveys, suitable habitat for the monarch butterfly, including milkweeds (*Asclepias* spp.) and a variety of other flowering plants for nectar, as well as nighttime roosting trees such as willows and pines were observed within the forested areas in the maintained right-of-way. This section of the PAD also includes general statements about vegetation management practices, such as mowing only from November 1st through April 1st (i.e., outside the monarch's breeding and migration period), that could alleviate potential effects to this species from proposed actions at the project. In addition, it states that Duke Energy is an active partner in the "Monarch Candidate Conservation Agreement with Assurances program" (Monarch Program). However, there is no description of any current vegetation management and other practices that Duke Energy implements to benefit monarchs. Please provide a detailed description of the Monarch Program, Duke Energy's role in this program as it relates to management and operation of the Bad Creek Project, and any measures that are currently implemented to protect monarchs at the project.

11. Section 6.5.2 of the PAD provides information about wildlife, including a reference to observations of over 170 species of birds (i.e., eBird volunteer birding database, 2021), in the project vicinity. However, the PAD does not include information about any avian interactions that may have been observed with the project transmission line or switchyard (e.g., nest building, perching, electrocutions, collisions, and any outages related to such interactions). Please provide any available data regarding observed/documented avian interactions with the existing project transmission lines and switchyard.

In addition, so that we may understand the potential for avian interactions with the transmission lines and the switchyard, please include information about the configuration and maintenance of the project transmission lines and switchyard as they relate to avian protection. Please indicate whether the existing project transmission line poles and conductors are consistent with the Avian Power Line Interaction Committee (APLIC) and the U.S. Fish and Wildlife Service (FWS) guidelines to minimize adverse interactions (i.e., potential avian electrocutions and collisions) (APLIC, 2006 and 2012; and APLIC and FWS, 2005). Please provide detailed descriptions, figures, and/or diagrams of the design of the project transmission lines and any existing avian protection devices installed on them. If any avian protection measures are currently proposed for the existing or new transmission lines associated with the Complex, please provide the

specifications and location(s) of these measures and a description of their consistency with APLIC guidelines, if applicable. If Duke Energy has an Avian Protection Plan for the Bad Creek Project, or for all of its hydropower projects that include transmission lines, please file a copy of the current plan.

12. Section 6.6.3 and the Natural Resource Assessment in Appendix E of the PAD discuss the potential effects of constructing the proposed Complex infrastructure and of disposing spoils in wetlands and surface waterbodies in the project area (e.g., dredging, filling, clearing, and de-watering). The PAD indicates that approximately 4 million cubic yards of spoil material for the Complex infrastructure would need to be deposited at on-site spoil locations and at the existing submerged weir in Lake Jocassee. Table 6.6-7 provides a preliminary assessment of potential spoil locations and the estimated impacts to wetlands and surface waters. This table indicates that there are five locations that Duke Energy prefers for spoil disposal (i.e., areas A, B, F, G, and I) and four other locations with the potential for spoil disposal (i.e., C, D, E, and H). However, the PAD does not describe the criteria used to assess the potential spoil disposal areas or provide an explanation of why areas A, B, F, G, and I were selected as preferred locations as opposed to areas C, D, E, H, or other, off-site potential spoil disposal areas. Please file a detailed description of how the potential spoil disposal areas are being identified, sized, assessed, and selected as Duke Energy's preferred locations for this purpose. Please update table 6.6-7 to include a comparison of the estimated acreage of forested uplands and wetlands that would be removed, filled, or otherwise affected at each potential spoil disposal area.

13. Sections 6.7.1.1.1 and 6.7.1.1.2 of the PAD describe the potential for the Indiana bat and northern long-eared bat and their winter and summer habitats to occur within the project boundary. The PAD indicates that one small cave/den was identified in the project boundary that could be used as winter hibernacula for these species. We are unable to find any other information about this cave/den in the PAD, including in the 2021 Bat Survey Report in Appendix G of the PAD. To facilitate review of the existing information about bats and their habitats in the project boundary, please: (1) provide a written description of the cave/den including a general location within the project boundary,³ size, and the estimated proximity to the existing and proposed project facilities, as well as current project operation and maintenance activities; (2) clarify whether the cave/den was surveyed during Duke Energy's 2021 field surveys; and (3) describe any bats or signs of bats that were observed, if applicable.

This section of the PAD also indicates that large trees with peeling bark and snags with cavities or crevices suitable for summer roosting habitat and potential foraging

³ In the interest of protecting potential habitat in the cave/den, please do not file the precise location.

habitat for Indiana and northern long-eared bats were abundant within the project boundary. There are general statements about the benefits of limiting tree removal to the period when these species are inactive (i.e., November 15th through March 31st), and a general proposal to coordinate with FWS prior to any tree clearing activities. However, it is not clear what, if any, practices Duke Energy currently implements to benefit Indiana and northern long-eared bats. It also is not clear if Duke Energy currently consults FWS prior to tree clearing activities, or if that is strictly a proposal for relicensing with or without the Complex. Please provide a description of any measures that are currently implemented to protect Indiana and northern long-eared bats and/or other bat species at the project, if any. In addition, please note that if the Complex is ultimately proposed as part of the relicensing process, additional information will be needed in the license application regarding the number of trees that would be removed or disturbed during project construction, operation, and maintenance.

Recreation, Land Use, and Aesthetics

14. Section 6.8 of the PAD describes the non-project Foothills Trail, which is managed through off-license agreements with the Foothills Trail Conservancy. During scoping meetings for the project, several individuals commented on the need to maintain or improve access to the Foothills Trail as part of the relicensing of the Bad Creek Project. Please clarify whether or not Duke Energy intends to evaluate improvements to the Foothills Trail (including additional parking areas or trailheads) as part of the project's relicensing.

15. During scoping meetings, several individuals commented about potential effects of construction of the Bad Creek II Complex on access to the Foothills Trail. Please describe how construction of the Complex would affect access to or use of access roads, parking areas, or trailheads associated with the Foothills Trail. Please also discuss construction-related effects to the trail itself and trail users, including changes in quality of the recreation experience during construction. Provide a discussion of the timing and duration of any effects in relation to the recreation season and the trail's peak use periods.

Noise, Air Quality, and Traffic

16. Section 5.6 of the PAD describes Duke Energy's preliminary proposal for construction of the Complex and the PAD provides some description of anticipated effects of construction of the Complex on environmental resources. So that we have a full understanding of the potential effects of construction of the Complex on environmental and other resources, please provide a description of the anticipated effects of construction on noise (including frequency, duration, and level in decibels), air quality (including airborne debris and dust, as well as heavy vehicle emissions), and traffic (including proposed routes for heavy equipment used for construction or spoil disposal,

temporary or permanent road closures, and parking or laydown areas for vehicles or equipment).

Literature Cited

APLIC (Avian Power Line Interaction Committee). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.

APLIC. 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute and APLIC. Washington, D.C.

APLIC and FWS (U.S. Fish and Wildlife Service). 2005. Avian Protection Plan Guidelines. Available at:
https://www.aplic.org/uploads/files/2634/APPguidelines_final-draft_Aprl2005.pdf. Accessed January 24, 2022.

SCHEDULE B ADDITIONAL STUDY REQUEST

To assist Commission staff with its analysis under the National Environmental Policy Act (NEPA), we recommend that the Duke Energy Carolinas, LLC conduct an Environmental Justice Study (EJ Study) for the Bad Creek Pumped Storage Project (Bad Creek Project). Pursuant to section 5.9 of the Commission's regulations we address the seven study request criteria below.

Environmental Justice Study

Goals and Objectives

§5.9(b)(1) Describe the goals and objectives of each study proposal and the information to be obtained.

The proposed EJ Study has five objectives: (1) to identify presence of environmental justice communities that may be affected by the relicensing of the Bad Creek Project, including the construction of the Complex, and identify outreach strategies to engage the identified environmental justice communities in the relicensing process, if present; (2) to identify the presence of non-English speaking populations that may be affected by the project and identify outreach strategies to engage non-English speaking populations in the relicensing process, if present; (3) to discuss effects of relicensing the project on any identified environmental justice communities and identify any effects that are disproportionately high and adverse; (4) to identify mitigation measures to avoid or minimize project effects on environmental-justice communities; and (5) to identify sensitive receptor locations within the project area and identify potential effects and measures taken to avoid or minimize the effects to such locations, if they are present.

Relevant Resource Management Goals and Public Interest Considerations

§5.9(b)(2) — If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Not applicable.

§5.9(b)(3) — If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*,¹ and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*,² as amended, require federal agencies to consider if impacts on human health or the environment would be disproportionately high and adverse for environmental justice communities in the surrounding community resulting from the programs, policies, or activities of federal agencies.

Further, Sections 4(e) and 10(a) of the Federal Power Act require the Commission to give equal consideration to all uses of the waterway on which a project is located, and what conditions should be placed on any license that may be issued. In making its license decision, the Commission must equally consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

Existing Information and Need for Additional Information

§5.9(b)(4) Describe existing information concerning the subject of the study proposal, and the need for additional information.

The information necessary to conduct an identification of environmental justice communities near the project is available through the U.S. Census Bureau's American Community Survey; however, such information must be aggregated and compared in order to make determinations about the presence of environmental justice communities within the project area. The nature of effects of the project on any communities present would need to be determined through consultation with the communities, and are dependent on the applicant's relicensing proposal.

Project Nexus

§5.9(b)(5) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

Project construction, operation, and maintenance has the potential to affect human health or the environment in environmental justice communities. Examples of resource impacts may include, but are not necessarily limited to, project-related effects on: erosion

¹ 86 Fed. Reg. 7,619-7,633 (January 27, 2021).

² 59 Fed Reg. 7,629-7,633 (February 16, 1994).

or sedimentation of private properties; groundwater or other drinking water sources; subsistence fishing, hunting, or plant gathering; access for recreation; housing or industries of importance to environmental justice communities; and construction-or operation-related air quality, noise, and traffic.

Proposed Methodology

§5.9(b)(6) *Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.*

Below, we provide the methodology that Commission staff has adopted for collecting environmental justice data for hydroelectric projects. This methodology has been successfully employed on a number of projects in the licensing process and is consistent with guidance from the Environmental Protection Agency's *Promising Practices for EJ Methodologies in NEPA Reviews* (2016).³ Please prepare an Environmental Justice Study Report that provides the following:

- a) A table of racial, ethnic, and poverty statistics for each state, county, and census block group within the geographic scope of analysis. For the project, the geographic scope of analysis is all areas within 1 mile of the project boundary, and within 5 miles around the proposed construction of the Complex. The table should include the following information from the U.S. Census Bureau's most recently available *American Community Survey 5-Year Estimates* for each state, county, and block group (wholly or partially) within the geographic scope of analysis:
 - i. Total population;
 - ii. Total population of each racial and ethnic group (i.e., White Alone Not Hispanic, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, some other race, two or more races, Hispanic or Latino origin [of any race]) (count for each group);

³ Available online at https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.

- iii. Minority population including individuals of Hispanic or Latino origin as a percentage of total population;⁴ and
- iv. Total population below poverty level as a percentage.⁵

The data should be collected from the most recent *American Community Survey* files available, using table #B03002 for race and ethnicity data and table #B17017 for low-income households. A template table is provided below.

- b) Identification of environmental justice populations by block group, using the data obtained in response to part a above, by applying the following methods included in EPA's *Promising Practices for EJ Methodologies in NEPA Reviews* (2016).
 - i. To identify environmental justice communities based on the presence of minority populations, use the "50-percent" and the "meaningfully greater" analysis methods. To use the "50-percent" analysis method, determine whether the total percent minority population of any block group in the affected area exceeds 50-percent. To use the "meaningfully greater" analysis, determine whether any affected block group affected is 10-percent greater than the minority population percent in the county using the following process:
 - 1. Calculate the percent minority in the reference population (county);
 - 2. To the reference population's percent minority, add 10-percent (i.e., multiply the percent minority in the reference population by 1.1); and
 - 3. This new percentage is the threshold that a block group's percent minority would need to exceed to qualify as an environmental justice community under the meaningfully greater analysis method.

⁴ To calculate the percent total minority population, subtract the percentage of "White Alone Not Hispanic" from 100 percent for any given area.

⁵ To calculate percentage of total population below poverty level, divide the total households below the poverty level by the total number of households and multiply by 100.

- ii. To identify environmental justice communities based on the presence of low-income populations, use the “low-income threshold criteria” method. To use the “low-income threshold criteria,” the percent of the population below the poverty level in the identified block group must be equal to or greater than that of the reference population (county).
- c) A map showing the project boundary and location(s) of any proposed project-related construction in relation to any identified environmental justice communities within the geographic scope. Denote on the map if the block group is identified as an environmental justice community based on the presence of minority population, low-income population, or both.
- d) A discussion of anticipated project-related effects on any environmental justice communities for all resources where there is a potential nexus between the effect and the environmental justice community. For any identified effects, please also describe whether or not any of the effects would be disproportionately high and adverse.
- e) If environmental justice communities are present, please provide a description of your public outreach efforts regarding your project, including:
 - i. a summary of any outreach to environmental justice communities conducted prior to filing the application (include the date, time, and location of any public meetings beyond those required by the regulations);
 - ii. a summary of comments received from members of environmental justice communities or organizations representing the communities;
 - iii. a description of information provided to environmental justice communities; and
 - iv. planned future outreach activities and methods specific to working with the identified communities.
- f) A description of any mitigation measures proposed to avoid and/or minimize project effects on environmental justice communities.
- g) Identification of any non-English speaking groups, within the geographic scope of analysis, that would be affected by the project (regardless of whether the group is part of an identified environmental justice community). Please describe your previous or planned efforts to identify and communicate with these non-English speaking groups, and identify and describe any measures that you propose to avoid and minimize any project-related effects non-English speaking groups.

- h) If new construction is proposed, identification of sensitive receptor locations (e.g., schools, day care centers, hospitals, etc.) within the geographic scope of analysis. Show these locations on the map generated in step c. Provide a table that includes their distances from project facilities and any project-related effects on these locations, including measures taken to avoid or minimize project-related effects.

This study should be conducted in consultation with other relicensing stakeholders who express interest. When you file your final study report with the Commission, please include documentation of any consultation you conducted with entities that expressed interest in environmental justice, copies of their comments, and an explanation of how you have addressed their comments in your final response.

Level of Effort and Cost

§5.9(b)(7) Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

The estimated cost of all efforts to complete this study is \$50,000.

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Robert H. Boyles, Jr.
Director

Lorianne Riggan
Director, Office of
Environmental Programs

June 23, 2022

Electronic Transmission

Hon. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

REFERENCE: Comments on the Pre-Application Document, Scoping Document 1, and Study Requests for Bad Creek Pumped Storage Project (P-2740-053).

Dear Secretary Bose:

The South Carolina Department of Natural Resources (SCDNR) has reviewed the Pre-Application Document (PAD) prepared by Duke Energy Carolinas, LLC (Licensee) and Scoping Document 1 (SD1) prepared by the Federal Energy Regulatory Commission (Commission or FERC) for the proposed relicensing of the Bad Creek Pumped Storage Project, FERC Project No. 2740 (Project). The Licensee has chosen to utilize the Commission's Integrated Licensing Process (ILP) to relicense the Project.

This letter is provided in response to the Commission's notice of April 22, 2022, solicitation for public comments on the PAD, SD1, and identification of issues and study requests related to the proposed relicensing of the Project. The SCDNR submits these comments, opinions, and recommendations in accordance with provisions of the Fish and Wildlife Coordination Act, as amended (16 U.S.C. Sec. 661-667); the Federal Power Act (16 U.S.C. Sec. 791 et seq.); the National Environmental Policy Act (42 U.S.C. Sec. 4321 et seq.); and the Electric Consumers Protection Act of 1986 (Pub. L. No. 99-495, 100 Stat. 1243).

Project Description

The Project is located in Oconee County, South Carolina, approximately eight miles north of the Town of Salem. The Bad Creek Reservoir (or upper reservoir) was formed from the damming of Bad Creek and West Bad Creek and serves as the Project's upper reservoir. Lake Jocassee, licensed as part of the Licensee's Keowee-Toxaway Hydroelectric Project (FERC Project No. 2503), serves as the lower reservoir. The Project is located on a headwater tributary of the

Savannah River. The Project facilities consist of an upper reservoir, a main dam, a west dam, an east saddle dike, a water conveyance system, an underground powerhouse, access roads, and voltage transformation facilities. The Project has a total installed capacity of 1,400 megawatts (MW). The total average annual generation of the Project is about 1,884,685 megawatt-hours (MWh). The Project is operated under the terms of the Project's original license, set to expire on July 31, 2027.

The Licensee has proposed to assess the feasibility to develop a Bad Creek II Complex (Complex) during the pre-filing period of the ILP's relicensing process. The Complex would consist of the following new facilities or structures: (a) upper reservoir inlet/outlet structure, (b) water conveyance system, (c) underground powerhouse, (d) powerhouse access tunnels, (e) lower reservoir inlet/outlet structure, (f) switchyard, (g) transformer yard, and (h) transmission line. The Complex powerhouse would include four, new reversible pump-turbine units with an installed generating capacity between 106 MW and 425 MW, and a starting capacity between 308 MW and 372 MW for pumping. Average annual generation for the Project would increase by up to 25,856 MWh. With the new pump-turbine units, generating and pumping capacity would increase due to a combination of an increase in flow and improvement in the hydraulic design of the generation runners. The overall cycle capacity would increase by an estimated 80 percent when all four units are in operation.

SCDNR Responsibilities and Objectives

The SCDNR is the state agency charged by state law with the management, protection, and enhancement of wildlife, fisheries, and marine resources in South Carolina. The SCDNR is responsible for formulating comprehensive policies for water resources through a State Water Plan to address issues affecting water supply, water quality, navigation, hydroelectric power, outdoor recreation, fish and wildlife needs, and other water resource interests. The SCDNR is also charged with the statewide responsibilities for regulating watercraft operation and associated recreation on state waters, conducting geological surveys and mapping, promoting soil and water conservation, management of invasive aquatic plants, flood mitigation, drought response planning and coordination, and the state scenic rivers program. The SCDNR's mission is to serve as the principal advocate for and steward of South Carolina's natural resources. The SCDNR authorities and responsibilities are described in Titles 48, 49, and 50, South Carolina Code of Laws (1976), as amended.

The SCDNR's interests and management objective for the Bad Creek Pumped Storage Project include the protection, enhancement, and restoration of natural resources and their associated values. Specific objectives are to:

- Ensure the FERC license recognizes that the waters and land surrounding the Bad Creek Reservoir, Lake Jocassee, and Savannah River are important public trust resources, and that the Project is managed to achieve public benefits.
- Maintain and/or enhance the water quality conditions to meet state standards and current use classifications that protect and provide for fish and wildlife habitat, contact recreation, and public water supply.

- Ensure the implementation of appropriate water management and downstream flows to be consistent with the South Carolina Water Plan to protect water quality, provide for reasonable navigation, protect fish and wildlife resources, and meet present and future water supply demands (municipal, industrial, agricultural).
- Protect and enhance fish and wildlife populations and their habitat by:
 1. Minimizing entrainment mortality for fish;
 2. Developing shoreline management plans to protect and enhance shoreline and littoral habitats for aquatic species, as well as environmentally sensitive areas and natural communities of concern from future development and shoreline erosion;
 3. Implementing long-term monitoring strategies to ensure protection of key aquatic species and to appraise restoration and enhancement efforts;
 4. Reducing negative effects to stream fish populations caused by habitat fragmentation resulting from the dams and lakes and monitoring the viability of key conservation species potentially impacted by fragmentation, such as rare, threatened, and endangered (RTE) species and species of conservation concern identified in the State Wildlife Action Plan; and
 5. Minimizing the spread of exotic, invasive species; and increasing the acreage of protected natural areas.
- Protect and enhance public opportunities for fishing, hunting, wildlife viewing, boating, and other outdoor recreation by:
 1. Expanding and improving existing areas and facilities to meet user needs;
 2. Developing, based on user needs and capacity, new locations for recreation areas/facilities;
 3. Increasing land areas designated for outdoor recreation and wildlife conservation;
 4. Designing and implementing management plans for facilities to minimize crowding and safety problems.
 5. Ensuring facilities comply with the Americans with Disabilities Act Standards for Accessible Design;
 6. Improving safety and law enforcement among recreational users; and
 7. Protecting aesthetic values within the Project area.
- Protect any significant historic, cultural, or archaeological resources from human and natural impacts.

Comments on PAD

The SCDNR understands the purpose of the PAD is to provide the Commission, federal and state agencies, and other interested stakeholders with background information related to Project facilities and other aspects of the Project, such as engineering, operational, economic, and

environmental considerations. The PAD is also intended to define pertinent Project issues and potential study needs. Under FERC regulations, the Licensee is required to complete the PAD using existing, relevant, and reasonably available information that is pertinent to the Project. The SCDNR provides the following comments in response to solicitation for public comment.

Section 5.4.4 Lower Reservoir Inlet/Outlet Structure

This section describes the Project's existing lower reservoir inlet/outlet structure and references steel trash racks. The SCDNR requests information regarding the dimensions and bar spacing of the existing trash rack structure to better understand the Project's impact on aquatic species.

Section 5.4.5 Submerged Weir in Lower Reservoir

This section describes a submerged weir located 550 meters downstream of the Project inlet/outlet structure on the lower reservoir. According to the PAD, the weir's location in the Whitewater River cove serves to dissipate the energy of the discharged water and minimize the effects of warm water from Bad Creek's upper reservoir warm water, by preventing the water from mixing with the lower cool-water layers of Lake Jocassee. The weir was constructed out of nearly half a million cubic yards of rock excavated during the construction of the Project. The SCDNR requests further information regarding 1) the dimensions of the weir (feet), 2) how the Licensee inspects the weir to ensure the weir continues to function as designed, 3) the frequency of inspections, and 4) information on any maintenance that has occurred. Section 6.3.10.2 states that spoil from the proposed construction of the Complex will be added to the downstream slope of the weir. The SCDNR requests further information regarding why the spoil should be added to the weir and how the Licensee selected the downstream slope of the weir. Additionally, since the submerged weir is located 40-50 feet below the water surface, how will the Licensee ensure the correct placement of the spoil and avoid excess turbidity and aquatic habitat degradation during deployment?

Section 5.5.1 Current and Proposed Operations

This section notes that the Licensee currently operates the Project on a "daily cycle" mode, defined as alternating between generating and pumping on a daily basis, with the reservoir typically maintained in the upper 50 to 60 ft at elevations of 2,310 and 2,250 ft msl (compared to a maximum drawdown of 160 ft). However, the PAD does not discuss how the Licensee intends to operate the Project during a subsequent license term with the addition of the proposed Complex. The SCDNR requests further information with regards to the Licensee's proposed operations at the Project including the frequency and magnitude of drawing down and refilling the Bad Creek's upper reservoir.

Section 5.6.2 Proposed Project Facilities

This section discusses the design specifications of the Licensee's proposed Complex. The details included in the upper reservoir's inlet/outlet configuration includes a coarse opening trash rack at each tunnel inlet. However, further specifications of the trash racks, including the bar spacing is not included. Additionally, no such trash rack feature was included in the proposed lower

reservoir’s inlet/outlet structure configuration. The SCDNR requests the additional information to better understand the Project’s effects on aquatic species.

Section 6.1.3.2 Water Use & Table 6.1-5

Table 6.1-5 should include the following waterbodies within the Lake Jocassee Watershed:

Name	State	Description	Surface Water Classification
Coley Creek	SC	The portion of the creek in SC	TPGT
Devils Hole Creek	SC	The entire creek tributary to Lake Jocassee	TPGT
Howard Creek	SC	The portion below Bad Creek to Lake Jocassee	TN
Jackie’s Branch	SC	The entire creek tributary to Lake Jocassee	TN
Mill Creek	SC	The entire creek tributary to Lake Jocassee	TPGT

Section 6.1.5 Tributary Rivers and Streams

This section should include Howard Creek, which includes Limber Pole and Corbin Creeks, as a contributing significant tributary draining directly to Lake Jocassee.

Section 6.3.10.1 Impact on Water Exchange Between the Upper and Lower Reservoirs

This section notes that previous analyses have shown that if the entire Bad Creek Reservoir active storage volume was released, then the impact on Lake Jocassee would be a 4-ft increase in water level. The SCDNR notes that the subsequent refilling of the full volume of Bad Creek Reservoir would decrease the elevation of Lake Jocassee by four feet. Additionally, this section notes that the combined capacity of Bad Creek and the Complex would allow the Licensee to reduce the drawdown time from 23 hours to 11 hours and reduce the pumping refill time from 26 hours to 13. Therefore, the additional capabilities of the Complex will allow for twice the amount of water exchange, increasing the likelihood of negative impacts to aquatic species, recreation, water quality, and shoreline erosion rate in the lower reservoir.

Section 6.3.10.3 Spoil Locations & Figure 6.3-7

This section identifies the potential spoil disposal sites to be utilized during the construction of the proposed Complex. The SCDNR notes that the fill impacts appear to be in and around streams. Headwater and wetland systems provide an important link between upland watersheds and downstream aquatic environments. The SCDNR requests further information regarding the alternatives analysis associated with the selection of the areas identified as preferred and

potential spoil locations. Additionally, please describe the types of environmental impacts associated with the various alternatives and any avoidance and minimization measures taken. Additionally, the SCDNR recommends that revegetation on spoil piles should be native species appropriate for the ecoregion and should exclude plant species found on the exotic pest plant council list: https://www.se-eppc.org/southcarolina/SCEPPC_LIST2014finalOct.pdf. The SCDNR prefers the use of native warm season grasses and/or other native forbs that would be beneficial for wildlife and pollinators for stabilization for the spoil areas. Native warm season grass species suggestions include switchgrass (*Panicum virgatum*), indiagrass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*) and little bluestem (*Schizachyrium scoparium*). A list of beneficial pollinator plant species, such as milkweed (*Asclepias* spp.), for the southeast may be found at www.xerces.org/pollinators-southeast-region/ or by visiting <http://www.pollinator.org/guides>. The SCDNR strongly discourages the use of Sericea Lespedeza (*Lespedeza cuneata*) due to its invasive nature and lack of benefit to wildlife¹.

Section 6.4.2 Environmental Studies and Agreements under the Work Plans

The SCDNR finds value in continuing to monitor and mitigate for fish entrainment impacts, especially to forage species, at the Project. The additional pumping cycles at the proposed Complex site will increase the rate of entrainment and impingement of aquatic species throughout the term of a subsequent license.

Section 6.7.1 Federally Listed Threatened, Endangered, and Candidate Species

The SCDNR recommends including the federally endangered gray bat (*Myotis grisescens*) in the Project's list of federally listed threatened, endangered, and candidate species. Further, the SCDNR recommends the gray bat be included in the acoustic KPro analysis and results table, in addition to files being reviewed by a qualified biologist to evaluate potential presence. Though gray bat calls have little overlap with other *Myotis* species, they can overlap with calls of Tri-colored bats – the most common species detected in the Bad Creek 2021 Bat Survey Report. Gray bat records exist in Transylvania County, North Carolina, located less than a mile north of the Project. The closest gray bat records are the SCDNR validated gray bat calls detected at a bridge approximately nine miles from the Project in 2020, and at a site approximately 15 miles northeast of the Bad Creek Reservoir (personal communication with NC bat biologist). Due to these records and the gray bat's ability to extend their range 27 km (16.8 mi) (LaVal et al. 1977) from roost sites to forage, there is a chance the gray bat could be located within the Project Area.

¹ Native to eastern Asia, Sericea Lespedeza is considered a noxious, invasive plant pest, earning a "severe threat" designation by the South Carolina Exotic Pest Plant Council. A study of a reclaimed mine in Virginia found that northern bobwhite (*Colinus virginianus*) populations were limited due to poor habitat quality resulting from the monoculture plantings of Sericea Lespedeza and Tall Fescue (*Festuca arundinacea*) (Stauffer 2011). At a former surface mine site in Kentucky (now Peabody Wildlife Management Area), a 2015 study demonstrated that areas dominated by Sericea Lespedeza were not preferred habitat for bobwhite (Unger et al.), as it is not a preferred food for bobwhite (Ellis 1961), nor does it contain enough nutritional value to support a bobwhite population (Newlon et al. 1964).

Appendix E Natural Resources Assessments

The SCDNR notes that three State Listed Species occur in the Project Area and should be included in the Natural Resources Assessment Report. Please note take of state listed species is prohibited under S.C. Code of Laws §50-15-30.

Species name	State Status
Eastern Small-footed Bat (<i>Myotis leibii</i>)	State Threatened
Rafinesque’s Big-eared Bat (<i>Corynorhinus rafinesquii</i>)	State Endangered
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	State Threatened

Section 6.0 Summary of Potential Environmental Impacts and Agency Coordination

This section, including related Tables 8 and 10 and Figures 12 and 13, identify the Licensee’s preferred spoil sites. However, it is unclear to the SCDNR how the Licensee selected and prioritized the potential spoil sites, as previously mentioned. The SCDNR requests further information with regards to how the Licensee intends to select a site or sites for deposition of construction spoil, as well as what avoidance and minimization measures were considered.

Appendix F Desktop Entrainment Analysis

The SCDNR notes that the estimated percentage (12%) of entrainment of the threadfin shad population in Lake Jocassee is a high rate that should continue to be monitored. Threadfin shad are an important prey species for most sportfish in Lake Jocassee. The Project’s entrainment study conducted in the first three years of Project operations (1991-1993) (Barwick et al. 1994) found that entrainment rates increased when the water elevations in Lake Jocassee were below 334 meters for a total of 30 days annually. Further, the increased rates resulted in a stable or slightly declining population of threadfin shad. The SCDNR’s interests with this issue are to understand the effects of entrainment on fish populations and to evaluate methods to avoid and minimize these impacts. The SCDNR recommends the findings from Barwick et al. 1994 should be included in the Project’s PAD.

Appendix G 2021 Bat Survey Report

Section 4.1 Records Review

The SCDNR notes that caution in interpretation is also appropriate for the following species that can share significant overlap in call type:

- Northern long-eared bat versus Eastern small-footed bat
- Eastern red bat versus Seminole bat

The SCDNR disagrees with the following statement: “While no federally listed northern long-eared bats were found near the Project site, the recent discovery of the summer presence of pregnant females in the South Carolina Coastal Plain may indicate a migratory presence in more upland regions of the state.” The lack of captures in the middle of the state, despite SCDNR’s netting efforts since 2016, suggests spatially disjunct populations in South Carolina (Blue Ridge versus Coastal Plain population) similar to the disjunct populations known to occur in North Carolina. In 2013, prior to white-nose syndrome (WNS) being detected in South Carolina, northern long-eared bats were present and breeding in Oconee, Pickens, and Greenville counties. However, extirpation from the Blue Ridge ecoregion due to WNS mortality seems likely.

Section 4.2 Habitat Surveys

For emergence bat call surveys, the SCDNR recommends that the Licensee should utilize the same bat detector recorder type used during other acoustic surveys (e.g., SM3BAT or Echometer Touch 2), for improved quality call collection, identification, and consistency.

Comments on Scoping Document 1

Section 1.0 Introduction

This section should note that the Project is located on a headwater tributary to the Savannah River.

Section 5.0 Proposed Studies

The SCDNR accepts all twelve initial study proposals by the Licensee.

Section 9.0 Mailing Lists

The SCDNR requests the following individuals be added to FERC’s official mailing list for the Bad Creek Pumped Storage Project:

Ms. Lorianne Riggins
South Carolina Department of Natural
Resources
PO Box 167
1000 Assembly Street
Columbia, South Carolina 29202

Ms. Elizabeth Miller
South Carolina Department of Natural
Resources
PO Box 12559
217 Fort Johnson Road
Charleston, South Carolina 29422-2559

Study Requests

The SCDNR finds the initial list of study proposals from the Licensee to be thorough and adequate to assess the potential impacts to natural resources affected by Project operations. The

Kimberly D. Bose, Secretary
COMMENTS on Bad Creek Pumped Storage Project (P-2740-053) PAD, SD1, and Study Requests
June 23, 2022

SCDNR plans to continue to be an active participant in study plan review for each of the proposals.

The SCDNR appreciates the opportunity to review and provide comments and recommendations regarding the PAD and SD1 for the Bad Creek Pumped Storage Project. If you have any questions or need additional information, please do not hesitate to contact me by phone at 843-953-3881 or email at millere@dnr.sc.gov.

Sincerely,



Elizabeth C. Miller
FERC Coordinator, SCDNR

cc: Alan Stuart, Duke Energy
Melanie Olds, USFWS
Chuck Hightower, SCDHEC
Derrick Miller, USFS

Reference:

- Barwick, D.H., T.C. Folsom, L.E. Miller, and S.S. Howie. 1994. Assessment of Fish Entrainment at the Bad Creek Pumped Storage Station. Duke Power Company. Huntersville, NC.
- LaVal, R. K., R. L. Clawson, M. L. LaVal, and W. Caire. 1977. Foraging behavior and nocturnal activity patterns of Missouri bats, with emphasis on the endangered species *Myotis grisescens* and *Myotis sodalis*. *Journal of Mammalogy* 58:592–599.

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June 23, 2022

Electronically Filed

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Subject: Foothills Trail Conservancy's Comments on Duke Energy's Bad Creek Pumped Storage Project (P-2740-053) Submittals (SD1, NOI, and PAD)

The Honorable Ms. Bose,

Since 1974, the Foothills Trail Conservancy (FTC) nonprofit organization has been at the forefront of collaborative efforts to create, maintain, protect, and expand the Foothills Trail – a preeminent long-distance hiking trail in the Carolinas. With a part-time Executive Director and all-volunteer Board of Directors, FTC continues to lead efforts to construct and maintain the walking path and related appurtenances on many sections of the Trail.

The Foothills Trail is a 77-mile hiking-only National Recreation Trail that showcases the beauty and diversity of the Blue Ridge Region in North and South Carolina. In addition to the 77-miles that form the mainstem or “spine”, over 30 miles of existing spur trails connect to and expand access to and from the Foothills Trail (the Trail). The Trail leads hikers through the Blue Ridge Escarpment, one of the most ecologically diverse places in the world; past numerous waterfalls, incredible vistas, rare plants, abundant wildlife, through multiple state parks, across Sassafras Mountain (the highest mountain in SC) -- and includes unparalleled access to the Chattooga River, a nationally-designated Wild & Scenic River, and the Jocassee Gorges Management Area, which was included in National Geographic magazine's “50 of the Last Great Places – Destinations of a Lifetime”.

Located within a region experiencing incredible population growth (mid-way between Atlanta and Charlotte, and about an hour drive from Greenville, SC and Asheville, NC), the Trail system provides important recreational and educational opportunities to tens of thousands of nearby residents and draws visitors from around the world. Many people are relocating to North Carolina and South Carolina, making them some of the fastest growing states in the nation.¹ As people continue to discover this spectacular corner of the world, we're also seeing the demand for outdoor recreation skyrocket. NC and SC State Parks within this region have experienced significant surges in visitor use,² pushing some to implement a parking reservation system and to turn users away during busy weekends.³

¹ <https://www.census.gov/library/visualizations/2021/comm/how-does-your-state-compare.html>

² North Carolina State Parks Report Record 22.8 Million Visitors in 2021. <https://www.ncdcr.gov/news/press-releases/2022/01/25/north-carolina-state-parks-report-record-228-million-visitors-2021>

³ <https://southcarolinaparks.com/jones-gap>

Foothills Trail Conservancy's Comments on Bad Creek Pumped Storage Project (P-2740)

Creation of the existing Trail was a tremendous accomplishment that involved decades of collaborative efforts among federal and state governments, utilities, nonprofit organizations, private landowners, and numerous dedicated individuals. In addition to FTC and Duke Energy, numerous partner organizations assisted in making the Trail a reality. Due to the unusual nature of the Bad Creek Pumped Storage Project - with no recreational access to the Reservoir allowed - the Recreation component of the Original License was provided entirely by construction and maintenance of the 43-mile center section of the nearby Foothills Trail. Duke Energy (Duke) continues to be a critical partner in the sustained existence of this important regional and national recreational resource.

Examples of additional partners include the SC Department of Parks, Recreation & Tourism, SC Department of Natural Resources, NC Division of Parks and Recreation, NC Wildlife Resources Commission, and USDA Forest Service (Andrew Pickens and Nantahala Districts), Oconee and Pickens Counties, Naturaland Trust, Conserving Carolina, and many others. Additionally, FTC has coordinated countless volunteer efforts to assist in construction and maintenance activities – for example, over 2,200 volunteer hours in 2021 alone!

Continued support, enhancement, and expansion of the Trail should be the priority solution for meeting recreational needs for the proposed New License - and more recreation should be added if the proposed Complex construction occurs. A variety of factors must be considered to ensure the continuation of this unmatched resource, from permanent protection of an expanded Trail corridor to maintain Trail experience and allow flexibility as needed; to comprehensive assessment of future needs, current conditions, and both previous and anticipated costs. Future conditions include impacts from potential changing land use, impacts of climate change on recreational needs in the Trail area, needs for expanded/improved access, parking, camping sites, and/or appurtenances (e.g., pit toilets, bear proof lockers). Current conditions include an inventory of and map showing land ownership of all parcels the Trail traverses, legal agreements related to trail infrastructure (e.g., lease agreements), and a detailed inventory of trail-related infrastructure that is Duke's responsibility to maintain. Additional information needs include construction costs, maintenance costs, current condition, and projected maintenance schedule. Our community has provided a significant match to Duke's investment in recreational resources through thousands of volunteer hours each year and through assistance with Trail improvements. FTC values the ongoing cooperative partnership with Duke and looks forward to our continued shared dedication to the Foothills Trail.

We appreciate the opportunity to participate as a stakeholder in the relicensing process for the Bad Creek Pumped Storage Project (the Project), including the proposed construction of the 1,400-MW Bad Creek II Power Complex (the Complex) that would double capacity of this facility. We look forward to continued collaboration with Duke, as well as additional stakeholders and the Federal Energy Regulatory Commission (FERC) to ensure that the new license adequately provides for the recreational and natural resource protection needs of the region.

To broadly summarize, FTC's priority interests are repairing, enhancing, expanding, and permanently protecting Duke's 43-mile section of the Trail, to ensure the exceptional experience provided by the entire Foothills Trail continues for current and future generations.

Foothills Trail Conservancy's Comments on Bad Creek Pumped Storage Project (P-2740)

Although the Trail provides opportunities to recreate within an exceptional landscape, its future is at risk from potential land development, loss of legal access to the corridor, degraded quality due to improper maintenance or overuse, and climate change.

We applaud Duke's interest in continued support of the Trail and respectfully request inclusion of expanded assessments and additional measures as part of the Relicensing, as well as for the construction of the proposed Complex.

Foothills Trail Conservancy is pleased to offer the following detailed comments and recommendations on Duke's Scoping Document 1 (SD1) and the Pre-Application Document (PAD).

Sincerely,



Andrew Gleason
Foothills Trail Conservancy Board Chairman

COMMENT 1: Project infrastructure and capacity seems to have changed over time. Clear and consistent information regarding infrastructure size and Project capacity changes over time should be provided. The current discrepancies between Scoping Document 1 (SD1), Pre-Application Document (PAD), and the Original License should be corrected or more fully explained if conditions have been modified since the approval of the Original License.

1a) This information, including completed and ongoing modifications, could be summarized in a table to provide FERC and stakeholders a clear understanding of infrastructure details. Specific examples of inconsistent information or confusing presentation are provided below.

Bad Creek Reservoir Size is listed as:

- 318-acre with storage capacity of 33,323 acre-feet (Original License),
- 367-acre with storage capacity of 33,900 acre-feet (NOI),
- 363-acre with storage capacity of 35,513 acre-feet (PAD 1.1 and 5.4.1),
- 318-acre with storage capacity of 33,323 acre-feet (PAD 6.3.1.1).

Bad Creek installed capacity is listed as:

- 1,000 MW at Bad Creek (Original License),
- 1,400 MW at Bad Creek plus 1,400 MW from proposed new Complex for authorized installed capacity of 2,800 MW (NOI),
- 2,200 MW combined capacity of Bad Creek and Jocassee, with another 280 MW planned to come online by 2023 with completion of ongoing upgrades to the pump-turbine units at Bad Creek (PAD 1.2),
- 1,400 MW proposed new Complex adjacent to existing Bad Creek Powerhouse (PAD).

1b) In cases where impacts are larger than approved in the Original License, an explanation should be provided including additional mitigation measures that have been implemented. For example, stakeholders can deduce that the current ongoing upgrades to the pump-turbine units at Bad Creek will increase installed capacity by 400MW - or 40 percent - beyond that authorized by the Original License. However, it is unclear if potential increased impacts from this construction and upgrades have been evaluated. The documents should be revised to fully discuss impacts from the increased capacity provided by the upgrades currently being installed, including any expanded erosion prevention and recreational mitigation measures being taken to address impacts that are beyond that expected in the Original License.

Comment 1 requests revisions/clarifications to: NOI, PAD: 1.1, 1.2, 5.4.1, 6.3.1.1, 7.1.1.1.

COMMENT 2: Requirements of separate FERC-licensed projects should be kept separate. Recreation provided under a separate FERC License should not count toward the recreational opportunities provided by the Bad Creek License.

Several sections of the PAD include discussion about the Keowee-Toxaway (KT) Project; however, this information is not necessarily relevant as the Bad Creek Pumped Storage Project (P-2740) operates under a separate FERC License from the KT Project (P-2503). In several instances the information provided confuses the conversation as it is unclear how the KT Relicensing Agreement relates to the Bad Creek original Project construction or ongoing Project operation.

While the KT Relicensing Agreement includes critical information related to the KT Project, it should not be relevant to meeting the requirements for the separate and distinct impacts from the Bad Creek Project. Discussions during the KT Relicensing did not consider inclusion of mitigation measures for the Bad Creek Project; hence, requirements of the KT License should not be considered mitigation for Bad Creek. Specific examples are included below.

2a) PAD Section 1.6 (Licensing Background) states both that the Bad Creek Fishery Resources Work Plan was formerly the Keowee-Toxaway Fishery Resources Work Plan and that several activities included in Bad Creek studies were later transferred to the KT Project. Clarification should be provided on related requirements of each Original License and specific activities that were transferred between Licenses.

This section also indicates that Duke and SCDNR collaborated on the development of MOUs (each decade) to establish a framework to help maintain the high quality of fisheries of Lakes Jocassee and Keowee, and that these plans include focus on recreation. Specific recreational benefits provided from these MOUs – that are in addition to those required by the Keowee Toxaway License - should be clearly explained and Duke should provide a copy of each MOU and a summary list of activities successfully completed.

2b) PAD Section 6.8.3.1 (2013 Recreation Use and Needs Study) discusses a study completed in 2013. However, this study did not consider usage of nor the recreational needs provided by the Foothills Trail or the 43-mile section of the Trail that Duke was required to construct and maintain in order to fulfill the Recreation requirements of the Bad Creek Original License. Rather, the 2013 RUN Study evaluated lake access and boating facilities as part of the separate KT Relicensing Project.

Comment 2 suggests revisions/clarifications to PAD 1.2, 1.6, 6.8.3.1, 7.1.6.1.

COMMENT 3: Recreation requirements of the Original License should be accurately and comprehensively discussed. Due to the unusual nature of this project, with no recreational access to the Reservoir allowed, the Recreation component of the Original License was provided entirely by constructing and maintaining the 43-mile center section of the nearby Foothills Trail. A full description of the Trail (including reference to Exhibit R) should be included in discussions regarding protection, mitigation, and enhancement (PM&E) measures and comprehensive information about the Trail infrastructure, construction, and maintenance should be provided.

3a) SD1 3.1.1 and PAD Section 6.8.1 incorrectly state that the Foothills Trail is managed or maintained by the Foothills Trail Conservancy. While FTC maintains and assists with some portions of the Trail, these document sections should be revised to accurately reflect that Duke continues to be responsible for Trail operations and maintenance within the 43-mile section of Trail built to satisfy recreational requirements of the Original License.

In May 1980, Duke submitted “A Plan for Development and Management of the Foothills Trail and A Supplement to the Bad Creek Pumped Storage Project Exhibit R” (Exhibit R) that described ongoing operational, educational, and maintenance needs that would be provided by Duke. These include, but are not limited to:

- Maintaining stream crossing structures, signs, latrines, gates and footpaths within Duke's section of the trail,
- Employing a full-time professional with responsibilities for maintenance and supervision of the Trail and associated facilities,
- Removing trash from access points on a regular basis
- Cleaning up litter along the trail,
- Coordinating with law enforcement,
- Assisting with development of a trail guidebook and offering them at the Visitor Center,
- Educating people on trail-use guidelines by offering a slide show at Keowee-Toxaway Visitor Center and other locations,
- Displaying trail information at the Visitor Center (Including the Trail on the topographic model of the Keowee-Toxaway Project area).

3b) Numerous document sections inaccurately indicate that there is no recreation provided within the Project Boundary. Although most of the Trail is outside of the proposed Project Boundary, public access is currently provided within and adjoining the proposed Project Boundary. The public utilizes Bad Creek Road to access a public parking lot, Foothills Trail kiosk, and a spur trail providing access to the Foothills Trail and to the Lower Whitewater Falls scenic viewpoint. Each of these infrastructure components are shown on the Project Boundary map and should be labeled appropriately.

3c) Wording throughout some sections indicates that recreation was not met "in" the Project Boundary and could be misunderstood to mean that there was no recreation required "for" the Project. Wording should be clarified and additional explanation of the Trail should be added where appropriate.

3d) Several sections mention major PM&E measures required for the original Project construction and list Exhibit S (Environmental Study Plans), Duke and SC Department of Natural Resources (SCDNR) MOU and 10-Year Work Plans, and the Keowee-Toxaway Project Relicensing Agreement FERC No 2503 (KT Project). These sections should include reference to the Bad Creek Project license Exhibit R ("A Plan for Development and Management of the Foothills Trail and A Supplement to the Bad Creek Pumped Storage Project"), which specifies Duke's recreational requirements under the Original License. (SD1; PAD 1.1, 1.6, 6, 6.4.6)

Comment 3 requests revisions/clarifications to SD1, NOI, and PAD 1.1, 1.6, 5.2, 6, 6.4.6, 6.8.1, 6.8.3, 6.8.5, 7.

COMMENT 4: Provide a summary of completed recreation-related projects. Duke should provide comprehensive information regarding fulfillment of the Original License Exhibit R; including a map and complete inventory of infrastructure and appurtenances, construction and maintenance costs, and current conditions of these features throughout the 43-mile section of Trail.

- 4a)** Requested information regarding Duke's 43-mile section includes, but is not limited to:
- Summary of recreation-related requirements from the Original License and actions taken to meet those requirements, including specific measurables.
 - Status and durability of trail-related agreements with landowners.

- Copies of all trail-related legal agreements (lease agreements, etc.).
- Comprehensive inventory for all structures (e.g., parking lots, bridges, stairs, campsites), including, but not limited to structure name, structure material, year constructed, cost of installation, expected lifespan, assessment of current condition, and maintenance records (including costs).
- Associated costs, including past land/easement procurement, trail and infrastructure construction, and trail and infrastructure repairs and maintenance.
- Schedule of anticipated maintenance needs and costs.
- Potential need for acquisition of land and/or easements to ensure existence of Trail corridor in perpetuity for future generations, including projected costs.
- Detailed map(s) of Duke's 43-mile Trail section should be added that includes, at a minimum, the following information: parcel boundaries, current property owner(s), access locations (from water and land), spur trails, land use, structures (e.g., parking lots, bridges, stairs, campsites), streams/wetlands, areas of concern (e.g., erosion, overused parking/campsites), and points of interest.

4b) The history of compliance, including inspection reports should be included. For example, in 2000, FERC conducted an Environmental and Public Use Inspection (EPUI), which covered twenty-four miles of trail and identified a range of maintenance deficiencies that included trees across the trail, footbridges in need of repair, smaller bridges that had been washed out, loose handrails, missing footing steps, soil erosion, etc.

4c) Erosion throughout the trail corridor is a serious concern. Within the last six years, the Trail has experienced several landslides that required rebuilding portions of the Trail. Records of erosion-related problems, best management practices (BMPs), maintenance, and repairs should be included.

4d) Decline of native vegetation would significantly degrade the Trail. An evaluation should be conducted throughout the Trail corridor documenting the health of native vegetation, distribution of invasive species, and impact of diseases. For example, the current condition of Hemlock trees should be assessed, trees with a chance of surviving the Hemlock woolly adelgid should be treated, and non-surviving trees should be replaced. An inventory and map of hemlock trees should be included, noting current condition and anticipated actions.

Comment 4 requests revisions/clarifications to SD1, NOI, and PAD 1.1, 1.6, 5.2, 6, 6.4.6, 6.8.1, 6.8.3, 6.8.5, 7, 7.1.6.

COMMENT 5: Federal and state protections apply to Waters of the US regardless of modification, land ownership, or use of water. As both Waters of the US (WOTUS) and Waters of the State (WoS), the Bad Creek Reservoir and streams/wetlands present within the proposed Project Boundary are subject to federal and state regulations. Wording throughout the documents should be corrected to indicate that regulations, such as water quality standards, do apply. Additionally, monitoring should be conducted to evaluate existing impacts and assess potential future impacts.

The Bad Creek Reservoir was formed by damming Bad Creek and West Bad Creek, which were previously identified as Outstanding Resource Waters (figure 1). Converting streams to open

water (e.g., ponds, lakes, reservoirs) does not remove their qualifications as waters of the U.S. or waters of S.C and regulatory designations continue to apply.

5a) Section 1.5 (Other Major Regulatory Approvals) discusses various regulations related to impacts to waterways and states that new construction will require permits and authorizations from the U.S. Army Corps of Engineers (USACE). This wording could be revised to provide a clearer explanation that activities below the Ordinary High Water Mark (OHWM) are regulated by the USACE and the SC Department of Health and Environmental Control (SCDHEC).

5b) Sections 6.1.3.2 (Water Use) and 6.3.7.1 (Bad Creek Reservoir) incorrectly state that the waters within the Project area are not included in state water quality standards nor water classifications. Waterbodies within Duke's proposed Project Boundary are considered jurisdictional WOTUS and WoS and, as such, are assigned water classifications, must meet applicable water quality standards, and are protected by anti-degradation rules. SCDHEC Regulation 61-68 Water Classifications and Standards clearly states that the regulations "establish the State's official classified water uses for all waters of the State..."⁴

Furthermore, the SCDHEC Watershed Atlas (<https://gis.dhec.sc.gov/watersheds/>) identifies waters within the proposed Project Boundary with the following classifications (figure 1): streams flooded by Bad Creek Reservoir as Outstanding Resource Waters (ORW), the headwaters of Howard Creek as ORW becoming Trout Natural (TN) below the confluence with flow from Bad Creek Reservoir, unnamed stream 1 and impoundment as ORW, and unnamed stream 2 as Trout, Put, Grow, and Take (TPGT).⁵

Section 6.1.3.2 is titled "Water Use"; however, it does not include any discussion of actual water uses, but rather discusses Water Classifications. As such, the section heading should be revised to "Water Classifications and Standards".⁶

Sections 6.3.6 and 6.3.7.1 should be revised to recognize that Bed Creek Reservoir *is* subject to state classification designation and associated standards. As such, water quality monitoring should be conducted to ensure compliance with applicable water quality standards. Modifications or mitigation measures should be implemented, if needed, to address any potential degradation of water quality conditions from ongoing or proposed Project operations.

5c) Section 6.3.4 (Existing and Proposed Uses of Project Waters) and 7.1.2 (Water Resources) state that Bad Creek Reservoir waters are used only for Project operations and that there are no other existing or proposed uses for these waters. However, Section 6.1.1 of the PAD indicates that the Bad Creek Reservoir provides seepage flows from the Main Dam and the West Dam of approximately 5.0 cfs combined. According to the flow data provided by Duke in this section, the flow of Howard's Creek at USGS gauge 02184475 – downstream from Bad Creek Reservoir – ranges from 7.4 cfs (1996) to 12.9 cfs (1990). Further evaluating these data indicates that the Bad Creek Reservoir seepage provides 39 to 80 percent of the flow in Howard Creek. These seepage flows are critical to the continued health of Howard Creek, which is

⁴ SCDHEC Regulation 61-68 Water Classifications and Standards <https://live-sc-dhec.pantheonsite.io/sites/default/files/media/document/R.61-68.pdf>

⁵ SC Watershed Atlas [accessed 03 Jun 2022] <https://gis.dhec.sc.gov/watersheds/>

⁶ SCDHEC Regulation 61-68 Water Classifications and Standards <https://live-sc-dhec.pantheonsite.io/sites/default/files/media/document/R.61-68.pdf>

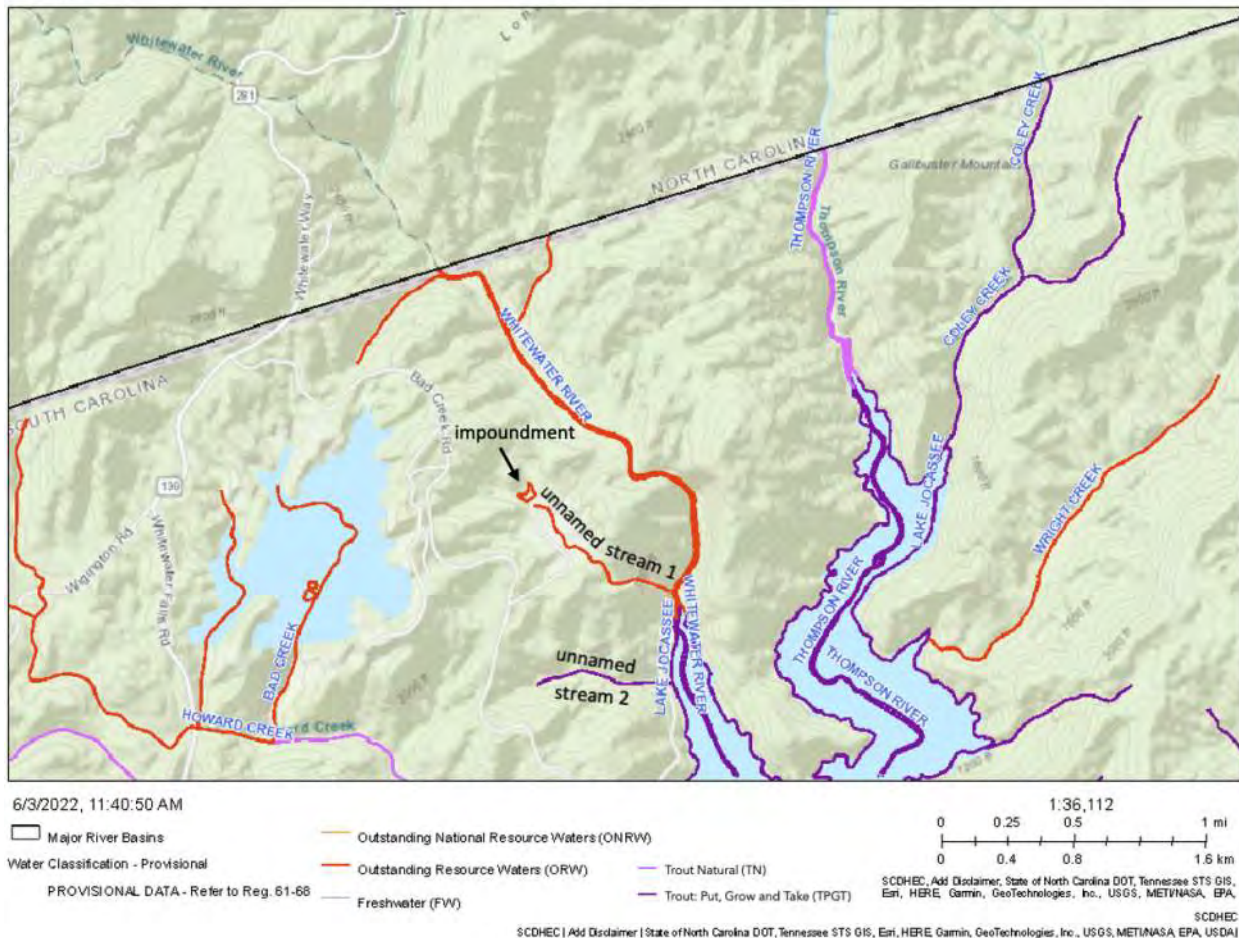
currently designated as an ORW (upstream and along Reservoir) and TN (downstream from Reservoir).

5d) Sections 6.3.8 (Gradient for Downstream Reaches Directly Affected by the Project) and 6.3.9 (Known or Potential Adverse Effects and Proposed PM&E Measures: Existing Operations) should be expanded to include Howard Creek, as it receives a substantial portion of flow from Bad Creek Reservoir and the additional unnamed tributaries to Lake Jocassee located within the Project Boundary. Additional discussion should be included regarding potential impact of continued and modified operations as well as PM&E.

5e) Section 7.1.2.1 (Potential Issues – Existing Project) notes that there are “no known potential adverse effects”; however, PAD Section 6.3.7.1 indicates that there is currently no monitoring, making it impossible to evaluate if there are any existing adverse effects. Additionally, conditions could be further impacted by the completion of the currently ongoing upgrades that will increase capacity from the 1,000 MW, that was mitigated under the Original License, to 1,400 MW. Duke should initiate a water quality monitoring program at the Bad Creek Reservoir to evaluate current impacts and, if needed, propose PM&E.

Comment 5 requests revisions/clarifications to PAD 1.5, 6.1.3.2, 6.3.4, 6.3.6, 6.3.7.1, 6.3.8, 6.3.9, 7.1.2, 7.1.2.1.

Figure 1 SCDHEC Watershed Atlas



COMMENT 6: Natural resources located within the Project Boundary continue to be protected under regulations; current conditions should be fully evaluated and discussed.

6a) PAD Section 7.1.3 (Fish and Aquatic Resources) should provide information regarding current status of fish and aquatic resources in waterways within the Project Boundary. Damming a stream does not remove all potential for fish or aquatic species to exist. In fact, the “world’s most prestigious professional bass tournament” – the Bassmaster Classic – has been held multiple years on Lake Hartwell,⁷ which is located in the chain of lakes downstream from the Bad Creek Reservoir. Fish and other aquatic resources should be evaluated, and potential impacts and PM&E should be determined.

6b) PAD Section 7.1.4.1 ([Wildlife and Botanical Resources] Potential Issues – Existing Project) outlines protection of upland habitat and shoreline management around Lake Jocassee and on the faces of the dams; however, it should be expanded to include a discussion of vegetation and shoreline management around the Bad Creek Reservoir as well. Additional discussion should also be included regarding vegetation management techniques along the transmission line corridor, with emphasis on strategies for reducing impacts to water resources and preventing the introduction and spread of invasive species.

Additionally, the condition of vegetation throughout the corridor of Duke’s 43-mile section of Trail is a serious concern. The evaluation should be expanded throughout the Trail corridor documenting the health of native vegetation, distribution of invasive species, and impact of diseases. For example, the current condition of Hemlock trees should be assessed, trees with a chance of surviving the Hemlock wooly adelgid should be treated, and non-surviving trees should be replaced. An inventory and map of hemlock trees should be included, noting current condition and anticipated actions.

6c) PAD Sections 7.1.5 (Wetlands and Riparian Habitat) and 7.1.5.1 (Potential Issues – Existing Project) – a map indicating location, size, and condition of all jurisdictional waters within the Project Boundary should be included. This section notes that continued operations are not expected to impact wetland, riparian, or littoral habitat, yet the ongoing vegetation maintenance along the transmission line likely involves mowing and/or application of pesticides. These activities can impact these sensitive ecosystems by removing or destabilizing habitat or plant communities; activities can also degrade water quality and increase erosion if appropriate vegetation is not maintained.

Comment 6 requests revisions/clarifications to PAD 7.1.3, 7.1.4, 7.1.4.1, 7.1.5, 7.1.5.1.

COMMENT 7: Current conditions should be evaluated throughout the Trail corridor. A comprehensive evaluation of existing resources and potential impacts of current and ongoing operations, including of current upgrades, to Project-related recreation (i.e., the 43-mile section of Trail and appurtenances constructed and maintained by Duke) should be included. Specific sections are noted below.

7a) SD1 Section 3.2.2 (page 9) should include a discussion of potential threats to Aquatic Resources throughout the Trail corridor. These could include upland soil erosion (potentially caused as a result of a storm, wildfire, or by trail use). Current conditions within the Trail

⁷ <https://andersonscliving.com/good-to-know/2022-bassmaster-classic-coming-to-lake-hartwell/>

corridor should be included in PAD Section 6.2.3 (Reservoir Shoreline and Stream Banks) regarding stream banks and PAD Section 7.1.1.1 (Geology and Soils Potential Issues – Existing Project) regarding any slope instability or erosion.

Without proper controls, stormwater runoff can accelerate erosion, contribute to streambank instability, increase pollutant loading, and degrade the quality of receiving water bodies. Erosion throughout the Trail corridor is a serious concern. Within the last six years, the Trail has experienced several landslides that required rebuilding portions of the Trail. Increased intensity of storm events and our changing climate will continue to amplify these problems. Best management practices (BMPs) that have been installed, such as water bars, may need repair or additional measures may be needed to address these problems throughout the Trail corridor.

Additionally, erosion and vehicle-related spills can occur in parking lots and at access points. For example, recent vandalism at a Trail access parking lot included drilling a hole in a vehicle's gas tank - and resulted in gasoline draining directly to a nearby stream. (See WYFF: [Thieves, vandals strike Foothills Trail parking lot, leaving hikers stranded, woman says](#) 5/30/22). Ensuring BMPs are appropriately constructed and maintained is especially important as we see increasing Trail usage and heightened intensity of storm events.

Also, regarding water quality impacts, there are limited restroom facilities currently available to Trail users - with all located at Trail access parking lots. None of the backcountry, designated campsites have restroom facilities. As noted by the US Department of Agriculture Forest Service (USFS), heavy usage of backcountry trails can result in environmental degradation associated with human waste disposal.⁸ The increasing popularity of the Trail may support the need for pit toilets to reduce potential for human waste to contaminate aquatic resources.

7b) SD1 Section 3.2.2 (page 10) Terrestrial Resources and Threatened and Endangered Species and PAD 6.5.4 ([Wildlife/Botanical] Known or Potential Adverse Effects and Proposed PM&E Measures: Existing Operations). Throughout the Trail corridor, these resources are at an increased threat from spread of invasive species and introduction of diseases, which are associated with both land disturbance and climate change. Invasive species can cause economic and ecological harm and their spread would significantly degrade the ecological integrity and recreational experience of the Trail corridor. Invasive species spread rapidly, outcompete valuable native species, and once established they can be difficult and costly to control. Regular assessments of invasive species throughout the Trail corridor would allow prevention and quick response, helping protect the long-term integrity of the Trail.

Additionally, decline of native vegetation due to diseases or insects would significantly degrade the Trail. An evaluation should be conducted throughout the Trail corridor documenting the health of native vegetation, distribution of problematic insects, and impact of diseases. For example, the current condition of Hemlock trees should be assessed, significant trees with a strong chance of surviving the Hemlock woolly adelgid should be treated, and consideration should be given to preventing erosion and accelerating forest recovery in areas with significant hemlock losses. An inventory and map of hemlock groves should be included, noting current condition and anticipated actions. Climate change is an important consideration for wildlife and botanical resources and should be considered throughout the life of the proposed new license.

⁸ <https://www.fs.fed.us/t-d/pubs/html/95231202/95231202.html>

PAD Section 6.5.2.2 (Invasive Species) should also include a map indicating locations of invasive species throughout the Project-related areas, especially in relation to sensitive species, pristine ecosystems, and the Foothills Trail. Additional information should be provided outlining Duke's efforts and plans to control, eradicate, and prevent movement of invasive species throughout these areas.

7c) The following PAD sections should include a thorough discussion of and maps identifying resources within the Trail corridor: 5.2 (Project Location and Maps), 6.1.5 (Tributary Rivers and Streams), 6.2.1 (Geologic Features), 6.2.4 (Known or Potential Adverse Effects and Proposed PM&E Measures: Existing Operations), 6.3.1 (Drainage Area), 6.3.7 (Existing Water Quality Data), 6.3.8 (Gradient for Downstream Reaches Directly Affected by the Project), 6.3.10.2 (Impacts to Project Streams), 6.5 (Wildlife and Botanical Resources), 6.5.1 (Terrestrial Habitats), 6.5.3 (Known or Potential Adverse Effects and Proposed PM&E Measures: Existing Operations), 6.6 (Wetlands Riparian, and Littoral Habitat), 6.7 (Rare, Threatened, and Endangered Species), 6.7.1.2 (Migratory Bird Treaty Act of 1918), 6.7.1.3 (At Risk Species), 6.7.2 (State-listed Threatened, Endangered, and Candidate Species), 6.7.3 (Known or Potential Adverse Effects and Proposed PM&E Measures: Existing Operations), 6.9 (Aesthetic Resources), and 7.1.1.1 (Geology and Soils Potential Issues – Existing Project).

Climate change is an important consideration for natural resources within the Trail corridor and should be considered throughout the life of the proposed new license. Of particular note is the consideration of wildlife corridors, which will be necessary for species migration due to climate change and should be considered and included in PM&E measures.

Regarding Geologic Features, much of this information can be obtained from the Geology Guide to the Foothills Trail: 77 miles of trail, 1.2 billion years of geology (SCDNR; Morrow, Robert H., Ranson, William A., Arrington, Tanner).

Comment 7 requests revisions/clarifications to SD1 3.2.2 (Aquatic Resources, Terrestrial Resources and Threatened and Endangered Species); and PAD 6.1.5, 6.2.1, 6.2.3, 6.2.4, 6.3.1, 6.3.7, 6.3.8, 6.3.10.2, 6.5, 6.5.1, 6.5.2.2, 6.5.3, 6.6, 6.7, 6.7.1.2, 6.7.1.3, 6.7.2, 6.7.3, 6.9, 7.1.6.3, 7.1.1.1.

COMMENT 8: Proposed PM&E should be clear and consistent. Discrepancies between SD1 and the PAD create confusion on Duke's future intent regarding the Trail; these documents should be clear and consistent. With no consideration of recreation at the Reservoir and recreational access on Lake Jocassee provided by the separate KT License, the Foothills Trail should be the focus of recreational requirements of the New License.

Please note, FTC comments regarding a comprehensive RUN study are included in Comment #9.

8a) The SD1 indicates that Duke does not propose to include the Foothills Trail in the New License, and it diminishes the role of the Trail in discussion throughout various sections. Specifically, SD1 Section 3.1.1 (page 6) states "Duke Energy does not propose to include the Foothills Trail as a project recreation facility under the new license."

The 43-mile section of Trail represents the preponderance of the recreation provided as part of the Original License; it fills a range of recreational needs that would be nearly impossible to

replace. The Trail is an important and unique recreational and educational resource that improves the quality of life throughout the region.

Continued support of the Foothills Trail is a critical component of the New License and expansion of the recreational provisions should be considered to account for the population growth, increased demand for outdoor recreational needs, and expansion of project operations from the ongoing upgrades.

8b) SD1 Section 3.2.2 (page 11) Recreation, Land Use, and Aesthetics outlines minimal considerations, with two of the three bullets only applicable if construction of the proposed Complex occurs. This section should be expanded to a full recreational use and needs (RUN) study that considers current and future recreational needs for the license renewal, including additional measures to be included if construction of the Complex is pursued. Full comments regarding the RUN study are discussed in Comment #9.

8c) SD1 Section 5.0 (page 18) Proposed Studies #8 Recreation and Public Safety study is currently limited to construction and operation of the Complex, or new facilities. The study should be expanded to consider public safety concerns along the Trail, including the need for enhanced safety measures at parking lots and access points. See WYFF: [Thieves, vandals strike Foothills Trail parking lot, leaving hikers stranded, woman says 5/30/22](#)).

Comment 8 requests revisions/clarifications to SD1 3.3.1, 3.2.2, 5.0; and PAD 5.2, 6.8.3, 6.8.3.1, 6.8.5, 7.1.6.1.

COMMENT 9: The RUN Study should be expanded. The proposed Recreational Use and Needs (RUN) Study should be comprehensive and specifically for recreation related to the Bad Creek Project.

A comprehensive Recreational Use and Needs (RUN) Study should be conducted to evaluate the need for expansion and enhancement of trail facilities to meet the current population, which has already grown significantly since the Original License in 1977. Additionally, the RUN should evaluate needs through 2077, the potential end of the New License period.

A previous comment outlines the inappropriateness of using the outdated and unrelated 2013 RUN Study completed to evaluate water-based recreation needs associated with the Keowee-Toxaway Relicensing (FERC Project No. P-2503) and requests revisions of PAD 6.8.3.1 (2013 Recreation Use and Needs Study).

9a) PAD Section 7.1.6.3 (Proposed Studies) outlines the proposed new RUN Study and notes that it would focus on the Foothills Trail, Canebreak access point (note corrected spelling is "Canebrake"), and the Laurel Creek Foothills Trail access points and parking areas. We appreciate the proposal for a RUN Study focused on the recreational requirements of the Bad Creek Project and request the focus area be expanded to include all land and water access points and all spur trails along the 43-mile section of Trail. Of particular importance is the land access location within the Bad Creek Project Boundary.

Additionally, the study should be expanded to evaluate if the current recreational opportunities are meeting demands, and if not – why. Simply counting existing trail users will not identify deficiencies that may be keeping people from using the Trail. For example, a recent spree of vandalism to vehicles at parking lots at Trail access points may discourage people from utilizing

any parking lots for hiking in the area, even if they are active hikers with interest in the Trail. (See WYFF: [Thieves, vandals strike Foothills Trail parking lot, leaving hikers stranded, woman says](#) 5/30/22). Study methods and focus areas should be expanded to improve accuracy of estimation of recreational needs.

Many nearby State Parks, featuring similar terrain and hiking challenges, have experienced significant surges in visitor use⁹ and at times cannot accommodate demand. The heavy demand has even pushed one Park to implement a parking reservation system and turn people away during busy weekends.¹⁰ If evaluation shows lower demand for Trail resources than State Parks, a comparison of features offered would inform the conversation on future needs for this Project.

Based on FTC members' expertise and experience, we request evaluation for the following additions or upgrades: expansion of the Trail and construction of additional spur trails to connect to additional points of interest (e.g., Walhalla, Stumphouse, Lake Toxaway, Panthertown Valley); improved access/parking (safety, etc.), additional and improved campsites (e.g., flatter areas to accommodate tents, pit toilets, bear proof lockers), etc.

FTC anticipates safety becoming an increasing concern. With expanding development, shrinking bear habitat, and more people on our trails, it's no surprise that bear encounters are increasing in our area.¹¹ Backpackers are often the most vulnerable to dangerous bear encounters. Properly hanging a food bag is an art (especially after a long day of hiking), and black bears are becoming increasingly skilled at gaining access to food bags. Food-conditioned bears are often bolder with human encounters, sometimes becoming aggressive, and often leading to the bear being euthanized. (See <https://www.usatoday.com/story/news/nation/2022/06/14/bear-euthanized-scratching-woman-child-national-park/7626099001/>) Some National Parks and long-distance trails in bear territory provide bear proof lockers at designated campsites to simplify proper food storage and enhance safety for humans and bears. This option should be considered for campsites throughout the Trail as a preventive safety measure.

9b) SD1 Sections 3.2.2 (Recreation, Land Use, and Aesthetics) and 5.0 (Proposed Studies #7 Recreation) should be revised to be consistent with the RUN Study outlined in the PAD, as expanded per revisions requested by FTC.

9c) PAD Section 6.1.3.1 (Land Cover) states that the primary reason the Bad Creek Reservoir and Lake Jocassee have no or minor residential development, respectively, is that Duke partnered with state agencies to designate a significant amount of the land adjoining Lake Jocassee for public recreation and resource conservation. However, a significant portion of Duke's 43-mile section of the Foothills Trail, required by the Original License, is located on property that Duke may intend for development. Duke transferred land ownership of a 6,694.8-acre parcel (Oconee County Parcel ID 016-00-01-013), which houses an important stretch of the Foothills Trail, several times throughout the Original License period. Online records show

⁹ North Carolina State Parks Report Record 22.8 Million Visitors in 2021. <https://www.ncdcr.gov/news/press-releases/2022/01/25/north-carolina-state-parks-report-record-228-million-visitors-2021>

¹⁰ <https://southcarolinaparks.com/jones-gap>

¹¹ <https://www.outsideonline.com/outdoor-adventure/environment/bears-north-carolina-encounters/>

transfer of this parcel on 7/8/2008 from Crescent Resources Inc to Duke Ventures LLC for a sales price of \$29,215,248; then an additional transfer on 7/9/2009 from Duke Ventures LLC to Duke Venture Real Estate LLC for \$0.¹² Development of this parcel would drastically change Land Cover within this watershed, while also degrading the quality of the Foothills Trail. Widening the Trail corridor should be closely evaluated to ensure protection of the natural resources and user experience along the Trail.

9d) The RUN Study should evaluate the potential impact if land use surrounding the Trail corridor was modified and discussion in PAD Section 6.8.5 (Non-Recreational Land Use and Management) should be expanded. Currently, the land surrounding the Trail corridor is nearly entirely undeveloped and provides hikers with a wilderness-like experience. As such, information should be provided on potential non-recreational land use and management of all land parcels that Duke's 43-mile section crosses. Duke should provide information on how the recreational quality and benefits of the Foothills Trail will be preserved – and expanded to meet growing recreational needs – throughout the new License period.

Additionally, expansion of the Trail corridor width will be of particular importance if land use changes occur throughout this region. Currently, the large areas of undeveloped land are providing critical habitat and supporting the resiliency of species. If surrounding lands are developed, the Trail corridor could provide the only connection between critical habitats. Considering the anticipated acceleration of species migration due to climate change, the Trail corridor could become vital to supporting genetic diversity - or even the survival of - some species. The USDA's *Conservation Buffers: Design Guidelines for Buffers, Corridors, and Greenways Manual* (2008)¹³ recommends minimum widths for corridors to support various species - invertebrates can utilize the narrowest corridors (100-200 feet) and large predator mammals need the largest corridors (330 feet to ≥3 miles). The Manual also notes that as "the length of the corridor increases, so should the width." Consideration must be given to the increased importance of the Trail corridor should the surrounding land develop within the next 50 years.

9e) PAD Section 7.1.6.1 (Potential Issues – Existing Project) offers to continue maintaining this 43-mile section of trail and two lake access locations for the New License. Our region's population has skyrocketed since the Original License was approved in 1977 and the demand for outdoor recreation has increased significantly. Considering this, improved and expanded recreational resources are necessary.

The FTC welcomes the opportunity to participate in future discussions regarding an updated Recreational Management Plan (RMP), including enhanced and expanded facilities, possibilities for permanent land agreements to secure the Trail's continued existence, and the anticipated ongoing maintenance needs.

¹² Oconee County Property Records [accessed 03 Jun 2022]

<https://qpublic.schneidercorp.com/Application.aspx?AppID=1030&LayerID=21692&PageTypeID=4&PageID=9258&KeyValue=016-00-01-013>

¹³

<https://www.csu.edu/cerc/researchreports/documents/ConservationBuffersDesignGuidelinesForBuffersCorridorsGreenways2008B.pdf>

Comment 9 requests revisions/clarifications to SD1 3.2.2, 3.3.1, 5.0; and PAD 5.2,6.1.3.1, 6.8.3, 6.8.3.1, 6.8.5, 7.1.6.1, and 7.1.6.3.

COMMENT 10: Expanded information should be included in some sections to provide a more accurate, updated, and comprehensive understanding of conditions.

10a) PAD Sections 6.11 (Socioeconomic Resources) and 6.11.1 (Population) provide information limited to Oconee County, in which the Bad Creek Project is located. However, the existing Project serves a much larger area. In fact, the Original License noted that the “additional peaking capacity of the proposed project will also be of benefit to the entire Virginia-Carolina (VACAR) Subregion of the Southern Electric Reliability Council (SERC).” (page 4). Also, PAD Section 1.2, indicates that population and household growth in the Carolinas is exceeding the national average. South Carolina is identified as the fifth fastest growing state in the nation, spurred by relocation of people from other states.¹⁴

These sections should be expanded to provide a comprehensive evaluation of the population and socioeconomics in the area serviced by the existing Project, the additional population that would be served by the proposed expansion, and the population (including future projections) of the Upstate region – the Greenville-Spartanburg-Anderson, SC Combined Statistical Area.

10b) PAD Section 6.1.2 (Climate) includes climate data limited to averages through 2010 and does not include more current data from the last 12 years. The climate evaluation should include current and comprehensive data. In addition to averages, maximums and minimums should be included for temperatures and rainfall. Including more current data may show significant differences in climate conditions. For example, a new record annual rainfall for the state was set in 2018, just 3 miles from the Bad Creek Project.¹⁵ This new record of 123.45” is significantly different from the maximum of 100” annual precipitation noted in the PAD. This section should also include a discussion of changing climate conditions and projected future conditions. This should include, but not be limited to, discussion of increasing nighttime temperatures, seasonal precipitation patterns, annual rainfall, and drought.

The impacts of climate change should also be evaluated and discussed in the following PAD sections: 6.3.9 ([Water Resources] Known or Potential Adverse Effects and Proposed PM&E Measures: Existing Operations), 6.7.3 ([Rare, Threatened, and Endangered Species] Known or Potential Adverse Effects and Proposed PM&E Measures: Existing Operations), and 6.7.4 ([Rare, Threatened, and Endangered Species] Known or Potential Adverse Effects and Proposed PM&E Measures: Bad Creek II Complex).

In relation to climate change, wildlife habitats, migration corridors, and species resiliency and survival are of particular interest and should be considered through 2077 - the potential life of the proposed new license. Wildlife corridors, which may be necessary for species migration due to climate change, should be considered and PM&E measures should be identified for both

¹⁴ Post and Courier (12/21/2021) https://www.postandcourier.com/news/us-sees-slowest-population-growth-on-record-but-sc-among-fastest-growing-states/article_7873e424-6274-11ec-81ba-9793bea986ef.html

¹⁵ SCDNR: https://www.dnr.sc.gov/news/2019/may/may2_recordrainfall.php

relicensing of Existing operations and additional considerations if the proposed Complex expansion moves forward.

Widening the Trail corridor width will become increasingly important as climate change impacts this ecologically diverse region. Currently, the large areas of undeveloped land are providing critical habitat and supporting the resiliency of species. If surrounding lands are developed, the Trail corridor could provide the only connection between critical habitats. Considering the accelerated need for species migration due to climate change, the Trail corridor could become vital to supporting genetic diversity - and even the survival of - some species. The USDA's *Conservation Buffers: Design Guidelines for Buffers, Corridors, and Greenways Manual* (2008)¹⁶ recommends minimum widths for corridors to support various species - invertebrates can utilize the narrowest corridors (100-200 feet) and large predator mammals need the largest corridors (330 feet to ≥3 miles). The Manual also notes that as "the length of the corridor increases, so should the width." Consideration must be given to the increased importance of the Trail corridor should the surrounding land develop within the next 50 years.

10c) PAD Section 7.1.1.1 (Geology and Soils Potential Issues – Existing Project) outlines geology and soils-related issues from the "existing" project, but additional information should be included. For example, it notes that there "is active slope movement in the Project" and that these areas are monitored but does not provide information on severity or locations of this activity. Additionally, it is important to recognize that Duke is currently modifying operations and equipment to increase capacity at Bad Creek by 40% beyond the capacity in the original license. It is unclear if the increased impacts from the current expansion activities have been evaluated. This section should be revised to fully discuss impacts from the increased capacity provided by the upgrades currently being installed, including any expanded erosion prevention and recreational mitigation measures being taken to address the current impacts that are beyond that expected in the Original License.

Comment 10 requests revisions/clarifications to PAD 6.1.2, 6.3.9, 6.7.3, 6.7.4, 6.8.3.1, 6.11, 6.11.1, and 7.1.1.1.

COMMENT 11: Construction of the Complex should require additional evaluation and PM&E measures. The proposed Bad Creek Complex II Expansion would double the already upgraded capacity of the Bad Creek Project. A complete analysis of permanent and temporary construction impacts and potential introduction/expansion of invasive species should be thoroughly evaluated and additional PM&E, including expanded recreational requirements, should be required.

11a) PAD Section 6 (Description of the Existing Environment and Resource Impacts) should include more detailed evaluation of potential impacts and PM&E measures for the construction and operation of the proposed Complex II and should propose consideration of current and future recreational needs.

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<https://www.csu.edu/cerc/researchreports/documents/ConservationBuffersDesignGuidelinesForBuffersCorridorsGreenways2008B.pdf>

11b) PAD Section 6.3.10 (Known of Potential Adverse Effects and Proposed PM&E Measures: Bad Creek II Complex) includes limited discussion as it does not acknowledge water uses beyond the Project. As noted in earlier comments, Howard Creek receives a substantial portion of flow from the Bad Creek Reservoir and a discussion regarding potential impact of continued and modified operations as well as PM&E. Impacts of climate change should also be evaluated and discussed.

11c) PAD Section 6.3.10.2 (Impacts to Project Streams) should include the estimated amount of impact (linear footage of streams, acreage of wetlands or open water), classification and condition of proposed impacted resources, and duration of impacts (e.g., during construction or permanent). This section should also discuss potential impacts to the streams along the 43-mile section of the Foothills Trail, including spur trails and access locations, that is Duke's responsibility to construct and maintain under the Original License. Additional discussion should be included if construction or operation of the Complex could directly impact the Foothills Trail, either temporarily or permanently.

11d) Additional discussion regarding the "Known or Potential Adverse Impacts and Proposed PM&E Measures for Bad Creek II Complex" should be included for the following PAD sections:

- 6.4.7 [Fish and Aquatic Resources], 6.5.4 [Wildlife and Botanical Resources], and 6.7.4 [Rare, Threatened, and Endangered Species] – land disturbance is often a gateway for introduction of additional invasive species, introduction of diseases, and expansion of existing invasive species populations. Each of these require thoughtful planning and control measures to prevent, limit, or mitigate potential impacts. Climate change is an important consideration for wildlife and botanical resources and should be considered throughout the life of the proposed new license. Potential wildlife corridors, which may be necessary for species migration due to climate change, should be investigated.
- 7.1.4 (Wildlife and Botanical Resources) - Proposed environmental measures should be expanded to ensure impacts are avoided and minimized wherever possible, as well as include efforts to enhance these species either within or outside of the Project Boundary.

11e) PAD Section 7.1.2.2 ([Water Resources] Potential Issues – Bad Creek II Complex) indicates that the operation of the proposed Bad Creek II Complex has the potential to impact water surface elevations of Lake Jocassee. Further information should be provided regarding specifics of anticipated changes in water levels, for how long, and at what time(s) of day/night.

This section also indicates that increased sediment loading to the Whitewater River arm of Lake Jocassee is expected during construction. In addition to SCDHEC permit(s), the addition of fill to a WOTUS and WoS may require a permit from the USACE. Extra care should be taken to prevent and minimize erosion to avoid degradation of the high-quality downstream waters, which are classified as Outstanding Resource Waters, Trout Natural, and Trout: Put, Grow and Take.

Additionally, this section states that disposal of the overburden from construction activities is expected to include addition of fill to streams and wetlands within the project area. As noted previously in these comments, the waters in this area have uncommonly high-water quality and are designated as Outstanding Resource Waters, Trout Natural, and Trout Put, Grow and Take

waters – SC's most protective designations. Alternative disposal locations should be utilized to avoid filling such high-quality waterways.

11f) PAD Section 7.1.5.2 ([Wetlands and Riparian Habitat] Potential Issues – Bad Creek II Complex) notes that approximately 4 million cubic yards of spoil material will need to be disposed of and indicates that to do so within the Project Boundary will involve permanent impacts to water resources. Considering the unique habitat for many At-Risk species within this area, Duke should evaluate alternate locations for disposal of spoil material.

Duke Energy does not propose any PM&E measures be included in the New License as compensatory mitigation will be required if waters of the U.S. are impacted. We understand this process is separate from FERC's relicensing and urge Duke to consider permittee-sponsored mitigation to ensure protection and enhancement of waters and habitats similar to the unique and high-quality habitat provided in the Project area.

11g) PAD Section 7.1.6.2 ([Recreation and Land Use] Potential Issues – Bad Creek II Complex) indicates that temporary impacts from construction of the Bad Creek II Complex will include prohibiting public access within the Project Boundary for five years. This section should be revised to clearly indicate what parking lots and access points will be impacted. As noted previously, a popular parking lot and access point to hiking trails are located within the Project Boundary. Both the Lower Whitewater Falls Trail and the Bad Creek Spur Trail are located partially within the Project Boundary.

The FTC welcomes the opportunity to participate in additional discussions regarding these potential temporary – but long-term – impacts and possible mitigation strategies.

11h) PAD Section 7.1.7 (Aesthetic Resources) outlines the visible Project elements and should be expanded to include visual conditions and impact along the Trail. For example, the Bad Creek Reservoir and transmission lines are visible from locations along the Foothills Trail and additional viewpoints throughout the area. These locations should be identified and potential issues from the existing project or proposed Complex should be evaluated for additional consideration.

Comment 11 requests revisions/clarifications to PAD 6, 6.3.10, 6.3.10.2, 6.4.7, 6.5.4, 6.7.4, 7.1.2.2, 7.1.4, 7.1.4.2, 7.1.5, 7.1.5.2, 7.1.6.2, and 7.1.7.

COMMENT 12: The proposed Project Boundary should be expanded to include all Project-related infrastructure.

12a) Throughout the documents (e.g., Section 6.8.5; Appendix C), the Project Boundary Map should be clearly labeled and expanded to include the weir in Lake Jocassee that was installed to reduce impacts from the Bad Creek reservoir discharge. The weir is described in Section 5.4.5 (Submerged Weir in Lower Reservoir).

12b) In several places throughout the documents, Duke notes that no public recreation is provided within the proposed Project Area. However, public access is currently provided in and adjoining the proposed Project Boundary. The public utilizes Bad Creek Road to access a public parking lot, Foothills Trail kiosk, and a spur trail providing access to the Foothills Trail and to the Lower Whitewater Falls. Each of these infrastructure components are shown on the map and should be labeled appropriately.

12c) Additionally, recreational areas that are provided to meet FERC License Agreements are regularly included within the Project Boundaries; as such, the entirety of Duke's 43-mile section of the Foothills Trail should be included within the Project Boundary and related maps.

Comment 12 requests revisions/clarifications to PAD 5.4.5, 6.8.5, 7.1.6, 7.1.6.1, 7.1.7; and Appendix C.

COMMENT 13: Specific minor revision requests are listed below.

13a) The Foothills Trail Conservancy contact information should be updated in the Bad Creek Pumped Storage Project (FERC No. 2740) Distribution List (included in NOI and PAD Appendix A), to the following:

Andrew Gleason
Chairman, Board of Directors
Foothills Trail Conservancy
andrewandwilla@hotmail.com

Dr. Bill Ranson
Member, Board of Directors
Foothills Trail Conservancy
bill.ranson@retiree.furman.edu

Glenn Hilliard
Founder and Advisor
Foothills Trail Conservancy
glenn@hilliardgroup.com

13b) SD1 Section 8.0 (page 21-23) should include the most current version of Comprehensive Plans; for example, the list includes the SC State Comprehensive Outdoor Recreation Plan (SCORP) from 2008, but the SCORP was updated in 2019 and is available online <https://p.widencdn.net/bzuwqi/2019-South-Carolina-SCORP-FINAL>.

13c) PAD Section 4.4.1 (Maintenance of Public Website) – Duke commits to maintaining a public Project website during the course of the licensing process. To assist stakeholders and the general public with understanding Duke's compliance with the Licensing Agreements, we recommend maintaining this website (including compliance reports) into the future.

13d) PAD Section 6.8.1.1 (FERC-Approved Recreation Facilities at the Project) states that "Prior to the construction of the Project, the first portion of the Foothills Trail was built linking Table Rock State Park to Oconee State Park." This wording is confusing and could be misunderstood that the first portion of the Trail connected Table Rock State Park to Oconee State Park. In fact, Table Rock State Park and Oconee State Park represent the current end points – and the section between is the entire 77-mile Foothills Trail, including the 43-mile central section Duke constructed and continues to maintain. This section should be clarified to accurately describe the initial section built prior to construction of the Bad Creek Project.

Comment 13 requests revisions/clarifications to NOI; SD1 8.0; PAD 4.4.1, 6.8.1.1; and PAD Appendix A.



Protecting Land & Water | Advocacy | Balanced Growth

ELECTRONICALLY FILED

June 23, 2022

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Alan Stuart
Duke Energy Carolina, LLC
Mail Code EC012Q
526 Church Street
Charlotte, NC 28202

Re: **Bad Creek Pumped Storage Project (FERC No. 2740-053)**
Comments on Preliminary Application Document and Scoping Document 1

Dear Secretary Bose and Mr. Stuart:

Upstate Forever is a nonprofit organization that works to balance growth with the protection of our natural resources by working on conservation, water quality, and sustainable development issues in the Upstate region of South Carolina. Our mission is to protect critical lands, waters, and the unique character of the Upstate of South Carolina, including the Upper Savannah Watershed where many of our members live, work, and recreate. Over the past two decades, we have successfully partnered with public and private landowners, local, state and federal governments, utilities, non-governmental agencies, and other stakeholders to protect the natural assets that make the Upstate special, such as our farmlands, forests, natural areas, rivers, and clean air.

On February 23, 2002, Duke Energy (“Duke”) filed a Notice of Intent and Pre-Application document for its Bad Creek Pumped Storage Project (FERC No. 2740, “Project”). The existing FERC license for the Bad Creek Project expires on July 31, 2027. The Project is the first in a series of impoundments in the Savannah River Basin that include Lake Jocassee, Lake Keowee, Lake Hartwell, Lake Russell, and Lake Thurmond. Located near the Town of Salem in northern

Oconee County, the Project utilizes a reservoir created by impounding Bad Creek and West Bad Creek, tributaries of Howard Creek and Lake Jocassee, in the Whitewater River Watershed (HUC 0305010101-05) in the uppermost headwaters of the Savannah River Basin.

Water in the Bad Creek reservoir originates primarily by pumping water from the lower reservoir (Lake Jocassee) through the Bad Creek Complex and into the upper (main) reservoir. During periods of high energy demand power is generated using the water stored in the main reservoir, then refilled from the lower reservoir when demand is low. Duke is currently evaluating the technical and economic feasibility of installing the Bad Creek II Complex (“Complex”), which would increase the power generation capacity – from 1,400 Megawatts (MW) to 2,800 MW – and pumped storage return of the Project by installing an additional conveyance system and powerhouse. The evaluation also includes the potential need for additional transmission lines. The second complex would allow Duke to generate power using either system while simultaneously maintaining, upgrading, or repairing the other complex as needed. If Duke Energy decides not to pursue a second complex in its final licensing proposal, Duke plans to continue to operate the Project under the conditions of the existing license.

From 2010-2014, Upstate Forever participated in the relicensing of the Keowee-Toxaway Hydroelectric Project (FERC No. 2503), which culminated in the successful renewal of the FERC license for that project. Through the ILP relicensing process, we collaborated with Duke Energy and other stakeholders to develop protection, mitigation, and enhancement measures as well as environmental and recreation resource enhancements for the region. Following the completion of the relicensing process, Upstate Forever has served on the grant review committee for the Keowee-Toxaway Habitat Enhancement Program and participated as a stakeholder with the Lake Keowee Source Water Protection Team. We are pleased to participate as a stakeholder for the relicensing of the Bad Creek Project. Our primary interests in this Project are related to water quality and quantity, fish and wildlife habitat, recreation resources and opportunities, and land conservation. We look forward to working with Duke Energy and other stakeholders to ensure that the new license provides for the protection, restoration, and mitigation of the natural resources within the Upper Savannah Watershed. We have completed a review of the Preliminary Application Document (PAD) and Scoping Document 1 (SD1) and are pleased to offer the following comments and additional study requests.

Sincerely,



Andrea Cooper
Executive Director

COMMENTS ON PRELIMINARY APPLICATION DOCUMENT

5.4.1 EXISTING PROJECT FACILITIES – UPPER RESERVOIR AND DAM

This section describes the project facilities including reservoirs and dams. The final paragraph refers to stream augmentation facilities, which consisted of a “system of intakes, pipes, and sluice gates” to augment flows to Howard Creek. However, the stream augmentation system is not currently used. Howard Creek is a tributary of Lake Jocassee, classified as Outstanding Resource Waters (ORW) by the SC Department of Health and Environmental Control (SCDHEC), and receives anywhere from 40% to 80% of its flow from Bad Creek and West Bad Creek by way of seepage from the Main Dam and West Main Dam. Please elaborate the purpose and need for the stream augmentation on Howard Creek, and further explain why the system is no longer in use.

6.1.2 CLIMATE

This section of the PAD provides climate data for two 30-year periods from 1971-2000 and 1981-2010, and appears to be sourced from a recent (2021) SCDNR study. Although more recent and more descriptive data is probably available, it is not included here. The Upstate has seen a dramatic increase in the frequency and intensity of extreme weather events not only over the past several decades but in just the past few years, including high intensity rainfall, flash flooding, and prolonged periods of drought. If possible, please update this section to include climate data that captures recent extreme weather events. We would like to see more descriptive data through 2020 such as maximum and minimum rainfall amounts, number of days with or without rain, longest period without rainfall, number of days above average, severe weather events, and any other descriptive data.

6.1.3.1 MAJOR LAND AND WATER USES – LAND COVER

Section 6.1.3 of the PAD describes major land and water uses within the Project boundary using the U.S. Geological Survey’s National Land Cover Database. Both Table 6.1-3 and Figure 6.1-3 include areas categorized as “cultivated crops” (3.7% of Project boundary) or “hay/pasture” (10.1% of Project boundary), neither of which would be consistent with typical land management practices around a high priority dam, nor do they appear to agree with the images of the Main Dam in Figure 5.4-2 and the West Dam in Figure 5.4-3. Please confirm whether any cultivated crops or areas of hay or pasture do indeed exist within the project boundary, or clarify the land uses immediately adjacent to the Main Dam and West Dam.

6.2.5.2 SHORELINES AND STREAM BANKS

Section 6.2.5.2 of the PAD describes the modeling framework used to evaluate the potential operational impacts of the proposed Bad Creek II Complex in the Whitewater River arm of Lake Jocassee, including potential shoreline erosion. Results of the computational flow dynamics

(CFD) model indicate that the addition of the Complex is unlikely to increase the shoreline erosion potential of the Lake Keowee shoreline. Please update this section of the PAD with more information regarding the modeling results, including graphic depictions of peak velocities, discharge points, and shoreline impacts.

6.3.7 EXISTING WATER QUALITY DATA

This section of the PAD provides a summary of existing water quality data collected for waters within the Project Boundary and vicinity but is limited to the upper reservoir (6.3.7.1 Bad Creek Reservoir) and lower reservoir (6.3.7.2 Lake Jocassee). No water quality data is included for either Howard Creek, which receives seepage flows from the Main Dam and West Dam and is a tributary of Lake Jocassee, or Whitewater River, which is the receiving water from daily Project operations and the location of a submerged weir designed to minimize the effects of Project operations on lake stratification, protect cold-water fish habitat, and dissipate energy from discharged water. Similarly, no water quality data is provided for Bad Creek or West Bad Creek, which according to Section 6.3.1 of the PAD are only “partially to mostly submerged.”

In addition, neither the upper reservoir nor its tributaries have historically been monitored for water quality, which is an erroneous oversight providing no baseline water quality data for waters in the Project vicinity. Flow data is provided for Howard Creek in Table 6.1-1 but only for a brief period from 1989 to 1996. According to the current implementation of the Waters of the US (WOTUS)¹, Pre-2015 Regulatory Definition and Practice, the Bad Creek Reservoir is included under WOTUS and Waters of the State (WoS) protections because it was formed by the impoundment of two free-flowing rivers or streams, Bad Creek and West Bad Creek, and as such regulatory designations do apply. More information is needed for these Project-related water resources to better understand the Project’s impact on existing watershed health. Please provide a rationale for excluding these significant water resources in the Whitewater River Watershed and include measures for updating and collecting water quality data in the PAD and proposed studies for relicensing.

6.3.7.2.2 WATER QUALITY MONITORING

Duke Energy proposes to develop a Water Quality Monitoring Plan in consultation with agencies for Project construction (pre-, during, and post-construction) and operations, including monitoring locations, methods, and reporting criteria for major parameters such as DO, temperature, pH, specific conductance, and turbidity. Duke should include nutrients (nitrogen and phosphorus) to the list of parameters they monitor as land use practices can contribute to increased nutrient levels in surface waters. The Upstate is seeing an increasing trend with rising nutrient levels in reservoirs, which can lead to harmful algal blooms, and ultimately result in lost recreation opportunities, decreased property values, and poor water quality that is expensive for water utilities to treat. Because the nearby Lake Keowee is a popular recreation

¹ <https://www.federalregister.gov/documents/2021/12/07/2021-25601/revised-definition-of-waters-of-the-united-states>

destination and drinking water source for over 250,000 people in the Upstate, this should be of considerable importance. Furthermore, in continuation with our concerns regarding the absence of water quality data for Project-related waters, please include a plan for establishing and monitoring water quality data for Bad Creek, West Bad Creek, Howard Creek, and White River.

6.5.2.2 INVASIVE SPECIES

Section 6.5.2.2 of the PAD lists numerous invasive species observed during field surveys conducted throughout the transmission line corridors in 2021. However, there is no indication of field surveys conducted in other Project areas, including access areas or on the faces of the project dams. Many of these species already are or will soon be extremely problematic for land management if left unattended. Furthermore, the PAD does not provide any other detail about current or proposed vegetation management at the project and should include information describing management activities for native and non-native invasive species in the Project boundary and vicinity.

6.6.1.1.1 WETLANDS, RIPARIAN, AND LITTORAL HABITAT – RELATIVELY PERMANENT WATERS WITH SEASONAL FLOW

This section appears to be mis-titled. Based on context of the section paragraph, this section should instead be titled as “Relatively Permanent Waters with *Perennial Flow*.”

6.6.3 KNOWN OR POTENTIAL ADVERSE EFFECTS AND PROPOSED PM&E MEASURES: BAD CREEK II COMPLEX

The PAD estimates approximately 4 million cubic yards of spoil material will need to be disposed as a result of constructing the proposed new Complex. That is the equivalent to approximately 250,000 dump trucks. Both Section 6.6.3 and the Natural Resource Assessment in Appendix E discuss the potential for disposing spoils in wetlands and surface waters, including dredging, filling, clearing, and de-watering. However, there is no discussion in this section of transporting the spoil material off site for alternative uses or disposal. In addition, Table 6.6-7 of this section lists potential spoil locations and the estimated impacts to wetlands and surface waters, including preferred spoil locations (denoted by an asterisk *). However, the PAD does not discuss the criteria used to assess the potential spoil disposal areas, nor does it provide an explanation of why some areas are preferred over others. The Clean Water Act requires consideration for avoiding and minimizing impacts before a Section 404 permit can be obtained for placing fill in waters of the US, and before a water quality certification can be awarded by the State. Off-site transport should be included in the criteria and considered the only option unless other disposal methods can be justified. Please update this section to include a comprehensive discussion of these criteria with the addition of off-site removal, including how the potential spoil disposal areas are being identified, sized, assessed, and selected as Duke Energy’s preferred locations for this purpose off-site removal.

During construction of Complex II, it is anticipated that several trucks and other large equipment will be transported over roads to access the Project. This additional traffic will increase turbidity levels in stormwater runoff in both reservoirs as well as the tributary streams. Duke should include a discussion of the type and number of BMPs (e.g., vegetation, matting, silt fencing) proposed to prevent runoff from negatively impacting water quality. Furthermore, Duke should include plans for stabilizing soils at construction sites and staging areas during and after construction activities making sure to use only native vegetation in the project vicinity to stabilize and re-establish habitats.

6.8 RECREATION AND LAND USE

Section 6.8 of the PAD provides a thorough description of recreation facilities and opportunities in the Project vicinity, including the Foothills Trail and other nearby recreation resources. Notably, there is considerable emphasis on off-Project recreation areas likely due to the restricted nature of the upper reservoir. Because there is no access to the Bad Creek reservoir for recreation purposes, fulfillment of the Recreation component (Exhibit R) of the original license was provided through the creation and management of a 43-mile central section of the Foothills Trail. Exhibit R included public access and parking, trail kiosks and directional signs, additional spur trails, and stream crossings as well as continual maintenance and operational activities for limited recreation uses, primarily hiking. For this section of the PAD Duke should provide a comprehensive summary of its fulfillment of Exhibit R requirements under the original license, including a history of any modifications to Exhibit R that may have occurred during the license term.

Unfortunately, language in both the PAD and Scoping Document 1 creates confusion regarding Duke's long-term plans for continued management of the Foothills Trail. Specifically, Section 7.1.6.1 of the PAD states, "The segment of the Foothills Trail and two undeveloped access areas on non-Project lands that were developed per the Original License will continue to be maintained by Duke Energy in the New License term as a non-Project facility and potentially under a separate agreement with regional stakeholders." Meanwhile, SD1 states that "Duke Energy does not propose to include the Foothills Trail as a project recreation facility under the new license." These two documents should be reconciled to clarify Duke's intentions and the fate of the Trail.

The Foothills Trail system provides important recreational and educational opportunities to both Upstate residents and visitors from around the world. However, the Upstate is experiencing unprecedented and accelerating population growth and is expected to continue growing for decades to come. By 2040, our region's population is projected to reach nearly 1,750,000 – an increase of 64% since 1990.² Already our natural resources are stretched thin, and the current pandemic has revealed how fragile and overburdened our public recreation areas have become. Continued support of the Foothills Trail is a critical component of the New

² https://www.upstateforever.org/files/files/2017.7.20_SOF_FINAL_Report.pdf

License and expansion of the recreation provisions should be considered to account for the population growth, increased demand for outdoor recreational needs, and expansion of project operations from the ongoing upgrades. Ensuring that recreation opportunities centered on the Foothills Trail continue to provide quality recreation opportunities in perpetuity and that the Foothills Trail can continue to grow to meet additional demand should be paramount in this licensing. Such consideration should include all or some of the following:

1. An endowment given to the Foothills Trail Conservancy for ongoing management and maintenance of the Foothills Trail system;
2. Fee-simple donations of land to be included in the Foothills Trail system, or to State resource agencies for various purposes, including recreation, habitat management, and water quality protection;
3. Conservation easements on lands owned by Duke Energy, which would protect the Foothills Trail corridor, or allows for other recreation opportunities (a conservation easement would limit specific land development practices but could allow for recreation uses and even Project related activities), including the 6,700-ac tract surrounding the Project;
4. Expand the Foothills Trail system to connect with other trail systems, including the Palmetto Trail at Stumphouse Tunnel, the Panthertown trail system, the Tuskegee National Forest trail system, the Art Loeb Trail in Pisgah National Forest, and the Appalachian Trail; and
5. Providing a financial contribution to the Oconee County Conservation Bank, which would then be used to protect additional lands in the County beyond the Project boundary.

We encourage Duke to update this section of the PAD to include the options above, which are vital tools for creating, protecting, and managing open space for public recreation uses outside the Project boundary.

Throughout the PAD, much consideration is given for the Keowee-Toxaway Hydroelectric Project (FERC No. 2503). However, the Keowee-Toxaway Project operates under a separate and distinct license from the Bad Creek Pumped Storage Facility. It is often confusing how one project relates to the other, and sometimes reads as if requirements under one license are used to offset obligations under the other. While both projects are indeed impacted by the other, and may influence operations at other projects (e.g., Oconee Nuclear Station), the relicensing processes, including studies, commitments, obligations, and other agreements are specific to those projects. Specifically, there is an impression that some recreation opportunities lost from the exclusivity of the Bad Creek project were remedied on Lake Jocassee, which may or may not have been negotiated during the relicensing of the Keowee-Toxaway project. During the Keowee-Toxaway relicensing, stakeholders were not able to consider lost recreation opportunities of the Bad Creek project. The same is true for fishery resources and work plans conducted in coordination with SCDNR through the Keowee-Toxaway relicensing, as well as the Recreation, Use, and Needs Study (RUN Study) conducted in 2013, which failed to consider the recreation opportunities provided by the Foothills Trail. In

summary, these projects are clearly complementary and inextricably linked, but do not necessarily satisfy individual license requirements.

While water-based recreation such as boating and swimming at the Bad Creek reservoir are understandably overlooked due to fluctuating water levels and public safety concerns, management components related to traditional recreation activities such as fly-fishing and birdwatching should have been considered under the original license and should be addressed in the current licensing. Therefore, due to the lack of water-based recreation opportunities available for this Project, the RUN Study should consider alternatives to water-based recreation opportunities in off-Project areas. Furthermore, a thorough RUN Study should be included as part of the general licensing requirements and completed regardless of whether Duke decides to pursue the additional Complex II.

Similarly, with the increased strain on public recreation areas resulting in overuse and overcrowded experiences, the RUN Study should evaluate the need for expanded facilities, spur trails, connectivity, camping, and other attributes, including public safety concerns throughout the Foothills Trail system. Vandalism and wild animal encounters have increased in Upstate recreation areas, including the Foothills Trail system. Public safety needs to be assessed along the trail corridor, and at access and parking areas, observation areas, and any other facilities associated with the trail system. Lastly, the RUN Study should be re-evaluated periodically, and a new study conducted at least every ten years throughout the next license term.

Finally, the original license refers to the Bad Creek Pumped Storage Project as the preferred alternative to a proposed Long Spur Ridge project, which was also under consideration as a similar pumped storage facility. The creation of future projects in the vicinity of the existing Project, including the Limber Pole Creek Project and the Coley Creek Project, should be considered particularly given that obligations for recreation are satisfied beyond the project boundary. These two projects would be situated on an expansive 6,700-acre tract owned by Duke Ventures Real Estate, LLC, a subsidiary of Duke Energy. While Duke Energy may not consider these as viable projects at this time, things may change dramatically over the course of the next license term, which may result in drastic changes in land use and development in the Project vicinity. We believe protection of this tract in particular (Oconee County parcel #016-00-01-013) is key to ensuring long-term high-quality habitat and recreation resources for the Upstate, and for ensuring abundant high-quality water resources for the region. If developed, this tract would have permanent and devastating impacts to water quality in the Whitewater River Watershed and would diminish all the proactive accomplishments that our resource agencies and conservation community have achieved over the past 50 years. (See the “Water Quality Sensitivity in the Bad Creek Project Vicinity” map appended at Attachment 1.)

7.1.1 GEOLOGY AND SOILS

This section of the PAD provides a brief description of soil classifications in the Project vicinity. However, it does not include an analysis of Prime Soils or Soils of Statewide Importance. Duke should consult with USDA/NRCS to provide a summary of soils that have the best combination

of physical and chemical characteristics for producing food, feed, fiber, forage, and oilseed crops, and is available for such use, and develop a plan for protecting those areas during the next licensing term. The Oconee County Conservation Bank has provided grant funding for projects that permanently protect lands with Prime or Important Soils with conservation easements held by Upstate Forever or Oconee County's Soil and Water Conservation District.

8.0 COMPREHENSIVE PLANS

This section should include the most recent future land use maps and comprehensive plans available for the project area in both Transylvania and Jackson counties of North Carolina, and Oconee County, South Carolina. Oconee County recently adopted its "Unified 2020 Comprehensive Plan"³ on March 3, 2020. From October 2018 through December 2019, Oconee County engaged its local citizens through numerous public meetings, newspaper inserts highlighting the elements of the plan, and a survey for public input. Because the character and density of land that abuts the Project will not be determined solely by Duke Energy, management of the Project as well as the lands in the Project vicinity should consider the vision for the future expressed by Oconee County residents and captured in their plan.

GENERAL COMMENTS

- **CLIMATE CHANGE**

The PAD includes no discussion of climate change and how it may affect various aspects of the Project, including operations and management of Project resources. Climate change is an important consideration for wildlife and botanical resources, recreation, water quality and water quantity, and land planning, use, and policy. It should be included for consideration in each section of the PAD, as well as every proposed study in this licensing process, and continue to inform Project management and operation decisions throughout the life of the proposed new license. In addition, how will climate change considerations be reflected in the design and operations of Duke's current and proposed hydroelectric facilities?

As previously discussed, SC has seen a dramatic increase in the frequency and intensity of extreme weather events over the past several decades, including flooding and drought. These extreme conditions will continue to have implications on the operations and management of these facilities and the natural resources. This should include, but not be limited to, discussion of increasing nighttime temperatures, changing seasonal precipitation patterns, increased frequency in extreme weather events, and increased periods of drought. Wildlife corridors, which may be necessary for species migration due to climate change, should be considered and PM&E measures identified for both relicensing of existing operations.

- **SEPARATE LICENSES WITH SPECIFIC REQUIREMENTS**

³ <https://oconeesc.com/documents/planning-zoning/comprehensive-plan/unified-2020-comprehensive-plan.pdf>

Throughout the PAD, much consideration is given for the Keowee-Toxaway Hydroelectric Project (FERC No. 2503). However, the Keowee-Toxaway Project operates under a separate and distinct license from the Bad Creek Pumped Storage Facility. It is often confusing how one project relates to the other, and sometimes reads as if requirements under one license are used to offset obligations under the other. While both projects are indeed impacted by the other, and may influence operations at other projects (e.g., Oconee Nuclear Station), there are resources and obligations singular to each project. As already mentioned, there is an impression that some recreation opportunities lost from the exclusivity of the Bad Creek project were remedied on Lake Jocassee, which may or may not have been negotiated during the relicensing of the Keowee-Toxaway project. During the Keowee-Toxaway relicensing, stakeholders were not able to consider lost recreation opportunities of the Bad Creek project. The same is true for fishery resources and work plans conducted in coordination with SCDNR through the Keowee-Toxaway relicensing, as well as the Recreation, Use, and Needs Study (RUN Study) conducted in 2013, which failed to consider the recreation opportunities provided by the Foothills Trail. In summary, these projects are clearly complementary and inextricably linked, but do not necessarily satisfy individual license requirements.

COMMENTS ON SCOPING DOCUMENT 1

3.1.2 EXISTING PROJECT OPERATION

Throughout SD1 and the PAD, the Project is presented as an isolated pumped storage project seemingly without influence or relationship to other facilities or project operations. However, most of the volume in the upper reservoir originates from Lake Jocassee, which also plays a major role in the operations of both the Keowee-Toxaway Hydroelectric Project (FERC No. 2503) and the Oconee Nuclear Plant. All three projects depend on water levels in Jocassee to provide abundant water to safely generate power for Duke Energy customers. This section of the Scoping Document and the PAD should include a description of how the water level in Lake Jocassee affects these projects, including an extreme low inflow scenario where operations of Bad Creek may need to be curtailed or ceased to maintain operations at other projects.

Furthermore, the Project presently operates within the upper 50 to 60 feet of full pond level. However, the existing license authorizes a 160-foot maximum drawdown. Currently, the Project is undergoing pump-turbine upgrades, and Duke has proposed the construction and operation of a second powerhouse as part of this relicensing. Both the upgrades and the new Complex will increase the range within which Project operations will impact water levels, creating larger and more rapid fluctuations in both the Bad Creek reservoir and Lake Jocassee. Therefore, the increased operating band may also affect a variety of environmental parameters, including but not limited to water quality, shoreline habitat, and fish entrainment.

3.2.2 PROPOSED ENVIRONMENTAL MEASURES

Under the Aquatic Resources portion of this section, we believe the Fisheries MOU and 10-Year Work Plans for fishery resources that Duke has completed in partnership with SCDNR should be included. Activities included in the 10-Year Work Plans were designed to develop and enhance management strategies for fish in these areas and included fisheries surveys and inventories, water quality and aquatic habitat evaluations, fish stocking, recreation, and shoreline impacts. Duke Energy entered an MOU with SCDNR for the long-term management and maintenance of high-quality fishery resources in Lake Keowee and Lake Jocassee *as well as their tributary streams*. While the current MOU is in effect through 2027 and intended to mitigate for fish entrainment, we don't currently know what contribution the proposed Complex will have on entrainment. Therefore, we believe that Duke should extend the MOU and workplans through the term of the new license.

4.1.2 RESOURCE ISSUES – AQUATIC RESOURCES

We support all the issues identified in this section. However, we have particular concerns that no water quality data has been collected for the Bad Creek Reservoir and associated tributaries making it impossible to determine if the current or proposed operations have or will have any negative impacts on water quality. (See our previous comment regarding Section 6.3.7.2.2 of the PAD on Water Quality Monitoring.)

Furthermore, we have concerns regarding the effects of construction-related erosion, sedimentation, and spoils disposal on water quality, aquatic habitat, and aquatic biota in the Bad Creek reservoir, Lake Jocassee, and surrounding tributaries. Four million cubic yards of debris is expected from the construction of Complex II, which is the equivalent of at least 250,000 dump trucks. The resulting construction activity will heavily impact roads in the watershed and create additional runoff and turbidity in nearby streams and reservoirs. In addition, Duke has proposed to dispose of spoils in several nearby locations, including wetlands, forested uplands, tributaries, and the weir. Most of the waters in the Project vicinity are characterized as extremely high-quality streams with designations including Outstanding Resource Waters, Trout Natural, and Trout Put, Grow and Take, which our State's most protective water classifications. ***Filling wetlands and tributaries is not an acceptable option.***

It is also not clear how the spoil locations were selected or why no consideration was given to transporting materials off site. Upland disposal of construction debris that results in impacts to streams or wetlands, as well as placement of rock spoils at the submerged weir, will require an Individual Permit from the USACE as well as a Water Quality Certification from SCDHEC under the authorities of Sections 404 and 401 of the Clean Water Act. Further, as part of the Mitigation Rule, it is a requirement for Duke Energy to consider all steps to *avoid and minimize* impacts to water resources before undertaking activities that negatively impact waters. Duke Energy expects to initiate this parallel regulatory process in conjunction with the relicensing process. However, to avoid impacts to water resources, we strongly recommend that spoils be transported off site rather than used to fill wetlands and streams. (See our previous comments regarding Section 6.6.3 of the PAD on Known or Potential Adverse Effects and Proposed PM&E Measure: Bad Creek II Complex.)

4.1.3 RESOURCE ISSUES – TERRESTRIAL RESOURCES

In addition to assessing the effects of project construction, operation, and maintenance activities on ecological communities and protected terrestrial species, we believe that the effects on *potential* habitat should also be assessed. Furthermore, we believe this should be expanded to include the effects of non-native, invasive, and noxious species on ecological communities and potential habitat areas as well. Habitat and corridor protection is one of the most critical needs for the protection and preservation of species. Assessing the direct impact of the Project on target species is only one component to ensuring that the species have the greatest chance of survival. Rather, the assessment should explicitly examine the amount of available habitat and habitat needs for healthy, diverse, and viable populations of the target species. The assessment should examine past habitat availability, current habitat availability, and determine trends for habitat loss or creation through the term of the new license based on the identified trends. This information can then be used to identify target values for habitat protection and restoration in and near the Project. Lastly, the impacts of climate change should also be evaluated and discussed. Wildlife habitat corridors may be necessary for species migration due to climate change and should be of particular interest throughout the life of the proposed new license.

4.1.4 RESOURCE ISSUES – THREATENED AND ENDANGERED SPECIES

Upstate Forever has the same comments and concerns regarding the effects of project construction, operation, maintenance, and project-related recreation on RT&E species as we do on Section 4.1.3 above, including climate related impacts. In addition, both this section and Section 4.1.3 should consider Project impacts on species not included in this section of SD1. The US Fish and Wildlife Service provided a “List of Threatened, Endangered, Candidate, and Proposed Species Generated by ECOS-IPaC Website on April 11, 2022,” (List) which is available on the FERC’s eLibrary for this docket. The List includes ten (10) migratory bird species considered Birds of Conservation Concern (BCC), which warrant special attention in the project vicinity. These birds are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

4.1.5 RESOURCE ISSUES – RECREATION, LAND USE, AND AESTHETICS

As previously mentioned, language in both the PAD and Scoping Document 1 creates confusion regarding Duke’s long-term plans for continued management of the Foothills Trail. Specifically, Section 7.1.6.1 of the PAD states, “The segment of the Foothills Trail and two undeveloped access areas on non-Project lands that were developed per the Original License will continue to be maintained by Duke Energy in the New License term as a non-Project facility and potentially under a separate agreement with regional stakeholders.” Meanwhile, SD1 states that “Duke Energy does not propose to include the Foothills Trail as a project recreation facility under the new license.” These two documents should be reconciled to clarify Duke’s intentions and the fate of the Trail.

We support all the issues identified in this section. In addition, we believe that land use should be further reviewed in the context of shoreline habitat around the upper reservoir. Because there is no public access to the Bad Creek Reservoir shoreline, permitting policies addressed through a Shoreline Management Plan and Shoreline Management Guidelines are unnecessary. However, due to limited interference from human activities, much of the shoreline around the upper reservoir can and should be managed to provide prime riparian and littoral habitat. The impacts of climate change should also be evaluated and discussed.

Furthermore, because there is no recreational access to the Bad Creek reservoir, the recreation component (Exhibit R) of the original license was provided through the creation and management of a 43-mile section of the Foothills Trail. Exhibit R included public access and parking, trail kiosks and directional signs, additional spur trails, and stream crossings as well as continual maintenance and operational activities for limited recreation uses, primarily hiking. However, while water-based recreation such as canoeing and swimming are understandably overlooked due to fluctuating water levels and public safety concerns, management components related to traditional recreation activities such as fly-fishing and birdwatching should have been considered and should be addressed in the current licensing.

The Foothills Trail system provides important recreational and educational opportunities to both Upstate residents and visitors from around the world. Meanwhile, the Upstate is experiencing unprecedented and accelerating population growth and is expected to continue

growing for decades to come. Already our natural resources are stretched thin, and the current pandemic has revealed how fragile and overburdened our public recreation areas have become. Continued support of the Foothills Trail is a critical component of the New License and expansion of the recreation provisions should be considered to account for the population growth, increased demand for outdoor recreational needs, and expansion of project operations from the ongoing upgrades. Ensuring that recreation opportunities centered on the Foothills Trail continue to provide quality recreation opportunities in perpetuity and that the Foothills Trail can continue to grow to meet additional demand should be paramount in this licensing. Such consideration should include all of the following:

1. An endowment given to the Foothills Trail Conservancy for ongoing management and maintenance of the Foothills Trail system;
2. Fee-simple donations of land to be included in the Foothills Trail system, or to State resource agencies for various purposes, including recreation, habitat management, and water quality protection;
3. Conservation easements on lands owned by Duke Energy, which would protect the Foothills Trail corridor, or allows for other recreation opportunities (a conservation easement would limit specific land development practices but could allow for recreation uses and even Project related activities), including the 6,700-ac tract surrounding the Project;
4. Expand the Foothills Trail system to connect with other trail systems, including the Palmetto Trail at Stumphouse Tunnel, the Panthertown trail system, the Tuskegee National Forest trail system, the Art Loeb Trail in Pisgah National Forest, and the Appalachian Trail; and
5. Providing a financial contribution to the Oconee County Conservation Bank, which would then be used to protect additional lands in the County beyond the Project boundary.

The original license also refers to the Bad Creek Pumped Storage Project as the preferred alternative to a proposed Long Spur Ridge project, which was also under consideration as a similar pumped storage facility. The creation of future projects in the vicinity of the existing Project, including the Limber Pole Creek Project and the Coley Creek Project, should be considered particularly given that obligations for recreation are satisfied beyond the project boundary. These two projects would be situated on an expansive 6,700-acre tract owned by Duke Ventures Real Estate, LLC, a subsidiary of Duke Energy. While Duke Energy may not consider these as viable projects at this time, things may change dramatically over the course of the next license term, which may result in drastic changes in land use and development in the Project vicinity. We believe protection of this tract in particular (Oconee County parcel #016-00-01-013) is key to ensuring long-term high-quality habitat and recreation resources for the Upstate, and for ensuring abundant high-quality water resources for the region. If developed, this tract would have permanent and devastating impacts to water quality in the Whitewater River Watershed and would diminish all the proactive accomplishments that our resource agencies and conservation community have achieved over the past 50 years.

(See the “Water Quality Sensitivity in the Bad Creek Project Vicinity” map appended at Attachment 1, and our previous comments on Section 6.8 of the PAD regarding Recreation and Land Use.)

1.0 PROPOSED STUDIES

The proposed Fish and Aquatic Resources studies are limited in scope and should be expanded to include the Bad Creek Reservoir and associated tributaries, or Duke should include an additional study to collect water quality data for Project-related streams. Currently no water quality data exists for Bad Creek Reservoir and the surrounding streams making it impossible to assess current and future water quality conditions in these locations. (See our previous comment regarding Section 6.3.7.2.2 of the PAD on Water Quality Monitoring, and Section 4.1.2 of SD1 regarding Resource Issues – Aquatic Resources.)

8.0 COMPREHENSIVE PLANS

As previously mentioned in our comment on Section 8.0 of the PAD, this section should include the most recent future land use maps and comprehensive plans available for the project area in both Transylvania and Jackson counties of North Carolina, and Oconee County, South Carolina. Oconee County recently adopted its “Unified 2020 Comprehensive Plan”⁴ on March 3, 2020. From October 2018 through December 2019, Oconee County engaged its local citizens through numerous public meetings, newspaper inserts highlighting the elements of the plan, and a survey for public input. Because the character and density of land that abuts the Project will not be determined solely by Duke Energy, management of the Project as well as the lands in the Project vicinity should consider the vision for the future expressed by Oconee County residents and captured in their plan.

⁴ <https://oconeesc.com/documents/planning-zoning/comprehensive-plan/unified-2020-comprehensive-plan.pdf>

ADDITIONAL STUDY PLAN REQUEST

Environmental Justice Study

In comments submitted to FERC on June 16, 2022, Stephen Bowler, South Branch Chief of the Division of Hydropower Licensing for FERC included a request for an Environmental Justice Study (see “Staff Comments on the Pre-Application Document and Study Request for the Bad Creek Pumped Storage Project”). Upstate Forever supports this study request and believes it would provide important information related to how the Bad Creek Project relicensing, operations, and proposed construction activities might affect underserved communities (“environmental justice communities”) in the Project vicinity. The proposed Environmental Justice Study has five objectives:

(1) to identify presence of environmental justice communities that may be affected by the relicensing of the Bad Creek Project, including the construction of the Complex, and identify outreach strategies to engage the identified environmental justice communities in the relicensing process, if present;

(2) to identify the presence of non-English speaking populations that may be affected by the project and identify outreach strategies to engage non-English speaking populations in the relicensing process, if present;

(3) to discuss effects of relicensing the project on any identified environmental justice communities and identify any effects that are disproportionately high and adverse;

(4) to identify mitigation measures to avoid or minimize project effects on environmental-justice communities; and

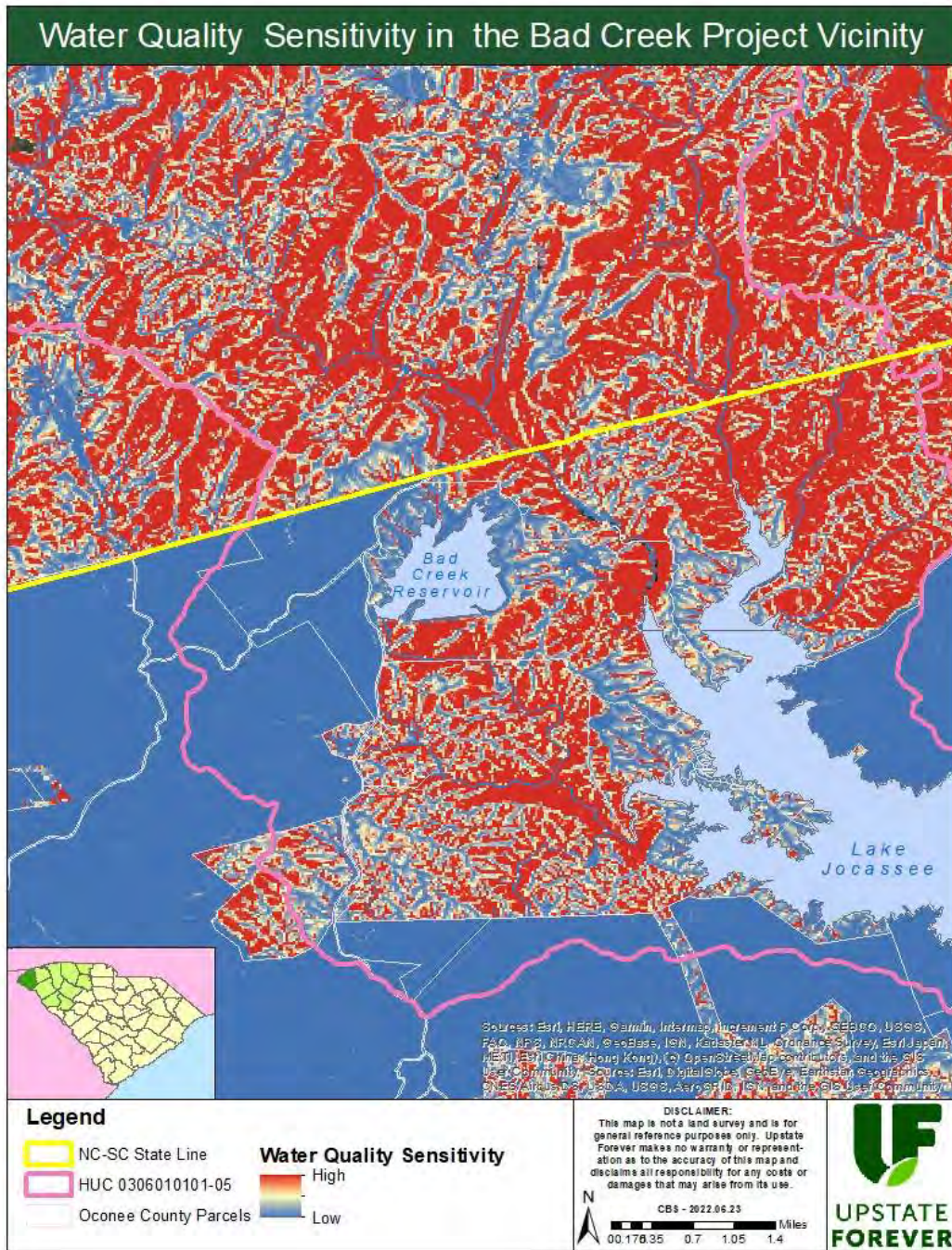
(5) to identify sensitive receptor locations within the project area and identify potential effects and measures taken to avoid or minimize the effects to such locations, if they are present.

Project construction, operation, and maintenance has the potential to affect human health or the environment in environmental justice communities. Examples of resource impacts may include, but are not necessarily limited to, project-related effects on: erosion or sedimentation of private properties; groundwater or other drinking water sources; subsistence fishing, hunting, or plant gathering; access for recreation; housing or industries of importance to environmental justice communities; and construction-or operation-related air quality, noise, and traffic.

ATTACHMENT 1

Water Quality Sensitivity in the Bad Creek Vicinity

This map shows the sensitivity of *unprotected* tracts of land in terms of impacts to water quality if developed. Areas in red show a *high sensitivity*, which means that water quality would be severely impacted by development. Note that almost all the unprotected land in the Project vicinity is highly sensitive and water quality would be greatly diminished if developed.



Salazar, Maggie

Subject: FW: [EXTERNAL] Three species of ferns found for the first time in South Carolina at Lake Jocassee
Attachments: 21PhytoN-SCFerns.pdf

From: Chris Starker <cstarker@upstateforever.org>

Sent: Monday, June 27, 2022 12:57:53 PM

To: Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Elizabeth Miller <MillerE@dnr.sc.gov>; melanie.olds@fws.gov <melanie.olds@fws.gov>; wes.cooler@mac.com <wes.cooler@mac.com>; Glenn Hilliard <glenn@hilliardgrp.com>; Andy Douglas <adoug41@att.net>; RigginL@dnr.sc.gov <RigginL@dnr.sc.gov>; Rachel.McNamara@ferc.gov <Rachel.McNamara@ferc.gov>; Erika Hollis <ehollis@upstateforever.org>

Subject: [EXTERNAL] Three species of ferns found for the first time in South Carolina at Lake Jocassee

***** CAUTION! EXTERNAL SENDER *** STOP. ASSESS. VERIFY!!** Were you expecting this email? Are grammar and spelling correct? Does the content make sense? Can you verify the sender? If suspicious report it, then do not click links, open attachments or enter your ID or password.

Good afternoon, everyone. I just learned this morning about the discovery (nearly five years ago) of three new fern species at Lake Jocassee. There is no mention of any of these ferns in the PAD. Despite the deadline for comments on the PAD and SD1 last week, I feel like this is important information relevant to the Bad Creek Project that should be included in both documents as well as any related studies. A link to the journal article published in 2018 (also attached) as well as the December 2017 issue of "The Blue Wall Weekly" are below.

<https://www.phytoneuron.net/2018Phytoneuron/21PhytoN-SCFerns.pdf>

<https://www.jocasseelaketours.com/component/acymailing/listid-1/mailid-149-blue-wall-weekly-december-18-2017?tmpl=component&tmpl=component>

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THREE REMARKABLY DISJUNCT FERN SPECIES DISCOVERED IN PICKENS COUNTY, SOUTH CAROLINA

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ABSTRACT

Three species of fern in the family Pteridaceae are reported as new to South Carolina: *Astrolepis sinuata* (Lag. ex Sw.) Benham & Windham subsp. *sinuata*, *Bommeria hispida* (Mett. ex Kuhn) Underw., and *Pellaea wrightiana* Hook. One of these, *Bommeria hispida*, is the first record for eastern North America. All three occur in a cliff habitat in Pickens County created in 1968-1971 by quarrying of granite to build the adjacent Jocassee Dam. All three are native to the western USA and are hypothesized to have colonized this site along the leading edge of the Blue Ridge Escarpment as winds from the Southwest continue to bring in spores.

In 2017 Ms. Kay Wade located a large population of a strange fern growing on outcrops near the Jocassee Dam in Pickens Co., South Carolina. She brought this population to the attention of local native plant enthusiast and South Carolina Native Plant Society member Mr. Dan Whitten. Dan visited the site with Kay and confirmed that the plants were a species of *Pellaea*, possibly *Pellaea atropurpurea* (L.) Link. Mr. Whitten was aware that *Pellaea atropurpurea* was found on calcareous or mafic substrata and thus sent a photograph of the fern to retired University of South Carolina, Upstate professor Gillian Newberry. Dr. Newberry suggested the species was a western species, likely *Pellaea wrightiana*, not *Pellaea atropurpurea*.

Wade took McMillan to the site on December 3, 2017 and McMillan immediately recognized the plant as *Pellaea wrightiana* Hook., a species with which he was intimately familiar from his work in western Texas and North Carolina. McMillan managed to scale up the rock face to secure a sample of the fronds and confirmed this identification upon returning to Clemson University. A return visit with Kay Wade, Edward Pivorun and Richard Porcher on December 6, 2017 allowed a more thorough

examination of the cliff with binoculars. The group identified two additional species: *Astrolepis sinuata* (Lag. ex Sw.) Benham & Windham subsp. *sinuata* and *Bommeria hispida* (Mett. ex Kuhn) Underw. (this determination was suggested by Alan Weakley of the University of North Carolina after examining photographs). McMillan collected one frond from each of these species but most of the cliff was outside the range of hands and binoculars. The team returned to the site on 13 December 2017 with a member of McMillan's staff, Mr. Cody Davis, an expert climber. Mr. Davis secured fronds of all three species and thoroughly explored the extent of the cliff for other oddities that might be encountered.

All determinations were confirmed by George Yatskievych via a loan of specimens to the University of Texas at Austin. Taxonomy follows Weakley (2015). Vouchers are as follow.

ASTROLEPIS SINUATA (Lag. ex Sw.) Benham & Windham subsp. *sinuata*

South Carolina. Pickens Co.: Approximately 300-400 vigorous clumps growing along approximately 50 meters of shoreline of Lake Jocassee on exposed granitic outcrops created during the construction of Lake Jocassee dam; plants located in vegetation mats and fissures in the rock face on west and southwest-facing exposures, with *Pellaea wrightiana*, *Bommeria hispida*, *Woodsia obtusa*, *Asplenium platyneuron*, *Andropogon virginicus*, *Chrysopsis mariana*, *Solidago canadensis*, and various bryophytes, 34°58'11.59" N 82°54'45.27" W, 6 Dec 2017, *McMillan s.n.* with Wade, Porcher, and Pivorun (CLEMS); same location, 14 Dec 2017, *McMillan s.n.* with Davis, Maddox, Pivorun, and Huffman (CLEMS, NCU).

BOMMERIA HISPIDA (Mett. ex Kuhn) Underw.

South Carolina. Pickens Co.: Two clumps located shoreline of Lake Jocassee on exposed granitic outcrops created during the construction of Lake Jocassee dam; plants found in fissures in the rock face on south and southwest-facing exposures, with *Astrolepis sinuata*, *Pellaea wrightiana*, *Woodsia obtusa*, *Asplenium platyneuron*, *Andropogon virginicus*, *Chrysopsis mariana*, *Solidago canadensis*, and various bryophytes, 34°58'11.59" N 82°54'45.27" W, 14 Dec 2017, *McMillan s.n.* with Davis, Maddox, Pivorun, and Huffman (CLEMS, NCU).

PELLAEA WRIGHTIANA Hook.

South Carolina. Pickens Co.: Over 2000 vigorous clumps growing along approximately 150 meters (0.1 mile) of shoreline of Lake Jocassee on exposed granitic outcrops created during the construction of Lake Jocassee dam; plants dominant in fissures in the rock face on south, southwest and west-facing exposures, with *Astrolepis sinuata*, *Bommeria hispida*, *Woodsia obtusa*, *Asplenium platyneuron*, *Andropogon virginicus*, *Chrysopsis mariana*, *Solidago canadensis*, and various bryophytes, 34°58'11.59" N 82°54'45.27" W, 3 Dec 2017, *McMillan s.n.* with Wade and Whitten (CLEMS); same location, 14 Dec 2017, *McMillan s.n.* with Davis, Maddox, Pivorun, and Huffman (CLEMS, NCU).

Discussion

All three of these species typically occur far to the west of Lake Jocassee. These discoveries add three species to the flora of South Carolina as well as the first record for *Bommeria hispida* in eastern North America.

The occurrence of ferns in the Southeast with a much more western distribution is not without precedent. *Pellaea wrightiana* is known from two locations in the piedmont of North Carolina, *Myriopteris rufa* Fée from Virginia and West Virginia, *Myriopteris gracilis* Fée from Virginia, *Astrolepis sinuata* subsp. *sinuata* from a single location in Georgia, *Astrolepis integerrima* (Hook.) D.M. Benham & Windham from Alabama, and most remarkably *Pellaea ternifolia* (Cav.) Link subsp. *arizonica* Windham from approximately 7.25 miles northeast of the Lake Jocassee site in Pickens County (Wagner 1965; Knobloch & Lellinger 1969; Wiebolt & Bentley 1982; Mellichamp et al. 1987;

Benham & Windham 1993; Allison & Stevens 1999; Heafner 2001). The Jocassee Gorges region has long been known for the remarkable diversity of ferns found there. One species, the mostly tropical *Hymenophyllum tunbrigense* (L.) J.E. Smith, which was located during surveys of the nearby Eastatooe River gorge (approximately 6.7 miles northeast of the Lake Jocassee site), is still known from only this single metapopulation in the continental USA (Taylor 1938). *Asplenium monanthes* L., another species with a mostly tropical distribution, is present at many locations in the Jocassee Gorges region. A review of published records and herbarium specimens, combined with field work for the preparation of this article indicates that the area of Pickens/Oconee counties now hosts 68 species of fern and fern relatives. Pickens County alone is home to 65 species. The discovery of three additional species certainly places this small region into a category of extremely high regional pteridophyte diversity.

Most, if not all, of the locations of fern species that are far disjunct to the east from more western ranges are reports of a single species per locale. The Jocassee site is remarkable for the presence of three species displaying such a pattern.

Pellaea wrightiana is a common species found on acidic-reaction outcrops in Texas, Oklahoma, New Mexico, Arizona, southern Colorado, and southern Utah and was formerly known from only two other populations east of Texas. It was erroneously reported for South Carolina by Platt and Townsend (1996). The plants originally thought to be *P. wrightiana* from Pickens County were found to be the first record of *Pellaea ternifolia* Link subsp. *arizonica* in eastern North America (Heafner 2001). The population reported here is the first record for South Carolina and is the most extensive population in eastern North America. The closest populations to the Lake Jocassee site are in Alexander Co., North Carolina (roughly 120 miles northeast), with an initially reported population of approximately 100 clumps growing on granite and Stanly Co., North Carolina (roughly 140 miles east-northeast), with an initially reported population of approximately 500 plants. Since their initial discovery, both of the North Carolina populations have apparently declined. Heafner (2001) found the Alexander County population had dropped to only around 25 clumps while the Stanly County population had also declined by half. The Lake Jocassee site is estimated to consist of no less than 2000 clumps. The discovery of the South Carolina population indicates that this species should be searched for on other acidic-reaction rock outcrops throughout the southern Appalachian region. Heafner (2001) reported that there was very little variation in the allozymes between the two North Carolina populations and they were likely to represent dispersal from a single eastward immigration event. Among the populations sampled from the western range, he found that plants in North Carolina were most similar to those sampled from Jeff Davis Co., Texas.

Astrolepis sinuata subsp. *sinuata* is also a common species on acidic-reaction outcrops in Arizona and New Mexico east to central Texas. The species is remarkably disjunct from central Texas to a bridge piling in Beauregard Par., Louisiana, and Merriweather Co., Georgia, where it was found on a granite flatrock next to a natural gas distribution station (Benham & Windham 1993; McMillan et al. 2013; L.L. Gaddy, pers. comm. 2017). The Pickens County location is the first for South Carolina and only the second report from east of the Mississippi River; it is the largest population east of central Texas.

The Pickens County location represents the first known station in the eastern USA for *Bommeria hispida*. This species is remarkably disjunct from the nearest known populations in Brewster Co., Texas (more than 1200 miles to the southwest). This staggering distance might at first seem unique but it is identical to the disjunction in range found in the nearby population of *Pellaea ternifolia* subsp. *arizonica*.

Establishment at the Pickens County site

The site at which all of the observations were made is a human-created habitat. The cliff habitat was created in 1968-1971 by quarrying activity for the material to build the adjacent Jocassee

Dam. The area is known as "The Wall" and is a 10–40 meter high quarry of granitic rock. The entire hill and face of the mountain was denuded with no natural vegetation left during construction. For a better idea of the scale of disturbance, the construction of the site can be seen on video during the opening minutes of the movie *Deliverance*. The habitat these ferns have colonized was barren, newly exposed rock during the construction of the dam.

The resulting cliff forms a horseshoe shape with the upstream portion facing south and ranging to southwest, west, and northwest exposures as it proceeds downstream. All three of the species are limited to southwest and west-facing faces. The base of the cliff extends to the water for the entire length and is well over 150 feet tall along a large portion of its length. This shape, in addition to the fact that the widest portion of the lake extends from the cliff habitat, has created conditions that receive the full impact of the predominant southwest winds that dominate the region. The winds eddy and swirl in this cove and may provide the opportunity for enhanced settling of the spores that brought these ferns to the cliff.

Astrolepis sinuata subsp. *sinuata* ($2n = 87$, triploid) relies on apogamous reproduction while *Pellaea wrightiana* ($2n = 116$, allotetraploid) and *Bommeria hispida* ($2n = 60$) both reproduce sexually (Benham & Windham 1993; Gastony & Haufler 1976). Spore resiliency and longevity has been shown to be high in members of the family Pteridaceae, with spores preserved on herbarium sheets remaining viable for over 40 years (Windham, Wolf, & Ranker 1986). It is hypothesized that spores were transported along prevailing southwest winds and settled on the newly exposed cliff face where competition with local species was reduced or absent due to the disturbance. The site is along the leading edge of the Blue Ridge Escarpment.

An alternative hypothesis is that nearby populations of these species provided spores for colonization of the newly exposed habitat, but we searched thoroughly along the entire shoreline outcrop habitats of Lake Jocassee and located no other populations. We also searched the exposed rock outcrops above the cliff. The area above the cliff was completely denuded during dam construction.

An alternative hypothesis could include the introduction of spores via machinery used in the construction. Several factors argue against this, notably the absence of any non-pteridophyte species from farther west on the site or nearby. Weed seeds would seem to just as easily be moved. Finally, the presence of another nearby species of fern with a similar distribution (*Pellaea ternifolia* subsp. *arizonica*) and the presence of *Pellaea wrightiana* at two sites in North Carolina, where they are assumed to have naturally colonized their habitats, supports the fact that spores must travel these distances and be able to successfully colonize new habitats.

ACKNOWLEDGEMENTS

The authors would like to thank George Yatskievych of the University of Texas for confirming our identifications and his patient search for intact sporangia to determine the subspecies of *Astrolepis sinuata*. Alan Weakley of the University of North Carolina was extremely patient and helpful in discussions concerning these ferns. We also would like to thank Brooks Wade of Jocassee Lake Tours for helping to provide the opportunity to make such discoveries possible, Zachary Maddox for providing boat transportation to the site and Rick Huffman of the South Carolina Native Plant Society for joining us and always encouraging, promoting, and participating in the continued discovery of our native flora. Guy Nesom reviewed and edited the paper.

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Friends of Lake Keowee Society

Dedicated to the preservation and enhancement of Lake Keowee and its watershed through advocacy, conservation and education.

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June 20, 2022

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A,
Washington, DC 20426

RE: Comments on the Bad Creek Pumped Storage Project (FERC No. 2740), Oconee County, South Carolina Notice of Intent (NOI) to File License Application; the Pre-Application Document (PAD), request for comments on the PAD and Scoping Document, and Associated Study Requests for the Bad Creek Pumped Storage Complex II Project.

Dear Ms. Bose:

The Friends of Lake Keowee Society has reviewed the pertinent documents pertaining to the Bad Creek Pumped Storage Project (FERC No. 2740) dated April 22, 2022, which include the Notice of Intent (NOI), the Pre-Application Document (PAD), the Request for Comments on the PAD and Scoping Document, and Identification of Issues and Associated Study Requests for a new license using the Integrated Licensing Process (ILP) for the Bad Creek II Pump Storage project.

At this time, we have no issues or concerns with the proposed relicensing of the Bad Creek Pumped Storage Project or with the ILP for a new license for the Bad Creek Pumped Storage Complex II. The studies identified for the environmental assessment for the Bad Creek Pumped Storage Complex II appear to cover the areas of major concern for FOLKS and our members. We look forward to working with the study groups, FERC, Duke Energy, and others throughout the process to meet our collective goals of supplying clean and green energy to the grid.

Best regards,

Dale Wilde - President, FOLK

phil mitchell, salem, SC.

Request addition of study to encompass "Emergency Preparedness" during construction.

Justification :

Remote location with currently located remote emergency services available to the area. Usage of explosives and major underground work increases the inherent risks and therefore the likelihood of needing this study.

ISSUES :

One project access road, Bad Creek Road, with NO other road egress or exit to 21 home sites. If a life safety emergency, such as fire or complications due to excavation (project involves excavation and thousands of feet of underground work) occurs which prevents road usage then home owners are trapped. Suggest a temporary rough cut secondary access road with possible later usage for recreation.

Project should study impact / benefit of adding an emergency services boat and dock to address fire and life safety during construction and operation due to the remote nature and potential hazards.

Project should study impact / benefit of supporting the addition of another, closer, Fire House on Highway 130 / 281 coming from the Toxaway, NC side of the Bad Creek project to address response time, due to remote location and likelihood of the need for emergency, such as fire and life safety issues.

Study should include issues with emergency communications plans with home owners (due to only one access road in and out).

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
July 12, 2022

OFFICE OF ENERGY PROJECTS

Project No. 2740-053 – South Carolina
Bad Creek Pumped Storage Project
Duke Energy Carolinas, LLC

Via FERC Service

Alan Stuart
Duke Energy Carolinas, LLC
Mail Code EC-12Q
526 S. Church Street
Charlotte, NC 28202

Reference: Additional Information Request

Dear Mr. Stuart:

We have reviewed the Pre-Application Document (PAD) for the relicensing of Duke Energy Carolinas, LLC's (Duke Energy) Bad Creek Pumped Storage Project No. 2740-053 (Bad Creek Project), filed on February 23, 2022, participated in the scoping meetings during the week of May 16, 2022, and reviewed the scoping comments filed by stakeholders.

Based on our review of the PAD and the scoping comments, we need additional information related to material presented in the PAD. The requested additional information (see the attached Schedule A) should be filed within 15 days of the date of this letter.

If you have any questions, please contact Navreet Deo at (202) 502-6304, or navreet.deo@ferc.gov.

Sincerely,

Stephen Bowler, Chief
South Branch
Division of Hydropower Licensing

Attachment: Schedule A

SCHEDULE A
ADDITIONAL INFORMATION REQUEST

1. In scoping comments, stakeholders, including the Foothills Trail Conservancy, raised a number of questions regarding ongoing operation and maintenance of the Foothills Trail. Construction of the Foothills Trail was authorized by the Commission in a January 14, 1981 Order Approving Amendment of Exhibit R (14 FERC 62,026 [1981]). Ordering Paragraph 1(A) approves a 61-page document entitled “A Plan for Development and Management of the Foothills Trail” (1980). Commission staff cannot locate this document, or any subsequent revisions (if any), in the record for the project. Please file a copy of the 1980 plan, as well as any subsequent revisions to the plan, or management agreements for the Foothills Trail that have occurred during the term of the current license.



July 25, 2022

Electronically Filed

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Subject: **Bad Creek Pumped Storage Project (P-2740-053)
Pre-Application Document Additional Information Request**

Dear Secretary Bose:

Duke Energy Carolinas, LLC (Duke Energy or Licensee) is the Licensee, owner, and operator of the 1,400-megawatt (MW) Bad Creek Pumped Storage Project (FERC No. 2740) (Project), located in Oconee County, South Carolina. The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission), and the current operating license for the Project expires on July 31, 2027. Accordingly, Duke Energy is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

On February 23, 2022, in accordance with 18 CFR §5.6, Duke Energy filed the Pre-Application Document (PAD) and Notice of Intent with FERC. On July 12, 2022, FERC issued an Additional Information Request related to the PAD.

FERC's request is repeated below for reference:

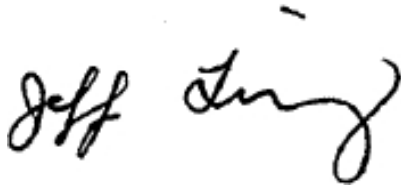
- 1. In scoping comments, stakeholders, including the Foothills Trail Conservancy, raised a number of questions regarding ongoing operation and maintenance of the Foothills Trail. Construction of the Foothills Trail was authorized by the Commission in a January 14, 1981 Order Approving Amendment of Exhibit R (14 FERC 62,026 [1981]). Ordering Paragraph 1(A) approves a 61-page document entitled "A Plan for Development and Management of the Foothills Trail" (1980). Commission staff cannot locate this document, or any subsequent revisions (if any), in the record for the project. Please file a copy of the 1980 plan, as well as any subsequent revisions to the plan, or management agreements for the Foothills Trail that have occurred during the term of the current license.*

The Honorable Kimberly D. Bose, Secretary
July 25, 2022
Page 2 of 2

Duke Energy is hereby providing the requested document "A Plan for Development and Management of the Foothills Trail and a Supplement to The Bad Creek Pumped Storage Project FERC Project #2740 Exhibit R" (along with a copy of FERC's January 24, 1981 order, for reference) in Enclosure 1 to this submittal. Duke Energy is not presently aware of subsequent revisions to this Plan.

If there are any questions regarding this filing, please contact Alan Stuart, Senior Project Manager, Water Strategy & Hydro Licensing at Alan.Stuart@duke-energy.com or via phone at 980-373-2079.

Sincerely,

A handwritten signature in black ink that reads "Jeff Lineberger". The signature is written in a cursive style with a small dash above the "i" in "Lineberger".

Jeffrey G. Lineberger, PE
Water Strategy & Hydro Licensing
Duke Energy

Enclosure

cc (w/enclosure): Alan Stuart, Duke Energy
Garry Rice, Duke Energy
Jennifer Bennett, Duke Energy
Service List



Attachment 1

A Plan for Development and
Management of the Foothills
Trail and a Supplement to
Exhibit R

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Response to PAD and
SD1 Comments

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Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
1	Project Infrastructure/Operations	<p>1. Study request to address "Emergency Preparedness" during construction due to remote location of site and nearby homes.</p> <p>One project access road, Bad Creek Road, with no other road egress or exit to 21 home sites. If a life safety emergency, such as fire or complications due to excavation (project involves excavation and thousands of feet of underground work) occurs which prevents road usage then home owners are trapped. Suggest a temporary rough cut secondary access road with possible later usage for recreation.</p> <p>Project should study impact / benefit of adding an emergency services boat and dock to address fire and life safety during construction and operation due to the remote nature and potential hazards.</p> <p>Project should study impact / benefit of supporting the addition of another, closer, Fire House on Highway 130 / 281 coming from the Toxaway, NC side of the Bad Creek project to address response time, due to remote location and likelihood of the need for emergency, such as fire and life safety issues. Study should include issues with emergency communications plans with home owners (due to only one access road in and out).</p>	Fishers Knob Homeowners	May 17 2022	<p>Because this study request does not satisfy the Integrated Licensing Process (ILP) study criteria, it is considered a comment. Duke Energy expects that emergency response and preparedness and public safety measures through construction would be addressed through construction plans to be submitted to the FERC Division of Dam Safety and Inspections following issuance of the new license and prior to commencement of construction. Stakeholder comment periods and consultation throughout the ILP provide opportunities for concerns and potential protection, mitigation, and enhancement measures to be raised to Duke Energy and the Commission, and Duke Energy intends to identify and develop appropriate communication plans and measures to reduce or mitigate construction impacts in consultation with relicensing stakeholders.</p>
2	Project Infrastructure/Operations	<p>1. Current discrepancies in project infrastructure descriptions and capacity between Scoping Document 1 (SD1), Pre-Application Document (PAD), and the Original License should be corrected or more fully explained if conditions have been modified since the approval of the Original License. Also clarify impacts from construction and new powerhouse and how mitigation will be addressed to address impacts beyond that expected in the original license.</p> <p>This comment includes two associated sub-parts (1a and 1b); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	<p>Duke Energy notes that it is not unusual for as-built versus originally authorized or proposed dimensions of project structures to vary for a hydropower project, particularly one the scale of Bad Creek. Duke Energy is not aware of any discrepancies that would materially affect natural resource impacts previously assessed by FERC. The relicensing process, inclusive of development of the Draft and Final License Application, provides an opportunity to provide updated Project information to the Commission.</p> <p>With respect to impacts of the recent and ongoing powerhouse upgrades, these upgrades were authorized by, and subject to environmental review by FERC and agencies for, FERC's August 6, 2018 Order Amending License, Revising Project Description and Annual Charges, and Approving Revised Exhibit M.</p> <p>Duke Energy is providing additional details and clarifications about existing Project structures in this PSP in response to comments from FERC and stakeholders, including the following:</p> <ul style="list-style-type: none"> - The Bad Creek reservoir size (from the original license and as cited in Section 6.3.1.1) is correctly stated at 318 acres with storage of 33,323 acre-feet. This number is based on the original reservoir storage curves developed for the project. The 363-acre value is based on LiDAR data collected by Duke Energy in 2018, when the upper reservoir was fully drawn down. This data is of higher resolution and is used as the surface area size throughout the PAD. The 367-acre estimate is from 1992 Licensing as-built data, as described in the text on page 6-50 of the PAD and in Table 6.3-1 "Usable Storage Summary", which includes a list of all data sources and previously stated values for acres of the Bad Creek Reservoir since 1974.

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
3	Aquatic Resources, Recreation	<p>2. Requirements of separate FERC-licensed projects should be kept separate. Recreation provided under a separate FERC License should not count toward the recreational opportunities provided by the Bad Creek License. Several sections of the PAD include discussion about the Keowee-Toxaway (KT) Project; however, this information is not necessarily relevant as the Bad Creek Pumped Storage Project (P-2740) operates under a separate FERC License from the KT Project (P-2503). In several instances the information provided confuses the conversation as it is unclear how the KT Relicensing Agreement relates to the Bad Creek original Project construction or ongoing Project operation.</p> <p>This comment includes two associated sub-parts (2a and 2b); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	Duke Energy agrees that mitigation for the Keowee-Toxaway Project is not intended to meet the requirements for the separate and distinct impacts from the Bad Creek Project, but that protection, mitigation, and enhancement measures in place for Lake Jocassee as required by the Keowee-Toxaway Project also benefit the Bad Creek Project. The 10-Year Work Plans, work plan summaries, and approved modifications, as well as the 2013 KT License Agreement are attached to the Aquatic Resources Study Plan for clarity on which mitigation activities are covered under each relicensing. The Recreational Resources Study includes plans to conduct a RUN study and will include the 43-mile-long Foothills Trail Corridor.
4	Recreation	<p>3. Recreation requirements of the Original License should be accurately and comprehensively discussed. Due to the unusual nature of this project, with no recreational access to the Reservoir allowed, the Recreation component of the Original License was provided entirely by constructing and maintaining the 43-mile center section of the nearby Foothills Trail. A full description of the Trail (including reference to Exhibit R) should be included in discussions regarding protection, mitigation, and enhancement (PM&E) measures and comprehensive information about the Trail infrastructure, construction, and maintenance should be provided.</p> <p>This comment includes four associated sub-parts (3a through 3d); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	The Recreation Use and Needs Study (a task of the Recreational Resources Study) will identify facilities required by the Bad Creek Exhibit R and assess the current condition of the facilities and amenities of the Duke Energy managed access locations to the Foothills Trail. The trail and corridor conditions and potential maintenance needs will be assessed through a Foothills Trail Condition Assessment. Duke Energy acknowledges that the public uses Bad Creek Road to access public parking lot, Foothills Trail kiosk, and a spur trail providing access to the Foothills Trail and to the Lower Whitewater Falls scenic viewpoint; these components of public access will be labeled on a revised map to be included in the Recreational Resources Report and Draft License Application.
5	Recreation	<p>4. Provide a summary of completed recreation-related projects. Duke should provide comprehensive information regarding fulfillment of the Original License Exhibit R; including a map and complete inventory of infrastructure and appurtenances, construction and maintenance costs, and current conditions of these features throughout the 43-mile section of Trail.</p> <p>This comment includes four associated sub-parts (4a through 4d); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	<p>A comprehensive map of the Foothills Trail will be included in the Recreational Resources Study report showing trail corridor, available parcel information, and Duke Energy maintained access points. Major points of maintenance interest along the trail will be identified during the trail assessment including corridor, trail surface and structure concerns, however the report may not identify all minor constructed structures such as stairs. Duke Energy does not propose to acquire additional easements for the Foothills Trail Corridor as trail expansion is not currently proposed. As noted above, condition assessment of the trail maintained by Duke Energy will be assessed as part of this study.</p> <p>Duke Energy does not propose to conduct a vegetation or hemlock survey as part of the Recreational Resources Study and does not believe there to be a nexus between this resource issue and Project operations to support an ILP study.</p>

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
6	Water Resources	<p>5. Federal and state protections apply to Waters of the US regardless of modification, land ownership, or use of water. As both Waters of the US (WOTUS) and Waters of the State (WoS), the Bad Creek Reservoir and streams/wetlands present within the proposed Project Boundary are subject to federal and state regulations. Wording throughout the documents should be corrected to indicate that regulations, such as water quality standards, do apply. Additionally, monitoring should be conducted to evaluate existing impacts and assess potential future impacts.</p> <p>This comment includes five associated sub-parts (5a through 5e); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	<p>Duke Energy is not aware of any state or federally regulated water classifications or designations assigned to the upper reservoir; however, the upper reservoir could potentially be considered Waters of the U.S. or Waters of the State according to the Pre-2015 Regulatory Definition and Practice. Duke Energy further notes that the definition of WOTUS is currently in flux. As described in the Water Resources Study, to characterize baseline conditions and assess potential water quality impacts, Duke Energy will undertake water quality monitoring (continuous temperature and bi-weekly DO) at three historic monitoring sites in the Whitewater River arm of Lake Jocassee in 2023 (two-unit powerhouse operation) and 2024 (four-unit powerhouse operation, with all ongoing upgrades complete). Monitoring is not useful in the Bad Creek upper reservoir due to significant daily water fluctuations.</p> <p>Upland waters and impacts to upland streams and wetlands will be considered under the future Water Quality Monitoring Plan under the Water Resources Study.</p>
7	Multiple resources	<p>6. Natural resources located within the Project Boundary continue to be protected under regulations; current conditions should be fully evaluated and discussed.</p> <p>This comment includes three associated sub-parts (6a through 6c); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	<p>Comments noted. Impacts to natural resources associated with construction and operation of the new powerhouse in the project area will be assessed throughout the licensing study. Duke Energy plans to provide in the license application and supporting documents information required by FERC and other regulatory entities, and relevant to the construction and operation of the expanded Project in the new license term.</p>
8	Recreation	<p>7. Current conditions should be evaluated throughout the Trail corridor. A comprehensive evaluation of existing resources and potential impacts of current and ongoing operations, including current upgrades, to Project-related recreation (i.e., the 43-mile section of Trail and appurtenances constructed and maintained by Duke) should be included.</p> <p>This comment includes three associated sub-parts (7a through 7c); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	<p>Foothills Trail surface and corridor conditions such as notable erosion (specific to the area within the Duke Energy easement area) will be assessed through a Foothills Trail Condition Assessment as part of the Recreational Resources Study. This study will identify any current outstanding maintenance needs. Need for additional facilities associated with trail use such as restrooms will be evaluated as part of the Recreation Use and Needs Study. Duke Energy does not propose to study vegetation or hemlock populations along the Foothills Trail Corridor as trail maintenance concerns will be addressed in assessment. The possible construction of the Bad Creek II Complex would not have direct impact on vegetation condition throughout the trail corridor. Vegetation outside of the 200-ft Duke Energy trail corridor easement will not be studied as there is not a direct nexus to the Project and lands outside the easement are not owned or controlled by Duke Energy.</p>
9	Recreation	<p>8. Proposed PM&E should be clear and consistent. Discrepancies between SD1 and the PAD create confusion on Duke's future intent regarding the Trail; these documents should be clear and consistent. With no consideration of recreation at the Reservoir and recreational access on Lake Jocassee provided by the separate KT License, the Foothills Trail should be the focus of recreational requirements of the New License.</p> <p>This comment includes three associated sub-parts (8a through 8c); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	<p>The Recreation Use and Needs Study and Draft and Final License Application will provide clarifying language of the Foothills Trail nexus to the current license and subsequent renewal. Duke Energy intends to continue to ensure for the management of the 43-mile trail segment currently under its management purview. Continued operation of the existing Bad Creek Project will not increase use of the Foothills Trail or neighboring recreational resources, and no expansion of the trail corridor is currently proposed. Use and needs of the existing facilities will be evaluated and additional needs related to recreational use of the trail and associated facilities will be identified.</p>

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
10	Recreation	<p>9. The RUN Study should be expanded. The proposed Recreational Use and Needs (RUN) Study should be comprehensive and specifically for recreation related to the Bad Creek Project.</p> <p>This comment includes five associated sub-parts (9a through 9e); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	Addressed in the Recreation Use and Needs Study (task of the Recreational Resources Study). Expansion of the trail corridor is not proposed for the continued operation of the existing Bad Creek Project. All Duke Energy managed land and water access to the Foothills Trail will be addressed in the RUN Study. Duke Energy Ventures is a wholly owned subsidiary of Duke Energy Corporation that holds property that may be needed in the future to meet electric customer needs.
11	Multiple resources	<p>10. Expanded information should be included in some sections to provide a more accurate, updated, and comprehensive understanding of conditions.</p> <p>This comment includes three associated sub-parts (10a through 9c); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	Duke Energy plans to provide in the Draft and Final License Application and supporting documents information required by FERC and other regulatory entities to support their environmental review processes and required permits and approvals, and relevant to the construction and operation of the expanded Project in the New License term. Expanded information on socioeconomics, climate, and geology, and recreation will be included in relevant sections of the Study Reports and Draft and Final License Application.
12	Multiple resources	<p>11. Construction of the Complex should require additional evaluation and PM&E measures. The proposed Bad Creek Complex II Expansion would double the already upgraded capacity of the Bad Creek Project. A complete analysis of permanent and temporary construction impacts and potential introduction/expansion of invasive species should be thoroughly evaluated and additional PM&E, including expanded recreational requirements, should be required.</p> <p>This comment includes eight associated sub-parts (11a through 11h); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	Comment noted by Duke Energy. Impacts of Bad Creek II Complex construction/expansion will be assessed throughout the relicensing, and appropriate protection, mitigation, and enhancement measures will be identified and evaluated in consultation with stakeholder and proposed in the Draft and Final License Application.
13	Project Infrastructure/Operations	<p>12. The proposed Project Boundary should be expanded to include all Project related infrastructure.</p> <p>This comment includes three associated sub-parts (12a through 12c); the full comment is included in Appendix B.</p>	Foothills Trail Conservancy	June 23 2022	Duke Energy intends to identify a new project boundary in the Draft and Final License application that would include all lands necessary for access to, or control of, the existing and expanded Project facilities. Duke Energy proposes that the Foothills Trail (portion of the trail presently maintained by Duke Energy) be treated as a non-Project facility in the new License, and does not expect to propose significant expansion of the Project boundary to encompass this facility. Duke Energy is committed to working with stakeholders to identify appropriate enhancements and management measures and responsibilities for this portion of the Foothills Trail in the New License term.
14	General	<p>13a. The Foothills Trail Conservancy contact information should be updated in the Bad Creek Pumped Storage Project (FERC No. 2740) Distribution List (included in NOI and PAD Appendix A), to the following:</p> <p>Andrew Gleason Chairman, Board of Directors Foothills Trail Conservancy andrewandwilla@hotmail.com</p> <p>Dr. Bill Ranson Member, Board of Directors Foothills Trail Conservancy bill.ranson@retiree.furman.edu</p> <p>Glenn Hilliard Founder and Advisor Foothills Trail Conservancy glenn@hilliardgroup.com</p>	Foothills Trail Conservancy		The requested contacts have been added to the Project distribution list.
15	Recreation	<p>13b. SD1 Section 8.0 (page 21-23) should include the most current version of Comprehensive Plans; for example, the list includes the SC State Comprehensive Outdoor Recreation Plan (SCORP) from 2008, but the SCORP was updated in 2019 and is available online https://p.widencdn.net/bzuwqi/2019-South-Carolina-SCORP-FINAL.</p>	Foothills Trail Conservancy		The Recreation Use and Needs Study (task of the Recreational Resources Study) will utilize the most updated SC State Comprehensive Outdoor Recreation Plan as noted.

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
16	General	13c. PAD Section 4.4.1 (Maintenance of Public Website) – Duke commits to maintaining a public Project website during the course of the licensing process. To assist stakeholders and the general public with understanding Duke’s compliance with the Licensing Agreements, we recommend maintaining this website (including compliance reports) into the future.	Foothills Trail Conservancy		Duke Energy is committed to transparent communications with stakeholders throughout Project lifecycles and anticipates using the public website or similar medium to communicate project status and updates, and resources associated with the Project, into the new license term.
17	Recreation	13d. PAD Section 6.8.1.1 (FERC-Approved Recreation Facilities at the Project) states that “Prior to the construction of the Project, the first portion of the Foothills Trail was built linking Table Rock State Park to Oconee State Park.” This wording is confusing and could be misunderstood that the first portion of the Trail connected Table Rock State Park to Oconee State Park. In fact, Table Rock State Park and Oconee State Park represent the current end points – and the section between is the entire 77-mile Foothills Trail, including the 43-mile central section Duke constructed and continues to maintain. This section should be clarified to accurately describe the initial section built prior to construction of the Bad Creek Project.	Foothills Trail Conservancy	June 23 2022	The requested information and clarification will be provided in the Recreational Resources Study report.
18	General	1. At this time, we have no issues or concerns with the proposed relicensing of the Bad Creek Pumped Storage Project or with the ILP for a new license for the Bad Creek Pumped Storage Complex II. The studies identified for the environmental assessment for the Bad Creek Pumped Storage Complex II appear to cover the areas of major concern for FOLKS and our members. We look forward to working with the study groups, FERC, Duke Energy, and others throughout the process to meet our collective goals of supplying clean and green energy to the grid.	Friends of Lake Keowee	June 22 2022	Comment noted; no response required.
19	Aquatic Resources	1. This section describes the Project’s existing lower reservoir inlet/outlet structure and references steel trash racks. The SCDNR requests information regarding the dimensions and bar spacing of the existing trash rack structure to better understand the Project’s impact on aquatic species.	SCDNR	June 23 2022	The discharge structure splits the two existing discharge tunnels into two parts. The two arched tunnels have splitter walls creating four openings convey the water. Each half arch section has two steel racks (upper and lower). The lower portion is rectangular (16.25’ high x 18.25’ wide); the upper portion has a rectangular bottom and arched top. The bottom width is 18.25’ wide. The short side is 9.25’ high; the tall side is 16.25’ high. The radius of the arch is 32’-4”. There are 34 spaces at 6” spacing, on-center, for a flow area of 17’ with this spacing (the sides are slightly smaller because of the trashrack frame).
20	Water Resources	2. This section describes a submerged weir located 550 meters downstream of the Project inlet/outlet structure on the lower reservoir. According to the PAD, the weir’s location in the Whitewater River cove serves to dissipate the energy of the discharged water and minimize the effects of warm water from Bad Creek’s upper reservoir warm water, by preventing the water from mixing with the lower cool-water layers of Lake Jocassee. The weir was constructed out of nearly half a million cubic yards of rock excavated during the construction of the Project. The SCDNR requests information regarding 1) the dimensions of the weir (feet), 2) how the Licensee inspects the weir to ensure the weir continues to function as designed, 3) the frequency of inspections, and 4) information on any maintenance that has occurred.(PAD section 5.4.5). The SCDNR requests further information regarding why the spoil should be added to the weir and how the Licensee selected the downstream slope of the weir. Additionally, since the submerged weir is located 40-50 feet below the water surface, how will the Licensee ensure the correct placement of the spoil and avoid excess turbidity and aquatic habitat degradation during deployment?	SCDNR	June 23 2022	Existing Weir: Width = 567 ft Length = 455 ft Proposed Weir: Width = 864 ft Length = 765 ft The submerged weir is located approximately 550 meters downstream of the Project discharge and was originally constructed to help minimize the effects of mixing downstream of the Whitewater River arm of Lake Jocassee; it has not been modified since the original construction. The weir is composed of rockfill (i.e., spoil from the original Project construction). The weir is not enclosed in the existing FERC Project Boundary for Bad Creek but is included in the Project Boundary for the Keowee-Toxaway Project (Lake Jocassee). If the Bad Creek II Complex is constructed, the weir may be expanded to help mitigate the effects of a second discharge in the Whitewater River arm. Duke Energy is presently evaluating if and how the underwater weir would be required to be included in the Project boundary for the Bad Creek Project in the New License term. The existing weir is not directly inspected but has been subjected to detailed bathymetric survey, and Duke Energy expects that bathymetric survey methods may also be used to verify expanded weir dimensions. Rockfill would be placed on the downstream side as there is sufficient space to accommodate the volume. The turbidity/water quality/aquatic impacts potentially associated with rockfill placement to expand the weir will be assessed as part of the Water Resources Study Plan.

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
21	Project Infrastructure/Operations	<p>3. This section notes that the Licensee currently operates the Project on a “daily cycle” mode, defined as alternating between generating and pumping on a daily basis, with the reservoir typically maintained in the upper 50 to 60 ft at elevations of 2,310 and 2,250 ft msl (compared to a maximum drawdown of 160 ft). However, the PAD does not discuss how the Licensee intends to operate the Project during a subsequent license term with the addition of the proposed Complex. The SCDNR requests further information with regards to the Licensee’s proposed operations at the Project including the frequency and magnitude of drawing down and refilling the Bad Creek’s upper reservoir.</p>	SCDNR	June 23 2022	<p>With the addition of the Bad Creek II Complex, energy generation will increase but so will pumping input power requirements. The increase in generation per drawdown is estimated to be 244 MWh per cycle. The full drawdown of the reservoir will require approximately 11.5 hours with both Bad Creek I and II operating. Without the Bad Creek II Complex operating, the drawdown would require approximately 23 hours. The addition of Bad Creek II will introduce more capacity and generation into the power grid during a shorter period of time. The design of the equipment will likely be such that pumping power input may be varied which will allow better utilization of renewable energy flow into the power grid.</p> <p>As operation of the existing Project has evolved (within the authorized limits) over the license term to adapt to changing needs of the regional grid and energy generation sources, so too may operation of the expanded Project over the new license term. To maximize benefits of the Project for its ratepayers and shareholders, Duke Energy will be seeking to preserve flexibility to continue to operate the Bad Creek Project within the parameters to be established by the new license. To illustrate how the Bad Creek II Complex may modify existing Project operations, Duke Energy expects a variety of operating scenarios to be identified and presented to the Operations Resource Committee stakeholder team convened for this relicensing. Further, Duke Energy anticipates addressing within other respective Resource Committees (i.e. Water Quality, Recreation, etc.) how the identified operational scenarios may impact environmental resources at the Project.</p>
22	Aquatic Resources	<p>4. This section discusses the design specifications of the Licensee’s proposed Complex. The details included in the upper reservoir’s inlet/outlet configuration includes a coarse opening trash rack at each tunnel inlet. However, further specifications of the trash racks, including the bar spacing is not included. Additionally, no such trash rack feature was included in the proposed lower reservoir’s inlet/outlet structure configuration. The SCDNR requests the additional information to better understand the Project’s effects on aquatic species.</p>	SCDNR	June 23 2022	<p>Design of the proposed inlet/outlet structure for Bad Creek II Complex is not finalized, therefore these specifications are not available at this time. Duke Energy expects these design details will be available during the study execution phase of relicensing in 2023-2024. This information will be provided to and discussed with, including potential effects on aquatic resources, the Aquatics Resource Committee members well in advance of Draft Application filing.</p>
23	Water Resources	<p>5. Revision to Table 6.1-5 waterbodies of Lake Jocassee watershed.</p>	SCDNR	June 23 2022	<p>The suggested waterbodies have been added and the table is included as Table 4-1 in the Water Resources Study plan (Appendix C).</p>
24	Water Resources	<p>6. Section 6.1.5 should include Howard Creek, which includes Limber Pole and Corbin Creeks, as a contributing significant tributary draining directly to Lake Jocassee.</p>	SCDNR	June 23 2022	<p>Duke Energy is in agreement that Howard Creek is a significant contributing tributary to Lake Jocassee; the tributary descriptions will be revised accordingly in the future Exhibit E of the Draft and Final License Application and relevant study reports.</p>
25	Water Resources	<p>7. This section notes that previous analyses have shown that if the entire Bad Creek Reservoir active storage volume was released, then the impact on Lake Jocassee would be a 4-ft increase in water level. The SCDNR notes that the subsequent refilling of the full volume of Bad Creek Reservoir would decrease the elevation of Lake Jocassee by four feet. Additionally, this section notes that the combined capacity of Bad Creek and the Complex would allow the Licensee to reduce the drawdown time from 23 hours to 11 hours and reduce the pumping refill time from 26 hours to 13. Therefore, the additional capabilities of the Complex will allow for twice the amount of water exchange, increasing the likelihood of negative impacts to aquatic species, recreation, water quality, and shoreline erosion rate in the lower reservoir.</p>	SCDNR	June 23 2022	<p>While the volume of water exchanged between the upper and lower reservoirs would not change, the rate of exchange between the upper and lower reservoirs would increase with the addition of a second powerhouse. Impacts to aquatic species, recreation, water quality, shoreline erosion (Whitewater River cove), and littoral habitat will be assessed through the individual studies proposed for this relicensing.</p>

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
26	Water Resources	<p>8. This section identifies the potential spoil disposal sites to be utilized during the construction of the proposed Complex. The SCDNR notes that the fill impacts appear to be in and around streams. Headwater and wetland systems provide an important link between upland watersheds and downstream aquatic environments. The SCDNR requests further information regarding the alternatives analysis associated with the selection of the areas identified as preferred and potential spoil locations. Additionally, please describe the types of environmental impacts associated with the various alternatives and any avoidance and minimization measures taken. Additionally, the SCDNR recommends that revegetation on spoil piles should be native species appropriate for the ecoregion and should exclude plant species found on the exotic pest plant council list: https://www.se-eppc.org/southcarolina/SCEPPC_LIST2014finalOct.pdf. The SCDNR prefers the use of native warm season grasses and/or other native forbs that would be beneficial for wildlife and pollinators for stabilization for the spoil areas. Native warm season grass species suggestions include switchgrass (<i>Panicum virgatum</i>), indiagrass (<i>Sorghastrum nutans</i>), big bluestem (<i>Andropogon gerardii</i>) and little bluestem (<i>Schizachyrium scoparium</i>). A list of beneficial pollinator plant species, such as milkweed (<i>Asclepias</i> spp.), for the southeast may be found at www.xerces.org/pollinators-southeast-region/ or by visiting http://www.pollinator.org/guides. The SCDNR strongly discourages the use of <i>Sericea Lespedeza</i> (<i>Lespedeza cuneata</i>) due to its invasive nature and lack of benefit to wildlife. (Section 6.3.10.3)</p>	SCDNR	June 23 2022	<p>As part of the Bad Creek II Power Complex Feasibility Study, an excavated materials disposal study was conducted to quantify the amount of spoil associated with the excavation and construction of the proposed Project facilities. Determining the preliminary spoil areas on Duke Energy-owned property, size of areas, amount of spoil to be placed, and feasibility and costs associated with each were an objective of the Bad Creek II Feasibility Study. Several factors were considered as part of this material disposal study including, but not limited to: (1) site safety considerations; (2) environmental considerations; (3) proximity of spoil area to construction site and haul distance; (4) volume of spoil and spoil area ability to adequately accommodate and contain; (5) previously utilized spoil areas, (6) topography, (7) logistics and costs. Offsite spoil locations were not considered during this phase of the study. Several of the areas evaluated were not selected as “preferred” by Duke Energy for several reasons including low volume area capacity, environmental and safety concerns, or access difficulties. A detailed ranking analysis of each identified sites was not performed as part of the Bad Creek II Feasibility Study.</p> <p>Note that Site H should be considered as a “preferred” in Table 6.6-7 Table of the PAD (Table 5-2 in Proposed Study Plan).</p> <p>An excavated materials disposal study was conducted to quantify the amount of spoil associated with the construction of the proposed project facilities. Table 5-3 in the Proposed Study Plan provides estimated excavation and spoil quantities for the power complex elements including the upper reservoir I/O area, water conveyance tunnels and shafts, powerhouse and access tunnels/shafts, various construction adits, and lower reservoir I/O area and the assumed spoil locations.</p> <p>Vegetation/native species restoration on spoil piles will be considered.</p>
27	Aquatic Resources	<p>9. SCDNR finds value in continuing to monitor and mitigate for fish entrainment impacts, especially to forage species, at the Project. The additional pumping cycles at the proposed Complex site will increase the rate of entrainment and impingement of aquatic species throughout the term of a subsequent license. (Section 6.4.2)</p>	SCDNR	June 23 2022	<p>The current 10-year work plan continues entrainment minimization measures, pelagic prey fish surveys, and electrofishing through 2027. During the New License term, Duke Energy proposes to continue to implement activities established by the MOU as may be modified in consultation with stakeholders through the relicensing process, and will continue to implement protection, mitigation, and enhancement activities established under the KT Project Relicensing Agreement. The updated desktop Entrainment Study suggests that fish populations in Lake Jocassee will experience minor effects from the additional operations of Bad Creek II Complex. As part of the Aquatic Resources Study, Duke Energy will consult with interested stakeholders regarding the results of the entrainment study and any necessary future protection, mitigation, or enhancement measures.</p>
28	Wildlife & Botanical Resources	<p>10. The SCDNR recommends including the federally endangered gray bat (<i>Myotis grisescens</i>) in the Project’s list of federally listed threatened, endangered, and candidate species. Further, the SCDNR recommends the gray bat be included in the acoustic KPro analysis and results table, in addition to files being reviewed by a qualified biologist to evaluate potential presence. Though gray bat calls have little overlap with other <i>Myotis</i> species, they can overlap with calls of Tricolored bats – the most common species detected in the Bad Creek 2021 Bat Survey Report. Gray bat records exist in Transylvania County, North Carolina, located less than a mile north of the Project. The closest gray bat records are the SCDNR validated gray bat calls detected at a bridge approximately nine miles from the Project in 2020, and at a site approximately 15 miles northeast of the Bad Creek Reservoir (personal communication with NC bat biologist). Due to these records and the gray bat’s ability to extend their range 27 km (16.8 mi) (LaVal et al. 1977) from roost sites to forage, there is a chance the gray bat could be located within the Project Area.</p>	SCDNR	June 23 2022	<p>Please see attached memorandum discussing the analysis of acoustic files for gray bats. No diagnostic calls for this species were identified.</p>

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
29	Wildlife & Botanical Resources	11. The SCDNR notes that three State Listed Species occur in the Project Area and should be included in the Natural Resources Assessment Report (eastern small-footed bat, Rafinesque's big-eared bat, bald eagle) (PAD Appendix E)	SCDNR	June 23 2022	Duke Energy acknowledges that only federally-listed and At-Risk-Species were included in the Natural Resources Assessment. Information regarding activities that may affect bat species due to construction or operation in the Project nexus will be detailed in the Draft and Final License Application and will include state-listed species listed by the SCDNR.
30	Water Resources	12. This section, including related Tables 8 and 10 and Figures 12 and 13, identify the Licensee's preferred spoil sites. However, it is unclear to the SCDNR how the Licensee selected and prioritized the potential spoil sites, as previously mentioned. The SCDNR requests further information with regards to how the Licensee intends to select a site or sites for deposition of construction spoil, as well as what avoidance and minimization measures were considered. (PAD Section 6)	SCDNR	June 23 2022	Please see response to Comment No. 26
31	Aquatic Resources	13. The SCDNR notes that the estimated percentage (12%) of entrainment of the threadfin shad population in Lake Jocassee is a high rate that should continue to be monitored. Threadfin shad are an important prey species for most sportfish in Lake Jocassee. The Project's entrainment study conducted in the first three years of Project operations (1991-1993) (Barwick et al. 1994) found that entrainment rates increased when the water elevations in Lake Jocassee were below 334 meters for a total of 30 days annually. Further, the increased rates resulted in a stable or slightly declining population of threadfin shad. The SCDNR's interests with this issue are to understand the effects of entrainment on fish populations and to evaluate methods to avoid and minimize these impacts. The SCDNR recommends the findings from Barwick et al. 1994 should be included in the Project's PAD. (Appendix F)	SCDNR	June 23 2022	Please see response to Comment No. 27. Duke Energy notes that the findings from Barwick et al. (1994) are included in Sections 6.4.2.2.3 and 6.4.3.11. of the PAD.
32	Wildlife & Botanical Resources	14. The SCDNR notes that caution in interpretation is also appropriate for NLEB vs. eastern small footed bat and eastern red bat vs. Seminole bat, which can share significant overlap in call type. The SCDNR disagrees with the following statement: "While no federally listed northern long-eared bats were found near the Project site, the recent discovery of the summer presence of pregnant females in the South Carolina Coastal Plain may indicate a migratory presence in more upland regions of the state." The lack of captures in the middle of the state, despite SCDNR's netting efforts since 2016, suggests spatially disjunct populations in South Carolina (Blue Ridge versus Coastal Plain population) similar to the disjunct populations known to occur in North Carolina. In 2013, prior to white-nose syndrome (WNS) being detected in South Carolina, northern long-eared bats were present and breeding in Oconee, Pickens, and Greenville counties. However, extirpation from the Blue Ridge ecoregion due to WNS mortality seems likely.	SCDNR	June 23 2022	Duke Energy's consultant, ERM, acknowledges the likely extirpation of NLEB from the Project area. Duke Energy and ERM concur that there is acoustic overlap between eastern red bat and Seminole bat; the best possible determinations of likely presence were made based on the quality of recorded calls. Duke Energy and ERM concur that there is acoustic overlap in Myotis calls (NLEB and eastern small-footed bats) and between eastern red bat and Seminole bat; the best possible determinations of likely presence were made based on the quality of recorded calls.
33	Wildlife & Botanical Resources	15. For emergence bat call surveys, the SCDNR recommends that the Licensee should utilize the same bat detector recorder type used during other acoustic surveys (e.g., SM3BAT or Echometer Touch 2), for improved quality call collection, identification, and consistency.	SCDNR	June 23 2022	Emergence surveys used the Echometer Touch, which is an active acoustic detector. SM3BATs were used for passive acoustic surveys. The benefits of each are slightly different. However, in the future (if future surveys are necessary), bat surveys will use the same detector type for active and passive surveys, for consistency.
34	General	16. Minor notes and additional addresses for agency correspondence	SCDNR	June 23 2022	Comment and additional mailing addresses noted.

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
35	Water Resources	<p>1. This section describes the project facilities including reservoirs and dams. The final paragraph refers to stream augmentation facilities, which consisted of a “system of intakes, pipes, and sluice gates” to augment flows to Howard Creek. However, the stream augmentation system is not currently used. Howard Creek is a tributary of Lake Jocassee, classified as Outstanding Resource Waters (ORW) by the SC Department of Health and Environmental Control (SCDHEC), and receives anywhere from 40% to 80% of its flow from Bad Creek and West Bad Creek by way of seepage from the Main Dam and West Main Dam. Please elaborate the purpose and need for the stream augmentation on Howard Creek, and further explain why the system is no longer in use.</p>	Upstate Forever	June 23 2022	<p>Article 39 of the Original License required, in part, the Licensee to assess the desirability and feasibility of providing stormflow augmentation to facilitate sediment removal in Howard Creek following construction and providing minimum flow to Howard Creek from a flow augmentation system that had been installed to support construction. As described in a FERC order dated February 14, 1995, following the initial upper reservoir filling, Duke Energy measured flows at a control location above the area of Project impact, and in an area immediately below the west and main dams to estimate seepage from the two Project dams, and correlated these data with historic baseflow data. The results of the Licensee's study indicated that the quantity of seepage in Howard Creek was generally less than the average monthly historic flows for January-August, and equal to or greater than the monthly average for September-December. Based on this study, Duke Energy concluded that no augmentation or supplemental flows are needed, because the natural hydrology of the watershed and seepage from the dams provide a high quality baseflow to Howard Creek.</p> <p>The Licensee was directed, by the February 14, 1995 order, to further consult with USFWS and SCDNR regarding the need for streamflow augmentation in Howard Creek. Additional information from this study and consultation was filed with FERC on June 9, 1995. By letter order dated July 9, 1995, FERC agreed with the conclusions and recommendations of Duke Energy's transmittal, including continued monitoring of dam seepage flowrates into Howard Creek and notifying USFWS and SCDNR when combined seepage flows of Bad and West Bad Creeks drop below 2.0 cfs or exceed 3.5 cfs for two consecutive biweekly flume recordings, and no requirements for operation of the baseflow augmentation system.</p>
36	General - Climate	<p>2. This section of the PAD provides climate data for two 30-year periods from 1971-2000 and 1981-2010, and appears to be sourced from a recent (2021) SCDNR study. Although more recent and more descriptive data is probably available, it is not included here. The Upstate has seen a dramatic increase in the frequency and intensity of extreme weather events not only over the past several decades but in just the past few years, including high intensity rainfall, flash flooding, and prolonged periods of drought. If possible, please update this section to include climate data that captures recent extreme weather events. We would like to see more descriptive data through 2020 such as maximum and minimum rainfall amounts, number of days with or without rain, longest period without rainfall, number of days above average, severe weather events, and any other descriptive data.</p>	Upstate Forever	June 23 2022	<p>Climate data will be revised and expanded in Exhibit E of the license application to provide a more detailed treatise of recent climate trends/events in the region. This response also addresses in part Upstate Forever's comment under "General Comments" regarding climate.</p>
37	Wildlife & Botanical Resources	<p>3. Section 6.1.3 of the PAD describes major land and water uses within the Project boundary using the U.S. Geological Survey's National Land Cover Database. Both Table 6.1-3 and Figure 6.1-3 include areas categorized as “cultivated crops” (3.7% of Project boundary) or “hay/pasture” (10.1% of Project boundary), neither of which would be consistent with typical land management practices around a high priority dam, nor do they appear to agree with the images of the Main Dam in Figure 5.4-2 and the West Dam in Figure 5.4-3. Please confirm whether any cultivated crops or areas of hay or pasture do indeed exist within the project boundary, or clarify the land uses immediately adjacent to the Main Dam and West Dam.</p>	Upstate Forever	June 23 2022	<p>The 30-meter-resolution National Land use Cover Data (NLCD) interprets open areas as hay/pasture and/or cultivated crops. Aerial imagery confirms that 30-meter cells identified by the database as crops and/or hay/pasture are open areas associated with the West dam and East dam downstream faces (rip rap), maintained areas (mowed) around the former construction yard, maintenance areas, helicopter pad, and existing powerhouse complex. Figure 5-1 is provided in Section 5 of the Proposed Study Plan comparing the NLCD data vs. aerial imagery. The table of land uses will be updated in the license application to indicate this discrepancy.</p>
38	Water Resources	<p>4. Section 6.2.5.2 of the PAD describes the modeling framework used to evaluate the potential operational impacts of the proposed Bad Creek II Complex in the Whitewater River arm of Lake Jocassee, including potential shoreline erosion. Results of the computational flow dynamics (CFD) model indicate that the addition of the Complex is unlikely to increase the shoreline erosion potential of the Lake Keowee shoreline. Please update this section of the PAD with more information regarding the modeling results, including graphic depictions of peak velocities, discharge points, and shoreline impacts.</p>	Upstate Forever	June 23 2022	<p>Information regarding velocities, discharge, and shoreline impacts to the Whitewater River cove streambank opposite of the inlet/outlet structure will be developed as an objective of the Water Resources Study and will therefore be detailed in the Water Resources Study Report and Draft and Final License Application.</p>

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
39	Water Resources	<p>5. This section of the PAD provides a summary of existing water quality data collected for waters within the Project Boundary and vicinity but is limited to the upper reservoir (6.3.7.1 Bad Creek Reservoir) and lower reservoir (6.3.7.2 Lake Jocassee). No water quality data is included for either Howard Creek, which receives seepage flows from the Main Dam and West Dam and is a tributary of Lake Jocassee, or Whitewater River, which is the receiving water from daily Project operations and the location of a submerged weir designed to minimize the effects of Project operations on lake stratification, protect cold-water fish habitat, and dissipate energy from discharged water. Similarly, no water quality data is provided for Bad Creek or West Bad Creek, which according to Section 6.3.1 of the PAD are only “partially to mostly submerged.”</p> <p>In addition, neither the upper reservoir nor its tributaries have historically been monitored for water quality, which is an erroneous oversight providing no baseline water quality data for waters in the Project vicinity. Flow data is provided for Howard Creek in Table 6.1-1 but only for a brief period from 1989 to 1996. According to the current implementation of the Waters of the US (WOTUS)1, Pre-2015 Regulatory Definition and Practice, the Bad Creek Reservoir is included under WOTUS and Waters of the State (WoS) protections because it was formed by the impoundment of two free-flowing rivers or streams, Bad Creek and West Bad Creek, and as such regulatory designations do apply. More information is needed for these Project-related water resources to better understand the Project’s impact on existing watershed health. Please provide a rationale for excluding these significant water resources in the Whitewater River Watershed and include measures for updating and collecting water quality data in the PAD and proposed studies for relicensing.</p>	Upstate Forever	June 23 2022	Please see response to Comment No. 6.
40	Water Resources	<p>6. Duke Energy proposes to develop a Water Quality Monitoring Plan in consultation with agencies for Project construction (pre-, during, and post-construction) and operations, including monitoring locations, methods, and reporting criteria for major parameters such as DO, temperature, pH, specific conductance, and turbidity. Duke should include nutrients (nitrogen and phosphorus) to the list of parameters they monitor as land use practices can contribute to increased nutrient levels in surface waters. The Upstate is seeing an increasing trend with rising nutrient levels in reservoirs, which can lead to harmful algal blooms, and ultimately result in lost recreation opportunities, decreased property values, and poor water quality that is expensive for water utilities to treat. Because the nearby Lake Keowee is a popular recreation destination and drinking water source for over 250,000 people in the Upstate, this should be of considerable importance. Furthermore, in continuation with our concerns regarding the absence of water quality data for Project-related waters, please include a plan for establishing and monitoring water quality data for Bad Creek, West Bad Creek, Howard Creek, and Whitewater River.</p>	Upstate Forever	June 23 2022	Water quality in upland streams that may be impacted by construction of the Bad Creek II Complex will be monitored under the proposed Water Quality Monitoring Plan (the development of which is a Water Resources Study task). As land cover in the vicinity of the Project is predominantly forested, and common land use practices in upland areas (e.g., agriculture, livestock, industry, etc.) are not considered a major contributing factor to water quality, monitoring nutrient levels in Lake Jocassee is not proposed as part of the Water Resources Study or Water Quality Monitoring Plan. Duke Energy will undertake water quality monitoring (continuous temperature and bi-weekly DO) at three historic monitoring sites in the Whitewater River arm of Lake Jocassee in 2023 and 2024. Monitoring is not feasible in the Bad Creek upper reservoir due to significant daily water fluctuations and safety impacts.
41	Wildlife & Botanical Resources	<p>7. Section 6.5.2.2 of the PAD lists numerous invasive species observed during field surveys conducted throughout the transmission line corridors in 2021. However, there is no indication of field surveys conducted in other Project areas, including access areas or on the faces of the project dams. Many of these species already are or will soon be extremely problematic for land management if left unattended. Furthermore, the PAD does not provide any other detail about current or proposed vegetation management at the project and should include information describing management activities for native and non-native invasive species in the Project boundary and vicinity.</p>	Upstate Forever	June 23 2022	A discussion of transmission line right-of-way vegetation management protocol and status as well as facility vegetation management protocol, including herbicide application, is provided in this PSP in response to FERC Additional Information Request #9. Please refer to Table 5-1. Responses to FERC Additional Information Requests in the Proposed Study Plan.
42	Water Resources	<p>8. This section appears to be mis-titled. Based on context of the section paragraph, this section should instead be titled as “Relatively Permanent Waters with Perennial Flow.”</p>	Upstate Forever	June 23 2022	Correction noted.

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
43	Water Resources	<p>9. The PAD estimates approximately 4 million cubic yards of spoil material will need to be disposed as a result of constructing the proposed new Complex. That is the equivalent to approximately 250,000 dump trucks. Both Section 6.6.3 and the Natural Resource Assessment in Appendix E discuss the potential for disposing spoils in wetlands and surface waters, including dredging, filling, clearing, and de-watering. However, there is no discussion in this section of transporting the spoil material off site for alternative uses or disposal. In addition, Table 6.6-7 of this section lists potential spoil locations and the estimated impacts to wetlands and surface waters, including preferred spoil locations (denoted by an asterisk *). However, the PAD does not discuss the criteria used to assess the potential spoil disposal areas, nor does it provide an explanation of why some areas are preferred over others. The Clean Water Act requires consideration for avoiding and minimizing impacts before a Section 404 permit can be obtained for placing fill in waters of the US, and before a water quality certification can be awarded by the State. Off-site transport should be included in the criteria and considered the only option unless other disposal methods can be justified. Please update this section to include a comprehensive discussion of these criteria with the addition of off-site removal, including how the potential spoil disposal areas are being identified, sized, assessed, and selected as Duke Energy's preferred locations for this purpose off-site removal.</p> <p>During construction of Complex II, it is anticipated that several trucks and other large equipment will be transported over roads to access the Project. This additional traffic will increase turbidity levels in stormwater runoff in both reservoirs as well as the tributary streams. Duke should include a discussion of the type and number of BMPs (e.g., vegetation, matting, silt fencing) proposed to prevent runoff from negatively impacting water quality. Furthermore, Duke should include plans for stabilizing soils at construction sites and staging areas during and after construction activities making sure to use only native vegetation in the project vicinity to stabilize and re-establish habitats.</p>	Upstate Forever	June 23 2022	<p>Please see response to Comment No. 26.</p> <p>Concerns associated with increased turbidity levels in response to runoff and selection of best management practices will be addressed under the Water Resources Study Plan and future erosion and sediment control plans to be developed to support expanded Project construction.</p>

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
44	Recreation	<p>10. Section 6.8 of the PAD provides a thorough description of recreation facilities and opportunities in the Project vicinity, including the Foothills Trail and other nearby recreation resources. Notably, there is considerable emphasis on off-Project recreation areas likely due to the restricted nature of the upper reservoir. Because there is no access to the Bad Creek reservoir for recreation purposes, fulfillment of the Recreation component (Exhibit R) of the original license was provided through the creation and management of a 43-mile central section of the Foothills Trail. Exhibit R included public access and parking, trail kiosks and directional signs, additional spur trails, and stream crossings as well as continual maintenance and operational activities for limited recreation uses, primarily hiking. For this section of the PAD Duke should provide a comprehensive summary of its fulfillment of Exhibit R requirements under the original license, including a history of any modifications to Exhibit R that may have occurred during the license term.</p> <p>Unfortunately, language in both the PAD and Scoping Document 1 creates confusion regarding Duke's long-term plans for continued management of the Foothills Trail. Specifically, Section 7.1.6.1 of the PAD states, "The segment of the Foothills Trail and two undeveloped access areas on non-Project lands that were developed per the Original License will continue to be maintained by Duke Energy in the New License term as a non-Project facility and potentially under a separate agreement with regional stakeholders." Meanwhile, SD1 states that "Duke Energy does not propose to include the Foothills Trail as a project recreation facility under the new license." These two documents should be reconciled to clarify Duke's intentions and the fate of the Trail.</p> <p>The Foothills Trail system provides important recreational and educational opportunities to both Upstate residents and visitors from around the world. However, the Upstate is experiencing unprecedented and accelerating population growth and is expected to continue growing for decades to come. By 2040, our region's population is projected to reach nearly 1,750,000 – an increase of 64% since 1990. Already our natural resources are stretched thin, and the current pandemic has revealed how fragile and overburdened our public recreation areas have become. Continued support of the Foothills Trail is a critical component of the New License and expansion of the recreation provisions should be considered to account for the population growth, increased demand for outdoor recreational needs, and expansion of project operations from the ongoing upgrades. Ensuring that recreation opportunities centered on the Foothills Trail continue to provide quality recreation opportunities in perpetuity and that the Foothills Trail can continue to grow to meet additional demand should be paramount in this licensing. Such consideration should include all or some of the following:</p> <ol style="list-style-type: none"> 1. An endowment given to the Foothills Trail Conservancy for ongoing management and maintenance of the Foothills Trail system. 	Upstate Forever	June 23 2022	An inventory of recreational facilities associated with the Bad Creek Project will be provided in the Recreational Resources Study report.
45	Geology and Soils	<p>11. This section of the PAD provides a brief description of soil classifications in the Project vicinity. However, it does not include an analysis of Prime Soils or Soils of Statewide Importance. Duke should consult with USDA/NRCS to provide a summary of soils that have the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, and oilseed crops, and is available for such use, and develop a plan for protecting those areas during the next licensing term. The Oconee County Conservation Bank has provided grant funding for projects that permanently protect lands with Prime or Important Soils with conservation easements held by Upstate Forever or Oconee County's Soil and Water Conservation District.</p>	Upstate Forever	June 23 2022	Duke Energy plans to provide in the license application and supporting documents information required by FERC and other regulatory entities to support their environmental review processes, and relevant to the construction and operation of the expanded Project in the New License term. Mapping or evaluation of prime or important soils is not presently proposed by Duke Energy as part of the ongoing Geology Study or as an element of this PSP.
46	Recreation	<p>12. This section should include the most recent future land use maps and comprehensive plans available for the project area in both Transylvania and Jackson counties of North Carolina, and Oconee County, South Carolina. Oconee County recently adopted its "Unified 2020 Comprehensive Plan" on March 3, 2020. From October 2018 through December 2019, Oconee County engaged its local citizens through numerous public meetings, newspaper inserts highlighting the elements of the plan, and a survey for public input. Because the character and density of land that abuts the Project will not be determined solely by Duke Energy, management of the Project as well as the lands in the Project vicinity should consider the vision for the future expressed by Oconee County residents and captured in their plan.</p>	Upstate Forever	June 23 2022	The Oconee County Comprehensive Plan as well as the most recent State Comprehensive Outdoor Recreation Plans will be included in the Recreational Resources Study (Recreation Use and Needs task).

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
47	General - Climate	<p>13. (General Comments - Climate Change). The PAD includes no discussion of climate change and how it may affect various aspects of the Project, including operations and management of Project resources. Climate change is an important consideration for wildlife and botanical resources, recreation, water quality and water quantity, and land planning, use, and policy. It should be included for consideration in each section of the PAD, as well as every proposed study in this licensing process, and continue to inform Project management and operation decisions throughout the life of the proposed new license. In addition, how will climate change considerations be reflected in the design and operations of Duke's current and proposed hydroelectric facilities?</p> <p>As previously discussed, SC has seen a dramatic increase in the frequency and intensity of extreme weather events over the past several decades, including flooding and drought. These extreme conditions will continue to have implications on the operations and management of these facilities and the natural resources. This should include, but not be limited to, discussion of increasing nighttime temperatures, changing seasonal precipitation patterns, increased frequency in extreme weather events, and increased periods of drought. Wildlife corridors, which may be necessary for species migration due to climate change, should be considered and PM&E measures identified for both relicensing of existing operations.</p>	Upstate Forever		<p>Climate data will be revised and expanded in Exhibit E of the license application to provide a more detailed treatise of recent climate trends in the region.</p> <p>Operational models (HEC-ResSim and CHEOPS) were developed with climate change scenarios in support of the 2014 New Operating Agreement (NOA) between Duke Energy, the U.S. Army Corps of Engineers, and Southeastern Power Administration. These sensitivity assessments were simulated to evaluate possible impacts of future temperature increases, basin inflow reduction, extended drought, and future water withdrawal demands; scenarios were agreed upon by the Operating Scenarios Committee. Bad Creek II Complex operations will comply with the 2014 NOA parameters, therefore no additional study is needed.</p>
48	Recreation	<p>14. (General Comments - Separate Licenses with Specific Requirements). Throughout the PAD, much consideration is given for the Keowee-Toxaway Hydroelectric Project (FERC No. 2503). However, the Keowee-Toxaway Project operates under a separate and distinct license from the Bad Creek Pumped Storage Facility. It is often confusing how one project relates to the other, and sometimes reads as if requirements under one license are used to offset obligations under the other. While both projects are indeed impacted by the other, and may influence operations at other projects (e.g., Oconee Nuclear Station), there are resources and obligations singular to each project. As already mentioned, there is an impression that some recreation opportunities lost from the exclusivity of the Bad Creek project were remedied on Lake Jocassee, which may or may not have been negotiated during the relicensing of the Keowee-Toxaway project. During the Keowee-Toxaway relicensing, stakeholders were not able to consider lost recreation opportunities of the Bad Creek project. The same is true for fishery resources and work plans conducted in coordination with SCDNR through the Keowee-Toxaway relicensing, as well as the Recreation, Use, and Needs Study (RUN Study) conducted in 2013, which failed to consider the recreation opportunities provided by the Foothills Trail. In summary, these projects are clearly complementary and inextricably linked, but do not necessarily satisfy individual license requirements.</p>	Upstate Forever	June 23 2022	<p>The Recreational Resources Study will include identification and assessment of recreational facilities specifically associated with the Bad Creek Project and the Foothills Trail. Attachment 1 of the Aquatic Resources Study plan (Appendix D) is being provided as additional information on mitigation required by and performed pursuant to the Original License for the Bad Creek Project.</p>
49	Water Resources	<p>15. Existing Project Operation. Throughout SD1 and the PAD, the Project is presented as an isolated pumped storage project seemingly without influence or relationship to other facilities or project operations. However, most of the volume in the upper reservoir originates from Lake Jocassee, which also plays a major role in the operations of both the Keowee-Toxaway Hydroelectric Project (FERC No. 2503) and the Oconee Nuclear Plant. All three projects depend on water levels in Jocassee to provide abundant water to safely generate power for Duke Energy customers. This section of the Scoping Document and the PAD should include a description of how the water level in Lake Jocassee affects these projects, including an extreme low inflow scenario where operations of Bad Creek may need to be curtailed or ceased to maintain operations at other projects. Furthermore, the Project presently operates within the upper 50 to 60 feet of full pond level. However, the existing license authorizes a 160-foot maximum drawdown. Currently, the Project is undergoing pump-turbine upgrades, and Duke has proposed the construction and operation of a second powerhouse as part of this relicensing. Both the upgrades and the new Complex will increase the range within which Project operations will impact water levels, creating larger and more rapid fluctuations in both the Bad Creek reservoir and Lake Jocassee. Therefore, the increased operating band may also affect a variety of environmental parameters, including but not limited to water quality, shoreline habitat, and fish entrainment.</p>	Upstate Forever	June 23 2022	<p>Evaluation of changing water levels (under different operation scenarios) in response to the addition of a second powerhouse (Bad Creek II Complex) is an objective of the Water Resources study, and results will be included in the study report and Draft and Final License Application. Note that the operating band for Bad Creek reservoir (or Lake Jocassee) will not be modified from present conditions.</p>

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
50	Aquatic Resources	<p>16. Proposed Environmental Measures). Under the Aquatic Resources portion of this section, we believe the Fisheries MOU and 10-Year Work Plans for fishery resources that Duke has completed in partnership with SCDNR should be included. Activities included in the 10-Year Work Plans were designed to develop and enhance management strategies for fish in these areas and included fisheries surveys and inventories, water quality and aquatic habitat evaluations, fish stocking, recreation, and shoreline impacts. Duke Energy entered an MOU with SCDNR for the long-term management and maintenance of high-quality fishery resources in Lake Keowee and Lake Jocassee as well as their tributary streams. While the current MOU is in effect through 2027 and intended to mitigate for fish entrainment, we don't currently know what contribution the proposed Complex will have on entrainment. Therefore, we believe that Duke should extend the MOU and workplans through the term of the new license.</p>	Upstate Forever	June 23 2022	During the New License term, Duke Energy proposes to continue to implement activities established by the MOU as may be modified in consultation with stakeholders through the relicensing process, and will continue to implement protection, mitigation, and enhancement activities established under the KT Project Relicensing Agreement.
51	Water Resources	<p>17. Resource Issues Aquatic Resource). We support all the issues identified in this section. However, we have particular concerns that no water quality data has been collected for the Bad Creek Reservoir and associated tributaries making it impossible to determine if the current or proposed operations have or will have any negative impacts on water quality. Furthermore, we have concerns regarding the effects of construction-related erosion, sedimentation, and spoils disposal on water quality, aquatic habitat, and aquatic biota in the Bad Creek reservoir, Lake Jocassee, and surrounding tributaries. Four million cubic yards of debris is expected from the construction of Complex II, which is the equivalent of at least 250,000 dump trucks. The resulting construction activity will heavily impact roads in the watershed and create additional runoff and turbidity in nearby streams and reservoirs. In addition, Duke has proposed to dispose of spoils in several nearby locations, including wetlands, forested uplands, tributaries, and the weir. Most of the waters in the Project vicinity are characterized as extremely high-quality streams with designations including Outstanding Resource Waters, Trout Natural, and Trout Put, Grow and Take, which our State's most protective water classifications. Filling wetlands and tributaries is not an acceptable option.</p> <p>It is also not clear how the spoil locations were selected or why no consideration was given to transporting materials off site. Upland disposal of construction debris that results in impacts to streams or wetlands, as well as placement of rock spoils at the submerged weir, will require an Individual Permit from the USACE as well as a Water Quality Certification from SCDHEC under the authorities of Sections 404 and 401 of the Clean Water Act. Further, as part of the Mitigation Rule, it is a requirement for Duke Energy to consider all steps to avoid and minimize impacts to water resources before undertaking activities that negatively impact waters. Duke Energy expects to initiate this parallel regulatory process in conjunction with the relicensing process. However, to avoid impacts to water resources, we strongly recommend that spoils be transported off site rather than used to fill wetlands and streams. (See our previous comments regarding Section 6.6.3 of the PAD on Known or Potential Adverse Effects and Proposed PM&E Measure: Bad Creek II Complex.)</p>	Upstate Forever	June 23 2022	Please see responses to Upstate Forever comments #5, #6, and #9 (Comment Nos. 39, 40, and 43 in this table).

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
52	Wildlife & Botanical Resources	17. Resource Issues Terrestrial Resources). In addition to assessing the effects of project construction, operation, and maintenance activities on ecological communities and protected terrestrial species, we believe that the effects on potential habitat should also be assessed. Furthermore, we believe this should be expanded to include the effects of non-native, invasive, and noxious species on ecological communities and potential habitat areas as well. Habitat and corridor protection is one of the most critical needs for the protection and preservation of species. Assessing the direct impact of the Project on target species is only one component to ensuring that the species have the greatest chance of survival. Rather, the assessment should explicitly examine the amount of available habitat and habitat needs for healthy, diverse, and viable populations of the target species. The assessment should examine past habitat availability, current habitat availability, and determine trends for habitat loss or creation through the term of the new license based on the identified trends. This information can then be used to identify target values for habitat protection and restoration in and near the Project. Lastly, the impacts of climate change should also be evaluated and discussed. Wildlife habitat corridors may be necessary for species migration due to climate change and should be of particular interest throughout the life of the proposed new license.	Upstate Forever	June 23 2022	Duke Energy plans to provide in the Draft and Final License Application and supporting documents information required by FERC and other regulatory entities to support their environmental review processes and required permits and approvals, and relevant to the construction and operation of the expanded Project in the New License term. Duke Energy further expects any necessary monitoring and management plans for the protection of natural resources that may be impacted by the Project to be developed in consultation with stakeholders through this relicensing process.
53	Wildlife & Botanical Resources	18. Resource Issues Threatened and Endangered Species). Upstate Forever has the same comments and concerns regarding the effects of project construction, operation, maintenance, and project-related recreation on RT&E species as we do on Section 4.1.3 above, including climate related impacts. In addition, both this section and Section 4.1.3 should consider Project impacts on species not included in this section of SD1. The US Fish and Wildlife Service provided a "List of Threatened, Endangered, Candidate, and Proposed Species Generated by ECOS-IPaC Website on April 11, 2022," (List) which is available on the FERC's eLibrary for this docket. The List includes ten (10) migratory bird species considered Birds of Conservation Concern (BCC), which warrant special attention in the project vicinity. These birds are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.	Upstate Forever	June 23 2022	Duke Energy plans to continue to informally consult with state and federal natural resource agencies throughout the licensing process to identify listed and sensitives species that may be present and impacted by expanded Project construction. Additional formal consultation between FERC and USFWS is expected after the filing of the license application, if Duke Energy's proposed action may affect protected species, and recommended protection, mitigation, and enhancement measures would be identified through this process.

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
54	Recreation	<p>19. Recreation, land use, aesthetics). As previously mentioned, language in both the PAD and Scoping Document 1 creates confusion regarding Duke's long-term plans for continued management of the Foothills Trail. Specifically, Section 7.1.6.1 of the PAD states, "The segment of the Foothills Trail and two undeveloped access areas on non-Project lands that were developed per the Original License will continue to be maintained by Duke Energy in the New License term as a non-Project facility and potentially under a separate agreement with regional stakeholders." Meanwhile, SD1 states that "Duke Energy does not propose to include the Foothills Trail as a project recreation facility under the new license." These two documents should be reconciled to clarify Duke's intentions and the fate of the Trail. We support all the issues identified in this section. In addition, we believe that land use should be further reviewed in the context of shoreline habitat around the upper reservoir. Because there is no public access to the Bad Creek Reservoir shoreline, permitting policies addressed through a Shoreline Management Plan and Shoreline Management Guidelines are unnecessary. However, due to limited interference from human activities, much of the shoreline around the upper reservoir can and should be managed to provide prime riparian and littoral habitat. The impacts of climate change should also be evaluated and discussed. Furthermore, because there is no recreational access to the Bad Creek reservoir, the recreation component (Exhibit R) of the original license was provided through the creation and management of a 43-mile section of the Foothills Trail. Exhibit R included public access and parking, trail kiosks and directional signs, additional spur trails, and stream crossings as well as continual maintenance and operational activities for limited recreation uses, primarily hiking. However, while water-based recreation such as canoeing and swimming are understandably overlooked due to fluctuating water levels and public safety concerns, management components related to traditional recreation activities such as fly-fishing and birdwatching should have been considered and should be addressed in the current licensing. The Foothills Trail system provides important recreational and educational opportunities to both Upstate residents and visitors from around the world. Meanwhile, the Upstate is experiencing unprecedented and accelerating population growth and is expected to continue growing for decades to come. Already our natural resources are stretched thin, and the current pandemic has revealed how fragile and overburdened our public recreation areas have become. Continued support of the Foothills Trail is a critical component of the New License and expansion of the recreation provisions should be considered to account for the population growth, increased demand for outdoor recreational needs, and expansion of project operations from the ongoing upgrades. Ensuring that recreation opportunities centered on the Foothills Trail continue to provide quality recreation opportunities in perpetuity and that the Foothills Trail can continue to grow to meet additional demand should be paramount in this licensing. Such consideration should include all of the following:</p> <ol style="list-style-type: none"> 1. An endowment given to the Foothills Trail Conservancy for ongoing management and maintenance of the Foothills Trail system; 2. Fee-simple donations of land to be included in the Foothills Trail system, or to State resource agencies for various purposes including recreation, habitat management, and water quality protection. 	Upstate Forever	June 23 2022	Duke Energy intends to provide for the continued management and maintenance of the portion of Foothills Trail corridor contemplated in the Exhibit R of the Bad Creek Hydroelectric License. Duke Energy currently funds the management and maintenance of the 43 miles of the trail corridor within its purview via private contractor. The mechanism for funding and maintenance of the trail in the new license term has not yet been determined but will be proposed in the Draft and Final License Application. Duke Energy does not own any notable tracks of land along the Foothills Trail Corridor that are not reserved for potential future development to meet electric customer needs. The two reserved tracks (Limberpole and Coley Creek) are encumbered by conservation easements.
55	Aquatic Resources	<p>20. Proposed Studies. The proposed Fish and Aquatic Resources studies are limited in scope and should be expanded to include the Bad Creek Reservoir and associated tributaries, or Duke should include an additional study to collect water quality data for Project-related streams. Currently no water quality data exists for Bad Creek Reservoir and the surrounding streams making it impossible to assess current and future water quality conditions in these locations. (See our previous comment regarding Section 6.3.7.2.2 of the PAD on Water Quality Monitoring, and Section 4.1.2 of SD1 regarding Resource Issues – Aquatic Resources.)</p>	Upstate Forever	June 23 2022	Water storage in the upper reservoir consists almost exclusively of pump-backed water from Lake Jocassee; the drainage area of the reservoir is limited to 1.5-square miles. Prior to impoundment, Bad Creek and West Bad Creek were tributaries of Howard Creek, however these streams are now submerged in the upper reservoir. Stream augmentation facilities were constructed at the upper reservoir to augment flows to Howard Creek following construction. As described in Duke Energy's response to Comment No. 35, the system was not subsequently operated or required to be operated for streamflow augmentation. As required by the original Bad Creek license, annual fishery assessments of Howard Creek were conducted prior to, during and following construction. Results from the recovery program suggested the Howard Creek fishery had returned to pre-construction condition by 1995. The last year of monitoring of Howard Creek occurred in 2015. No additional impacts to Howard Creek are expected from the continued operation of the Project. Potential impacts to upland waters and streams due to construction and operation of the Bad Creek II complex will be considered under the Water Resources Study Plan.

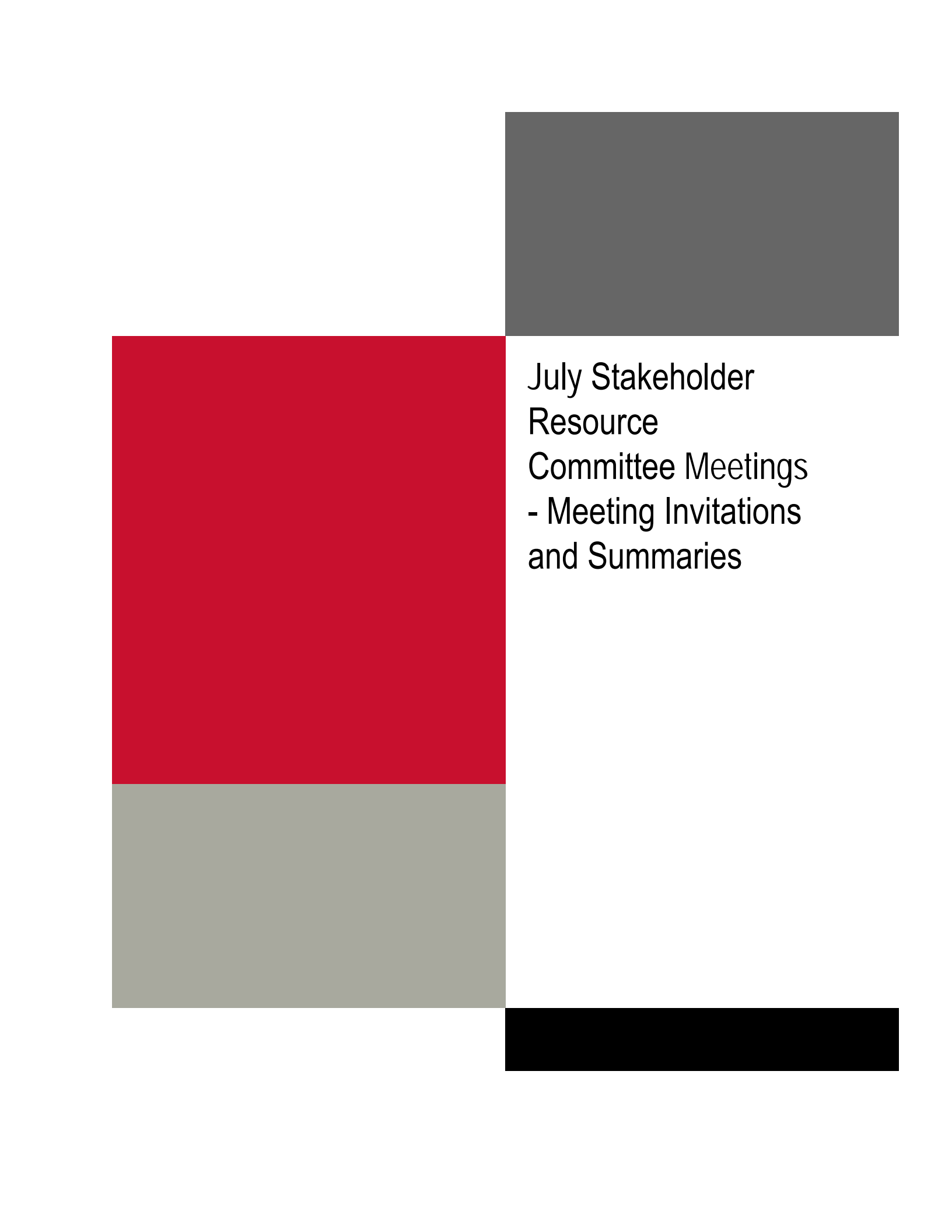
Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
56	Recreation	21. As previously mentioned in our comment on Section 8.0 of the PAD, this section should include the most recent future land use maps and comprehensive plans available for the project area in both Transylvania and Jackson counties of North Carolina, and Oconee County, South Carolina. Oconee County recently adopted its "Unified 2020 Comprehensive Plan" on March 3, 2020. From October 2018 through December 2019, Oconee County engaged its local citizens through numerous public meetings, newspaper inserts highlighting the elements of the plan, and a survey for public input. Because the character and density of land that abuts the Project will not be determined solely by Duke Energy, management of the Project as well as the lands in the Project vicinity should consider the vision for the future expressed by Oconee County residents and captured in their plan.	Upstate Forever	June 23 2022	Please see response to Upstate Forever Comment #12 (Comment No. 46).
57	Wildlife & Botanical Resources	22. Three new (to South Carolina) fern species have been discovered in Pickens County	Upstate Forever	June 27 2022	Duke Energy appreciates the additional new information, which will be taken into consideration as applicable during conduct of any pre-construction surveys that may be required for sensitive botanical species.
58	Env Justice	23. Support FERC's request for Environmental Justice study	Upstate Forever	June 23 2022	In accordance with FERC's study request and as proposed in this PSP (Appendix H), Duke Energy will conduct an Environmental Justice study for the Bad Creek relicensing.
59	Water Resources	1. The EPA strongly encourages Duke Energy and FERC to mitigate these impacts by reusing these materials and find other projects in the area that might need fill material, such as old mines, roads, and superfund sites. Further, we strongly recommend avoiding disposing spoil material into water bodies and wetlands. Additionally, we recommend adding all Duke's owned properties in the vicinity of the project on a map that could be considered for disposal of spoil material such as Figure 6.1-2. This information could help the public recommend sensible mitigation or further alternatives.	USEPA	June 27 2022	Please see response to Comment No. 26. Duke Energy plans to provide in the Draft and Final License Application and supporting documents information required by FERC and other regulatory entities, and relevant to the construction and operation of the expanded Project in the new license term. Clean Water Act 401/404 permits will be obtained for construction/impacts activities.
60	General - Climate	2. Climate - EPA recommends including more recent climate data.	USEPA	June 27 2022	Please see response to Comment No. 47.
61	Geology and Soils	3. The EPA understands that geological issues such as high-in-situ stresses were encountered during the construction of the existing powerhouse, and the EPA recommends including studies regarding possible secondary impacts to the existing powerhouse from proposed excavations. Additionally, if such investigations disclosed probable hazards, then please include mitigations to ensure the existing project's stability.	USEPA	June 27 2022	Studies on geology and geologic hazards were carried out for the Bad Creek II Feasibility study; results will be included in the Revised Study Plan.
62	Aquatic Resources	4. The EPA recommends exploring worldwide hard mitigation technologies (besides operational guidelines) that could be applied to prevent/minimize entrainments. Further, the proposed project poses an additional burden to these fisheries.	USEPA	June 27 2022	The updated desktop Entrainment Study suggests that fish populations in Lake Jocassee will experience minor effects from the additional operations of Bad Creek II Complex. As part of the Aquatic Resources Study, Duke Energy will consult with interested stakeholders regarding the results of the entrainment study and any necessary future protection, mitigation, or enhancement measures.
63	Water Resources	5. Figure 6.3-5. Lake Jocassee Daily Water Surface Elevation shows the elevations from May 1, 1975, to December 31, 2020. This figure is not clear, please add an additional graph showing the years instead of the "Day of Year."	USEPA	June 27 2022	An additional graphic displaying the year on the X-axis has been developed and is included following this table.
64	Water Resources	6. Duke Energy has sufficient time to avoid impacts or mitigate impacts. We recommend pursuing additional innovations to help mitigate water quality, and cumulative impacts.	USEPA	June 27 2022	Duke Energy plans to identify and evaluate, in consultation with stakeholders, potential avoidance and mitigation measures for the construction of the Bad Creek II Complex and propose technically and economically feasible measures in the license application. Due to the scale of the material (primarily rock) excavation for construction of the Bad Creek II Complex, Duke Energy does not presently anticipate that impacts of material disposal can be completely avoided.

Comment No.	Resource Area	Summary of Comment	Stakeholder	Date	Response
65	Water Resources	7. Please include information on the existing weir such as possible impacts from spoil dumping. Include how the future dumping could impact Lake Jocassee and the weir as a whole.	USEPA	June 27 2022	The submerged weir is located approximately 550 meters downstream of the Project discharge and was originally constructed to help minimize the effects of mixing downstream of the Whitewater River arm of Lake Jocassee; it has not been modified since the original construction. The weir is composed of rockfill (i.e., spoil from the original Project construction). The weir is not enclosed in the existing FERC Project Boundary for Bad Creek but is included in the Project Boundary for the Keowee-Toxaway Project (Lake Jocassee). If the Bad Creek II Complex is constructed, the weir may be expanded to help mitigate the effects of a second discharge in the Whitewater River arm. Impacts to Lake Jocassee from the potential placement of rockfill at the existing weir will be assessed as part of the Water Resources Study.
66	Water Resources	8. Spoil dumping would impact water quality and would impact species. We recommend developing studies in the areas Duke Energy deemed to be ideal for dumping spoil including water bodies and any wetlands.	USEPA	June 27 2022	Estimating impacts from potential spoil placement is an objective of the Water Resources Study and results will be included in the study report and Draft and Final License Application.
67	Water Resources	9. EPA recommends including water quality baseline data for the Bad Creek Reservoir. We believe it is important to have this data to compare future data and make accurate determinations and decisions based on data.	USEPA	June 27 2022	Duke Energy will undertake water quality monitoring (continuous temperature and bi-weekly DO) at three historic monitoring sites in the Whitewater River arm of Lake Jocassee in 2023 (two-unit powerhouse operation) and 2024 (four-unit powerhouse operation, with all ongoing upgrades complete). This data will also be used to compare against historical data. Monitoring is not feasible in the Bad Creek upper reservoir due to significant daily water fluctuations and safety issues. Bad Creek reservoir is used only for Project operations and there is no public access. Upland waters and impacts to upland streams and wetlands (as well as Lake Jocassee) will be considered under the future water quality monitoring plan under the Water Resources Study. Including a summary of baseline water quality data for waterbodies that would be impacted by the relicensing is an objective of the Water Resources Study. Baseline data will be used to compare with data collected under pre-construction and post-construction conditions.
68	General - Construction	10. The EPA recommends disclosing construction and operational emissions. We recommend best management practices and potentially implementing a Clean Diesel Policy to minimize mobile sources of emissions during construction.	USEPA	June 27 2022	Duke Energy expects to provide necessary information for FERC to complete its Environmental Document in the Final License Application. Best Management Practices are expected to be implemented during the construction phase, but specific measures have not yet been identified at this early stage. Such measures would be the subject of construction plans to be developed prior to commencement of construction.
69	Wildlife & Botanical Resources	1. Duke Energy has identified several preliminary studies and environmental protection, mitigation, and enhancement measures (PM&E) in its PAD. The Service (USFWS) is in agreement with all of the PM&E measures proposed.	USFWS	June 9 2022	Comment noted; no response required.
70	Wildlife & Botanical Resources	2. Several at-risk-species are on the Service's National Listing Workplan to be assessed for listing during the same time frame as the ILP. If any of these species are listed or proposed for listing during that time the Service will notify Duke Energy and work with them to ensure proper protection measures are in place.	USFWS	June 9 2022	Comment noted; no response required.
71	Wildlife & Botanical Resources	3. On March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act of 1973, as amended. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). If the final determination is to reclassify to endangered, that reclassification would go into effect 30 days later, which would be sometime during December 2022. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species.	USFWS	June 9 2022	Comment noted. Duke Energy will monitor the status of NLEB, and will re-engage with USFWS as needed to implement conservation measures for this species.
72	Wildlife & Botanical Resources	4. It should be noted that the Service does not have any records of the Indiana bat within Oconee County, South Carolina and we believe this species does not need to be included in the list of T&E species to be analyzed.	USFWS	June 9 2022	Comment noted; no response required.



July Stakeholder Resource
Committee Meetings

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July Stakeholder
Resource
Committee Meetings
- Meeting Invitations
and Summaries

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Subject: FW: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Aquatics)

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>

Sent: Friday, June 24, 2022 6:12 AM

To: gcyantis2@yahoo.com; Elizabeth Miller <MillerE@dnr.sc.gov>; jhains@g.clemson.edu; ehollis@upstateforever.org; amedeemd@dhec.sc.gov

Cc: Abney, Michael A <Michael.Abney@duke-energy.com>; Wahl, Nick <Nick.Wahl@duke-energy.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Salazar, Maggie <Maggie.Salazar@hdrinc.com>

Subject: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Aquatics)

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Aquatics Resource Team Members:

Thank you for agreeing to participate on the Aquatics Resource Team for relicensing of the Bad Creek Hydroelectric Project. As Alan Stuart mentioned during the Relicensing Stakeholder Kick-off Meeting on May 31, Duke Energy has formed six (6) resource teams to develop study plans necessary for the relicensing of Bad Creek I Complex and the new license application for the potential Bad Creek II Complex (i.e., Aquatics, Cultural Resources, Recreation & Aesthetics, Water Quality, Operations, and Wildlife & Botanical). Duke Energy received an additional study request from FERC on June 16, 2022 to perform an Environmental Justice Study. We will include this study in the Operations Resource Team in case you are interested in this study plan.

I (John Crutchfield) will serve as the Technical Coordinator for each Resource Management Team to set meeting dates and ensure we develop the study plans in a timely fashion for FERC submittal. Duke Energy looks forward to working with each of you during the relicensing process.

A first step in the Integrated Licensing Process (ILP) is to develop necessary study plans for the relicensing application and submit those to FERC by August 7. Duke is currently drafting study plan elements for review and discussion with Resource Teams during meetings the week of July 18-22.

I will be sending a Doodle Poll to Resource Team members for potential time and meeting dates to begin this study plan development process. Please respond to this Doodle Poll by Friday, July 1 COB. This initial meeting will be virtual via Microsoft Teams. Given the tight deadline that Duke Energy has to submit the study plans, please be flexible and try to clear your schedule the week of July 18-22 to make the meeting. This will help us meet the tight time schedule.

We anticipate this study plan meeting to last 3 hours. The Doodle Poll will have 3 hour meeting blocks from Monday, July 18 through Friday, July 22. I will try to schedule the Resource Team meeting that fits participants schedules but please note we have 6 resource teams meeting that week so there may have to be some juggling of schedules to accommodate all meetings. We will conclude the meeting early if we finish before the allotted time.

I will send out a meeting agenda to you prior to our Resource Team meeting. We will provide an overview of the draft study plan elements during the meeting.

If you have any questions regarding the study plan development and Resource Team meeting, please let Alan Stuart and me know.

Regards,

John Crutchfield

Project Manager II, Water Strategy & Hydro Licensing
Regulated & Renewable Energy

Duke Energy

526 S. Church Street, EC12Q | Charlotte, NC 28202

Office 980-373-2288 | Cell 919-757-1095

Meeting Minutes

Project: Bad Creek Pumped Storage Project Relicensing

Resource Committee: Aquatic Resource Committee

Subject: Proposed Study Plans

Date: Friday, July 22, 2022

Location: Microsoft Teams

Attendees: John Crutchfield (Duke Energy) Amy Breedlove (SCDNR)
Alan Stuart (Duke Energy) Morgan Kern (SCDNR)
Nick Wahl (Duke Energy) Elizabeth Miller (SCDNR)
Scott Fletcher (Duke Energy) Dan Rankin (SCDNR)
Erin Settevendemio (HDR) William Wood (SCDNR)
Maggie Salazar (HDR) Gerry Yantis (Advocates for Quality
Development)
John Hains (Friends of Lake Keowee Society)

Introduction

John Crutchfield opened the meeting with a safety moment, led the group through participant introductions, and advanced through the introductory slides, which included:

- Summarizing proposed studies and corresponding resource committees and Duke Energy study leads; and
- Describing the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) process and schedule.

Aquatic Resources Proposed Study Planning Meeting Presentation

Nick Wahl presented a summary of the Aquatic Resources proposed study plan (PSP), including background/existing information, the study area, project nexus, goals and objectives, general methods, and schedule.

Questions and Comments:

- Gerry Yantis asked whether aquatic life present on/in the existing weir will be surveyed prior to weir expansion/impacts. J. Crutchfield stated that field studies of the existing weir are not presently proposed.
- G. Yantis asked whether fish migrate from Lake Jocassee to the tributaries for spawning or whether fish primarily spawn in the lake, and whether fluctuating water surface elevations driven by the project will affect tributary access. Nick stated that most fish spawn in the lake, but some may move into tributaries. He also stated that the CHEOPS model will determine the extent of water surface elevation changes. Erin Settevendemio mentioned that no changes to the current

license operating range are planned, and that the Bad Creek II Complex's operations will fall within the current license limits. Alan Stuart further clarified that there are minimization measures in place to limit fluctuations during black bass spawning periods.

- G. Yantis asked whether there is opportunity to use spoils currently planned to be placed on the weir in deeper areas elsewhere to create more shallow, spawning habitat in Lake Jocassee. J. Crutchfield and A. Stuart stated that this was not something they were considering.
- G. Yantis wondered if zebra mussels are an issue in Lake Jocassee and whether monitoring stations at boat ramps should be implemented. N. Wahl stated that he is not aware of any dreissenid (Zebra) mussels in Lake Jocassee or Lake Keowee. A. Stuart also stated that invasive species are annually monitored in Lake Jocassee and Lake Keowee. John Hains added that zebra mussels require a higher concentration of calcium than is available in waterbodies in the region, therefore it would be very unlikely for these species to establish in these lakes.
- J. Hains asked whether the models being used for the PSP were developed earlier and asked whether there are technical reports about the development of these models available. A. Stuart stated that the CFD model was developed during the feasibility study for the Bad Creek II Complex and the CHEOPS model was developed initially during the KT relicensing. At the time it was created, the CHEOPS model included the low inflow protocol for the U.S. Army Corps of Engineers; the model will be updated with more recent information since that time. The technical report for the CHEOPS model is available, however the report for the initial development of the CFD model is not completed, but will be available at a later time.
- J. Hains commented that regarding invasive species, Asiatic clams are prevalent in Lake Jocassee and Lake Keowee and currently there are not any control options available.
- Dan Rankin asked whether driving factors were taken into account for the updated entrainment study, such as low water levels and cold temperatures. A. Stuart stated that the intent of the study meeting(s) is to discuss concerns about what factors affect entrainment; in years past, the assumption was that there is 100% mortality. Duke Energy anticipates the entrainment-related mitigation measures carrying forward into the new license. E. Settevendemio mentioned in the chat that the updated entrainment study report is attached as an appendix to the PAD.
- J. Hains asked whether there is still a concern of entrainment if the species is invasive. A. Stuart stated he would have to defer to the S.C. Department of Natural Resources (SCDNR). D. Rankin stated the main invasive species present in Lake Jocassee is the Alabama bass, which has mostly displaced the Bartram's bass. He recognizes that while it is an invasive species, it is also valued by anglers; given that there are no practical ways to eliminate the species, it is considered a sportfish, but it is not prioritized by the SCDNR. D. Rankin also stated that entrainment is primarily forage fish and is rarely sportfish, so it is unlikely that Alabama bass are experiencing significant entrainment. Group

discussed control options including stocking YY “supermales” which result in all-male progeny.

- William Wood commented that citations for Table 4 of the updated entrainment study (swim speeds table) and an in-text USFWS reference are needed. John asked Erin to provide this information as an attachment to the meeting summary.

SharePoint tutorial

Erin Settevendemio presented an overview of the Bad Creek Relicensing Project Resource Committees SharePoint site.

Additional Comments/Concerns

- August 16 will be the tour of Bad Creek. Acceptance of meeting invite assumes attendance.
- Duke Energy will also schedule an in-person meeting of the six Resource Committees on September 6 in Greenville, SC. Meeting invitation and details will be forthcoming.

Action Items

- **Action Item 1:** Kleinschmidt to provide references for Swim Speed Table and USFWS reference missing. These documents are provided in the folder with the meeting summary.
- **Action Item 2:** Post presentation, recording, and meeting notes to SharePoint site.

Subject: FW: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Cultural Resources)

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>

Sent: Friday, June 24, 2022 6:10 AM

To: Elizabeth Miller <MillerE@dnr.sc.gov>; adoug41@att.net; cstarker@upstateforever.org; amedeemd@dhec.sc.gov

Cc: Churchill, Christy <Christy.Churchill@duke-energy.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>;

Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Salazar, Maggie

<Maggie.Salazar@hdrinc.com>

Subject: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Cultural Resources)

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Cultural Resources Team Members:

Thank you for agreeing to participate on the Cultural Resources Team for relicensing of the Bad Creek Hydroelectric Project. As Alan Stuart mentioned during the Relicensing Stakeholder Kick-off Meeting on May 31, Duke Energy has formed six (6) resource teams to develop study plans necessary for the relicensing of Bad Creek I Complex and the new license application for the potential Bad Creek II Complex (i.e., Aquatics, Cultural Resources, Recreation & Aesthetics, Water Quality, Operations, and Wildlife & Botanical). Duke Energy received an additional study request from FERC on June 16, 2022 to perform an Environmental Justice Study. We will include this study in the Operations Resource Team in case you are interested in this study plan.

I (John Crutchfield) will serve as the Technical Coordinator for each Resource Management Team to set meeting dates and ensure we develop the study plans in a timely fashion for FERC submittal. Duke Energy looks forward to working with each of you during the relicensing process.

A first step in the Integrated Licensing Process (ILP) is to develop necessary study plans for the relicensing application and submit those to FERC by August 7. Duke is currently drafting study plan elements for review and discussion with Resource Teams during meetings the week of July 18-22.

I will be sending a Doodle Poll to Resource Team members for potential time and meeting dates to begin this study plan development process. Please respond to this Doodle Poll by Friday, July 1 COB. This initial meeting will be virtual via Microsoft Teams. Given the tight deadline that Duke Energy has to submit the study plans, please be flexible and try to clear your schedule the week of July 18-22 to make the meeting. This will help us meet the tight time schedule.

We anticipate this study plan meeting to last 3 hours. The Doodle Poll will have 3 hour meeting blocks from Monday, July 18 through Friday, July 22. I will try to schedule the Resource Team meeting that fits participants schedules but please note we have 6 resource teams meeting that week so there may have to be some juggling of schedules to accommodate all meetings. We will conclude the meeting early if we finish before the allotted time.

I will send out a meeting agenda to you prior to our Resource Team meeting. We will provide an overview of the draft study plan elements during the meeting.

If you have any questions regarding the study plan development and Resource Team meeting, please let Alan Stuart and me know.

Regards,

John Crutchfield

Project Manager II, Water Strategy & Hydro Licensing
Regulated & Renewable Energy

Duke Energy

526 S. Church Street, EC12Q | Charlotte, NC 28202

Office 980-373-2288 | Cell 919-757-1095

Meeting Minutes

Project:	Bad Creek Pumped Storage Project Relicensing	
Resource Committee:	Cultural Resource Committee	
Subject:	Proposed Study Plans	
Date:	Wednesday, July 20, 2022	
Location:	Microsoft Teams	
Attendees:	John Crutchfield (Duke Energy) Christy Churchill (Duke Energy) Bill Green (Terracon) Maggie Salazar (HDR)	Elizabeth Miller (SCDNR – FERC Coordinator) Chris Moore (SCDNR) Caitlin Rogers (Catawba Indian Nation THPO Assistant) Elizabeth Johnson (S.C. State Historic Preservation Office) Andy Douglas (S.C. Wildlife Federation)

Introduction

John Crutchfield opened the meeting with a safety moment, led the group through participant introductions, and advanced through the introductory slides, which included:

- Summarizing proposed studies and corresponding resource committees and Duke Energy study leads; and
- Describing the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) process and schedule.

Cultural Resources Proposed Study Planning Meeting Presentation

Christy Churchill presented a summary of the Cultural Resources proposed study plan (PSP) and explained that no cultural resource specific comments were received on the PAD from FERC or the stakeholders. Duke Energy intends to continue consultation with Indian Tribes and other stakeholders. The study plan will focus on capturing any impacts from the proposed Bad Creek II Complex. C. Churchill reviewed the two proposed tasks.

- **Questions and Comments:**
 - Elizabeth Johnson asked about the approach to field work in the mountains. Bill Green noted that the methodology will proceed as normal (i.e. shovel testing at 30 meter intervals); however, for steeper areas they may implement a pedestrian and/or drone to assist. B. Green confirmed that they will shovel test non-steep areas. B. Green explained that Lake Jocassee and Lake Keowee are included because previous surveys by Brockington indicated the lakes needed to be evaluated after 50 years. B. Green further explained that in hydro relicensing's they have never included the lake in the evaluation and asked E. Johnson her opinion for including them. E. Johnson confirmed they are not typically included

but will follow back up with the group to provide some clarification on whether to include the lakes in the study.

- Chris Moore asked about the six alluvial areas within the APE and wondered if deep testing would be required. B. Green noted that a conventional survey would be completed (one area already has a previously recorded site) to determine if deep testing is necessary.

SharePoint tutorial

Maggie Salazar presented an overview of the Bad Creek Relicensing Project Resource Committees SharePoint site.

Additional Comments/Concerns

- None

Action Items

- **Action Item 1:** Duke Energy to upload presentation recorded meeting, and meeting summary to the SharePoint site in the [Cultural Resource Committee](#) folder.
- **Action Item 2:** Elizabeth Johnson to provide direction for including Lake Jocassee and Lake Keowee in the study.

Subject: FW: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Recreation and Aesthetics)

Importance: High

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>

Sent: Friday, June 24, 2022 6:23 AM

To: adoug41@att.net; suewilliams130@gmail.com; dwilde@keoweefolks.org; andrewandwilla@hotmail.com; Elizabeth Miller <MillerE@dnr.sc.gov>; cstarker@upstateforever.org; charris@scprt.com; amedeemd@dhec.sc.gov

Cc: Bennett, Jennifer Wright <Jennifer.Bennett@duke-energy.com>; 'Kelly.Kirven@KleinschmidtGroup.com' <Kelly.Kirven@KleinschmidtGroup.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Salazar, Maggie <Maggie.Salazar@hdrinc.com>

Subject: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Recreation and Aesthetics)

Importance: High

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Recreation and Aesthetics Resource Team Members:

Thank you for agreeing to participate on the Recreation and Aesthetics Resource Team for relicensing of the Bad Creek Hydroelectric Project. As Alan Stuart mentioned during the Relicensing Stakeholder Kick-off Meeting on May 31, Duke Energy has formed six (6) resource teams to develop study plans necessary for the relicensing of Bad Creek I Complex and the new license application for the potential Bad Creek II Complex (i.e., Aquatics, Cultural Resources, Recreation & Aesthetics, Water Quality, Operations, and Wildlife & Botanical). Duke Energy received an additional study request from FERC on June 16, 2022 to perform an Environmental Justice Study. We will include this study in the Operations Resource Team in case you are interested in this study plan.

I (John Crutchfield) will serve as the Technical Coordinator for each Resource Management Team to set meeting dates and ensure we develop the study plans in a timely fashion for FERC submittal. Duke Energy looks forward to working with each of you during the relicensing process.

A first step in the Integrated Licensing Process (ILP) is to develop necessary study plans for the relicensing application and submit those to FERC by August 7. Duke is currently drafting study plan elements for review and discussion with Resource Teams during meetings the week of July 18-22.

I will be sending a Doodle Poll to Resource Team members for potential time and meeting dates to begin this study plan development process. Please respond to this Doodle Poll by Friday, July 1 COB. This initial meeting will be virtual via Microsoft Teams. Given the tight deadline that Duke Energy has to submit the study plans, please be flexible and try to clear your schedule the week of July 18-22 to make the meeting. This will help us meet the tight time schedule.

We anticipate this study plan meeting to last 3 hours. The Doodle Poll will have 3 hour meeting blocks from Monday, July 18 through Friday, July 22. I will try to schedule the Resource Team meeting that fits participants schedules but please note we have 6 resource teams meeting that week so there may have to be some juggling of schedules to accommodate all meetings. We will conclude the meeting early if we finish before the allotted time.

I will send out a meeting agenda to you prior to our Resource Team meeting. We will provide an overview of the draft study plan elements during the meeting.

If you have any questions regarding the study plan development and Resource Team meeting, please let Alan Stuart and me know.

Regards,

John Crutchfield

Project Manager II, Water Strategy & Hydro Licensing

Regulated & Renewable Energy

Duke Energy

526 S. Church Street, EC12Q | Charlotte, NC 28202

Office 980-373-2288 | Cell 919-757-1095

Meeting Minutes

Project: Bad Creek Pumped Storage Project Relicensing

Resource Committee: Recreation & Aesthetic Resources Committee

Subject: Proposed Study Plans

Date: Tuesday, July 19, 2022

Location: Microsoft Teams

Attendees: John Crutchfield (Duke Energy)
Alan Stuart (Duke Energy)
Jennifer Bennett (Duke Energy)
Kelly Kirven (Kleinschmidt)
Kerry McCarney-Castle (HDR)
Maggie Salazar (HDR)

Andrew Gleason (Foothills Trail Conservancy)
Elizabeth Miller (SCDNR – FERC Coordinator)
Pat Cloninger (SCDNR)
Ken Forrester (SCDNR – Jocassee Gorge Manager)
William Wood (SCDNR – Fisheries Biologist)
Amy Breedlove (SCDNR – Fisheries Biologist)
Sue Williams (Advocates for Quality Development (AQD))
Kelly Howell (Assistant Ranger at Devil's Fork State Park)
Andy Douglas (S.C. Wildlife Federation)

Introduction

John Crutchfield opened the meeting with a safety moment, led the group through participant introductions, and advanced through the introductory slides, which included:

- Summarizing proposed studies and corresponding resource committees and Duke Energy study leads; and
- Describing the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) process and schedule.

Aesthetic Resources Proposed Study Planning Meeting Presentation

Jennifer Bennett presented a summary of the Aesthetic Resources proposed study plan (PSP) and explained that no aesthetic specific comments were received on the PAD from FERC or the stakeholders. The study plan will focus on capturing any impacts from the proposed Bad Creek II Complex. J. Bennett reviewed the nine proposed tasks.

- Ken Forrester noted that the timeline for field work associated with the Aesthetics study does not occur over winter (i.e., not in leaf-off conditions), making for a different aesthetic experience.
- **Action Item:** Update proposed schedule in the PSP.

Recreation Resources Proposed Study Planning Meeting Presentation

J. Bennett presented a summary of the Recreation Resources PSP and its goals and objectives. J. Bennett reviewed the four proposed tasks.

Questions and Comments

- **Action Item:** Andrew Gleason noted that the Duke Energy-managed portion of the Foothills Trail is incorrect and will need to be revised. A. Gleason offered to provide coordinates of the portion maintained by Duke Energy.
- K. Forrester asked whether the S.C. Department of Natural Resources (SCDNR) Wildlife Management Area (WMA) is being considered as part of the study, specific to hunting and ATV use. The WMA is accessed via Musterground Rd. K. Forrester wondered whether hunting use around the Project would be impacted by construction as it could inhibit access and also introduce vehicle noise to the area. E. Miller clarified that the SCDNR did not comment on hunting use in the PAD but did not know at the time hunting would be excluded from the study. E. Miller additionally clarified they would be concerned with use/access but also noise impacts.
 - Alan Stuart asked Pat Cloninger and K. Forrester if the timing of the field studies time period covered hunting use. November should capture bear hunting. K. Forrester clarified that the preferred timeframe would be March – May and September – January. September to January for the trails used by ATVs.
 - Kelly Kirven asked SCDNR to clarify WMA study needs, access points, and whether any information has been collected by the SCDNR at this location. K. Forrester confirmed that they do not capture information for use at this location, but they do for Lake Jocassee. There is parking at the Bad Creek Project and parking for ATVs on Mustground Rd. to access the WMA. Condition of the road is also important. K. Kirven noted that the study does include a parking lot count but could look at ATV parking area as well. Also, K. Kirven noted that they will perform surveys which could include targeted hunting questions. K. Forrester requested fishing and ATV use also be included in surveys.
- A. Gleason suggested moving trail counters from Horsepasture/Canebrake access to Laurel Valley Trail Access parking lot as it is a frequently accessed location. J. Bennett noted that instead of moving one, Duke Energy could add an additional one at Laurel Valley Trail Access. Duke Energy does want to identify and understand use via boat to the trail from the Horsepasture/Canebrake access locations.
- Andy Douglas noted that he is involved with recreational/commercial tours on Lake Jocassee and there are pontoon boats in the Whitewater River arm two to three times a day.
- A. Gleason asked about the contractor doing the trail assessment. J. Bennett noted that the contract is still being awarded, but it will be a professional trail builder. A. Gleason asked if he could be included in the trail assessment field visits. A. Stuart explained Duke Energy will hire an independent contractor. A. Gleason is concerned that the contractor will look at the “big” items (like bridges), not the smaller items that are of interest to the Foothills Trail Conservancy, like trail erosion. J. Bennett clarified that the purpose of the study would focus on trail and surface related assessments, i.e. trail creep, trail corridor conditions. A. Stuart noted that detailed methodology will be fleshed out further in the study plan which should address A. Gleason’s comment.

SharePoint tutorial

Maggie Salazar presented an overview of the Bad Creek Relicensing Project Resource Committees SharePoint site.

- **Action Item:** M. Salazar to re-submit access link to E. Miller, S. Williams, and A. Douglas.

Additional Comments/Concerns

- A. Stuart noted that he is aiming for August 16th for a site visit to Bad Creek.
- A. Stuart noted that there is a 30-day ILP driven PSP meeting after the filing of the PSPs. He would like to set up separate resource committee meetings in between to discuss methodology in more detail.

Action Items

- **Action Item 1:** Duke Energy to upload presentation, recorded meeting, and meeting summary to the SharePoint site in the [Recreation and Aesthetic Resource Committee](#) folder.
- **Action Item 2:** Update proposed schedule in the Aesthetic Resources PSP.
- **Action Item 3:** Update Duke-managed Foothills Trail boundary in PSP.
- **Action Item 4:** M. Salazar to re-submit access link to E. Miller, S. Williams, and A. Douglas. (Completed 7/20/22)

Subject: FW: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Wildlife and Botanical)

Importance: High

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>

Sent: Friday, June 24, 2022 6:20 AM

To: adoug41@att.net; suewilliams130@gmail.com; dwilde@keoweefolks.org; bill.ranson@retiree.furman.edu; Elizabeth Miller <MillerE@dnr.sc.gov>; cstarker@upstateforever.org; wes.cooler@mac.com; amedeemd@dhec.sc.gov

Cc: Abney, Michael A <Michael.Abney@duke-energy.com>; Fletcher, Scott T <Scott.Fletcher@duke-energy.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Salazar, Maggie <Maggie.Salazar@hdrinc.com>

Subject: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Wildlife and Botanical)

Importance: High

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Wildlife and Botanical Resource Team Members:

Thank you for agreeing to participate on the Wildlife and Botanical Resource Team for relicensing of the Bad Creek Hydroelectric Project. As Alan Stuart mentioned during the Relicensing Stakeholder Kick-off Meeting on May 31, Duke Energy has formed six (6) resource teams to develop study plans necessary for the relicensing of Bad Creek I Complex and the new license application for the potential Bad Creek II Complex (i.e., Aquatics, Cultural Resources, Recreation & Aesthetics, Water Quality, Operations, and Wildlife & Botanical). Duke Energy received an additional study request from FERC on June 16, 2022 to perform an Environmental Justice Study. We will include this study in the Operations Resource Team in case you are interested in this study plan.

I (John Crutchfield) will serve as the Technical Coordinator for each Resource Management Team to set meeting dates and ensure we develop the study plans in a timely fashion for FERC submittal. Duke Energy looks forward to working with each of you during the relicensing process.

A first step in the Integrated Licensing Process (ILP) is to develop necessary study plans for the relicensing application and submit those to FERC by August 7. Duke is currently drafting study plan elements for review and discussion with Resource Teams during meetings the week of July 18-22.

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We anticipate this study plan meeting to last 3 hours. The Doodle Poll will have 3 hour meeting blocks from Monday, July 18 through Friday, July 22. I will try to schedule the Resource Team meeting that fits participants schedules but please note we have 6 resource teams meeting that week so there may have to be some juggling of schedules to accommodate all meetings. We will conclude the meeting early if we finish before the allotted time.

I will send out a meeting agenda to you prior to our Resource Team meeting. We will provide an overview of the draft study plan elements during the meeting.

If you have any questions regarding the study plan development and Resource Team meeting, please let Alan Stuart and me know.

Regards,

John Crutchfield

Project Manager II, Water Strategy & Hydro Licensing
Regulated & Renewable Energy
Duke Energy
526 S. Church Street, EC12Q | Charlotte, NC 28202
Office 980-373-2288 | Cell 919-757-1095

Meeting Minutes

Project: Bad Creek Pumped Storage Project Relicensing

Resource Committee: Wildlife and Botanical Resources

Subject: Proposed Study Plans

Date: Thursday, July 21, 2022

Location: Microsoft Teams

Attendees: John Crutchfield (Duke Energy)
Alan Stuart (Duke Energy)
Mike Abney (Duke Energy)
Scott Fletcher (Duke Energy)
Kerry McCarney-Castle (HDR)
Eric Mularski (HDR)

Elizabeth Miller (SCDNR – FERC Coordinator)
Alex Pellett (SCDNR)
Dan Rankin (SCDNR)
Andrew Grosse (SCDNR)
Andy Douglas (SC Wildlife Federation and Jocassee Lake Tours)
Austen Attaway (SCDNR)
Dale Wilde (Friends of Lake Keowee)
Jennifer Kindel (SCDNR)
Pat Cloninger (SCDNR)
Ken Forrester (SCDNR)
Samantha Tessel (SCDNR)
Melanie Olds (USFWS)
Sue Williams (ADQ – Oconee and Pickens counties)
William Ransom (Foothills Trail Conservancy/ Retired Furman Geology Professor)

Introduction

John Crutchfield opened the meeting with a safety moment, led the group through participant introductions, and advanced through the introductory slides, which included:

- Summarizing proposed studies and corresponding resource committees and Duke Energy study leads; and
- Describing the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) process and schedule.

Wildlife and Botanical Resources Presentation

Scott Fletcher presented a summary of the studies that were done prior to the submittal of the Pre-Application Document (PAD) and stated there is no proposed study plan for Wildlife & Botanical Resources based on the results of those initial studies (i.e., Natural Resources Assessment and Bat Survey). Formal comments that were received related to Wildlife & Botanical Resources will be addressed in the Proposed Study Plan document, which includes a comment response matrix. S. Fletcher reviewed the PAD comments from the U.S. Fish and Wildlife Service, South Carolina Department of Natural Resources (SCDNR), and Upstate Forever as well at the FERC Additional Information Request dated August 16, 2022.

Questions and Comments:

- William (Bill) Ransom inquired about the Foothills Trail Conservancy's comment on the Foothills Trail; J. Crutchfield and Alan Stuart responded that it was addressed with the Recreation Study since it was related to the Foothills Trail and noted that many comments overlap into other resources areas.
- Dale Wilde stated that there are so many undecided aspects to the project (i.e., haul routes and spoil placement), and would the Wildlife & Botanical Resource Committee be able to track all activities related to this resources area during proposed project construction. A. Stuart and J. Crutchfield stated there will frequent cross-over and collaboration between resource groups. The Wildlife and Botanical Resource Committee will be integral in the determination, evaluation, and mitigation related to these resources for the Bad Creek Project.

SharePoint tutorial

K. McCarney Castle presented an overview of the Bad Creek Relicensing Project Resource Committees SharePoint site.

Additional Comments/Concerns

- None

Action Items

- **Action Item 1:** Duke Energy to upload presentation, recording, and meeting summary to the SharePoint site in the [Wildlife & Botanical Resource Committee](#) folder.

Subject: FW: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Water Quality)

Importance: High

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>

Sent: Friday, June 24, 2022 6:17 AM

To: ehollis@upstateforever.org; gcyantis2@yahoo.com; dwilde@keoweefolks.org; Elizabeth Miller <MillerE@dnr.sc.gov>; amedeemd@dhec.sc.gov

Cc: Raber, Maverick James <Maverick.Raber@duke-energy.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Salazar, Maggie <Maggie.Salazar@hdrinc.com>

Subject: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Water Quality)

Importance: High

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Water Quality Resource Team Members:

Thank you for agreeing to participate on the Water Quality Resource Team for relicensing of the Bad Creek Hydroelectric Project. As Alan Stuart mentioned during the Relicensing Stakeholder Kick-off Meeting on May 31, Duke Energy has formed six (6) resource teams to develop study plans necessary for the relicensing of Bad Creek I Complex and the new license application for the potential Bad Creek II Complex (i.e., Aquatics, Cultural Resources, Recreation & Aesthetics, Water Quality, Operations, and Wildlife & Botanical). Duke Energy received an additional study request from FERC on June 16, 2022 to perform an Environmental Justice Study. We will include this study in the Operations Resource Team in case you are interested in this study plan.

I (John Crutchfield) will serve as the Technical Coordinator for each Resource Management Team to set meeting dates and ensure we develop the study plans in a timely fashion for FERC submittal. Duke Energy looks forward to working with each of you during the relicensing process.

A first step in the Integrated Licensing Process (ILP) is to develop necessary study plans for the relicensing application and submit those to FERC by August 7. Duke is currently drafting study plan elements for review and discussion with Resource Teams during meetings the week of July 18-22.

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I will send out a meeting agenda to you prior to our Resource Team meeting. We will provide an overview of the draft study plan elements during the meeting.

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Regards,

John Crutchfield

Project Manager II, Water Strategy & Hydro Licensing
Regulated & Renewable Energy
Duke Energy
526 S. Church Street, EC12Q | Charlotte, NC 28202
Office 980-373-2288 | Cell 919-757-1095

Meeting Minutes

Project:	Bad Creek Pumped Storage Project Relicensing	
Resource Committee:	Water Resources	
Subject:	Proposed Study Plans	
Date:	Thursday, July 21, 2022	
Location:	Microsoft Teams	
Attendees:	John Crutchfield (Duke Energy) Alan Stuart (Duke Energy) Mike Abney (Duke Energy) Maverick Raber (Duke Energy) Ty Ziegler (HDR) Kerry McCarney-Castle (HDR) Eric Mularski (HDR)	Elizabeth Miller (SCDNR – FERC Coordinator) Alex Pellett (SCDNR) Dan Rankin (SCDNR) William Wood (SCDNR) Amy Breedlove (SCDNR) Dale Wilde (Friends of Lake Keowee Society) Gerry Yantis (AQD) Morgan Amandee (SCDHEC) Melanie Olds (USFWS)

Introduction

John Crutchfield opened the meeting with a safety moment, led the group through participant introductions, and advanced through the introductory slides, which included:

- Summarizing proposed studies and corresponding resource committees and Duke Energy study leads; and
- Describing the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) process and schedule.

Water Resources Proposed Study Planning Meeting Presentation

Maverick Raber presented a summary of the Water Resources proposed study plan (PSP) and stated that no formal study requests were received related to water resources, however, stakeholder and FERC comments were received and will be addressed in the PSP. He then went through the tasks expected to be completed under the Water Resources PSP.

Questions and Comments:

- Dale Wilde asked how the tasks associated with the Water Resources Study will be separated out from other studies. M. Raber explained that there are several areas of overlap between the various relicensing studies and provided an example where two studies would inform each other (i.e., Water Resources and Recreation).
- Dan Rankin asked about stage sampling (historical) and if any of the historical sites would be monitored as part of the proposed study plan. M. Raber stated that the Water Quality Monitoring Plan will consider these sites.

- D. Rankin asked if there would be a closure of Koon Branch Trail located on Wildlife Management Area (WMA) land during construction. Alan Stuart inquired where Koon Branch Trail is located – D. Rankin stated it is a hiking trail on the west side of river. A. Stuart asked if access is gained from Bad Creek Road at Musterground Road and D Rankin confirmed. A. Stuart confirmed that closures are not anticipated at this time but that is subject to change. The Whitewater River arm of Lake Jocassee will be closed during construction of the Bad Creek II Complex, but as noted there are no closures of Musterground Road anticipated, although traffic might be increased. Road closures and traffic will be addressed through a safety plan.
- William Wood asked about on-site spoil sites and placement. M. Raber stated these sites are still being evaluated and determined. A. Stuart added that that assessment is ongoing and is based on several criteria and pointed to Appendix E of the PAD for preliminary details on potential rock and spoil placement.
- Elizabeth Miller asked about spoil sites, the submerged weir and if the SCDNR comments would be responded to in the PSP. M. Raber stated that all comments will be responded to in the PSP and will continue to be addressed through the relicensing process. He added that water resources evaluations and monitoring will be integral to the relicensing and some of the ground work done for the 401/404 permitting will be done during this process.
- D. Wilde asked who will be handling the work for the tasks under the Water Resources Study and if SCDHEC would perform the sampling. M. Raber responded that field activities would be carried out by Duke Energy and its subconsultants.

SharePoint tutorial

K. McCarney Castle presented an overview of the Bad Creek Relicensing Project Resource Committees SharePoint site.

Additional Comments/Concerns

- E. Miller asked if the SCDNR is permitted to revise the excel sheet (Contact List) on the SharePoint site to include other stakeholders. A. Stuart replied that she could modify it or could send along a request to have it revised.
- D. Wilde asked about editing in SharePoint. J. Crutchfield indicated she was welcome to reach out regarding questions. **Action Item:** HDR to re-submit access link to D. Wilde.
- A. Stuart mentioned the PSP Meeting will be held in-person in Greenville, SC on September 6th. E. Miller asked if the PSP meeting (held 30 days post PSP filing) is an official FERC meeting that would cover all PSP studies and as well as the PSP document. A. Stuart confirmed.
- J. Crutchfield indicated that the meeting was only partially recorded. D. Wilde offered her audio recording for the SharePoint site. **Action Item:** HDR to upload audio recording from D. Wilde to the external SharePoint site.

Action Items

- **Action Item 1:** Duke Energy to upload presentation and meeting summary to the SharePoint site in the [Water Resources Resource Committee](#) folder.

- **Action Item 2:** HDR to re-submit access link to D. Wilde (**Complete**)
- **Action Item 3:** HDR to upload audio recording from D. Wilde to the external SharePoint site (**Complete**)

Subject: FW: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Operations)

Importance: High

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>

Sent: Friday, June 24, 2022 6:15 AM

To: Elizabeth Miller <MillerE@dnr.sc.gov>; jhains@g.clemson.edu; James Keane <jtk7140@me.com>; charris@scprt.com; amedeemd@dhec.sc.gov

Cc: Bruce, Ed <Ed.Bruce@duke-energy.com>; Dunn, Lynne <Lynne.Dunn@duke-energy.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Salazar, Maggie <Maggie.Salazar@hdrinc.com>; Alison Jakupca <Alison.Jakupca@KleinschmidtGroup.com>

Subject: Bad Creek Relicensing -- Study Plan Development and Stakeholder Resource Teams Meetings (Operations)

Importance: High

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Operations Resource Team Members:

Thank you for agreeing to participate on the Operations Resource Team for relicensing of the Bad Creek Hydroelectric Project. As Alan Stuart mentioned during the Relicensing Stakeholder Kick-off Meeting on May 31, Duke Energy has formed six (6) resource teams to develop study plans necessary for the relicensing of Bad Creek I Complex and the new license application for the potential Bad Creek II Complex (i.e., Aquatics, Cultural Resources, Recreation & Aesthetics, Water Quality, Operations, and Wildlife & Botanical). Duke Energy received an additional study request from FERC on June 16, 2022 to perform an Environmental Justice Study. We will include this study in the Operations Resource Team in case you are interested in this study plan.

I (John Crutchfield) will serve as the Technical Coordinator for each Resource Management Team to set meeting dates and ensure we develop the study plans in a timely fashion for FERC submittal. Duke Energy looks forward to working with each of you during the relicensing process.

A first step in the Integrated Licensing Process (ILP) is to develop necessary study plans for the relicensing application and submit those to FERC by August 7. Duke is currently drafting study plan elements for review and discussion with Resource Teams during meetings the week of July 18-22.

I will be sending a Doodle Poll to Resource Team members for potential time and meeting dates to begin this study plan development process. Please respond to this Doodle Poll by Friday, July 1 COB. This initial meeting will be virtual via Microsoft Teams. Given the tight deadline that Duke Energy has to submit the study plans, please be flexible and try to clear your schedule the week of July 18-22 to make the meeting. This will help us meet the tight time schedule.

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If you have any questions regarding the study plan development and Resource Team meeting, please let Alan Stuart and me know.

Regards,

John Crutchfield

Project Manager II, Water Strategy & Hydro Licensing

Regulated & Renewable Energy

Duke Energy

526 S. Church Street, EC12Q | Charlotte, NC 28202

Office 980-373-2288 | Cell 919-757-1095

Meeting Summary

Project:	Bad Creek Pumped Storage Project Relicensing	
Resource Committee:	Operations Resource Committee	
Subject:	Environmental Justice Proposed Study	
Date:	Monday, July 18, 2022	
Location:	Microsoft Teams	
Attendees:	John Crutchfield (Duke Energy) Alan Stuart (Duke Energy) Ed Bruce (Duke Energy) Lynne Dunn (Duke Energy) Alison Jakupca (Kleinschmidt) John Hains (Friends of Lake Keowee) Terry Keane (Advocates for Quality Development [AQD] representative) Melanie Olds (USFWS)	Elizabeth Miller (SCDNR) Pat Cloninger (SCDNR) Alix Pedraza (SCDNR) Alex Pellett (SCDNR) Dan Rankin (SCDNR) Greg Mixon (SCDNR) Rowdy Harris (SC Parks and Recreation and Tourism) Kerry McCarney-Castle (HDR)

Introduction

John Crutchfield opened the meeting with a safety moment, led the group through participant introductions, and advanced through the introductory slides, which included:

- Summarizing proposed studies and corresponding resource committees and Duke Energy study leads; and
- Describing the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) process and schedule.

Environmental Study Proposed Study Planning Meeting Presentation

Alison Jakupca presented the Environmental Justice proposed study plan including a description of the renewed interest by FERC in 2021 regarding the importance of Environmental Justice to relicensing activities. Relicensings are federal actions, therefore Environmental Justice strives to ensure equal uses of the waterways for all populations, including minority, low-income, or indigenous populations.

Oconee County was previously analyzed, and no Environmental Justice populations were identified (as described in the pre-application document [PAD]); however, Duke Energy will proceed with the Environmental Justice study so that FERC has all information needed for the National Environmental Policy Act (NEPA) analysis.

- **Question:** Regarding the Proposed Study Area, Alan Stuart asked if the study would apply the same methodology to the two study area boundary lines shown on the figure.
A. Jakupca confirmed that yes, since the study area boundaries for the existing project

and the proposed project overlap a great deal, both would be approached similarly, with the exception of the small area of transmission line that lies outside of the 5-mile radius of potential impacts relating to the Bad Creek II Complex construction.

- **Question:** A. Stuart asked if any Sensitive Receptor Locations identified would be limited to a certain distance from the Project. A. Jakupca responded that yes, locations need to be within designated study area boundaries.

SharePoint tutorial

Kerry McCarney-Castle presented an overview of the Bad Creek Relicensing Project Resource Committees SharePoint site.

- **Question:** A. Stuart asked if a document is exported to a person's desktop and edited – will it replace the existing version when it is re-uploaded. K. McCarney-Castle confirmed that the document would not be replaced on the SharePoint site and stressed the importance of working on SharePoint for collaboration due to version control issues. ***Documents should not be edited outside of SharePoint. Documents can be edited by selecting "Open in Desktop App." SharePoint will automatically save changes.***

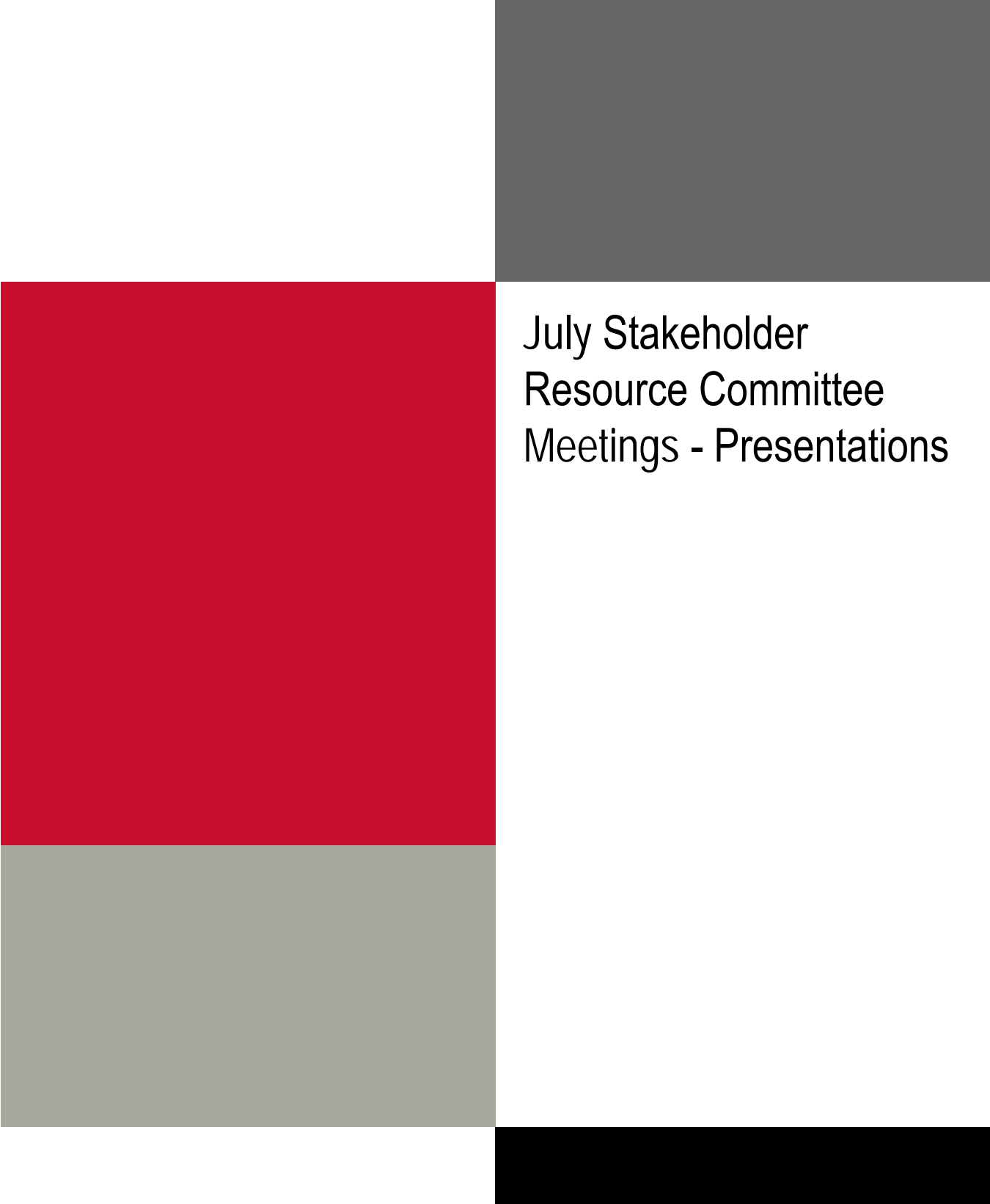
Additional Comments/Concerns

- **Question:** Elizabeth Miller asked if Environmental Justice was the only topic covered under "Operations". Duke Energy confirmed that Environmental Justice is the only study under the Operations Resource Committee. However, information requests relative to other studies (Example of which A. Stuart cited rate of change information may be developed within the Operations Committee and provided to the Recreation Committee to use to assess potential impacts on recreational use.)
- As a follow-up to the meeting, Duke Energy wants all committee members to understand if information requests or comments/questions posed in comments on the PAD warrant discussion(s) in the respective resource committee this is certainly permissible and will be addressed during the relicensing process.

Action Items

- **Action Item 1:** Duke Energy to upload Environmental Justice presentation to the SharePoint site in the [Operations Resource Committee](#) folder.
- **Action Item 2:** Duke Energy to prepare and upload Meeting Summary to the SharePoint site in the [Operations Resource Committee](#) folder by 7/29.
- **Action Item 3:** Duke Energy to upload recording of the Environmental Justice presentation to the [Operations Resource Committee](#) folder.

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July Stakeholder
Resource Committee
Meetings - Presentations

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Bad Creek Pumped Storage Project No. 2740

Study Planning Meeting
Water Resources


DUKE ENERGY
BUILDING A SMARTER ENERGY FUTURE™

JULY 21, 2022

1

Study Planning Meeting Agenda

- Welcome and Meeting Purpose
- Safety Moment
- Introductions
- Resource Committees
- Proposed Study Plans – FERC ILP Schedule
- Water Resources Study Plan Overview
- Questions
- Action Items
- Bad Creek SharePoint Site Tutorial
- Adjourn



Bad Creek Pumped Storage Project Study Planning Meeting | 2

2

Resource Committees

Lead Technical Manager

- John Crutchfield

Project Manager

- Alan Stuart

Aquatic Resources

- Mike Abney
- Nick Wahl

Cultural Resources

- Christy Churchill

Water Resources

- Maverick Raber

Recreation & Aesthetics

- Jennifer Bennett

Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher

Operations

- Lynne Dunn
- Ed Bruce

Bad Creek Pumped Storage Project Study Planning Meeting | 3

3

FERC ILP Schedule

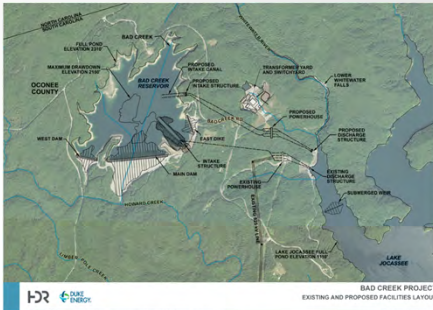
Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) [18 CFR 95.54(b)]	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting [18 CFR 95.7]	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) [18 CFR 95.86(a)]	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit [18 CFR 95.86(b)(ii)]	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on FERC, NEPA, and Scoping Document 1 (SD1) [18 CFR 95.86]	Licensee	Within 30 days following Notice of NOI/PAD and SD1	June 3, 2022
Issue Scoping Document 2 (SD2), if necessary [18 CFR 95.86]	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) [18 CFR 95.83]	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting [18 CFR 95.83(d)]	Licensee	Within 30 days following filing of PSP	Sep 6, 2022
Comments on PSP [18 CFR 95.83]	Stakeholders	Within 30 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) [18 CFR 95.83(d)]	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP [18 CFR 95.83(b)]	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination [18 CFR 95.83(d)]	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Session of Studies [18 CFR 95.83]	Licensee	-	Spring-Fall 2023
File Study Program Report [18 CFR 95.83(d)]	Licensee	Quarterly	Spring 2023-Fall 2024
Revised Study Report (RSR) [18 CFR 95.83(d)]	Licensee	Pursuant to the commission-approved study plan or later than 1 year after Commission approval of the study plan, whichever comes first.	Jan 4, 2024

Bad Creek Pumped Storage Project Study Planning Meeting | 4

4

Water Resources Proposed Study Plan (PSP)

- No formal study requests related to water resources were submitted during the scoping process
- Several comments from agencies and stakeholder groups were received and considered in the development of the PSP
 - Comments will be addressed in the PSP Comment Response Matrix



Bad Creek Pumped Storage Project Study Planning Meeting | 5

5

Background and Existing Information

- Bad Creek Reservoir is used only for Project operations and is inaccessible to the public; it is not designated for any other uses and has no known state or federal water quality standards.
- Lake Jocassee and tributaries in the study area are subject to state and federal water quality standards.
- Monitoring data (e.g. hydrology, water quality) collected as early as 1973.
 - Impacts on Bad Creek I construction and operation.
 - Comparison to applicable water quality standards.
 - Pelagic trout habitat (Aquatic Resources).

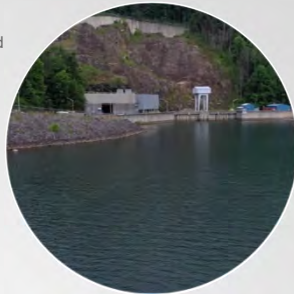


Bad Creek Pumped Storage Project Study Planning Meeting | 6

6

Project Nexus

- No anticipated additional potential adverse effects to existing water resources from the continued operation of Bad Creek I.
- The construction and operations of Bad Creek II Complex has the potential to impact water resources in Lake Jocassee.
- The construction of Bad Creek II Complex and spoil disposal in upland areas could result in impacts to upland water resources (tributary streams).



Bad Creek Pumped Storage Project Study Planning Meeting | 7

7

General Study Area

- Main/primary Project site
- Upper reservoir
- Lower reservoir (specifically, Whitewater River Cove)
- Transmission line corridor



Bad Creek Pumped Storage Project Study Planning Meeting | 8

8

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 1: Evaluate the impact of current (baseline) operations of Bad Creek I

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

Objective 3: Address stakeholder concerns

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 1: Evaluate the impact of current (baseline) operations of Bad Creek I

Task 1: Summary of Existing Water Quality Data and Standards

- Current and historical data
- Compare to applicable water quality standards
- Establish baseline conditions

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

- Task 2 – Water Quality Monitoring in the Whitewater River Arm
- Temperature and Dissolved Oxygen (DO) monitoring
 - June – September, 2023 and 2024
 - Continuous temperature and bi-weekly DO vertical profiles

- Task 3 – Velocity Effects and Vertical Mixing in Lake Jocassee
- Hydraulic modeling to determine Computational Flow Dynamics (CFD) model boundary
 - 3-D CFD modeling to determine flow patterns and velocities in Whitewater River arm associated with Bad Creek I and Bad Creek II operations under various Jocassee reservoir elevations and submerged weir configurations
 - Determine potential for shoreline erosion in Whitewater River arm

- Task 4 – Water Exchange Rates and Lake Jocassee Reservoir Levels
- Computer Hydro-Electric Operations and Planning Software (CHEOPS) Model – water exchange rates, magnitude, duration
 - Reservoir elevation effects



Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

- Task 5 – Future Water Quality Monitoring Plan Development (WQMP) associated with the following Bad Creek II activities:
- Construction of inlet/outlet structure and submerged weir expansion
 - Construction in upland areas
 - Potential upland soil disposal

- Key components:
- Consultation with Agencies on monitoring locations and parameters (in consideration of existing data and anticipated impacts)
 - The WQMP will include pre-construction, construction, post-construction time periods
 - Comparison of data to applicable water quality standards
 - Water Resource Impacts in support of permitting activities including Clean Water Act 401/404



Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 3: Address stakeholder concerns

PAD, NOI comments

Resource Committee input (today's meeting!)

Next Step: PSP review and comment period

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Study Schedule

Task	Proposed Timeframe for Completion
Study Planning and Existing Data Review	August – December 2022
Task 1 – Summary of Existing Water Quality Data and Standards	January 2023 – April 2023
Task 2 – Water Quality Monitoring in Whitewater River Arm	June 2023 – September 2023 June 2024 – September 2024
Task 3 – Velocity Effects and Vertical Mixing In Lake Jocassee Due to a Second Powerhouse	April 2023 – October 2023
Task 4 – Water Exchange Rates and Lake Jocassee Reservoir Levels	April 2023 – October 2023
Task 5 – Future Water Quality Monitoring Plan Development	January 2024 – December 2024
Distribute Draft Study Report with the Initial Study Report	January 2024
Distribute Revised Study Report with the Updated Study Report	January 2025

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Questions



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Bad Creek Pumped Storage Project No. 2740

Study Planning Meeting
Aquatic Resources





JULY 22, 2022

1

Study Planning Meeting Agenda

- Welcome and Meeting Purpose
- Safety Moment
- Introductions
- Resource Committees
- Proposed Study Plans – FERC ILP Schedule
- Aquatic Resources Study Plan Overview
- Questions
- Action Items
- Bad Creek SharePoint Site Tutorial
- Adjourn



Bad Creek Pumped Storage Project Study Planning Meeting | 2

2

Resource Committees

Lead Technical Manager

- John Crutchfield

Project Manager

- Alan Stuart

Aquatic Resources

- Mike Abney
- Nick Wahl

Cultural Resources

- Christy Churchill

Water Resources

- Maverick Raber

Recreation & Aesthetics

- Jennifer Bennett

Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher

Operations

- Lynne Dunn
- Ed Bruce

Bad Creek Pumped Storage Project Study Planning Meeting | 3

3

FERC ILP Schedule

Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) [18 CFR 95.5(a)]	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting [18 CFR 95.7]	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) [18 CFR 95.8(a)]	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit [18 CFR 95.8(b)-(d)]	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on NOI, PAD, and Scoping Document 1 (SD1) [18 CFR 95.8]	Licensee/ Stakeholders	Within 60 days following Notice of NOI/PAD and SD1	June 3, 2022
Issue Scoping Document 2 (SD2), if necessary [18 CFR 95.8(e)]	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) [18 CFR 95.9]	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting [18 CFR 95.9(d)]	Licensee	Within 30 days following filing of PSP	Sep 6, 2022
Comments on PSP [18 CFR 95.9(e)]	Stakeholders	Within 30 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) [18 CFR 95.9(f)]	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP [18 CFR 95.9(h)]	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination [18 CFR 95.9(i)]	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Session of Studies [18 CFR 95.9(j)]	Licensee	-	Spring-Fall 2023
File Study Program Report [18 CFR 95.9(k)]	Licensee	Quarterly	Spring 2023-Fall 2024
Revised Study Report (RSR) [18 CFR 95.9(l)]	Licensee	Pursuant to the commission-approved study plan or no later than 1 year after Commission approval of the study plan, whichever comes first.	Jan 4, 2024

Bad Creek Pumped Storage Project Study Planning Meeting | 4

4

Aquatic Resources Study Plan

- No formal study requests related to aquatic resources were submitted during the scoping process
- Comments received from agencies and stakeholder groups considered in the development of the preliminary proposed study plan
- PAD comments will be addressed in the Proposed Study Plan Comment Response Matrix



5

Background and Existing Information

- Bad Creek Reservoir is used only for Project operations; it is not designated for any other uses and therefore has no applicable state or federal water quality standards.
- In 1996, Duke Energy and SCDNR developed a Memorandum of Understanding to help maintain the high-quality fisheries of lakes Jocassee and Keowee. Implemented through 10-Year Work Plans (1996-2005, 2006-2016, 2017-2027).
 - Agreement on minimizing fish entrainment
 - Electrofishing of littoral fish populations
 - Hydroacoustic monitoring of pelagic forage fish populations
 - Cost sharing for trout stocking
 - Cost sharing for fisheries research and enhancements
 - Water quality monitoring for pelagic trout habitat (K-T license)



6

General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
 - Main/primary Project site
 - Upper reservoir
 - Lower reservoir (specifically, Whitewater River Cove)
 - Preliminary transmission line alignment



7

Project Nexus

- The construction and operations of Bad Creek II Complex has the potential to impact aquatic habitat and fish populations in Lake Jocassee.
- The construction of Bad Creek II Complex and expansion of the underwater weir may cause direct, permanent and temporary impacts to aquatic resources.



8

Goals and Objectives

The goal of the Aquatic Resources Study is to evaluate potential impacts to fish and aquatic life populations, communities, and habitats due to the construction and operation of the proposed Bad Creek II Complex.

Objective 1: Evaluate the potential for increased fish entrainment due to the addition of Bad Creek II Complex and consult with agencies and other Project stakeholders regarding results of the updated desktop Entrainment Study (Kleinschmidt 2021).

Objective 2: Assess changes to pelagic and littoral aquatic habitat in Lake Jocassee resulting from the additional discharge and expanded underwater weir using models developed for the Water Resources Study or related relicensings.

Objective 3: Evaluate potential direct impacts to aquatic habitats (including wetlands) related to Bad Creek II Complex construction activities by characterizing surface waters, including resource quality and presence of aquatic biota (e.g., mussels).

9

Methodology



Objective 1 – Consultation on Entrainment

- Meet with agencies and stakeholders to discuss the results of the updated Entrainment Study and minimization measures.



Objective 2 – Effects of Bad Creek II Complex and Expanded Weir on Aquatic Habitat

- Evaluation of potential effects to Lake Jocassee trout habitat
 - Expanded CFD model
- Evaluation of potential effects to littoral zone habitat
 - CHEOPS™ model



Objective 3 – Impacts to Surface Waters and Associated Aquatic Fauna

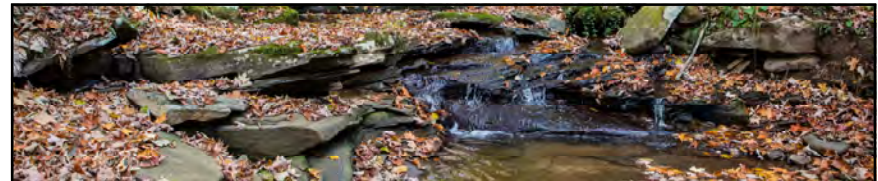
- Upland spoil locations, construction of Bad Creek II Complex powerhouse, + expansion of underwater weir
- Estimation of potential impacts and characterization of affected waters
 - Stream habit quality surveys
 - Presence/absence mussel surveys

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Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Consultation on Entrainment	January – June 2023
Desktop Studies on Pelagic and Littoral Habitat Effects	Spring – Fall 2023
Mussel Surveys and Stream Habitat Quality Surveys	Summer 2023
Initial Study Report	January 2024

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QUESTIONS

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Bad Creek Pumped Storage Project No. 2740

Study Planning Meeting
Recreation and Aesthetic Resources





JULY 19, 2022

1

Study Planning Meeting Agenda

- Welcome and Meeting Purpose
- Safety Moment
- Introductions
- Resource Committees
- Proposed Study Plans – FERC ILP Schedule
- Aesthetic Resources Study Plan Overview
- Recreation Resources Study Plan Overview
- Questions
- Action Items
- Bad Creek SharePoint Site Tutorial
- Adjourn



Bad Creek Pumped Storage Project Study Planning Meeting | 2

2

Resource Committees

Lead Technical Manager

- John Crutchfield

Project Manager

- Alan Stuart

Aquatic Resources

- Mike Abney
- Nick Wahl

Cultural Resources

- Christy Churchill

Water Resources

- Maverick Raber

Recreation & Aesthetics

- Jennifer Bennett

Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher

Operations

- Lynne Dunn
- Ed Bruce

Bad Creek Pumped Storage Project Study Planning Meeting | 3

3

FERC ILP Schedule

Activity	Responsible Parties	Timeline	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) (18 CFR 15.136)	FERC	Written 5 weeks to 2-3 weeks prior to license expiration	Feb 22, 2022
Initial Tribal Consultation Meeting (18 CFR 15.1)	FERC	Not later than 30 days following filing of NOI/NOI	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) (18 CFR 15.134)	FERC	Within 60 days following filing of NOI/PAD	Apr 14, 2022
conduct Scoping Meetings and site visit (18 CFR 15.135(a))	FERC	Within 30 days following notice of NOI/PAD and SD1	May 04, 2022
Comments on PAD, SD1, and Study Requests (18 CFR 15.134)	Stakeholders	Written 60 days following Notice of NOI/PAD and SD1	June 21, 2022
Issue Scoping Document 2 (SD2), if necessary (18 CFR 15.13)	FERC	Written 45 days following receipt for filing comments on NOI/PAD	Aug 1, 2022
File Proposed Study Plan (PSP) (18 CFR 15.13)	FERC	Written 18 days following receipt for filing comments on NOI/PAD	Aug 7, 2022
FERC Meeting (18 CFR 15.134)	FERC	Written 30 days following filing of PSP	Aug 8, 2022
Comments on PSP (18 CFR 15.134)	Stakeholders	Written 60 days following filing of PSP	Sept 5, 2022
File Revised Study Plan (RSP) (18 CFR 15.134)	FERC	Written 21 days following receipt for comments on PSP	Sept 15, 2022
Comments on RSP (18 CFR 15.134)	Stakeholders	Written 18 days following filing of RSP	Sept 28, 2022
Issue Study Plan Determination (18 CFR 15.134)	FERC	Written 21 days following filing of RSP	Oct 4, 2022
Submit City Statement of Position (18 CFR 15.13)	FERC	Written 15 days following filing of RSP	Sept 14, 2022
File Study Program Report (18 CFR 15.134)	FERC	Class only	Upcoming Federal PSP
File Revised Study Report (18 CFR 15.134)	FERC	Proposed 120-day period for comments and 120 days for the licensee to file a revised study report (if the project is still within license term)	Jan 4, 2023

Bad Creek Pumped Storage Project Study Planning Meeting | 4

4

Aesthetic Resources Study Plan

- The Commission's April 22, 2022, Scoping Document 1 identified the following as a potential aesthetic resource issue:
 - Effects of project construction, operation (including the presence of project facilities), and maintenance activities on visual resources.
- In the PAD, Duke Energy proposed to conduct an Aesthetic Resources Study in support of the proposed Bad Creek II Complex.
- No formal study requests or stakeholder comments related to aesthetic resources were received; comments from the FERC in SD1 will be addressed in the Proposed Study Plan.



5

Goals and Objectives

The objective of the Aesthetic Resources Study is to establish the baseline condition of the aesthetic resources near the existing Project and to provide additional information (e.g., including visualizations of the expanded Project) to evaluate expected impacts of construction and operation of the Bad Creek II Complex on these resources and any PM&E measures.

Focus on impacts of the construction and operation of the Bad Creek II Complex.

No adverse additional effects to aesthetic resources are expected to result from the continued operation of the existing Project over the new license term.

No practical or necessary PM&E measures have been identified or proposed for the existing Project structures.

6

General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
 - Main/primary Project site
 - Proposed Bad Creek II Complex
 - Upper reservoir
 - Lower reservoir (specifically, Whitewater River Cove)
 - Transmission line corridor



7

Background and Existing Information

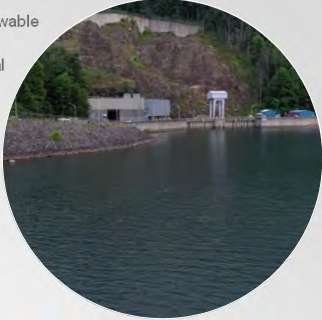
- Upper reservoir Project structures as well as the inlet/outlet structure and powerhouse portal are visible from specific vantage points on Lake Jocassee and the surrounding area.
- During a 2013 RUN Study at the KT Project, one third of the people surveyed stated nothing detracts from the aesthetic quality of the Lake Jocassee.



8

Project Nexus

- A new inlet/outlet structure for a second powerhouse would be viewable from the same viewshed as the existing structures.
- With the construction of the proposed Project expansion, the visual landscape will be altered both during and after construction.



Bad Creek Pumped Storage Project Study Planning Meeting | 9

9

Methodology

Task 1 – Existing Landscape Description

- Review existing information to characterize the existing landscape.

Task 2 – Visibility Analysis

- Identify areas within the existing landscape from which any part of the proposed Bad Creek II facilities would potentially be visible.

Task 3 – Field Investigation

- Field investigation of target areas identified through Task 2.
- Will include photography and documentation of existing site attributes, and viewing/landscape conditions at photo points distributed throughout the study area.

Task 4 – Key Viewpoint Selection

- Selection of representative photo points investigated during Task 3 that will be used as key viewpoints for the visual impact analysis

Bad Creek Pumped Storage Project Study Planning Meeting | 10

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Methodology continued

Task 5 – Existing Visual Quality Assessment

- Assess visual quality at each key viewpoint identified in Task 4.

Task 6 – Visual Impact Assessment

- Specific assessment of the expected visual impact at each key viewpoint, based on the degree of contrast and associated visual quality change.
- Visual simulations of the expected appearance of Bad Creek II Complex from key viewpoints.

Task 7 – Visual Management Consistency Review

- Review consistency of the proposed Bad Creek II Complex with visual protection guidance established in applicable land use plans and regulations.

Task 8 – Mitigation Assessment

- Identify and assessment of mitigation measures that would address visual impacts of the proposed Bad Creek II Complex.

Task 9 – Conceptual Design of Bad Creek II Complex

- Assess aesthetic resource conditions relative to site layouts, conceptual designs, proposed construction processes, and lighting.
- Three-dimensional renderings will be produced.

Bad Creek Pumped Storage Project Study Planning Meeting | 11

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Study Logistics

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Study Tasks	Spring 2023 – Fall 2023
Initial Study Report	January 2024

Bad Creek Pumped Storage Project Study Planning Meeting | 12

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Recreation Study Plan

- The Commission's April 22, 2022, Scoping Document 1 identified the following as a potential resource issue:
 - Effects of proposed project construction, operation, and maintenance on recreational use in the project-affected area
- In the PAD, Duke Energy proposed to conduct a Recreation Resources Study in support of the proposed Bad Creek II Complex.
- Upstate Forever and the Foothills Trail Conservancy provided recreation related comments on the PAD.



13

Goals and Objectives

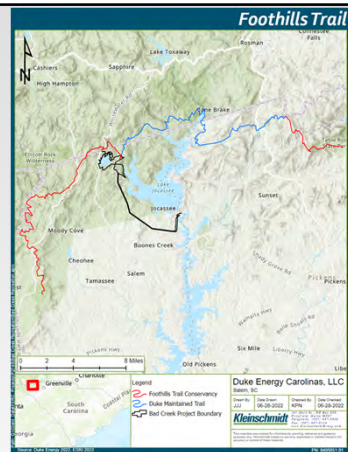
Four main study objectives of the Recreation Study Plan;

1. **Foothills Trail RUN Study:** assess current recreation use and identify future recreation needs, inform development of updated RMP.
2. **Foothills Trail Conditions Assessment:** evaluate the current condition of the foothills trail corridor and identify areas of potential improvements.
3. **Whitewater Cove Existing Recreational Use:** assess boating use of the Whitewater Cove and inform Duke Energy on level of use disruption that may occur with Bad Creek II Complex construction.
4. **Whitewater Cove Recreational Public Safety Evaluation:** evaluate public safety risks, including those associated with recreation at or near Whitewater Cove that may be created or exacerbated by Bad Creek II Complex construction.

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Proposed Study Area Duke Energy Foothills Trail Corridor

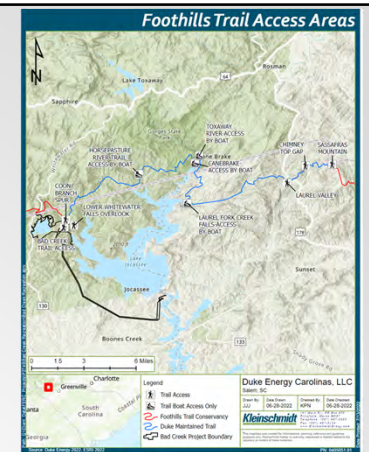
- Recreational Use
- Trail Condition



15

Proposed Study Area Foothills Trail Access Points

- Duke Energy maintained access points and points of interest.



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Proposed Study Area Whitewater Cove

- Recreational Use
- Public Safety associated with potential Bad Creek II Complex construction

Bad Creek Pumped Storage Project Study Planning Meeting | 17

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Project Nexus

- Although it is non-Project, the 43-mile segment of the Foothills Trail and 10 access areas are associated with the Project and are maintained by Duke Energy.
- Duke Energy plans to continue to maintain these facilities as non-Project.

Bad Creek Pumped Storage Project Study Planning Meeting | 18

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Methodology

Task 1 – Foothills Trail RUN Study

- Facility Inventory
- Traffic and Trail Counters
 - March-November 2023
- User Surveys
 - March-November 2023
 - Mix of weekdays, weekends, holidays
- Analysis:
 - Trail Use
 - Parking Demand
 - Future Recreation Use
 - Recreation Needs

Data will also inform of needed safety measures related to the Foothills Trail and facilities if construction if Bad Creek II project proceeds.

Access Area	Data Collection Methods			
	Inventory	Traffic Counter	Trail Counter	Surveys
Table Rock State Park				*
Sassafras Mountain Trail Access	*	*	*	*
Chimneytop Gap Trail Access	*		*	*
Laurel Valley Trail Access	*	*		*
Laurel Fork Creek Falls Trail Access	*		*	*
Toxaway River Trail Access	*	*	*	*
Canebrake Trail Access	*		*	*
Horsepasture River Trail Access	*	*	*	*
Lower Whitewater Falls Overlook	*		*	*
Bad Creek Trail Access	*	*		*
Coon Branch Spur Trail Access	*	*		*

Bad Creek Pumped Storage Project Study Planning Meeting | 19

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Methodology

Task 2 – Foothills Trail Conditions Assessment

- Professional Trail builder will assess conditions of the 43 miles of Foothills Trail managed by Duke Energy.
- Analysis:
 - Trail surface and feature assessment
 - Corridor condition
 - Identification and prioritization of major maintenance needs

Bad Creek Pumped Storage Project Study Planning Meeting | 20

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Methodology

Task 3 – Whitewater Cove Existing Recreational Use

- Drone flights of the Whitewater Cove area
 - 10 days between Memorial Day-Labor Day 2023
- Analysis:
 - Level of boating use
 - Type of watercraft
- Data will inform of potential impact of closures of the Whitewater River Cove area during construction if Bad Creek II project proceeds.

Task 4 – Whitewater Cove Recreational Public Safety Evaluation

- A three-dimensional CFD model will be created as part of the Water Resources Study to evaluate potential water velocities
- Analysis:
 - Impact of water velocity on recreational use of the Whitewater River Cove

Bad Creek Pumped Storage Project Study Planning Meeting | 21

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Study Logistics

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Study Tasks	Winter 2022 – Winter 2023
Foothills Trail RUN Study Data Collection	March – November 2023
Foothills Trail Conditions Assessment	November 2022- November 2023
Whitewater Cove Existing Recreational Use	May - September 2023
Whitewater Cove Recreational Public Safety Evaluation	Spring 2023 – Fall 2023
Initial Study Report	January 2024

Bad Creek Pumped Storage Project Study Planning Meeting | 22


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QUESTIONS

Bad Creek Pumped Storage Project Study Planning Meeting | 23



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Bad Creek Pumped Storage Project No. 2740

Study Planning Meeting
Cultural Resources

JULY 22, 2022

1

Study Planning Meeting Agenda

- Welcome and Meeting Purpose
- Safety Moment
- Introductions
- Resource Committees
- Proposed Study Plans – FERC ILP Schedule
- Cultural Resources Study Plan Overview
- Questions
- Action Items
- Bad Creek SharePoint Site Tutorial
- Adjourn




Bad Creek Pumped Storage Project Study Planning Meeting | 2

2

Resource Committees

Lead Technical Manager

- John Crutchfield

Aquatic Resources

- Mike Abney
- Nick Wahl

Cultural Resources

- Christy Churchill

Water Resources

- Maverick Raber

Recreation & Aesthetics

- Jennifer Bennett

Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher

Operations

- Lynne Dunn
- Ed Bruce

Bad Creek Pumped Storage Project Study Planning Meeting | 3

3

FERC ILP Schedule

Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) (18 CFR 95.54(b))	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting (18 CFR 95.7)	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) (18 CFR 95.86(a))	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit (18 CFR 95.86(b)(ii))	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on FERC, NEPA, and Scoping Document 1 (18 CFR 95.86)	Licensee	Within 60 days following Notice of NOI/PAD and SD1	June 3, 2022
Issue Scoping Document 2 (SD2), if necessary (18 CFR 95.86)	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) (18 CFR 95.83)	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting (18 CFR 95.83(d))	Licensee	Within 30 days following filing of PSP	Sep 6, 2022
Comments on PSP (18 CFR 95.83)	Stakeholders	Within 30 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) (18 CFR 95.83(b))	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP (18 CFR 95.83(b))	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination (18 CFR 95.83(d))	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Session of Studies (18 CFR 95.83)	Licensee	-	Spring-Fall 2023
File Study Program Report (18 CFR 95.83(d))	Licensee	Quarterly	Spring 2023-Fall 2024
Revised Study Report (RSR) (18 CFR 95.83(e))	Licensee	Pursuant to the commission-approved study plan or later than 1 year after Commission approval of the study plan, whichever comes first.	Jan 4, 2024

Bad Creek Pumped Storage Project Study Planning Meeting | 4

4

Cultural Resources Study Plan

- No formal study requests were received during the scoping process; however, Duke Energy will continue consultation with the Indian Tribes and other stakeholders during the preparation of the final study plan.
- In Section 7.1.8.3 of the PAD, Duke Energy proposed to conduct a Cultural Resources Study in support of the Bad Creek Project, including an archaeological study and an architectural survey of structures more than 40 years old.



5

Goals and Objectives

The goal of the Cultural Resources Study is to evaluate potential impacts to historic and archaeological resources, traditional cultural properties, and access to exercise traditional practices and treaty rights and historic properties, due to the construction, operation and maintenance of the proposed Bad Creek II Complex.

Objective 1: Consult with the State Historic Preservation Office, Indian Tribes, and other agencies regarding the potential issues to cultural resources located within the area of potential effects for the Bad Creek II Complex.

Objective 2: Evaluate Lake Jocassee and Lake Keowee for National Register eligibility.

Objective 3: Complete an architectural survey and National Register evaluation for the existing Bad Creek facilities.

6

General Study Area

- The study area for the Cultural Resources Study is the Area of Potential Effect (APE). The APE will be defined in consultation with the SHPO and THPO's.
 - Main/primary Project site
 - All lands within the Project boundary
 - Lands outside the Project boundary where cultural resources may be affected by Project-related activities
 - Upper reservoir
 - Lower reservoir (specifically, Whitewater River Cove)
 - Transmission line corridor



7

Background and Existing Information

- Portions of the existing Project that underwent extensive land modification or that are currently under Lake Jocassee, are unlikely to contain significant archaeological resources or historical architectural resources other than the elements of the Project greater than 50 years of age.
- Portions of the Project were subject to prior cultural resource surveys.
- As obtained from the SCDAH ArchSite database, there are 12 known archaeological sites that are within or immediately adjacent to the Project. Three sites are potentially eligible and require additional evaluation. Nine sites were determined to be not eligible. The Jocassee Hydrostation is eligible, and Lake Keowee and Lake Jocassee have not been evaluated.



8

Project Nexus

- Presently, there is no evidence that archaeological or historic resources are being affected by the Project's existing operations. The proposed Bad Creek II Complex has the potential to effect historic properties that may be eligible for inclusion on the NRHP.



9

Methodology



Task 1 – APE Determination

- The Project APE has tentatively been proposed. Section 106 Consultation with SHPO and Indian Tribes will finalize and document the final APE.



Task 2 – Cultural Resources Study of the APE

- A cultural resources survey of portions of the APE that will be impacted by the Project is anticipated. Shovel testing of all non-steep landforms, a pedestrian survey and/or drone survey of steeply sloped and rocky areas to look for rock shelters and petroglyphs, as well as an architectural survey of any structures on or near the Project APE that are 40+ years of age.
- Traditional Cultural Properties will be identified in consultation with Indian Tribes.
- Desktop Geomorphological assessment indicates there are six areas within the APE that have potential to contain archaeological resources that may require additional survey and deep testing if impacted by the Project.



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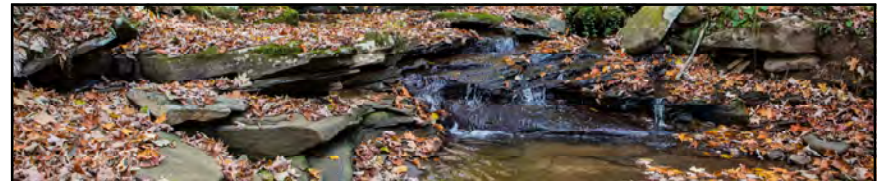
Study Logistics

- The preliminary schedule is outlined below.

Study Schedule

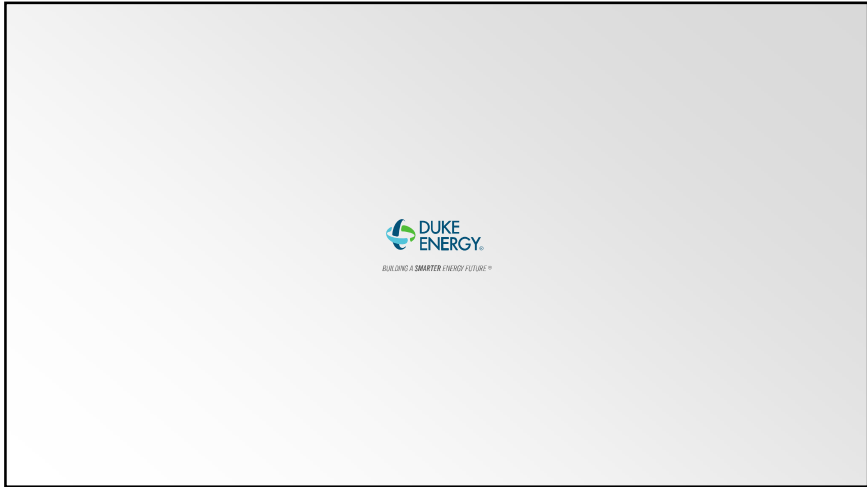
Task	Proposed Timeframe for Completion
Consultation with SHPO and other stakeholders	July-November 2022
Fieldwork, Analysis, and Reporting	Spring – Fall 2023
Initial Study Report	January 2024

11



QUESTIONS

12



Bad Creek Pumped Storage Project No. 2740

Study Planning Meeting Operations Resources





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JULY 18, 2022

1

Study Planning Meeting Agenda

- Welcome and Meeting Purpose
- Safety Moment
- Introductions
- Resource Committees
- Proposed Study Plans – FERC ILP Schedule
- Operations Resources Study Plan Overview
- Questions
- Action Items
- Bad Creek SharePoint Site Tutorial
- Adjourn




Bad Creek Pumped Storage Project Study Planning Meeting | 2

2

Resource Committees

Lead Technical Manager

- John Crutchfield



Aquatic Resources

- Mike Abney
- Nick Wahl



Water Resources

- Maverick Raber




Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher


Project Manager

- Alan Stuart



Cultural Resources

- Christy Churchill



Recreation & Aesthetics

- Jennifer Bennett



Operations

- Lynne Dunn
- Ed Bruce

Bad Creek Pumped Storage Project Study Planning Meeting | 3

3

FERC ILP Schedule

Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) [18 CFR 95.34(b)]	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting [18 CFR 95.7]	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) [18 CFR 95.86(a)]	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit [18 CFR 95.80(b)-(d)]	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on FERC, SD1, and Scoping Document 1 (SD1) [18 CFR 95.86]	Licensee/ Stakeholders	Within 45 days following Notice of NOI/PAD and SD1	June 5, 2022
Issue Scoping Document 2 (SD2), if necessary [18 CFR 95.30]	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) [18 CFR 95.31]	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting [18 CFR 95.31(d)]	Licensee	Within 30 days following filing of PSP	Sep 6, 2022
Comments on PSP [18 CFR 95.32]	Stakeholders	Within 30 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) [18 CFR 95.33(a)]	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP [18 CFR 95.33(b)]	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination [18 CFR 95.34(c)]	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Season of Studies [18 CFR 95.33]	Licensee	-	Spring-Fall 2023
File Study Program Report [18 CFR 95.33(d)]	Licensee	Quarterly	Spring 2023-Fall 2024
Revised Study Report (RSR) [18 CFR 95.33(e)]	Licensee	Pursuant to the commission-approved study plan or no later than 1 year after Commission approval of the study plan, whichever comes first.	Jan 4, 2024

Bad Creek Pumped Storage Project Study Planning Meeting | 4

4

Environmental Justice Study

FERC has identified that an Environmental Justice review is pertinent to its NEPA analysis for the relicensing and proposed Complex development.

5

What is Environmental Justice?

Environmental Justice (EJ) - The fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies.

6

Additional Terms Included in the Analysis

Fair Treatment - The principle that **no group of people**, including a racial, ethnic or a socioeconomic group, **should bear a disproportionate share of the negative environmental consequences** from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies.


Disproportionate Effects - Term used in Executive Order 12898 to describe situations of concern **where there exists significantly higher and more adverse health and environmental effects on minority populations, low-income populations or indigenous peoples.**

Sensitive Receptor Locations - Sensitive receptors include, but are not limited to, **hospitals, schools, daycare facilities, elderly housing and convalescent facilities.** These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants.

7

PRE-APPLICATION DOCUMENT

Bad Creek Pumped Storage Project
FERC Project No. 2740
Oconee County, South Carolina



Prepared by: HDR Engineering, Inc.
HDR

Background and Existing Information

8

Study Goals and Objectives

There are 5 main study objectives:

1. **Identify presence of environmental justice communities** that may be affected by the relicensing and proposed project expansion.
2. **Identify the presence of non-English speaking populations** that may be affected by the project.
3. **Identify the presence of sensitive receptor locations** in the geographic scope.
4. **Discuss the effects of the relicensing** on any identified environmental justice communities and any affects that are disproportionately high and adverse and potential effects on non-English speaking communities and sensitive receptor locations.
5. **Identify mitigation measures** to avoid or minimize project effects on environmental-justice communities, non-English speaking communities and sensitive receptor locations, if present within the geographic scope

9

Environmental Justice Geographic Scope



Proposed
Study Area

10

Project Nexus

- Project construction, operation, and maintenance has the potential to affect human health or the environment in environmental justice communities.
- Examples of resource impacts may include, but are not necessarily limited to, project-related effects on: subsistence fishing, hunting, or plant gathering; access for recreation; and construction-or operation-related air quality, noise, and traffic.

11

Methodology

Consistent with Environmental Protection Agency's *Promising Practices for EJ Methodologies in NEPA Reviews* (2016), the EJ Report will include the following:

Step 1: A table of racial, ethnic, and poverty statistics for each state, county, and census block group within the geographic scope of analysis. (Source: U.S. Census Bureau Data).

12

Geography	RACE AND ETHNICITY DATA										LOW-INCOME DATA
	Total Population (count)	White Alone Not Hispanic (count)	African American (count)	Native American/Alaska Native (count)	Asian (count)	Native Hawaiian & Other Pacific Islander (count)	Some Other Race (count)	Two or More Races (count)	Hispanic or Latino (count)	Total Minority (%)	Below Poverty Level (%)
State											
County or Parish											
Census Tract X, Block Group X											

13

Methodology (cont.)

Step 2: Utilizing data within Step 1 to identify environmental justice populations by block group by applying the following methods to minority populations:

- 50% Analysis Method
- Meaningfully Greater Analysis Method

Step 3: Utilizing data within Step 1 to use the "low-income threshold criteria" method to identify environmental justice communities based on the presence of low-income populations.

- the percent of the population below the poverty level in the identified block group must be equal to or greater than that of the reference population (county)

14

Methodology (cont.)



Step 4: Identify non-English speaking groups within the geographic scope of analysis **that would be affected by the project.**



Describe planned outreach efforts if these groups exist within the geographic scope.

15

Reporting: Map Development

Map Components

- FERC Project Boundary
- Project construction areas
- Identify block groups of EJ communities based on the presence of minority population, low-income population, or both
- Sensitive receptor locations (e.g., schools, day care centers, hospitals, etc.)

16

Reporting: Sensitive Receptor Locations

A table of distances of sensitive receptor locations from project facilities and proposed facilities.

Discussion of project-related effects on these locations.

Discussions of PM&E measures to avoid or minimize potential effects.

17

Reporting: Potential Project Effects Discussion

A discussion of potential project-related effects on any environmental justice communities, non-English speaking groups and sensitive receptor locations for all resources where there is a potential nexus between effects and communities/locations.

For any identified effects, describe whether or not any of the effects would be disproportionately high and adverse on environmental justice communities.

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Public Outreach



19




Protection Mitigation and Enhancement Measures

To avoid and/or minimize project effects on identified communities:

- Environmental justice communities
- Non-English speaking groups
- Sensitive receptor locations


20

Schedule

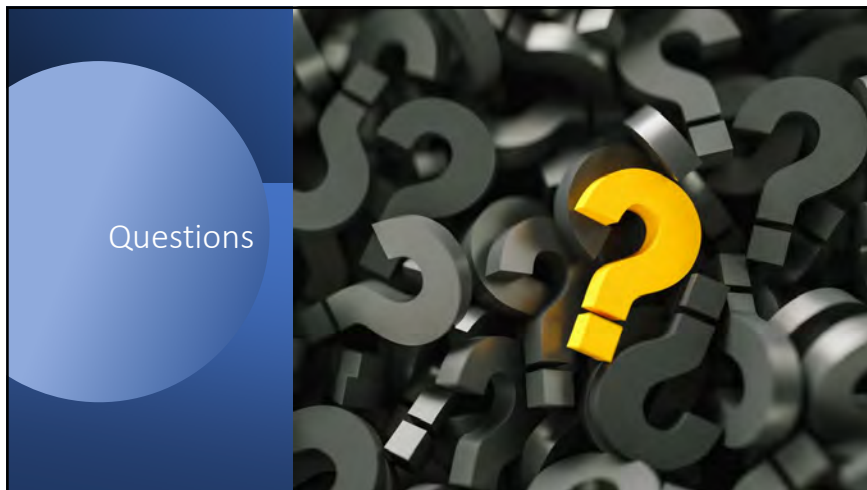
- 
Quarterly Progress Reports
On or around July 2023
On or around October 2023
- 
Public Outreach Meetings – October 2023
- 
Final Environmental Justice Report – January 4, 2024

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Type	First Name	Last Name	Company Name
Duke Technical Leader	John	Crutchfield	Duke Energy
Duke Resource Lead	Lynne	Dunn	Duke Energy
Duke Resource Lead	Ed	Bruce	Duke Energy
HDR Support	Sarah	Kulpa	HDR
Environmental Justice - Kleinschmidt Support	Alison	Jakupca	Kleinschmidt Associates
Committee Member	Elizabeth	Miller	South Carolina Department of Natural Resources
Committee Member	John	Haines	Friends of Lake Keowee Society
Committee Member	Terry	Keene	Advocates for Quality Development (AQD)
Committee Member	Rowdy	Harris	S.C. Department of Parks, Recreation & Tourism
Committee Member	Morgan	Amedee	SC Depart. Health and Environmental Control

 Resource Committee Members



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23

Bad Creek Pumped Storage Project No. 2740

Study Planning Meeting Wildlife & Botanical Resources


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JULY 21, 2022

1

Study Planning Meeting Agenda

- Welcome and Meeting Purpose
- Safety Moment
- Introductions
- Resource Committees
- Proposed Study Plans – FERC ILP Schedule
- Wildlife & Botanical Resources Study Plan Overview
- Questions
- Action Items
- Bad Creek SharePoint Site Tutorial
- Adjourn



Bad Creek Pumped Storage Project Study Planning Meeting | 2

2

Resource Committees

Lead Technical Manager

- John Crutchfield

Project Manager

- Alan Stuart

Aquatic Resources

- Mike Abney
- Nick Wahl

Cultural Resources

- Christy Churchill

Water Resources

- Maverick Raber

Recreation & Aesthetics

- Jennifer Bennett

Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher

Operations

- Lynne Dunn
- Ed Bruce

Bad Creek Pumped Storage Project Study Planning Meeting | 3

3

FERC ILP Schedule

Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) [18 CFR 95.5(a)]	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting [18 CFR 95.7]	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) [18 CFR 95.8(a)]	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit [18 CFR 95.8(b)-(d)]	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on NOI, PAD, and Scoping Document 1 (SD1) [18 CFR 95.8]	Licensee/ Stakeholders	Within 60 days following Notice of NOI/PAD and SD1	June 3, 2022
Issue Scoping Document 2 (SD2), if necessary [18 CFR 95.9(a)]	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) [18 CFR 95.9]	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting [18 CFR 95.9(d)]	Licensee	Within 30 days following filing of PSP	Sep 6, 2022
Comments on PSP [18 CFR 95.9(e)]	Stakeholders	Within 30 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) [18 CFR 95.9(f)]	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP [18 CFR 95.9(h)]	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination [18 CFR 95.9(i)]	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Season of Studies [18 CFR 95.9(j)]	Licensee	-	Spring-Fall 2023
File Study Program Report [18 CFR 95.9(k)]	Licensee	Quarterly	Spring 2023 - Fall 2024
Revised Study Report (RSR) [18 CFR 95.9(l)]	Licensee	Pursuant to the commission-approved study plan or later than 1 year after Commission approval of the study plan, whichever comes first.	Jan 4, 2024

Bad Creek Pumped Storage Project Study Planning Meeting | 4

4

Wildlife & Botanical Studies

- Natural Resources Assessment – Completed Prior to PAD Submittal
- Bat Survey – Completed Prior to PAD Submittal
- No Further Wildlife & Botanical Studies Proposed
- PAD comments will be addressed in the Proposed Study Plan Comment Response Matrix



5

Wildlife & Botanical Resources – PAD Comments Received from Stakeholders

Type	Resource Area	Summary of Study Request or Comment	Stakeholder	Date	Study Criteria Met?
Comment on PAD/NOI	Wildlife & Botanical Resources	1. Duke Energy has identified several preliminary studies and environmental protection, mitigation, and enhancement measures (PM&E) in its PAD. The Service (USFWS) is in agreement with all of the PM&E measures proposed.	USFWS	June 9, 2022	
Comment on SD1	Wildlife & Botanical Resources	2. Several at-risk-species are on the Service's National Listing Workplan to be assessed for listing during the same time frame as the ILP. If any of these species are listed or proposed for listing during that time the Service will notify Duke Energy and work with them to ensure proper protection measures are in place.	USFWS	June 9, 2022	
Comment on SD1	Wildlife & Botanical Resources	3. On March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act of 1973, as amended. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). If the final determination is to reclassify to endangered, that reclassification would go into effect 30 days later, which would be sometime during December 2022. The proposed reclassification, if finalized, would remove the current 4(c) rule for the NLEB, as these rules may be applied only to threatened species.	USFWS	June 9, 2022	
Comment on SD1	Wildlife & Botanical Resources	4. It should be noted that the Service does not have any records of the Indiana bat within Oconee County, South Carolina and we believe this species does not need to be included in the list of T&E species to be analyzed.	USFWS	June 9, 2022	

6

Wildlife & Botanical Resources – PAD Comments Received from Stakeholders

Type	Resource Area	Summary of Study Request or Comment	Stakeholder	Date	Study Criteria Met?
Comment on PAD/NOI	Wildlife & Botanical Resources	10. The SCDNR recommends including the federally endangered gray bat (<i>Myotis grisescens</i>) in the Project's list of federally listed threatened, endangered, and candidate species. And recommends the gray bat be included in the acoustic KPro analysis and results table, in addition to files being reviewed by a qualified biologist to evaluate potential presence.	SCDNR	June 23, 2022	
Comment on PAD/NOI	Wildlife & Botanical Resources	11. The SCDNR notes that three State Listed Species occur in the Project Area and should be included in the Natural Resources Assessment Report (eastern small-footed bat, Rafinesque's big-eared bat, bald eagle) (PAD Appendix E)	SCDNR	June 23, 2022	
Comment on PAD/NOI	Wildlife & Botanical Resources	14. The SCDNR notes that caution in interpretation is also appropriate for NLEB vs. eastern smallfooted bat and eastern red bat vs. Seminole bat, which can share significant overlap in call type, and disagrees with statement in PAD Section 4.1	SCDNR	June 23, 2022	
Comment on PAD/NOI	Wildlife & Botanical Resources	15. For emergence bat call surveys, the SCDNR recommends that the Licensee should utilize the same bat detector recorder type used during other acoustic surveys (e.g., SM3BAT or Echometer Touch 2), for improved quality call collection, identification, and consistency.	SCDNR	June 23, 2022	

7

Wildlife & Botanical Resources – PAD Comments Received from Stakeholders

Type	Resource Area	Summary of Study Request or Comment	Stakeholder	Date	Study Criteria Met?
Comment on PAD/NOI	Wildlife & Botanical Resources	3. Please confirm whether any cultivated crops or areas of hay or pasture do indeed exist within the project boundary, or clarify the land uses immediately adjacent to the Main Dam and West Dam.	Upstate Forever	June 23, 2022	
Comment on PAD/NOI	Wildlife & Botanical Resources	7. The PAD does not provide detail about current or proposed vegetation management at the project and face of dams and should include information describing management activities for native and non-native invasive species in the Project boundary and vicinity.	Upstate Forever	June 23, 2022	
Comment on PAD/NOI	Wildlife & Botanical Resources	18. We believe that the effects on potential habitat should also be assessed. Furthermore, we believe this should be expanded to include the effects of non-native, invasive, and noxious species on ecological communities and potential habitat areas as well. The assessment should examine past habitat availability, current habitat availability, and determine trends for habitat loss or creation through the term of the new license based on the identified trends.	Upstate Forever	June 23, 2022	
Comment on PAD/NOI	Wildlife & Botanical Resources	19. The US Fish and Wildlife Service provided a "List of Threatened, Endangered, Candidate, and Proposed Species Generated by ECOS-IPAC Website on April 11, 2022," (List) which is available on the FERC's eLibrary for this docket. The List includes ten (10) migratory bird species considered Birds of Conservation Concern (BCC), which warrant special attention in the project vicinity. These birds are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.	Upstate Forever	June 23, 2022	
Comment on PAD/NOI	Wildlife & Botanical Resources	24. Three new (to South Carolina) fern species have been discovered in Pickens County	Upstate Forever	June 27, 2022	

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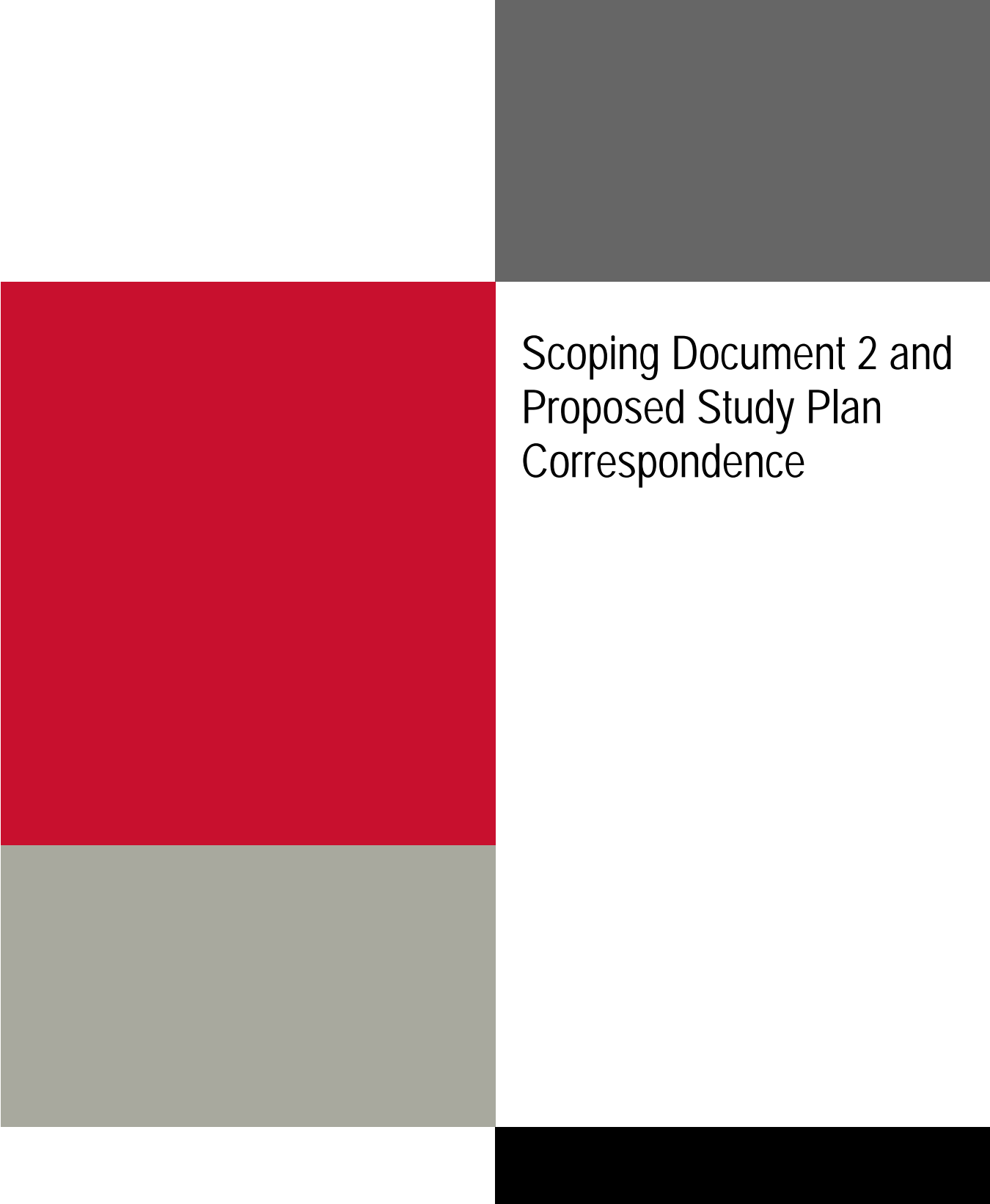
Wildlife & Botanical Resources – PAD Comments Received from FERC

Resource Area	Summary of Request	Agency
Wildlife & Botanical Resources	9. Please provide a detailed description of the management of native and non-native invasive vegetation (vegetation (i.e., any manual, mechanical, chemical, and/or biological) that occurs along project access roads, within the transmission line corridor right-of-way, the area surrounding upper reservoir, and adjacent to other project facilities. If herbicides are used to control vegetation within the project boundary, please provide the location(s), schedule(s), and method(s) of application (e.g., foliar and stump/stem/vine).	FERC AIR, June 16, 2022
	10. Provide a detailed description of the Monarch Program, Duke Energy's role in this program as it relates to management and operation of the Bad Creek Project, and any measures that are currently implemented to protect monarchs at the project.	FERC AIR, June 16, 2022
	11. The PAD does not include information about any avian interactions that may have been observed with the project transmission line or switchyard (e.g., nest building, perching, electrocutions, collisions, and any outages related to such interactions). Please provide any available data regarding observed/documentated avian interactions with the existing project transmission lines and switchyard. Include information about the configuration and maintenance of the project transmission lines and switchyard as they relate to avian protection. Please indicate whether the existing project transmission line poles and conductors are consistent with the Avian Power Line Interaction Committee (APLIC) and the U.S. Fish and Wildlife Service (FWS) guidelines to minimize adverse interactions (i.e., potential avian electrocutions and collisions) (APLIC, 2006 and 2012; and APLIC and FWS, 2005). Please provide detailed descriptions, figures, and/or diagrams of the design of the project transmission lines and any existing avian protection devices installed on them. If any avian protection measures are currently proposed for the existing or new transmission lines associated with the Complex, please provide the specifications and location(s) of these measures and a description of their consistency with APLIC guidelines, if applicable. If Duke Energy has an Avian Protection Plan for the Bad Creek Project, or for all of its hydropower projects that include transmission lines, please file a copy of the current plan.	FERC AIR, June 16, 2022

Wildlife & Botanical Resources – PAD Comments Received from FERC

Resource Area	Summary of Request	Agency
Wildlife & Botanical Resources	13A. The PAD indicates (Section 6.7.1.1.1 and 6.7.1.1.2) one small cave/den identified in the Project boundary that could be used as winter hibernacula for Indiana or northern long-eared bat but cannot find any details regarding this cave/den in the PAD or the bat survey. (1) provide a written description of the cave/den including a general location within the project boundary, size, and the estimated proximity to the existing and proposed project facilities, as well as current project operation and maintenance activities; (2) clarify whether the cave/den was surveyed during Duke Energy's 2021 field surveys; and (3) describe any bats or signs of bats that were observed, if applicable.	FERC AIR, June 16, 2022
	13B. Also, it is not clear what, if any, practices Duke Energy currently implements to benefit Indiana and northern long-eared bats. It also is not clear if Duke Energy currently consults FWS prior to tree clearing activities, or if that is strictly a proposal for relicensing with or without the Complex. Please provide a description of any measures that are currently implemented to protect Indiana and northern long-eared bats and/or other bat species at the project, if any. In addition, please note that if the Complex is ultimately proposed as part of the relicensing process, additional information will be needed in the license application regarding the number of trees that would be removed or disturbed during project construction, operation, and maintenance.	FERC AIR, June 16, 2022





Scoping Document 2 and
Proposed Study Plan
Correspondence

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FEDERAL ENERGY REGULATORY COMMISSION
Washington, DC 20426
August 5, 2022

OFFICE OF ENERGY PROJECTS

Project No. 2740-053 – South Carolina
Bad Creek Pumped Storage Project
Duke Energy Carolinas, LLC

**Subject: Scoping Document 2 for the Bad Creek Pumped Storage Project,
P-2740-053**

To the Parties Addressed:

The Federal Energy Regulatory Commission (Commission) is currently reviewing the Pre-Application Document (PAD), filed on February 23, 2022, by Duke Energy Carolinas, LLC (Duke Energy) for relicensing the Bad Creek Pumped Storage Project No. 2740 (Bad Creek Project). The project is located in Oconee County, South Carolina. No federal lands have been identified within the project boundary.

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, Commission staff will prepare an environmental document (NEPA document), which will be used by the Commission to determine whether, and under what conditions, to issue a new license for the project. The public scoping process will support and assist our environmental review, to ensure that all pertinent issues are identified and analyzed, and that the NEPA document is thorough and balanced.

Our preliminary review of the scope of environmental issues to be addressed in our NEPA document was contained in Scoping Document 1 (SD1), which was issued on April 22, 2022. We requested comments on SD1 to obtain the views off all interested entities on the scope of issues that should be addressed in the NEPA document. Due to restrictions on mass gatherings related to COVID-19, Commission staff were unable to conduct any on-site scoping meetings or an on-site environmental site review. Rather, two virtual scoping meetings were held by staff, and two virtual site visits were held by Duke Energy. Based on comments from the scoping meetings and written comments received during the scoping process, we have updated SD1 to reflect our current view of issues and alternatives to be considered in the NEPA document. ***Key changes from SD1 to Scoping Document 2 (SD2) are identified in bold, italicized type.***

SD2 is being distributed to both Duke Energy's distribution list and the Commission's official mailing list for the project (see section 9.0, *Mailing List* of the attached SD2). If you wish to be added to or removed from the Commission's official

mailing list, please send your request by email to efiling@ferc.gov or by mail via the U.S. Postal Service to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426. Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkins Avenue, Rockville, Maryland 20852. All written or emailed requests must specify your wish to be added to or removed from the mailing list, and must clearly identify the following on the first page: **Bad Creek Pumped Storage Project No. 2740-053.**

The enclosed SD2 supersedes SD1. SD2 is issued for information use by all interested parties; no response is required. If you have any questions about SD2, the scoping process, or how Commission staff will develop the NEPA document for this project, please contact Navreet Deo at (202) 502-6304 or navreet.deo@ferc.gov. Additional information about the Commission's licensing process and the project may be obtained from the Commission's website, www.ferc.gov.

Enclosure: Scoping Document 2

SCOPING DOCUMENT 2

BAD CREEK PUMPED STORAGE PROJECT
(PROJECT NO. 2740-053)

SOUTH CAROLINA



Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, DC

August 2022

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Figure 1: Location and Existing Facilities of the Bad Creek Pumped Storage Project
 (source: Duke Energy, Bad Creek Project Pre-Application Document (PAD)). 2

SCOPING DOCUMENT 2

Bad Creek Pumped Storage Project, No. 2740-053

1.0 INTRODUCTION

The Federal Energy Regulatory Commission (Commission or FERC), under the authority of the Federal Power Act (FPA),¹ may issue new licenses for terms ranging from 30 to 50 years for the continued operation and maintenance of non-federal hydroelectric projects. On February 23, 2022, Duke Energy Carolinas, LLC (Duke Energy), licensee for the existing Bad Creek Pumped Storage Project No. 2740 (Bad Creek Project or project), filed a Pre-Application Document (PAD) and Notice of Intent (NOI) to file an application for new license with the Commission.

The Bad Creek Project is located in Oconee County, South Carolina, about 8 miles north of the Town of Salem (figure 1). ***The lower reservoir of the project, Lake Jocassee,² is located on a headwater tributary to the Savannah River.*** The project facilities consist of an upper reservoir, a main dam, a west dam, an east saddle dike, a water conveyance system, an underground powerhouse, access roads, and voltage transformation facilities. The project has a total installed capacity of 1,400 megawatts (MW). The total average annual generation of the project is about 1,884,685 megawatt-hours (MWh). A detailed description of the project is provided in section 3.0, *Proposed Action and Alternatives*. A map of the project site is shown on figure 1. The project does not occupy federal lands.

The National Environmental Policy Act (NEPA) of 1969,³ the Commission's regulations, and other applicable laws require that we independently evaluate the environmental effects of relicensing the Bad Creek Project as proposed, and also consider reasonable alternatives to the licensee's proposed action. We will prepare an environmental document (NEPA document) for the Bad Creek Project that describes and evaluates the probable effects, if any, of the licensee's proposed action and alternatives. The Commission's scoping process will help determine the required level of analysis and satisfy the NEPA scoping requirements, irrespective of whether the Commission issues an environmental assessment (EA) or an environmental impact statement (EIS).

¹ 16 U.S.C. § 791(a)-825(r).

² See 156 FERC ¶ 62,122 issued August 16, 2016.

³ 42 U.S.C. §§ 4321-4370(f).

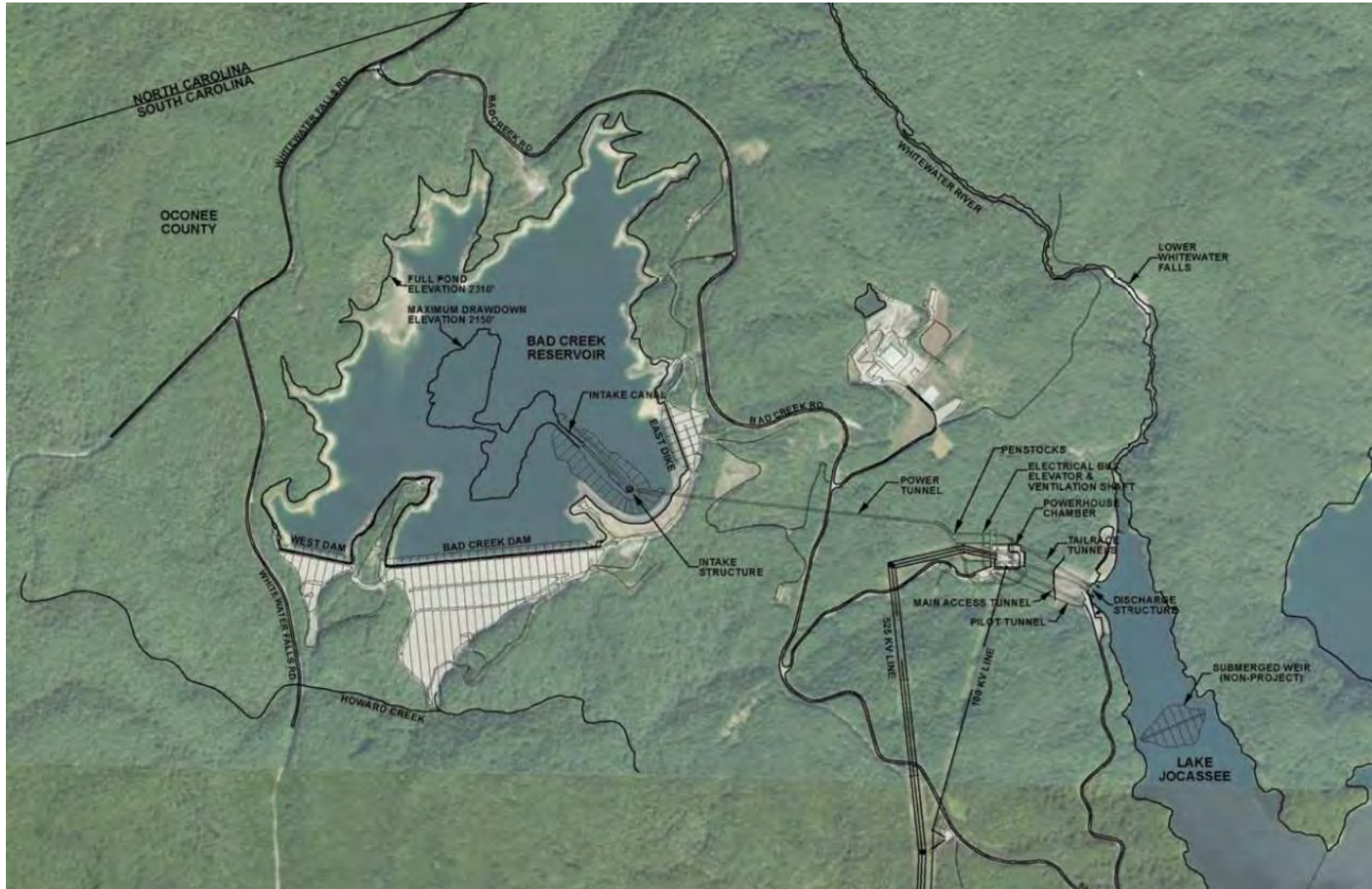


Figure 1: Location and Existing Facilities of the Bad Creek Pumped Storage Project (source: Duke Energy, Bad Creek Project Pre-Application Document (PAD)).

2.0 SCOPING

This Scoping Document 2 (SD2) is intended to advise all participants as to the proposed scope of the Commission's NEPA document and to seek additional information pertinent to this analysis. This document contains: (1) a description of the scoping process and schedule for the development of the NEPA document; (2) a description of the licensee's proposed action and alternatives; (3) a preliminary identification of environmental issues and proposed studies; (4) a proposed outline for the NEPA document; and (5) a preliminary list of comprehensive plans that are applicable for the project.

2.1 PURPOSES OF SCOPING

Scoping is the process used to identify issues, concerns, and opportunities for mitigation or enhancement associated with a proposed action. In general, scoping should be conducted early in the planning stage of a project. The purposes of the scoping process are as follows:

- invite the participation of federal, state, and local resource agencies, Native-American tribes, non-governmental organizations (NGOs), and the public to identify significant environmental and socioeconomic issues related to the proposed project;
- determine the resource issues, depth of analysis, and significance of issues to be addressed in the NEPA document;
- identify reasonable alternatives to the proposed action that should be evaluated in the NEPA document;
- solicit, from participants, available information on the resources at issue, including existing information and study needs; and
- determine the resource areas and potential issues that do not require detailed analysis during review of the project.

2.2 COMMENTS, SCOPING MEETINGS, AND ENVIRONMENTAL SITE REVIEWS

Commission staff issued Scoping Document 1 (SD1) on April 22, 2022, to enable resource agencies, Native-American Tribes, NGOs, and the public to participate more effectively, and contribute to, the scoping process. In SD1, we requested clarification of preliminary issues concerning the project and identification of any new issues that needed to be addressed in the NEPA document. Due to restrictions on mass gatherings related to

Novel Coronavirus Disease (COVID-19), Commission staff were unable to conduct any on-site scoping meetings or participate in any in-person environmental site review. Instead, on May 16, 2022 and May 17, 2022, we conducted virtual scoping meetings and Duke Energy provided virtual site tours. The scoping meetings were transcribed by a court reporter. We also solicited written comments, recommendations, and information on SD1.

We revised SD1 following the scoping meetings and after reviewing comments filed during the scoping comment period, which ended June 23, 2022. SD2 presents our current view of issues to be considered in the NEPA document. *To facilitate review, key changes from SD1 to SD2 are identified in bold, italicized type.*

<u>Commenter</u>	<u>Filing Date</u>
<i>Phil Mitchell</i>	<i>May 17, 2022</i>
<i>United States Fish and Wildlife Services (FWS)</i>	<i>June 9, 2022</i>
<i>Friends of Lake Keowee Society</i>	<i>June 22, 2022</i>
<i>Foothills Trail Conservancy</i>	<i>June 23, 2022</i>
<i>South Carolina Department of Natural Resources (South Carolina DNR)</i>	<i>June 23, 2022</i>
<i>Upstate Forever</i>	<i>June 23, 2022</i>
<i>United States Environmental Protection Agency (EPA)</i>	<i>June 27, 2022</i>

Scoping meeting transcripts and all comments received are part of the Commission’s official record for the project. Information in the official file is available for review on the Commission’s website at <https://www.ferc.gov>, using the “eLibrary” link. At this time, the Commission has suspended access to the Commission’s Public Reference Room due to the proclamation declaring a National Emergency concerning COVID-19 issued by the President on March 13, 2020. For assistance, please contact FERC at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

2.3 ISSUES RAISED DURING SCOPING

The issues raised by participants in the scoping process are summarized below. We revised SD1 to address only those comments relating directly to the scope of environmental issues. Further, we do not address recommendations for license conditions, such as protection, mitigation, and enhancement (PM&E) measures (e.g., specific whitewater flow releases, resource management plans), as these recommendations will be addressed in the NEPA document or any license order issued for the project. We also do not address requests for studies in the scoping document as these requests will be addressed through the ILP’s study plan development process. After Commission staff accept the license application for filing and determine we have sufficient information to evaluate environmental resource and engineering issues, we

will request final terms, conditions, recommendations, and comments when we issue our Ready for Environmental Analysis Notice. Finally, we do not address comments or recommendations that are administrative in nature or outside of the Commission's authority for relicensing the project.

General Comments

Comment: South Carolina DNR requests the addition of Ms. Lorianne Riggin and Ms. Elizabeth Miller to the official mailing list for the project.

Response: We have updated the official mailing list for the project to include the individuals requested by South Carolina DNR, and noted this change in Section 9.0, Mailing Lists of this scoping document.

Project Facilities and Operations

Comment: Upstate Forever comments that in addition to the Bad Creek Project, the Keowee-Toxaway Hydroelectric Project (FERC No. 2503) (Keowee-Toxaway Project) and Duke Energy's Oconee Nuclear Plant also depend on water levels in Lake Jocassee to generate power, respectively. Upstate Forever requests that Section 3.1.2, Existing Project Operation, of the scoping document include a description of how water levels in Lake Jocassee may affect these projects, and provide an extreme low-inflow scenario where changes in operation of the Bad Creek Project may be needed to maintain normal operation of the other two projects.

Response: Lake Jocassee is licensed as part of the Keowee-Toxaway Project and serves as the lower reservoir for the Bad Creek Project. As listed in section 3.2.2, Proposed Environmental Measures, of the scoping document, Duke Energy proposes to continue to operate the Bad Creek Project in accordance with the Keowee-Toxaway Project Relicensing Agreement (Relicensing Agreement). The Relicensing Agreement includes operating provisions and protection, mitigation, and enhancement measures governing the use of Lake Jocassee by both projects. In addition, Section 5.1.2, Resource Issues - Aquatic Resources, of the scoping document identified the effects of project operation on water levels in Lake Jocassee as a preliminary issue to be addressed in the NEPA document.

Comment: Upstate Forever comments that the proposed pump-turbine upgrades and Bad Creek II Complex could result in larger, and more rapid, fluctuations in the upper reservoir and Lake Jocassee. As a result, the existing 160-foot upper reservoir fluctuation band could affect a variety of environmental parameters, including but not limited to water quality, shoreline habitat, and fish entrainment.

Response: As identified in Section 5.1.2, Resource Issues – Aquatic Resources, of the scoping document, the effects of project operation on water levels and water quality in Lake Jocassee, and the effects of reservoir fluctuations associated with project operation on aquatic resources in Lake Jocassee, will be analyzed in the NEPA document.

Comment: South Carolina DNR comments that the description of the project location in Section 1.0, Introduction, of SD1 fails to note that the lower reservoir (Lake Jocassee) is located on a headwater tributary to the Savannah River.

Response: We have revised Section 1.0, Introduction, of the scoping document to include information regarding the location of the project with respect to the Savannah River watershed.

Aquatic Resources

Comment: The Foothills Trail Conservancy recommends that Commission staff consider the potential threats to aquatic resources (i.e., sedimentation as a result of trail use, etc.,) throughout the Foothills Trail corridor.

Response: The effects of construction-related erosion, sedimentation, and spoils disposal on water quality, aquatic habitat, and aquatic biota in Lake Jocassee and streams in the project vicinity is addressed in Section 5.1.2 of the scoping document. We have modified Section 5.1.2 to include an evaluation of the effects of project recreation on aquatic resources.

Comment: Upstate Forever comments that the Fisheries Memorandum of Understanding (MOU) and 10-Year Work Plans for fishery resources that Duke Energy has completed in partnership with the South Carolina DNR should be included as proposed environmental measures.

Response: Duke Energy's proposal to consult with resource agencies and other stakeholders to update the MOU and 10-year Work Plans as part of the relicensing process are included in Section 3.2.2 of the scoping document.⁴

Comment: Upstate Forever expresses concerns regarding the effects of construction-related erosion, sedimentation, and spoils disposal on water quality, aquatic habitat, and aquatic biota in the Bad Creek reservoir, Lake Jocassee, and the surrounding tributaries.

⁴ The MOU and most recent 10-year Work Plan (2017-2027) were filed with the Commission on December 6, 1996, and January 16, 2017, respectively.

Response: The effects of construction-related erosion, sedimentation, and spoils disposal on water quality, aquatic habitat, and aquatic biota in Lake Jocassee and streams in the project vicinity is addressed in Section 5.1.2. We have modified Section 5.1.2 to include the effects construction-related erosion, sedimentation, and spoils disposal in the Bad Creek reservoir on Lake Jocassee.

Terrestrial Resources and Threatened and Endangered (T&E) Species

Comment: Regarding Sections 5.1.3 (Terrestrial Resources) and 5.1.4 (Threatened and Endangered Species) of the scoping document, Upstate Forever comments that in addition to assessing the effects of project construction, operation, and maintenance activities on ecological communities and protected terrestrial species, Commission staff should also assess the effects on potential⁵ habitat, including the effects of non-native, invasive, and noxious species on ecological communities and potential habitat areas. Upstate Forever further states that Commission staff's assessment should explicitly examine past habitat availability, the current amount of available habitat, determine trends for habitat loss or creation through the term of a new license, and habitat needs for healthy, diverse, and viable populations of the target species.

Response: Section 5 describes staff's intent to analyze the existing available habitat for terrestrial flora and fauna and status of non-native invasive species. The environmental baseline for the Commission's NEPA assessment is the present time and, therefore, the focus of staff's analysis will be the current condition of natural resources at the project, and the effects of the applicant's proposal on those resources.

Comment: Upstate Forever states that Sections 5.1.3 (Terrestrial Resources) and 5.1.4 (Threatened and Endangered Species) of the scoping document should consider project impacts on species not included in these sections. Upstate Forever references the "List of Threatened, Endangered, Candidate, and Proposed Species Generated by ECOS-IPaC Website on April 11, 2022," which is available on the FERC's eLibrary for this docket. Specifically, Upstate Forever comments that this list includes 10 migratory bird species considered Birds of Conservation Concern, which warrant special attention in the project vicinity.

Response: Section 5.1.4 (Threatened and Endangered Species) of SD2 strictly includes federally listed species and species proposed for federal listing, as shown on the official species list generated by Commission staff on April 11, 2022, and filed to the record on April 12, 2022. Section 5.1.3 (Terrestrial Resources) of SD2 covers other special status terrestrial species (e.g., state listed species and federal candidate species). We have modified Section 5.1.3 to include the effects of project construction, operation,

⁵ *Upstate Forever emphasized the word "potential" in its comments on SD1.*

maintenance, and project-related recreation on Birds of Conservation Concern and their habitats.

Comment: FWS comments that on March 23, 2022, it published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the ESA of 1973, as amended. If finalized, the proposed reclassification of the NLEB would occur by November 2022 and would go into effect in December 2022, and it would remove the current 4(d) rule for this species. FWS states that it does not yet know what impact the proposed up-listing of NLEB will have on tree clearing and similar activities. In addition, FWS notes that there is potential for additional bat species to be listed during the relicensing process.

Response: Commission staff will monitor the status of the NLEB and will use FWS's Information and Planning and Consultation (IPaC) system to update the official species list for the project throughout the relicensing process and ensure that the Commission is prepared should the listing status for NLEB or other species change.

Comment: FWS comments that it does not have any records of the Indiana bat within Oconee County, South Carolina, and therefore FWS believes this species does not need to be included in the list of T&E species to be analyzed.

Response: Given FWS's comments and the fact that the Indiana bat does not appear on the IPaC official species list for the project, we have modified Section 5.1.4, Threatened and Endangered Species, to remove Indiana bat from the list of T&E species to be analyzed during the Bad Creek relicensing process.

Comment: South Carolina DNR comments that the gray bat may occur in the Bad Creek Project area because there are records of this species less than one mile north of the project in Transylvania County, North Carolina. In addition, South Carolina DNR-verified gray bat calls were detected at sites located about 9 miles and 15 miles from the project and this species' range can extend 16.8 miles from roosting and foraging sites. Therefore, South Carolina DNR recommends that the gray bat be included in the list of T&E species for the project.

Response: We have modified Section 5.1.4, Threatened and Endangered Species, to include project effects on the gray bat.

Climate Change

Comment: Upstate Forever and Foothills Trail Conservancy comment that the impacts of climate change on natural resources at the project and within the Foothills Trail corridor should be considered, evaluated, and discussed. These stakeholders state

that, in particular, wildlife habitat corridors may be necessary for species migration due to climate change and should be considered throughout the life of a new license for the project.

Response: We have added a bullet to Section 5.1.3, Terrestrial Resources, to describe our intent to consider climate change, along with other reasonably foreseeable effects on natural resources, including wildlife habitat corridors, in the project boundary to the extent possible.

Recreation, Land Use, and Aesthetics

Comment: The Foothills Trail Conservancy and Upstate Forever comment that requirements of the original license for the Bad Creek Project should be accurately and comprehensively discussed, including requirements related to the Foothills Trail.

Response: We have modified section 3.1.1, Existing Project Facilities, to more accurately reflect requirements of the original license for the Bad Creek Project in regard to the Foothills Trail. Further, we have modified section 5.1.5, Resource Issues—Recreation, Land Use, and Aesthetics, to clarify our intent to address issues relating to the Foothills Trail in our NEPA document.

Comment: Upstate Forever requests that Section 5.1.5, Resource Issues—Recreation, Land Use, and Aesthetics, be modified to discuss management of the project shoreline as riparian and littoral habitat.

Response: We have added a bullet to Section 5.1.5 to describe our intent to analyze the effects of land management within the project boundary on environmental resources, such as aquatic and terrestrial habitat.

Comment: Upstate Forever requests that the NEPA document consider traditional recreation activities, such as fly-fishing and birdwatching, which are not affected by the fluctuating water levels of a pumped storage development.

Response: We have added a bullet to Section 5.1.5 to describe our intent to evaluate the use of project lands for recreation activities that are not dependent on use of the Bad Creek Project's upper reservoir, including fly fishing and birdwatching.

Noise, Air Quality, and Traffic

Comment: EPA comments that Duke Energy should disclose construction and operational emissions related to the project and recommends the use of best management practices to minimize mobile sources of emissions during construction.

Response: To clarify, Section 5.1.8, Resource Issues—Noise, Air Quality, and Traffic, provides a preliminary list of potential issues to be analyzed in the NEPA document and includes the effects of project construction activities on air quality. Staff’s analysis will use existing information in the project record and any additional information developed during the relicensing process to evaluate potential effects on air quality and the need for protection, mitigation, and enhancement measures.

Comment: Mr. Phil Mitchell notes that there is only one access road, Bad Creek Road, leading to the project site and 21 residential properties in the surrounding area. Mr. Mitchell raises concern that excavation work associated with the construction of the proposed Bad Creek Complex II may block or limit access to Bad Creek Road by homeowners and emergency services. Mr. Mitchell suggests the use of a temporary, rough-cut road to serve as a secondary access point, and potentially, a recreational access route in the future.

Response: Section 5.1.7, Resource Issues—Socioeconomics, and Section 5.1.8, Resource Issues—Noise, Air Quality, and Traffic, provide a preliminary list of potential issues to be analyzed in the NEPA document, including the effects of continued project operation and maintenance on the provision of government services and the effects of project-related construction on road networks in the project area. Staff’s analysis will use existing information in the project record and any additional information developed during the relicensing process to evaluate potential effects of the project, including a discussion of how construction of the Bad Creek II Complex, if proposed, would affect access for emergency services. The need for protection, mitigation, and enhancement measures would be evaluated in the NEPA document.

Comprehensive Plans

Comment: The Foothills Trail Conservancy states that Section 8.0, Comprehensive Plans, should be revised to include the most recent version of documents available online.

Response: If more recent versions of documents listed in Section 8.0 are available, the preparing agency should file the revised documents with the Commission using the instructions available here: <https://cms.ferc.gov/media/list-comprehensive-plans>. We recommend that the State of South Carolina file its most recent State Comprehensive Outdoor Recreation Plan, as identified in the comments of the Foothills Trails Conservancy.

Comment: Upstate Forever requests that the Commission consider the most recent future land use maps and comprehensive plans available in both Transylvania and Jackson Counties, North Carolina and Oconee County, South Carolina.

Response: Local land use plans, and other municipally-prepared documents typically do not qualify as comprehensive plans under section 10(a)(2)(a) of the Federal Power Act because they are not prepared by a state or federal agency. If there are specific recommendations in municipally-prepared plans that are relevant to the project's relicensing, stakeholders may file such plans in the project docket with an explanation of how the document applies to the relicensing of the project. These comments would be considered, like other comments, as part of the Commission's 10(a) analysis.

3.0 PROPOSED ACTION AND ALTERNATIVES

In accordance with NEPA, the environmental analysis will consider the following alternatives, at a minimum: (1) a no-action alternative, (2) the licensee's proposed action, and (3) alternatives to the proposed action.

3.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the Bad Creek Project would continue to operate as required by the current project license (i.e., there would be no change to the existing environment). No new environmental protection, mitigation, or enhancement measures would be implemented. This alternative is the baseline environmental condition for comparison with other alternatives.

3.1.1 Existing Project Facilities

The existing Bad Creek Project includes: (1) a 2,600-foot-long, 355-foot-high main dam composed of an impervious core and rockfill shell, and equipped with 5-foot-high flashboards; (2) a 900-foot-long, 170-foot-high west dam; (3) a 900-foot-long, 90-foot-high east saddle dike; (4) a 363-acre upper reservoir with a gross storage capacity of 35,513 acre-feet at a normal maximum elevation of 2,310 feet mean sea level (msl); (5) an upper reservoir intake channel consisting of a dewatering dam and bellmouth inlet; (6) a 5,026-foot-long water conveyance system consisting of: (a) a 856-foot-long, 29.5-foot-diameter vertical access shaft, (b) 1,186-foot-long, 29.5-foot-wide power tunnel, (c) a manifold tunnel, (d) four, 13.6-foot-diameter steel-lined penstocks, (e) four, 316-foot-long, 16.4-foot-diameter draft tube tunnels, and (f) two, 875-foot-long, 24.6-foot-diameter tailrace tunnels; (7) a 433-foot-long, 164-foot-tall underground powerhouse containing four, Francis reversible-pump turbine-generator units with a total installed capacity of 1,400 MW; (8) an 43.5-foot-high equipment building located about 469 feet above the underground powerhouse; (9) a 118-foot-long, 15-foot-wide reinforced concrete, lower reservoir (Lake Jocassee)⁶ inlet/outlet structure, including four, 30-foot-high, 18-foot-wide steel lift gates; (9) generator leads; (10) a transformer

⁶ See 156 FERC ¶ 62,122 issued August 16, 2016.

yard; (11) a switchyard consisting of: (a) four step-up transformers, (b) one 9.25-mile-long, 100-kilovolt (kV) transmission line, and (c) one 9.25-mile-long, 525-kV line; (12) a 9.25-mile-long, 254-foot-wide transmission line corridor; and (13) appurtenant facilities. The project also includes an existing 4.8-mile road that leads from the project entrance to the powerhouse area near Lake Jocassee.

There is no public access to Bad Creek Reservoir due to potential large daily fluctuations in water and public safety considerations. As a requirement of the project's existing license, Duke Energy constructed a **43-mile** portion of the 77-mile Foothills Trail, which is *largely* located outside of the project boundary, *although public access to the trail is currently provided within and adjoining the project boundary. Management of the Foothills Trail is guided by the document "A Plan for Development and Management of the Foothills Trail" (1980), which is part of the approved Exhibit R for the project. The trail is maintained by Duke Energy in partnership with the Foothills Trail Conservancy.* Duke Energy does not propose to include the Foothills Trail as a project recreation facility under the new license.

3.1.2 Existing Project Operation

The Bad Creek Project is an automated pumped storage plant where water is regularly moved from the upper reservoir to the lower reservoir during generation, and from the lower reservoir back to the upper reservoir during pumping. All water utilized for generation originates from the 7,980-acre lower reservoir, Lake Jocassee. The lower reservoir has a gross storage capacity of 1,206,798 acre-feet at a normal maximum elevation of 1,110 feet msl. The project is currently licensed to operate on a weekly pump-storage cycle by generating approximately six hours per weekday, and partially pumping flow back to the upper reservoir each weeknight and on weekends. The upper reservoir is licensed to fluctuate between 2,310 feet msl (normal maximum elevation) and 2,150 feet msl (normal minimum elevation), resulting in a maximum drawdown of 160 feet and a useable storage capacity of 31,808 acre-feet.

However, in practice, the project operates in a daily pump-storage cycle by maintaining the upper reservoir above 2,250 feet msl for approximately 97 percent of the time to maximize head and unit efficiency. Generation usually occurs during the day, while water is pumped from the lower reservoir to partially replenish the upper reservoir at night.

The average annual generation of the project is about 1,884,685 MWh based on the period of record from 2015 to 2020. The average annual energy required for pumping during the same period is about 2,398,114 MWh. Therefore, the net energy consumption of the project is 513,429 MWh. The average cycle efficiency is about 78.6 percent.

3.2 LICENSEE'S PROPOSALS

3.2.1 Proposed Project Facilities and Operation

Duke Energy proposes to use the ILP pre-filing period to analyze the potential to develop a Bad Creek II Complex (Complex). The Complex would consist of a new: (a) upper reservoir inlet/outlet structure, (b) water conveyance system, (c) underground powerhouse, (d) powerhouse access tunnels, (e) lower reservoir inlet/outlet structure, (f) switchyard, (g) transformer yard, and (h) transmission line.

The Complex powerhouse would include four new, reversible pump-turbine units with an installed generating capacity between 106 MW and 425 MW, and a starting capacity between 308 MW and 372 MW for pumping. Average annual generation for the project would increase by up to 25,856 MWh. With the new pump-turbine units, generating and pumping capacity would increase due to a combination of an increase in flow and improvement in the hydraulic design of the generation runners. The overall cycle capacity would increase by an estimated 80 percent, when all four units are in operation.

No modifications are proposed to the existing upper and lower reservoirs. However, construction of the Complex would require modifications to the existing project boundary to enclose the new facilities. While Duke Energy owns all property required for the existing project in fee simple, a portion of the potential Complex transmission line corridor is currently maintained under a property easement. Duke Energy intends to identify a new project boundary in the final license application that would include all lands necessary for access to, or control of, the expanded project facilities.

If, during pre-filing, Duke Energy determines that it will not include the Complex in its final licensing proposal, the licensee proposes instead to continue to operate the project as required by the existing license.

3.2.2 Proposed Environmental Measures

Duke Energy identifies several preliminary studies and environmental protection, mitigation, and enhancement (PM&E) measures in its PAD. The PM&E measures described below address both the potential effects of the new Complex, and the effects of continued project operation, on resources in the project area, as appropriate. The potential need for additional PM&E measures will be evaluated during the relicensing process.

General

- Continue to operate the project in a pumped-storage mode in accordance with the Keowee-Toxaway Project Relicensing Agreement.⁷
- Consult with resource agencies and other stakeholders through the relicensing process to update the Memorandum of Understanding and 10-Year Work Plans between Duke Energy and the South Carolina Department of Natural Resources to maintain high quality fisheries in Lakes Jocassee and Keowee.

Geology and Soil Resources

- Identify feasible upland areas within the project boundary and/or property owned by Duke Energy to deposit spoils from construction of the proposed Complex.
- Complete a geotechnical investigation and geologic assessment to identify the potential effects of construction and operation of the proposed Complex and inform mitigation measures to maintain geological stability.

Aquatic Resources

- Continue to implement the following operational protocols to reduce entrainment at the Bad Creek Project: (1) minimize, to the extent practicable, the length of time during which the Lake Jocassee surface elevation is below 1,099 feet msl; (2) if Lake Jocassee surface elevation falls below 1,099 feet msl, implement operational changes on turbine unit availability and other operational considerations to minimize fish entrainment, such as turning lights off near inlet/outlet structures and implementing a unit startup and shutdown sequence;⁸ and (3) if Lake Jocassee is projected to remain below elevation 1,099 feet msl for 30 or 60

⁷ The Keowee-Toxaway Relicensing Agreement includes operating provisions and protection, mitigation, and enhancement measures associated with the Keowee-Toxaway Hydroelectric Project No. 2503 (Keowee-Toxaway Project). Lake Jocassee, the Bad Creek Project's lower reservoir, is part of the Keowee-Toxaway Project.

⁸ The pumping protocol includes starting up unit 4 first, followed by units 2, 3, and 1 sequentially. Unit order is reversed during the shutdown sequence.

days, notify and/or consult with the resource agencies to determine if additional measures are needed to minimize entrainment.

- Develop a water quality monitoring plan in consultation with the resource agencies that describes methods and reporting criteria for monitoring water quality (i.e., DO, temperature, pH, specific conductance, and turbidity) before construction, during construction, and during project operation.
- Develop an erosion and sedimentation control plan to minimize the effects of construction related erosion and sedimentation on water quality and aquatic habitat.
- Develop spill prevention, control, and safety management plans to prevent vehicle spilled fluids from entering the watersheds and harming water quality during construction and operation.
- Consult with the resource agencies and stakeholders through the relicensing process to determine: (1) appropriate measures to protect trout in Lake Jocassee; (2) the need for additional fisheries research and enhancements; and (3) measures for the protection of water quality, fish, and other aquatic resources during construction and operation of the Complex.

Terrestrial Resources and Threatened and Endangered Species

- Consult with resource agencies through the relicensing process to determine: (1) appropriate seasonal restrictions for vegetation clearing and measures for revegetation plans that are protective of plant and wildlife resources; and (2) measures to reduce the potential spread of invasive species during project construction and operation.
- Consult with resource agencies through the relicensing process to determine the need for pre-construction surveys for, and/or conservation measures to protect: (1) special status species such as Chamberlain's dwarf salamander, golden-winged warbler, Edmund's snaketail, Carolina hemlock, Georgia aster, and sun-facing coneflower; and (2) federally listed species including the persistent trillium, smooth coneflower, and small whorled pogonia.
- Consult with resource agencies prior to conducting tree clearing activities to protect special status bats, including the little brown bat, tricolored bat,

eastern small-footed bat, and the federally listed northern long-eared bat and Indiana bat.

Recreation, Land Use, and Aesthetics

- Prepare an updated recreation plan for the project.
- Consult with agencies and relicensing participants to identify and propose measures to address short-term construction-related impacts on boating or land-based recreation amenities.
- Employ common mitigation techniques to reduce impacts to visual resources during and after construction, including minimizing disturbance (e.g., limiting tree clearing and vegetation removal to the extent possible), lighting control, strategic placement of facility appurtenances, and reduction of visual contrast caused by new rights-of-way, access roads laydown areas, and staging areas.

Cultural Resources

- Identify National Register of Historic Places-eligible cultural resources and appropriate resource protection, avoidance, or mitigation measures for historic archaeological, and traditional cultural resources including, but not limited to, development of a Historic Properties Management Plan, installment of temporary fencing to protect cultural resources during construction (if present), avoidance of sensitive areas not directly within the footprint of the Complex facilities (as feasible), and monitoring during construction by a qualified archaeologist for construction in areas where cultural resources are likely to be present.

Developmental Resources

- Complete the ongoing Bad Creek II Complex Feasibility Design Study to analyze potential effects that may result from construction of the Complex, including construction of a new upper reservoir inlet/outlet structure, water conveyance system, underground powerhouse with four pump-turbine units, lower reservoir inlet/outlet structure, transformer yard, and transmission line.
- Conduct a comprehensive transmission line siting study for the proposed Complex to determine environmental effects and identify the preferred route for the new line.

3.3 DAM SAFETY

It is important to note that dam safety constraints may exist and should be taken into consideration in the development of proposals and alternatives considered in the pending proceeding. For example, proposed modifications to the dam structure, such as the addition of flashboards or fish passage facilities, could impact the integrity of the dam structure. As the proposal and alternatives are developed, the applicant must evaluate the effects and ensure that the project would meet the Commission's dam safety criteria found in Part 12 of the Commission's regulations and the Engineering Guidelines (<http://www.ferc.gov/industries/hydropower/safety/guidelines/eng-guide.asp>).

3.4 ALTERNATIVES TO THE PROPOSED ACTION

Commission staff will consider and assess all alternative recommendations for operational or facility modifications, as well as PM&E measures identified by Commission staff, federal and state agencies, Native-American tribes, NGOs, and the public.

3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

At present, we propose to eliminate the following alternatives from detailed study in the NEPA document.

3.5.1 Federal Government Takeover

In accordance with section 16.14 of the Commission's regulations, a federal department or agency may file a recommendation that the United States exercise its right to take over a hydroelectric power project with a license that is subject to sections 14 and 15 of the FPA.⁹ We do not consider federal takeover to be a reasonable alternative. Federal takeover of the project would require congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project.

3.5.2 Non-power License

A non-power license is a temporary license the Commission would terminate whenever it determines that another governmental agency is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the

⁹ 16 U.S.C. §§ 791(a)-825(r).

non-power license. At this time, no governmental agency has suggested a willingness or ability to take over the project. No party has sought a non-power license, and we have no basis for concluding that the Bad Creek Project should no longer be used to produce power. Thus, we do not consider a non-power license a reasonable alternative to relicensing the project.

3.5.3 Project Decommissioning

As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing in most cases.¹⁰ Decommissioning can be accomplished in different ways depending on the project, its environment, and the particular resource needs.¹¹ For these reasons, the Commission does not speculate about decommissioning measures at the time of relicensing, but rather waits until an applicant actually proposes to decommission a project, or a participant in a relicensing proceeding demonstrates that there are serious resource concerns that cannot be addressed with appropriate license measures and that make decommissioning a reasonable alternative.¹² Duke Energy does not propose decommissioning, nor does the record to date demonstrate there are serious resource concerns that cannot be mitigated if the project is relicensed; as such, there is no reason, at this time, to include decommissioning as a reasonable alternative to be evaluated and studied as part of staff's NEPA analysis.

¹⁰ See, e.g., *Eagle Crest Energy Co.*, 153 FERC ¶ 61,058, at P 67 (2015); *Public Utility District No. 1 of Pend Oreille County*, 112 FERC ¶ 61,055, at P 82 (2005); *Midwest Hydro, Inc.*, 111 FERC ¶ 61,327, at PP 35-38 (2005).

¹¹ In the unlikely event that the Commission denies relicensing a project or a licensee decides to surrender an existing project, the Commission must approve a surrender “upon such conditions with respect to the disposition of such works as may be determined by the Commission.” 18 C.F.R. § 6.2 (2020). This can include simply shutting down the power operations, removing all or parts of the project (including the dam), or restoring the site to its pre-project condition.

¹² See generally *Project Decommissioning at Relicensing*; Policy Statement, FERC Stats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); see also *City of Tacoma, Washington*, 110 FERC ¶ 61,140 (2005) (finding that unless and until the Commission has a specific decommissioning proposal, any further environmental analysis of the effects of project decommissioning would be both premature and speculative).

4.0 SCOPE OF CUMULATIVE EFFECTS AND SITE-SPECIFIC RESOURCE ISSUES

4.1 CUMULATIVE EFFECTS

According to the Council on Environmental Quality's regulations for implementing NEPA (40 C.F.R. 1508.7), a cumulative effect is the effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

4.1.1 Resources That Could be Cumulatively Affected

Based on information in the PAD for the Bad Creek Project, and preliminary staff analysis, we have identified geology and soil resources, water quality, water quantity, and fishery resources as resources that could be cumulatively affected by the proposed continued operation and maintenance of the Bad Creek Project, in combination with other hydroelectric projects and other activities in the Savannah River Basin.

4.1.2 Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of: (1) the proposed action's effect on the resources; and (2) contributing effects from other hydropower and non-hydropower activities within the Savannah River Basin. Because the proposed actions would affect the resources differently, the geographic scope for each resource may vary.

We have tentatively identified the geographic scope for geology and soil resources, water quality, water quantity, and fishery resources to include the Lake Jocassee watershed, including the tributaries to Lake Jocassee, as our upstream geographic scope of analysis. In addition, we identify the downstream geographic scope of analysis as extending to the mouth of the Savannah River. We chose this geographic scope because the collective operation and maintenance of the project, in combination with other developmental and non-developmental uses, may cumulatively affect geology and soil resources, water quality, water quantity, and fishery resources in the Savannah River.

4.1.3 Temporal Scope

The temporal scope of our cumulative effects analysis in the NEPA document will include a discussion of past, present, and reasonably foreseeable future actions and their effects on each resource that could be cumulatively affected. Based on the potential term of a new license, the temporal scope will look 30 to 50 years into the future, concentrating on the effect on the resources from reasonably foreseeable future actions. The historical discussion will, by necessity, be limited to the amount of available information for each resource. The quality and quantity of information, however, diminishes as we analyze resources further away in time from the present.

5.0 SITE-SPECIFIC RESOURCE ISSUES

5.1 RESOURCE ISSUES

In this section, we present a preliminary list of environmental issues to be addressed in the NEPA document. We identified these issues, which are listed by resource area, by reviewing the PAD and the Commission's record for the Bad Creek Project. This list is not intended to be exhaustive or final, but contains those issues raised to date that could have substantial effects. The resource issue listed below would address the potential effects of the new Complex, as well as the effects of continued project operations under the existing license, as appropriate. After the scoping process is complete, we will review the list and determine the appropriate level of analysis needed to address each issue. *Those issues identified by an asterisk (*) will be analyzed for both cumulative and site-specific effects.*

5.1.1 Geology and Soils Resources

- Effects of project construction and spoil disposal on soil erosion and sedimentation.
- Effects of project operation on shoreline erosion along the lower reservoir.*
- Effects of project construction on slope instability in the project area.
- Effects of seismic activity in the project area on construction of the Complex, and vice versa.

5.1.2 Aquatic Resources

- Effects of construction-related erosion, sedimentation, and spoils disposal on water quality, aquatic habitat, and aquatic biota in Lake Jocassee and streams in the project vicinity.

- Effects of project operation on water levels in Lake Jocassee.*
- Effects of project operation on water quality in Lake Jocassee, including water temperature, dissolved oxygen (DO) concentrations, and vertical mixing of DO.*
- Effects of reservoir fluctuations associated with project operation on aquatic habitat and biota in Lake Jocassee.*
- Effects of vertical mixing of DO associated with project operation on fish populations in Lake Jocassee.
- Effects of project operation on aquatic habitat and biota in Howard Creek.¹³
- Effects of project induced impingement, entrainment, and turbine mortality on fish populations in Lake Jocassee.*
- *Effects of project recreation on aquatic resources.*
- *The effects construction-related erosion, sedimentation, and spoils disposal in the Bad Creek reservoir on Lake Jocassee.*

5.1.3 Terrestrial Resources

- Effects of project construction, operation, and maintenance activities, including maintenance for roads and transmission line rights-of-way, and project-related recreation on native plant communities, wetlands, and the spread and control of non-native, invasive plants.
- Effects of the existing and proposed project transmission lines on raptors and other birds, including electrocution and collision hazards.
- Effects of permanent and temporary wildlife habitat loss due to construction of proposed project features and disposal of spoils, including potential loss of habitat that supports foraging and/or nesting raptors and other birds.
- Effects of noise, lighting, vehicular traffic, and human presence during project construction, operation, and maintenance activities on wildlife,

¹³ Howard Creek is a tributary of Lake Jocassee and receives seepage flows from the two earthen dams of the Bad Creek upper reservoir.

including special-status wildlife species, especially during sensitive periods (e.g., migrating or breeding).

- Effects of project construction, operation, maintenance, and project-related recreation on special status species, including the monarch butterfly, a federal candidate species, *Birds of Conservation Concern*, and ~~its~~ *their* habitats.
- *Effects of climate change and other reasonably foreseeable effects on natural resources, including wildlife habitat corridors, in the project boundary, to the extent possible.*

5.1.4 Threatened and Endangered Species

- Effects of project construction, operation, maintenance, and project-related recreation on the endangered persistent trillium (*Trillium persistens*), smooth coneflower (*Echinacea laevigata*), and **gray bat (*Myotis grisescens*)**~~Indiana bat (*Myotis sodalis*)~~,¹⁴ and the threatened northern long-eared bat (*Myotis septentrionalis*) and small whorled pogonia (*Isotria medeoloides*).

5.1.5 Recreation, Land Use, and Aesthetics

- Effects of proposed project construction, operation, and maintenance on recreational use in the project *boundary, including access to the existing Foothills Trail.*
- *Use of project lands for recreation activities, including fly fishing and birdwatching.*
- Effects of project construction, operation, and maintenance existing land uses in the project-affected area.
- *Effects of land management activities within the project boundary on environmental resources.*

¹⁴ On April 11, 2022, Commission staff accessed the U.S. Fish and Wildlife Service's IPaC database, and filed the IPaC official species list for the Bad Creek Project on April 12, 2022. The Indiana bat is discussed in Duke's PAD, but it does not appear on the official species list for the project *and this species is removed herein based on FWS's comments on SDI filed on June 9, 2022.*

- Effects of project construction, operation (including the presence of project facilities), and maintenance activities on visual resources.

5.1.6 Cultural Resources

- Effects of project construction, operation, and maintenance activities on historic and archaeological resources, traditional cultural properties, and access to exercise traditional practices and treaty rights.

5.1.7 Socioeconomics

- Effects of project construction and operation activities on local roads (including traffic), housing, businesses, employment opportunities, and government services.
- Effects of project construction and operation activities on human health or the environment in identified environmental justice communities.

5.1.8 Noise, Air Quality, and Traffic

- Effects of project construction on noise levels in the project area.
- Effects of project construction activities on air quality.
- Effects of project construction on traffic and road networks in the project area.

5.1.9 Developmental Resources

- Effects of proposed or recommended environmental measures on project generation and economics.

6.0 PROPOSED STUDIES

Initial study proposals from Duke Energy are identified by resource area, below in Table 1, and in the PAD. Further studies may need to be added to this list based on comments provided to the Commission and Duke Energy from agencies, Native-American tribes, and interested parties during the study planning process.

Table 1. Duke Energy’s initial study proposals for the Bad Creek Project (source: Duke Energy, Bad Creek Project PAD).

Resource Area and Issue	Duke Energy’s Proposed Study
1. General	Use a three-dimensional computational flow dynamics model (CFD) ¹⁵ to evaluate the effects of water discharge from the Complex on shoreline erosion, vertical mixing of DO, and water-based recreation in Lake Jocassee.
2. Geology and Soil Resources	Identify feasible upland areas within the project boundary and/or property owned by Duke Energy to deposit spoils from construction of the Complex.
3. Geology and Soil Resources	Complete a geotechnical investigation and geological assessment to identify potential effects of the Complex, and inform mitigation measures to maintain geological stability.
4. Fish and Aquatic Resources	Conduct a water quality study that includes: (1) a literature review of available water quality data, (2) water quality standards, (3) and current designated uses in the project boundary and Lake Jocassee. <i>If construction of the Complex is pursued, the study will also include: (1) an evaluation of the potential impacts of excavated material in upland disposal areas and at the submerged weir on water quality; and (2) development of a water quality monitoring plan in consultation with the resource agencies to monitor water quality prior to construction, during construction, and after construction.</i>
5. Fish and Aquatic Resources	Implement updates to the desktop entrainment study ¹⁶ based on consultation with stakeholders during the relicensing process.
6. Fish and Aquatic Resources	Conduct presence/absence surveys for mussels and other protected aquatic species in streams potentially impacted

¹⁵ In the PAD, Duke Energy indicates that a preliminary CFD model has been developed and will be updated to reflect the working design of the Complex.

¹⁶ Appendix F of Duke Energy’s PAD includes a desktop entrainment analysis that evaluated the addition of a second powerhouse identical in size and capacity to the existing powerhouse.

Resource Area and Issue	Duke Energy’s Proposed Study
	by potential project construction.
7. Recreation	Develop an understanding of existing recreation use and needs for future recreation development at the project through a mixed-method approach including background research, stakeholder consultation, and data collection to include spot and/or continuous visitor counts, aerial photography, and visitor use surveys.
8. Recreation and Public Safety	Evaluate safety risks to the public generally, and boaters specifically during both construction and operation of the Complex.
9. Aesthetic Resources	Assess aesthetic resources near the project and evaluate impacts of construction and operation of the Complex on these resources.
10. Cultural Resources	Conduct archaeological surveys for all non-steep landforms as well as architectural surveys of any structures at or near the project that are 40 or more years old.
11. Developmental Resources	Complete the Bad Creek II Feasibility Design Study to analyze potential effects that may result from construction of the Complex.
12. Developmental Resources	Conduct a transmission line siting study for the potential Complex.

7.0 NEPA DOCUMENT PREPARATION SCHEDULE

The NEPA document will be distributed to all persons and entities on the Commission’s service and mailing lists for the Bad Creek Project. The document will include our recommendations for operating procedures, as well as environmental protection and enhancement measures that should be part of any new license issued by the Commission. All recipients will then have 30 days to review the NEPA document

and file written comments with the Commission. All comments on the NEPA document filed with the Commission will be considered in preparation of the license order.

The major milestones, including those for preparing the NEPA Document,¹⁷ are as follows:

<u>Major Milestone</u>	<u>Target Date</u>
Scoping Meeting	May 2022
License Application Filed	July 2025
Ready for Environmental Analysis Notice Issued	September 2025
Deadline for Filing Comments, Recommendations, and Agency Terms and Conditions/Prescriptions	November 2025
NEPA Document Issued	July 2026
Comments on NEPA Document Due	August 2026
Deadline for Filing Modified Agency Recommendations	October 2026

A copy of the process plan, which has a complete list of the relicensing milestones for the Bad Creek Project, including those for developing the license application, is attached as Appendix A to this SD2.

8.0 COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA, 16 U.S.C. section 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by a project. The staff has preliminarily identified and reviewed the plans listed below that may be relevant to the Bad Creek Project. Agencies are requested to review this list and inform the Commission staff of any changes. If there are other comprehensive plans that should be considered for this list that are not on file with the Commission, or if there are more recent versions of the plans already listed, they can be filed for consideration with the Commission according to 18 C.F.R. § 2.19 of the Commission's regulations. Please follow the instructions for filing a plan at <http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf>.

The following is a list of comprehensive plans currently on file with the Commission that may be relevant to the Bad Creek Project:

Atlantic States Marine Fisheries Commission. 1996. Interstate fishery management plan for weakfish. (Report No. 27). May 1996.

¹⁷ This schedule assumes that a single EA would be prepared. If a draft and final EA, or EIS is prepared, the target dates for comments on the draft EA or EIS and deadline for filing modified agency recommendations may need to be revised.

Atlantic States Marine Fisheries Commission. 1998. Amendment 1 to the Interstate Fishery Management Plan for Atlantic sturgeon (*Acipenser oxyrinchus*). (Report No. 31). July 1998.

Atlantic States Marine Fisheries Commission. 1998. Interstate fishery management plan for Atlantic striped bass. (Report No. 34). January 1998.

Atlantic States Marine Fisheries Commission. 1999. Amendment 1 to the Interstate Fishery Management Plan for shad and river herring. (Report No. 35). April 1999.

Atlantic States Marine Fisheries Commission. 2000. Interstate Fishery Management Plan for American eel (*Anguilla rostrata*). (Report No. 36). April 2000.

Atlantic States Marine Fisheries Commission. 2000. Technical Addendum 1 to Amendment 1 of the Interstate Fishery Management Plan for shad and river herring. February 9, 2000.

Atlantic States Marine Fisheries Commission. 2008. Amendment 2 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2008.

Atlantic States Marine Fisheries Commission. 2009. Amendment 2 to the Interstate Fishery Management Plan for shad and river herring, Arlington, Virginia. May 2009.

Atlantic States Marine Fisheries Commission. 2010. Amendment 3 to the Interstate Fishery Management Plan for shad and river herring, Arlington, Virginia. February 2010.

Atlantic States Marine Fisheries Commission. 2013. Amendment 3 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. August 2013.

Atlantic States Marine Fisheries Commission. 2014. Amendment 4 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2014.

Forest Service. 2004. Sumter National Forest revised land and resource management plan. Department of Agriculture, Columbia, South Carolina. January 2004.

National Marine Fisheries Service. 1998. Final Recovery Plan for the shortnose sturgeon (*Acipenser brevirostrum*). Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. December 1998.

- National Marine Fisheries Service, North Carolina Wildlife Resources Commission, South Carolina Department of Natural Resources, and U.S. Fish and Wildlife Service. 2017. Santee Basin Diadromous Fish Passage Restoration Plan. 2017.
- National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.
- South Carolina Department of Health and Environmental Control. 1989. Assessment of non-point source pollution for the State of South Carolina. Columbia, South Carolina. April 1989.
- South Carolina Department of Health and Environmental Control. 1989. Non-point source management program for the State of South Carolina. Columbia, South Carolina. April 1989.
- South Carolina Department of Parks, Recreation, & Tourism. 2008. South Carolina State Comprehensive Outdoor Recreation Plan (SCORP). Columbia, South Carolina. April 2008.
- South Carolina Department of Parks, Recreation, & Tourism. 2002. The South Carolina State Trails Plan. Columbia, South Carolina. 2002.
- South Carolina Department of Natural Resources. 2014. South Carolina's State Wildlife Action Plan 2015. Columbia, South Carolina. October 2014.
- South Carolina Department of Natural Resources. 2004. South Carolina Water Plan-Second Edition. Columbia, South Carolina. January 2004.
- South Carolina Water Resources Commission. 1985. Instream flow study - Phase I: identification and priority listing of streams in South Carolina for which minimum flow levels need to be established. Report No. 149. Columbia, South Carolina. June 1985.
- South Carolina Water Resources Commission. 1988. Instream flow study - Phase II: determination of minimum flow standards to protect instream uses in priority stream segments. Report No. 163. Columbia, South Carolina. May 1988.
- South Carolina Water Resources Commission. National Park Service. 1988. South Carolina rivers assessment. Columbia, South Carolina. September 1988.
- South Carolina Wildlife and Marine Resources Department. 1989. South Carolina instream flow studies: a status report. Columbia, South Carolina. June 1, 1989.

Project No. 2740-053

U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.

U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

9.0 MAILING LIST

The list below is the Commission’s official mailing list for the Bad Creek Project. If you want to receive future mailings for this proceeding and are not included in the list below, please send your request by email to efiling@ferc.gov or by mail to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkins Avenue, Rockville, Maryland 20852. All written or emailed requests to be added to the mailing lists must clearly identify the following on the first page: **Bad Creek Pumped Storage Project (P-2740-053)**. You may use the same method if requesting removal from the mailing list below.

Register online at <http://www.ferc.gov/docs-filing/esubscription.asp> to be notified via email of new filings and issuances related to this project or other pending projects. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov, mailto: or toll free at 1-866-208-3676, or for TTY, (202) 502-8659.

Official Mailing List for the Bad Creek Pumped Storage Project

<p>Paul Nolan Energy Consultant 5515 17th Street North Arlington, Virginia 22205-2722</p>	<p>David Bernhart Assistant Regional Administrator NOAA National Marine Fisheries Service- SERO 263 13th Avenue South St. Petersburg, Florida 33701-5505</p>
<p>Patrick T McHenry Honorable U.S. House of Representatives 224 Cannon Washington, District of Columbia 20515</p>	<p><i>Lorianne Riggin</i> <i>South Carolina Department of Natural Resources</i> <i>P.O. Box 167</i> <i>1000 Assembly Street</i> <i>Columbia, South Carolina 29202</i></p>
<p><i>Elizabeth Miller</i> <i>South Carolina Department of Natural Resources</i> <i>P.O. Box 12559</i> <i>217 Fort Johnson Road</i> <i>Charleston, South Carolina 29422-2559</i></p>	

APPENDIX A

**BAD CREEK PUMPED STORAGE PROJECT
PROCESS PLAN AND SCHEDULE**

Shaded milestones are unnecessary if there are no study disputes. If the due date falls on a weekend or holiday, the due date is the following business day. Early filings or issuances will not result in changes to these deadlines. As appropriate, the process plan and schedule may be revised in the future.

18 C.F.R.	Lead	Activity	Timeframe	Deadline
§ 5.5(a)	Duke Energy	Filing of NOI and PAD	Actual filing date	2/23/2022
§ 5.7	FERC	Initial Tribal Consultation Meeting	Within 30 days of NOI and PAD notice (Waived)	3/25/2022
§5.8	FERC	FERC Issues Notice of Commencement of Proceeding and SD1	Within 60 days of NOI and PAD notice	4/22/2022
§5.8 (b)(3)(viii)	FERC/ Stakeholders	Public Scoping Meetings and Environmental Site Review	Within 30 days of NOI and PAD notice and issuance of SD1	5/16/2022 & 5/17/2022
§ 5.9	Stakeholders/ FERC	File Comments on PAD, SD1, and Study Requests	Within 60 days of NOI and PAD notice and issuance of SD1	6/23/2022
§5.10	FERC	FERC Issues SD2, if necessary	Within 45 days of deadline for filing comments on SD1	8/5/2022
§5.11(a)	Duke Energy	File PSP	Within 45 days of deadline for filing comments on SD1	8/8/2022
§5.11(e)	Duke Energy/ Stakeholders	Study Plan Meetings	Within 30 days of deadline for filing proposed Study Plans	9/6/2022
§5.12	Stakeholders	File Comments on PSP	Within 90 days after proposed study plan is filed	11/7/2022

18 C.F.R.	Lead	Activity	Timeframe	Deadline
§5.13(a)	Duke Energy	File RSP	Within 30 days following the deadline for filing comments on proposed Study Plan	12/5/2022
§5.13(b)	Stakeholders	File Comments on RSP	Within 15 days following Revised Study Plan	12/20/2022
§5.13(c)	FERC	FERC Issues SPD	Within 30 days following Revised Study Plan	1/4/2023
§5.14(a)	Mandatory Conditioning Agencies	Notice of Formal Study Dispute	Within 20 days of Study Plan determination	1/24/2023
§5.14(l)	FERC	Study Dispute Determination	Within 70 days of notice of formal study dispute	4/4/2023
§5.15(a)	Duke Energy	Conduct First Season Field Studies	May 2023 – April 2024	
§5.15(c)(1)	Duke Energy	File ISR	No later than one year from Study Plan approval	1/4/2024
§5.15(c)(2)	Duke Energy	ISR Meeting	Within 15 days of Initial Study Report	1/19/2024
§5.15(c)(3)	Duke Energy	File ISR Meeting Summary	Within 15 days of Study Results Meeting	2/5/2024
§5.15(c)(4)	Stakeholders/ FERC	File Meeting Summary Disagreements/Modifications to Study/Requests for New Studies	Within 30 days of filing Meeting Summary	3/4/2024
§5.15(c)(5)	Duke Energy	File Responses to Disagreements/Modifications/ New Study Requests	Within 30 days of disputes	4/3/2024
§5.15(c)(6)	FERC	Resolution of Disagreements/ Study Plan Determination	Within 30 days of filing responses to disputes	5/3/2024

18 C.F.R.	Lead	Activity	Timeframe	Deadline
§5.15	Duke Energy	Conduct Second Season Field Studies	May 2024 – April 2025	
§5.15 (f)	Duke Energy	File USR	No later than two years from Study Plan approval	1/3/2025
§5.15(c)(2)	Duke Energy	USR Meeting	Within 15 days of Updated Study Report	1/18/2025
§5.15(c)(3)	Duke Energy	File USR Meeting Summary	With 15 days of Study Results Meeting	2/3/2025
§5.15(c)(4)	Stakeholders/ FERC	File Meeting Summary Disagreements/ Modifications to Study Requests/Requests for New Studies	Within 30 days of filing Meeting Summary	3/4/2025
§5.15(c)(5)	Duke Energy/ Stakeholders	File Responses to Disagreements/Modifications/ New Study Requests	Within 30 days of disputes	4/3/2025
§5.15(c)(6)	FERC	Resolution of Disagreements/ Study Plan Determination	Within 30 days of filing responses to disagreements	5/1/2025
§5.16(a)	Duke Energy	File PLP (or DLA) with FERC and distribute to Stakeholders	Not later than 150 days before final application is filed	3/3/2025
§5.16 (e)	FERC / Stakeholders	Comments on PLP, Additional Information Request	Within 90 days of filing Preliminary Licensing Proposal (or Draft License Application)	6/2/2025
§5.17 (a)	Duke Energy	License Application Filed	Within 2 years of license expiration	7/31/2025

Subject: FW: [EXTERNAL] RE: Question on Cultural Resources related to listing of lakes
Attachments: Keowee-Toxaway NRHP Evaluation of Structures.pdf

From: Johnson, Elizabeth <EJohnson@scdah.sc.gov>
Sent: Wednesday, August 10, 2022 1:28 PM
To: Churchill, Christy <Christy.Churchill@duke-energy.com>
Subject: RE: [EXTERNAL] RE: Question on Cultural Resources related to listing of lakes

Christy:

Thanks for following up, I have spent some time going back through our records here and having staff check the GIS.

The *NRHP Evaluation of the Keowee-Toxaway Hydroelectric Development* (2012) by Brockington resulted in recording the Keowee Hydro Development with SHPO Site No 0155 (373-0155) and Jocassee Development as SHPO Site No. 0156 (446-0156). The report specifically stated on page 116 that the structures would be assessed once reach 50 years of age. As noted in the attached letter from 11/16/12 (copies also in the HPMP for the Keowee-Toxaway project, and the NRHP evaluation appendix) our office was of the opinion that the Keowee Hydro Development and Jocassee Development were not eligible for the NRHP (due to age), and we understood a re-evaluation would occur once 50 years old. We appreciate that Duke Energy undertook this evaluation in a timely manner.

That letter also included the statement that “we encourage Duke Energy to consider the impoundments created by the developments as potential historic properties.” Our office had provided previous comments (see 9/12/12 email from R. Dobrasko in appendix of the NRHP evaluation) asking about consideration of the lakes in the evaluation for the NRHP. Also in the appendix of the NRHP evaluation Duke Energy provided a response to this comment stating that the FERC-approved study plan specifically referenced “evaluation of Project structures and not associated landscape features” and that “the reservoirs are typically not included as part of the evaluation process.”

When Terracon completed the recent *Architectural Survey and National Register Evaluation of the Keowee Hydroelectric Station*, the stated intent of the work (p.ii) was “to document and assess structures that could be eligible for inclusion in the National Register of Historic Places (NRHP)”. That resulted in the Keowee Hydro Station, SHPO Site No. 0150 (with subnumbers for the powerhouse, intake structure, and spillway) being evaluated and recommended as eligible. As best as I can tell, the lake was not included in the evaluation, and the resulting recommendation was only for the structures. Our office concurred with the recommendation of eligibility (5/18/22).

When Terracon completed the recent *Architectural Survey and National Register Evaluation of the Jocassee Pumped Storage Hydro Station*, the stated intent of the work (p.ii) was “to document and assess structures that could be eligible for inclusion in the National Register of Historic Places (NRHP)”. That resulted in the Jocassee Hydro Station, SHPO Site No. 0198 (with subnumbers for nine structures) being evaluated and recommended as eligible. The lake does not appear to have been included in this evaluation, and the resulting recommendation was only for the structures. Our office concurred with the recommendation of eligibility (5/18/22).

In hindsight it would probably have been better to have re-used the previous SHPO Site Nos, and thus just changed those boundaries to reflect the updated eligibility determinations but we didn’t catch that duplication when Terracon requested the more recent numbers. And it would have been helpful for the reports to have referenced that the lakes were not considered in the evaluation, given the recommendation from 2012.

Here’s a potential path forward. Our office will change 0155 and 0156 to points (would show as not eligible), and plot on their respective Hydro areas. We would also update the Notes fields as follows:

0155 Notes : “re-evaluated for NRHP eligibility 2021-22, see Site No. 0150.01, 0150.02 and 0150.03 for eligible structures (also Oconee Nuclear Station HD)

0156 Notes : “re-evaluated for NRHP eligibility 2021-22, see Site No. 0198 for eligible boundary and structures

This allows us to capture both the initial recording of the developments in 2012, as well as the re-evaluation in 2021-22.

I note that ArchSite has not yet been updated with the most recent shapefiles for 0198, but that will happen in the near future.

Thanks, let me know of any thoughts/concerns re this approach.



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SC Department of Archives & History
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I as detailed here (www.terracon.com/disclaimer). If you cannot access the hyperlink, please e-mail sender.

November 16, 2012

Mr. Brett Garrison
Duke Energy Carolinas
Water Strategy and Services
EC12Y/P.O. Box 1006
Charlotte, NC 28201-1006

Re: Keowee-Toxaway Hydroelectric Project
Pickens and Oconee Counties, South Carolina
FERC No. 2503, SHPO Project No. 06-VM0413

Dear Mr. Garrison:

Thank you for your letter of October 31, which we received on November 1, regarding the above-referenced project. We also received a paper and digital copy of the report *NRHP Evaluation of the Keowee-Toxaway Hydroelectric Development, Oconee and Pickens Counties, South Carolina* and statewide survey cards as supporting documentation for this undertaking. The State Historic Preservation Office is providing comments to the Federal Energy Regulatory Commission via its licensee Duke Energy pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

Based on the research and documentation provided in the report, it is the opinion of our office that the Keowee Hydroelectric Development and the Jocassee Hydroelectric Development do not meet the criteria for listing in the National Register of Historic Places. We understand that Duke Energy plans to reconsider the eligibility of these properties once they are fifty (50) years of age. At that time, we encourage Duke Energy to consider the impoundments created by the developments as potential historic properties. Previous relicensing projects in South Carolina, such as the Santee-Cooper Hydroelectric Development and the Saluda Hydroelectric Development, considered the impoundments to be eligible for listing in the National Register of Historic Places.

We look forward to continuing to work with you on the relicensing process for the Keowee-Toxaway Hydroelectric Project. If you have any questions, please contact me at (803) 896-6183 or dobrasko@scdah.state.sc.us.

Sincerely,

Rebekah Dobrasko
Supervisor of Compliance, Tax Incentives, and Survey
State Historic Preservation Office

From: Stuart, Alan Witten <Alan.Stuart@duke-energy.com>
Sent: Friday, August 5, 2022 4:17 PM
To: Alexander, Thomas - SC Senate; amedeemd@dhec.sc.gov; Andrade, Kristin - USACE Greenville; Bailey, William - USACE Savannah; Baker, Lisa - United Keetoowah Band of Cherokee Indians; Barnhart, Jen - USFS Sumter NF; Bedenburgh, Michael - Palmetto Trust for Historic Preservation; Bereskin, David - Greenville Water; Bernhart, David - NOAA; Bluecloud, Keith - USBIA ERO; Bobertz, Shannon - SCDNR; abrock@oconeesc.com; Caggiano, Annie - Oconee Economic Alliance; Carter, Jerry - SC House of Representatives; Cato, Van - US Senate; Colburn, Kevin - American Whitewater; Collins, Neal - SC House of Representatives; Mayor, Clemson - cityofclemson; Wes Cooler; Corney, Michael; Corney, Steve; Dach, Bob - USBIA NR; Davis, Amin - NCDNCR; Andy Douglas; Douglas, Heyward - Foothills Trail Conservancy; Duncan, Jeffrey - NPS; Edwards, Danny - City of Walhalla, SC; Farrell, Christine - NC State Parks; Fell, Aiden - SCDPRT; Gestwicki, Tim - NC Wildlife Federation; Gilstrap, David - Pickens Cty Water Auth; Andrew Gleason; Gledhill-Earley, Renee - NCSHPO; Goudreau, Chris J.; Green, Sara - SC Wildlife Federation; Griffin, Marvin - USACE Savannah; jhains@g.clemson.edu; wenonah.haire; Rowdy Harris; Hawkins, Ray - Jocassee Outdoor Center; Higgins, Jamie - USEPA; hightocw@dhec.sc.gov; glenn@hilliardgrp.com; Hiott, David - SC House of Representatives; Hoffstatter, Mike - National Wild Turkey Federation; Erika Hollis; Howell, Kelly - SCDPRT; Hreha, Lisa - USACE; Hughes, Jennifer - SCDHEC; Jewsbury, Steve - Pickens Cty Water Auth; Jobsis, Gerritt - American Rivers; Johnson, Elizabeth - SCDAH; Keene, Terry - AQD; Kulpa, Sarah; Laughter, Jamie - Transylvanie Cty; Lineberger, Jeff; McCormack, Paul - SCDPRT; McNamara, Rachel - FERC; derrick.miller@usda.gov; Elizabeth Miller; Mindel, Howard - USACE; Mitchell, Phil - Fishers Knob Home Owners Group; Moore, Joe - City of Brevard NC; n, herb - sepa.doe; Olds, Melanie J; Owens, David - City of Pickens, SC; growens@gmail.com; Bill Ranson-Retired; Rice, Garry S; Rice, Rex - SC Senate; Lorianne Riggin; Rimkunas, Matt - US Senate; Rohde, Fritz; Roper, Ken - Pickens County; Sandifer, Bill - SC House of Representatives; cstarker@upstateforever.org; Strong, Brian - NC State Parks; Stuart, Alan Witten; Tarver, Fred - NCDEQ; Thayer, Anne - SC House of Representatives; Liz Thomas; Threatt-Taylor, Dale - Nature Conservancy; Weese, Elizabeth - NCDOJ; Whitmire, Bill - SC House of Representatives; Whitmire, Chris - NC House of Representatives; Dale Wilde; suewilliams130@gmail.com; Yantis, Gerry - AQD
Cc: Elizabeth Miller; jhains@g.clemson.edu; jtk7140@me.com; Rowdy Harris; cloningerp@dnr.sc.gov; Tom Daniel; mixong@dnr.sc.gov; Alex Pellett; RankinD@dnr.sc.gov; gcyantis2@yahoo.com; Erika Hollis; amedeemd@dhec.sc.gov; Olds, Melanie J; Amy Breedlove; Ross Self; quattrol@dnr.sc.gov; William T. Wood; kernm@dnr.sc.gov; Dale Wilde; Scott Harder; More, Priyanka; suewilliams130@gmail.com; Bill Ranson-Retired; cstarker@upstateforever.org; Wes Cooler; Ken Forrester; Austen Attaway; bradleyk@dnr.sc.gov; grossea@dnr.sc.gov; Jennifer Kindel; simmons@dnr.sc.gov; Samantha Tessel; Andrew Gleason; Christopher Moore; taylors@dnr.sc.gov; caitlin.rogers; wenonah.haire; ejohnson@scdah.sc.gov
Subject: P-2740 Bad Creek Pumped Storage Project: Relicensing Filing (Proposed Study Plan)
Attachments: Bad_Creek_FERC_2740_PSP_Transmittal_Aug.5.2022.pdf

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bad Creek Pumped Storage Project Stakeholders:

Duke Energy Carolinas, LLC (Duke Energy) is the licensee, owner and operator of the Bad Creek Pumped Storage Project (FERC No. 2740) (Project) located in Oconee County, South Carolina. The existing license for the Project was issued on August 1, 1977, under the terms of an Original License issued by the Federal Energy Regulatory Commission (FERC or Commission), and the current license expires on July 31, 2027. Accordingly, Duke Energy is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

We are notifying stakeholders of the availability of the next major ILP submittal, the Proposed Study Plan (PSP), which was filed with FERC by Duke Energy on August 5, 2022. The PSP describes the studies that the Licensee is proposing to conduct in support of relicensing the Project. This document also provides response to comments and requests for additional information received from FERC and relicensing stakeholders.

In accordance with 18 CFR §5.11(e), Duke Energy intends to hold an initial PSP Meeting on **Wednesday, September 7, 2022**. Comments on the PSP, including any additional or revised study requests, must be filed within 90 days of the deadline for filing this PSP, which is no later than November 5, 2022. Details for the proposed meeting and requirements for comments and additional study requests are provided in the attached cover letter. Please note that, due to file size restrictions, the PSP is not attached to this email. Duke Energy encourages stakeholders to view the filing on the Project's public relicensing website ([Bad Creek Pumped Storage Project](#)).

Should you have any questions regarding this filing or the relicensing process, or if you would like to request changes to the email distribution list for future submittals, please contact me at alan.stuart@duke-energy.com. On behalf of Duke Energy, thank you for your interest in the Bad Creek Project and for your participation in this process.



Alan W. Stuart

Senior Project Manager, Water Strategy & Hydro Licensing

Regulated & Renewable Energy

Duke Energy

526 S. Church Street, - EC12Q | Charlotte, NC 28202

Office 980-373-2079 | Cell 803-640-8765



August 5, 2022

Electronically Filed

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Subject: **Bad Creek Pumped Storage Project (P-2740-053)
Filing of Proposed Study Plan for Relicensing Studies**

Dear Secretary Bose:

Duke Energy Carolinas, LLC (Duke Energy or Licensee) is the Licensee, owner, and operator of the 1,400-megawatt (MW) Bad Creek Pumped Storage Project (FERC Project No. 2740) (Project), located in Oconee County, South Carolina, approximately eight miles north of Salem. The Bad Creek Reservoir (or upper reservoir) was formed from the damming of Bad Creek and West Bad Creek and serves as the Project's upper reservoir. Lake Jocassee serves as the lower reservoir and is licensed separately as part of Duke Energy's Keowee-Toxaway Hydroelectric Project (FERC Project No. 2503).

The existing license for the Project was issued on August 1, 1977, under the terms of an Original License issued by the Federal Energy Regulatory Commission (FERC or Commission), and the current 50-year operating license for the Project expires on July 31, 2027. Accordingly, Duke Energy is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

On February 23, 2022, in accordance with 18 CFR §5.6, Duke Energy filed the Pre-Application Document (PAD) and Notice of Intent (NOI) with FERC to initiate the ILP. The Commission issued Scoping Document 1 (SD1) for the Project on April 22, 2022. SD1 is intended to advise resource agencies, Indian tribes, non-governmental organizations, and other stakeholders as to the proposed scope of FERC's Environmental Assessment (EA) or Environmental Impact Statement (EIS) for the Project and to seek additional information pertinent to the Commission's analysis. In SD1 and a Comments on the PAD and Study Request letter dated June 16, 2022, the Commission requested that Duke Energy complete an Environmental Justice Study as part of the relicensing.

On May 16 and 17, 2022, the Commission held virtual public scoping meetings. During these meetings, FERC staff presented information regarding the ILP and details regarding the study scoping process and how to request a relicensing study, including the Commission's study criteria. In addition,

FERC staff solicited comments regarding the scope of issues and analyses for the EA. A virtual site visit was provided by Duke Energy prior to each public scoping meeting.

Resource agencies, Indian tribes, and other interested parties were afforded a 60-day period (which concluded on June 23, 2022) to request studies and provide comments on the PAD and SD1. During the comment period, a total of eight stakeholders filed letters with the Commission providing general comments, comments regarding the PAD, comments regarding SD1, and/or comments on studies of interest or proposed by Duke Energy in the PAD. Since the scoping meetings, Duke Energy has convened resource committee groups with interested stakeholders to provide an overview of methodology and goals for resources studies covered by the Proposed Study Plan (PSP).

In accordance with 18 CFR §5.11 of the Commission's regulations, Duke Energy is filing the PSP describing the studies that the Licensee is proposing to conduct in support of relicensing the Project.

Proposed Study Plan

Duke Energy has evaluated the study comments submitted by the stakeholders, with a focus on the requests that specifically addressed the seven criteria for study requests as set forth at 18 CFR §5.9(b) of the Commission's ILP regulations. One study request met ILP criteria and was submitted by FERC for the preparation of an Environmental Justice Study.

The purpose of the PSP is to present the studies that are being proposed by Duke Energy and to address the comments and study requests submitted by resource agencies and other stakeholders. At this time, Duke Energy is proposing to conduct the following studies as described in detail in the PSP:

1. Water Resources Study;
2. Aquatic Resources Study;
3. Visual Resources Study;
4. Recreational Resources Study;
5. Cultural Resources Study; and
6. Environmental Justice Study.

Duke Energy is filing the PSP with the Commission electronically and is distributing this letter to the parties listed on the attached distribution list. For parties listed on the attached distribution list who have provided an email address, Duke Energy is distributing this letter via email; otherwise, Duke Energy is distributing this letter via U.S. mail. All parties interested in the relicensing process may obtain a copy of the PSP electronically through FERC's eLibrary system¹, or from Duke Energy's public relicensing website.² If any party would like to request a CD containing a copy of the PSP, please contact the undersigned at the address listed below. Note that Critical Unclassified Information [CUI] pertaining to locations of protected archeological sites is being filed separately.

Comments on the PSP, including any additional or revised study requests, must be filed within 90 days of the deadline for filing this PSP, which is no later than November 5, 2022. Comments must include an explanation of any study plan concerns, and any accommodations reached with Duke

¹ https://elibrary.ferc.gov/idmws/search/fercgensearch.asp_under_docket_number_P-2740-053

² <https://badcreekpumpedstorage.com>

Energy regarding those concerns (18 CFR §5.12). Any proposed modifications to this PSP must address the Commission's seven ILP study criteria as presented in 18 CFR §5.9(b).

Initial Proposed Study Plan Meeting

In accordance with 18 CFR §5.11(e) of the Commission's regulations, Duke Energy intends to hold an initial PSP Meeting to describe the background, concepts, and study methods described in the PSP. Details for the proposed meeting are provided below. A dial-in number will also be provided upon request.

Date: Wednesday, September 7, 2022
Time: 9:00 a.m. (until 5:00 p.m., if necessary)
Location: Duke Energy's Wenwood Operations Center
425 Fairforest Way
Greenville, SC 29607

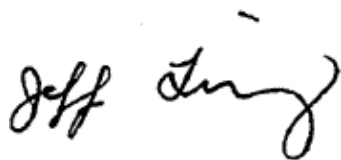
To assist with meeting planning and logistics, Duke Energy respectfully requests that individuals or organizations who plan to attend the meeting in-person please RSVP by sending an email to Alan.Stuart@duke-energy.com on or before August 22, 2022.

Response to Additional Information Requests

As noted above, on June 16, 2022, the Commission issued comments on the PAD, a study request, and requests for additional information. Duke Energy's responses to the additional information requested by FERC staff are provided within the PSP. Duke Energy has addressed (or deferred until a later phase of the relicensing process) all of the Commission's requests. In response to the Commission staff's request, Duke Energy is filing a copy of the Duke Energy (2020) Avian Protection Plan as an Appendix (Appendix J) to the PSP, and additional GIS data requested by Commission staff are being eFiled concurrent with the PSP.

Duke Energy looks forward to working with Commission staff, resource agencies, Indian Tribes, local governments, non-governmental organizations, and interested members of the public throughout the relicensing process. If there are any questions regarding filing, please contact Alan Stuart, Senior Project Manager, Water Strategy & Hydro Licensing at Alan.Stuart@duke-energy.com or via phone at 980-373-2079.

Sincerely,



Jeffrey G. Lineberger, PE
Water Strategy & Hydro Licensing
Duke Energy Carolinas, LLC

Enclosure

cc (w/enclosure): Alan Stuart, Duke Energy
Garry Rice, Duke Energy

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Bad Creek Pumped Storage Project (FERC No. 2740) Distribution List

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Subject:

FW: Bad Creek Relicensing Resource Committees Meeting - SAVE THE DATES

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Subject: Bad Creek Relicensing Resource Committees Meeting - SAVE THE DATES

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Bad Creek Relicensing Resource Committee Members:

Duke Energy would like to convene a catch-up meeting with all Resource Committees on either **Wednesday, November 16th or Thursday, November 17th, 9 am-12 pm**. Please block out your calendars for both of these date and time slots. We will provide further details on the meeting date/time slot and meeting agenda in the next two weeks. The meeting will be virtual and recorded so if you cannot make the meeting for some reason, we will send a link of the recorded meeting for your viewing.

I apologize in advance if you received multiple emails about this save the date announcement. I built my Resource Committee email contact lists based on those individuals who signed up for each committee; hence, some people serve on several committees and received the multiple emails.

Regards,

John Crutchfield

Project Manager II, Water Strategy & Hydro Licensing

Subject: FW: Bad Creek Relicensing: Proposed Study Plan Meeting Summary-September 7, 2022
Attachments: Bad Creek PSP Meeting Summary.pdf

From: Stuart, Alan Witten <Alan.Stuart@duke-energy.com>

Sent: Wednesday, October 19, 2022 6:45 AM

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Subject: Bad Creek Relicensing: Proposed Study Plan Meeting Summary-September 7, 2022

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning,

Please find for your use the attached Bad Creek Proposed Study Plan (PSP) Meeting Summary prepared for the PSP meeting convened on September 7, 2022. The meeting summary was filed earlier this morning with the Federal Energy Regulatory Commission as part of relicensing consultation and supports Duke Energy's continuing efforts to secure a new operating license for the Bad Creek Project .

We greatly appreciate everyone's participation, support and commitment in relicensing the Bad Creek Project.

If you have any questions, please feel free to reach out to us.

Respectfully,
Alan



Alan W. Stuart

Senior Project Manager, Water Strategy & Hydro Licensing
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October 19, 2022

Electronically Filed

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Subject: **Bad Creek Pumped Storage Project (P-2740)
Proposed Study Plan Meeting Summary**

Dear Secretary Bose:

Duke Energy Carolinas, LLC (Duke Energy or Licensee) is the Licensee, owner, and operator of the 1,400-megawatt (MW) Bad Creek Pumped Storage Project (FERC No. 2740) (Project), located in Oconee County, South Carolina. The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission), and the current operating license for the Project expires on July 31, 2027. Accordingly, Duke Energy is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

On August 5, 2022, Duke Energy filed the Proposed Study Plan (PSP) with FERC. In accordance with 18 CFR §5.11(e), on September 7, 2022, Duke Energy held a PSP meeting at the Duke Energy Operations Center in Greenville, SC to present the studies proposed by Duke Energy and to address stakeholder comments on the Pre-Application Document. Duke Energy is hereby submitting a courtesy copy of the meeting summary and presentation to the Commission. This transmittal will also be posted on the Project's public relicensing website.¹ The parties listed on the attached distribution list are being directly notified of this filing.

If there are any questions regarding this filing, please contact Alan Stuart, Senior Project Manager, Water Strategy & Hydro Licensing at Alan.Stuart@duke-energy.com or via phone at 980-373-2079.

Sincerely,

Jeffrey G. Lineberger, PE
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Enclosure

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¹ www.badcreekpumpedstorage.com

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Meeting Summary

Project: Bad Creek Pumped Storage Project Relicensing

Subject: Proposed Study Plan Meeting

Date: Wednesday, September 07, 2022

Location: Duke Energy Wenwood Operations Center in Greenville, SC

In-Person Attendees:

Alan Stuart (Duke Energy)
Christy Churchill (Duke Energy)
Ed Bruce (Duke Energy)
Garry Rice (Duke Energy)
Jeff Lineberger (Duke Energy)
John Crutchfield (Duke Energy)
Lynne Dunn (Duke Energy)
Maverick Raber (Duke Energy)
Nick Wahl (Duke Energy)
Paul Keener (Duke Energy)
Jennifer Bennett (Duke Energy)
Mike Abney (Duke Energy)
Erin Settevendemio (HDR)
Maggie Salazar (HDR)
Sarah Kulpa (HDR)
Alison Jakupca (KA)
Kelly Kirven (KA)
Bill Green (Terracon)
Stephen Bowler (FERC)
Amy Chastain (SCDNR)
Dan Rankin (SCDNR)
Elizabeth Miller (SCDNR)
Hailey Goyette (SCDNR)
Lynn Quattro (SCDNR)
William Wood (SCDNR)
Andrew Gleason (Foothills Trail Conservancy)
Glenn Hilliard (Foothills Trail Conservancy)
Chris Starker (Upstate Forever)
Erika Hollis (Upstate Forever)

Andy Douglas (SCWF)
Dale Wilde (Friends of Lake Keowee Society)
David Bereskin (Greenville Water)
Phillip Mitchell (Fisher Knob HOA)
Rowdy Harris (SCPRT)
Sue Williams (AQD)

Online Attendees:

Sarah Santos (Duke Energy)
Scott Fletcher (Duke Energy)
Melissa Murphy (Duke Energy)
Danielle Peoples (Duke Energy)
Ben Williamson (Duke Energy)
Kerry McCarney-Castle (HDR)
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Scott Willett (Anderson Regional Joint Water System)
Wes Cooler (Naturaland Trust)

Introductions

Alan Stuart opened the Proposed Study Plan (PSP) meeting and welcomed participants. He reviewed the agenda, objectives, and logistics for the meeting, provided a safety moment (basic disaster supply kit/hurricane season preparedness), and introduced Duke Energy and Federal Energy Regulatory Commission (FERC) meeting attendees (in person attendees and attendees via Microsoft Teams).

A. Stuart provided an overview of the existing Bad Creek Pumped Storage Project (Project) and the FERC project boundary and also introduced the proposed Bad Creek II Power Complex (Bad Creek II Complex) and the conceptual layout for the new facilities. The Bad Creek II Complex is a potential relicensing alternative for the new license application; it may or may not be included in the final license application. A. Stuart explained that the upper reservoir operating band will not change (160 vertical feet of fluctuation) with the construction of the Bad Creek II Complex. The new powerhouse complex would add an additional 1,400 megawatts (MW) of capacity to the existing Project.

Dale Wilde asked about the tunnel diameter of the proposed Bad Creek II Complex. A. Stuart noted that the diameter of the two-tunnels would be close in size to the existing Project's single tunnel but is dependent on the design of the pump-turbine units selected, which is still under study. The proposed tunnels are also slightly longer due to the distance between the existing upper reservoir and Lake Jocassee.

Andy Douglas asked about the schematic shown (Whitewater River cove) regarding boating / velocity impacts. Duke Energy acknowledged these components will be addressed in the Recreation Study and Computational Fluid Dynamics (CFD) modelling.

John Crutchfield provided an overview of the development of the PSP and the contents of the document that were filed with FERC on August 5, 2022. The PSP included six formal study plans. J. Crutchfield explained that the PSP did not include a Wildlife and Botanical Resources study plan, nor was one requested from FERC or stakeholders, because preliminary field assessments were performed and reported in the Pre-Application Document (PAD). Duke Energy expects that targeted field surveys may be required prior to construction, if the Bad Creek II Complex is included in the final license application.

J. Crutchfield reviewed the milestones completed to date and future scheduling. He reminded stakeholders that comments on the PSP are due by November 5, 2022 and that Duke Energy will file the Revised Study Plan (RSP) by December 5, 2022. The first field season for data collection will commence in the spring of 2023.

Sarah Salazar asked whether the stakeholders had a chance to visit the Project and J. Crutchfield confirmed that Duke Energy held a site visit on August 16, 2022, which was open to the relicensing stakeholder group. A. Stuart added that another site visit opportunity would be provided to coincide with the Initial Study Report meeting or second study season.

The PowerPoint presentation shown during this meeting is included in Attachment 1.

Water Resources Proposed Study Plan Meeting Presentation

Maverick Raber provided an overview of the Water Resources Study Plan and the general study area boundary. As part of relevant background and existing information, M. Raber described the monitoring data that had been collected prior to and following construction of the existing Project. Since impacts of existing Project operations are well documented, the focus of this study is on incremental impacts of construction and operation of the Bad Creek II Complex. M. Raber described each task proposed for this study and highlighted key components for the Water Quality Monitoring Plan that would be developed if the Bad Creek II Complex is proposed

in the final license. M. Raber also presented the proposed schedule for the study activities. Water quality monitoring is presently proposed for both the 2023 and 2024 field seasons (June – September).

Questions and Comments:

- David Bereskin (Greenville Water) asked how the proposed Bad Creek II Complex would impact Keowee lake levels. M. Raber does not anticipate impacts to Lake Keowee levels, but the CHEOPS model study will help to inform any downstream impacts. D. Bereskin requested that Lake Keowee impacts are studied and quantified or specified under a specific task in the Water Resources Study. D. Bereskin would like the study to look at potential effects on Lake Keowee from the operation of the Bad Creek II Complex. Jeff Lineberger noted that this requested assessment could fit under Task 4 since that is the task that includes efforts for modeling using the CHEOPS model. Chris Starker asked whether this question would be addressed in the Operations resource committee as well and Sarah Kulpa confirmed it would but noted it would also be captured as a task under the Water Resources study. A. Stuart clarified that water levels on Lake Keowee are maintained under the Keowee-Toxaway (KT) license. **Action item:** Duke Energy to evaluate if potential effects and discharges into Lake Keowee from the operation of the Bad Creek II Complex should be a new task or a subtask for Task 4.
- Erika Hollis asked about shoreline erosion (Lake Jocassee) and whether it would be assessed for the entire lake or just in certain areas. M. Raber noted that the focus for erosion is on the Whitewater River Cove since that will be the area affected by increased discharge from the addition of a new inlet/outlet structure but noted that the CFD model will determine the spatial extent of Bad Creek II Complex operation impacts relative to surface velocities and will determine whether there is a need for shoreline erosion studies outside of (downstream of) the Whitewater River Cove.
- C. Starker asked about Clean Water Act (CWA) 404/401 permitting and the potential placement of fill (i.e., spoil from excavation) at the existing weir. M. Raber confirmed that the 404/401 process would be applicable also for any impacts to streams or wetlands on land. A. Stuart noted that intent is to place rock spoils at the downstream end of the underwater weir; loose fill (fines) would be placed in upland areas. A sediment and erosion plan would also be required in addition to 404/401 permitting efforts. A. Stuart has confirmed with the U.S. Army Corps of Engineers (USACE) that a 404 permit would be required. C. Starker noted that Upstate Forever would be willing to help Duke Energy identify mitigation areas or opportunities in Region IV, if needed.
- Dan Rankin noted that the original weir was constructed to push water up hydraulically and inquired if the expansion of the weir would be similar and how the model would analyze this. M. Raber noted that the elevation of the weir and the upstream side (closest to the Whitewater River) are not expected to change, however the downstream side would be expanded. M. Raber noted the weir should function the same as under current conditions; with additional discharge from a second powerhouse, the weir should dissipate warm water and inhibit vertical mixing as much as possible (i.e., keep warmer water in the upper water column to prevent vertical mixing). A. Stuart noted the goal is to not raise the elevation of the weir, but Duke Energy could run scenarios to evaluate height increase during CFD model runs. M. Raber confirmed historical monitoring under

the KT license will continue and not be impacted. D. Rankin asked if Duke Energy would be interested in partnering with S.C. Department of Natural Resources (SCDNR) to place rock to create habitat for fish, which may also alleviate some permitting. A. Stuart noted that while that is not presently proposed, Duke Energy intends to continue to consult with SCDNR about recommended protection, mitigation, and enhancement (PM&E) measures.

- Elizabeth Miller asked about streams impacted by potential spoil placement and what sort of monitoring or modeling would support decision-making for spoil placement. M. Raber indicated that this would primarily be addressed through the 404/401 permitting process.
- Stephen Bowler noted that FERC must consider wetland impacts as part of FERC's National Environmental Policy Act (NEPA) analysis and that wetland impacts studied through the licensing could be used to support the 404 permit. A. Stuart noted that there are eight potential sites identified for spoils, but not all will be utilized. Avoidance of impacts would be a key criterion for final site selection.
- E. Hollis asked whether the stakeholder group will be involved in the Water Quality Monitoring Plan. M. Raber confirmed. A. Stuart clarified that the future Water Quality Monitoring Plan will be developed in 2024 so that a settlement agreement can be filed with the Draft License Application (DLA), if possible.
- S. Bowler reminded the group that the Integrated Licensing Process (ILP) does not preclude incorporation of consultation or data collection outside of the formal study plan process. J. Crutchfield noted that Duke Energy has created Resource Committees to support communication between Duke Energy and the stakeholders throughout the process. FERC offered to participate in these meetings as needed.
- S. Salazar asked about a potential excavation materials study report referenced in the PSP and whether a study of off-site material disposal would be done by Duke Energy. S. Kulpa noted while there is no official report, preliminary information regarding spoil sites was included as Appendix E of the PAD and that study of off-site disposal is not proposed due to the large volume of anticipated materials and the lack of cost-effective or practical options to move that much material offsite. Kerry McCarney-Castle sent a chat message to S. Salazar pointing to the table of estimated spoil amounts and spoil type provided in Section 5 of the PSP.

Aquatic Resources Proposed Study Plan Meeting Presentation

Mike Abney introduced the Aquatic Resources Study Plan and noted that he was also engaged in aquatic studies for the Keowee-Toxaway relicensing. M. Abney presented relevant background and existing information, including an overview of the Memorandum of Understanding (MOU) executed by Duke Energy and SCDNR, and the 10-Year Work Plans that have resulted from the MOU. M. Abney described the general study area which includes the Whitewater River Cove. M. Abney noted that because impacts of the existing Project are well documented, the focus of the study is on incremental impacts of construction and operation of the Bad Creek II Complex. M. Abney reminded the group that a desktop entrainment study for the proposed powerhouse had already been conducted and was reported in the PAD. M. Abney reviewed the major objectives, tasks, and schedule for the proposed study.

Questions and Comments:

- A. Douglas asked M. Abney to define entrainment. M. Abney explained impingement (stuck upon the trash rack or intake screen) and entrainment (going through the system). In the existing license model, the assumption was to assume 100% mortality to assume a worst-case scenario in the model. Duke Energy will consider mortality rates through this study. A. Douglas asked what sizes of fish are excluded from entrainment by protective measures such as trashracks at the intake (which are primarily designed to keep debris out of the intake). M. Abney explained there are standards for screens, primarily used to inhibit large fish, and entrainment is more a concern for smaller (forage) fish. A. Stuart noted that the trash racks for the proposed Bad Creek II Complex are proposed as 6-inch (spacing) vertical racks. D. Rankin noted that in past models, Duke Energy could identify the best way to operate units for reducing potential entrainment. D. Rankin asked whether a desktop study will be able to predict the best operational methods. D. Rankin noted that entrainment was higher in the winter because fish don't swim as fast in colder temperatures.
- E. Miller asked if and when the entrainment desktop study would be updated for variable speed pump/turbine technology. A. Stuart noted that the speed of the unit does not vary for purposes of entrainment (assume full load), so there is presently no plan to re-run the entrainment study.
- D. Wilde asked about the potential for construction of a second underwater weir. Duke Energy clarified there will be no second weir, just expansion of the downstream footprint of the existing weir.
- William Wood asked about the entrainment model and noted that the model assumed a 1.0-foot-long Threadfin Shad and requested Duke Energy re-run the model for a reduced/more representative size of forage fish. W. Wood suggested modeling a 3-inch fish instead of 12-inch fish. **Action Item:** Duke Energy acknowledges that reduction of Threadfin Shad size to 3 inches would theoretically make these fish more vulnerable to entrainment. While the entrainment model did assume a 1-foot-long Threadfin Shad, report results were based on hydroacoustic returns, therefore reducing the fish size would not impact results. An update to the entrainment report results will be provided with the RSP to address this comment.
- D. Rankin mentioned lighting effects and their ability in attracting fish and recommended avoiding or minimizing lighting around the intake structure.
- S. Salazar noted that FERC had commented on the PAD regarding the use of herbicide use around the Project. Duke Energy had replied that it does not apply any herbicides near or adjacent to streams or wetland areas. S. Salazar asked if the rate of reservoir fluctuation would change and would Duke Energy evaluate the herbicide application to account for altered drainage patterns, from reservoir operations or grading or placement of fill at spoil areas. Scott Fletcher noted that Duke Energy's vegetation management teams consider site specific conditions including terrain, slope, drainage, and in general, near aquatic habitat there is a buffer when applying herbicides. S. Salazar noted FERC may need additional information or these guidelines to support FERC's future NEPA evaluation.

- D. Rankin asked if Duke Energy is going to assess streams (Howard Creek) that were impacted by the existing Project and M. Abney clarified that the only streams Duke Energy is proposing to study are the ones that may be impacted by spoil placement and will not be considering any historic impacts. D. Rankin noted that the SCDNR has abundant historical data for Howard Creek that may be relevant to this study. Note: Dan later acknowledged during the meeting that Howard Creek was not an area potentially impacted by spoil placement. **Action Item:** Duke Energy and SCDNR coordinate to share this referenced information.

Recreation & Visual Resources Proposed Study Plan Meeting Presentation

Jennifer Bennett introduced the Recreation and Visual Resources study plans. For the Visual Resources Study, J. Bennett described which existing and proposed Project structures are/will be visible from access areas around the Project. J. Bennett described the study area, nexus between expanded Project operation and construction and resource impacts, and objectives for the Visual Resources Study. J. Bennett provided an overview of the tasks proposed in the PSP. J. Bennett noted that applicable land use plans and regulations include those of U.S. Forest Service (USFS) and Oconee County.

J. Bennett provided an overview of the Recreation Study Plan. She reviewed the proposed tasks, and described the proposed study area, which is different from the other studies due to the location of the (linear) Foothills Trail Corridor outside of the FERC Project Boundary.

J. Bennett provided an overview of the access areas that will be assessed as part of the Foothills Trail Corridor Recreational Use and Needs (RUN study) and noted that data collection methods for different access areas vary based on expected uses (vehicle vs. foot traffic) and site constraints. J. Bennett noted that Musterground Road was added following consultation with SCDNR because that road is used to access the Wildlife Management Area (WMA) for hunting. Musterground Road is only open to the public during specific hunting seasons, including September 15-January 15, and again from March 20-May 10. To capture data for the full bear and deer hunting season, a traffic counter was recently installed at Musterground Road. Data collection at other sites will commence in March 2023. J. Bennett also described how a UAS (drone) will be used to collect data for 10 days of the boating season (Memorial Day through Labor Day) in the Whitewater River Cove area. This data will inform temporary construction impacts (i.e., closure of this area for periods of construction).

Questions and Comments:

- A. Douglas asked about the Visual Resources study, and whether the interested stakeholders would be involved in evaluation of the study. J. Bennett noted that there will be stakeholders involved through the resource committees and their input will be taken into consideration, for example, when identifying key viewpoints. S. Kulpa added that the resource committee will be involved in choosing areas of interest.
- A. Douglas requested that the field visit portion of the study occur during leaf-off conditions so viewpoints will be visible. **Action Item:** Duke Energy to revise the Visual Resources Study to consider leaf-off conditions during the field visit.

- A. Douglas asked about light pollution. C. Starker asked about light pollution in terms of dark sky perspective. **Action Item:** Duke Energy will review PSP and consider revisions to the RSP to discuss light pollution in the appropriate study plan.
- E. Miller asked that since Labor Day just occurred, if Musterground Road would be surveyed next year over the Labor Day holiday. Kelly Kirven responded that the survey at Musterground Road will occur when the gate is open to the public, which is during bear and turkey season, or September 15-January 15 and March 20-May 10.
- E. Miller also asked how the 10 drone survey days would be selected. J. Bennett noted the methodology would be similar to that used to select survey days for the RUN study, including a mix of weekdays, weekends, and holiday use.
- D. Wilde asked if weather events would impact the days the drone would take photos and K. Kirven confirmed. D. Wilde noted that ten days of survey was not very many. D. Wilde asked about the methodology of the surveys. K. Kirven noted they typically use a combination of QR codes and staff in person for the recreation survey. Recreation surveys (part of the RUN study) will be collected over 30 days.
- C. Starker noted that spring break is a popular time to visit the Foothills Trail and wondered if there was intent to capture these dates specifically. K. Kirven noted that in the PSP there is a general schedule and presently some survey days are planned for March and April, but more surveying is planned for the summer and early fall seasons. Allocation of survey dates can be adjusted in consultation with the recreation resource committee.
- C. Starker asked about including rock climbing into the survey. K. Kirven noted that there is an “other” option to capture additional recreational uses on the survey form.
- **Action Items:** C. Starker noted that the uses identified in the survey could be revised to remove boating and add kayaking/canoeing. He also suggested adding fishing.
- A. Gleason asked about the condition assessment of the entire trail and noted that Duke Energy excluded engineered bridges as they are inspected every five years. A. Gleason wondered when the last bridge inspection was performed, and J. Bennett confirmed the last inspection was completed in 2021 by a contractor to Duke Energy. A. Gleason requested the inspection reports and J. Bennett confirmed these could be included in the study report. **Action Item:** Add additional details or listing of engineered bridges in the RSP. A. Gleason asked how Duke Energy defines engineered bridges and J. Bennett noted that the bridges have design plans and an inspection report with specific items evaluated. A. Gleason noted that since original construction of the trail, smaller bridges have been built, which he feels may be overlooked during the study. J. Bennett noted the inspector has a list of bridges, and in addition there is a trail inspector that is on-site often.
- Glenn Hilliard asked about the visual study and if there was consideration of impacts at the end of the next license term, and what would be the impacts if Duke Energy no longer maintained the license. Jeff Lineberger noted that the at the end of the next license term, there would be a similar relicensing process or if for some reason Duke Energy decided to no longer operate the Bad Creek Project, there is a decommission/surrender process that is very similar to relicensing. G. Hilliard noted that in the original license Duke Energy is allowed to close or re-route the trail and agreed to the corridor width. G. Hilliard agreed evaluating usage is important, but he

recommended Duke Energy evaluate/consider current usage vs. original usage, parking and appurtenant facilities, sanitation, and capacity. J. Bennett responded that the goal of the study is to document use of the trail and where and how often capacity is reached.

- A. Stuart noted that Duke Energy is evaluating recreation use today and projecting it out to account for population growth for Oconee County. K. Kirven confirmed that the escalation rate of population is applied to the data gathered through this study to account for population growth.
- In response to E. Miller asking about users traveling from other areas, K. Kirven noted that the survey requests information about where the individual lives (city, state, zip code) and population growth from other areas will be considered.
- A. Gleason noted that the recreation access points can be lake level dependent (specifically Toxaway River) and suggested flexibility in the field.
- G. Hillard proposed trail expansion up to Toxaway River access so one would have a way to get to the trail in low water and access and connect to other trails.
- **Action Items:** S. Salazar requested that the Wildlife Management Area near Musterground Road be identified on future maps. E. Miller noted that it would be helpful to also depict USFS lands in this figure as well.
- S. Salazar referred to the Task 2 Visual Study which she noted omits the existing Project transmission line corridor. Duke Energy confirmed that the existing transmission line would not be included in the analysis, however the proposed transmission line could be. A. Stuart confirmed that the future transmission line route has not been determined at this point. S. Kulpa clarified that if a new transmission corridor is determined, the study plans may be modified or supplemented to address the change. E. Miller asked about the timeline for the transmission routing study. A. Stuart said not until the end of 2023 at the earliest. S. Bowler confirmed Duke Energy would want to process and submit that information as soon as possible and that it is not uncommon for studies to drag into the post-application process when there is reason.
- S. Salazar noted that while the transmission line will be subject to S.C. Utility Commission environmental review, the lines are presently considered primary transmission lines and will have to be authorized by the FERC license and addressed in FERC's NEPA review. If the transmission line siting study timeframe extends through or past 2024, this may delay the new license issuance.
- S. Salazar requested that the Visual Resources Study occur during leaf-off conditions to capture visual effects. S. Kulpa asked the group if the primary concern from a visual resource perspective is the final proposed project or the construction impacts. **Action Item:** Duke Energy will add clarification in the study report that the field visit will occur during leaf-off conditions and discuss further with the resource committee.
- S. Salazar requested that GIS data and georeferenced photos from the field be included with the study report.
- S. Salazar stated FERC preference is that PM&E measures including but not limited to the Recreation Management Plan be presented in the Preliminary Licensing Proposal to allow for stakeholder feedback.
- S. Salazar asked for additional information about the spur trails. J. Bennett noted that the spur trails serve a variety of purposes. The term spur refers to a portion of trail that is not the mainstem of the Foothills Trail but connects to the mainstem of the Foothills

Trail. The spur trails identified in the PSP are maintained by Duke Energy. **Action Item:** Update Figure 3-3 in the Recreation Study to make sure it incorporates Project Boundary.

- S. Salazar requested a copy of relevant off-license memoranda of agreement between SCDNR and Duke Energy pertaining to management of recreation facilities or access areas. **Action Item:** Duke Energy and SCDNR to locate and review agreement(s) and determine if can be filed publicly with FERC and if so, append to the RSP or ISR.
- S. Salazar requested that additional details about the methods for the trail assessment be included in the RSP (**Action Item**). S. Salazar requested that the trail assessment also include existing or needed erosion and sediment controls. S. Salazar requested that additional information about vegetation maintenance and waste management (including who is responsible) at each site be captured in the Recreation Site Inventory forms (**Action Item**).
- A. Gleason noted that the only allowed use on the Foothills Trail is hiking. A. Stuart noted that documentation of “other” uses through the Recreation Use and Needs study task does not imply permission by Duke Energy for the use. J. Bennett noted the trail does run through other publicly managed lands where other uses are permitted off the trail.
- Dustin Wilson asked that a map showing what other uses are permitted at other sites in the vicinity of the Project be included in the RSP. D. Wilson asked if Duke Energy had considered adding the Lower Whitewater Falls Overlook to the survey sites. K. Kirven noted that the parking area for the overlook (located at the Bad Creek Hydro Access Area) would be evaluated with a traffic counter and in-person surveys and the trail to the overlook would be evaluated with a trail counter, capturing visitors to the overlook (unless visitors are through-hikers). K. Kirven suggested a QR code sign at the overlook may be appropriate to capture additional user surveys (**Action Item**).
- D. Wilson suggested Duke Energy include boater input (i.e., from Lake Jocassee) into the Visual Resources study. S. Bowler suggested using boaters to survey or create an event to take boaters out to survey them.
- D. Wilson asked the goal for number of surveys. K. Kirven noted that there are a lot of factors that influence the number surveys that will be completed, so it is common not to propose a set target for a study like this. Efforts will be made to collect as many surveys as possible.
- A. Gleason confirmed that the Foothills Trail Conservancy currently has survey QR codes available for to collect recreation data. E. Miller noted that the study’s QR codes (for the relicensing) should not be confused with Foothills Trail Conservancy QR codes. A. Gleason indicated that he could remove Foothills Trail Conservancy QR code signs prior to the start of the RUN study at any sites where Duke Energy QR code signs will be installed.
- In response to D. Wilde asking about the Foothills Trail inclusion as a Recreation facility in the new license, Duke Energy intends for the trail to be maintained through the new license term, but it may or may not be a requirement of the license (i.e., could instead be covered by an off-license agreement). S. Bowler noted that FERC will evaluate independently whether the facility is needed for the Project.

- C. Starker commented on the Recreation Survey, noting that it would be helpful to include a “no comment” response option. He noted that first-time visitors tend to provide favorable responses. K. Kirven responded that based on her experience, respondents do provide input, both positive and negative, in response to open-ended questions. Surveys are written and administered so as not to lead the respondent toward a specific answer.

Cultural Resources Proposed Study Plan Meeting Presentation

Christy Churchill provided an overview of the Cultural Resources Study Plan and relevant background and existing information. The study area is the Area of Potential Effect (APE), and this will be defined in consultation with State / Tribal Historic Preservation Officer (SHPO and THPO). C. Churchill reviewed the major tasks of and schedule for the proposed study plan.

Questions and Comments:

- D. Wilson asked whether Duke Energy will include additional surveying work if artifacts are found. C. Churchill confirmed additional surveys would be performed as required.
- D. Wilde asked if the Cultural Resources surveys are completed only above the water line. C. Churchill confirmed the proposed surveys are above the water line. Underwater areas for the upper reservoir and Lake Jocassee would have been surveyed in association with original project construction. If historic resources or artifacts are located underwater, they are generally accepted as preserved. The only time Duke Energy would survey underwater is during a large, extended reservoir drawdown that may impact sensitive areas.
- E. Miller asked about whether there are any sensitive sites near the spoil areas. A. Stuart noted there is one known site close to the proposed new tunnels, so that area will be surveyed. The other two are not in proximity sites and Duke Energy presently does not believe there would be any spoil impacts.
- C. Churchill noted that the findings of the surveys will be treated as non-public (Privileged) by FERC and only provided to the SHPO and Tribes and will not be publicly mapped. Authorized cultural resources professionals have access to location information through subscription to a database maintained by the SC Department of Archives and History.

Environmental Justice Proposed Study Planning Meeting Presentation

Alison Jakupca provided an overview of the Environmental Justice (EJ) study, noting that this is a relatively newer study requirement for FERC relicensings. A. Jakupca provided definitions for terms used in these analyses (e.g., environmental justice, fair treatment, disproportionate effects, and sensitive receptor locations). She also described how the PAD provided a preliminary assessment and identification of EJ communities. FERC’s study request encompassed a broader geographic range. A. Jakupca reviewed the study goals and objectives as well as the proposed study area. The study area includes a 1-mile buffer around the Project Boundary (effects of continued operation of Bad Creek Project) and a 5-mile buffer around the center of the proposed Bad Creek II Complex (analysis of effects on EJ communities from the proposed project expansion).

A. Jakupca described the reporting and map that would be developed from the data collected and analyzed during this study. If EJ communities are determined to be present, public outreach is a necessary task for study completion. Stakeholder outreach would inform the selection of PM&E measures for the Project if project expansion is proposed in the Final License Application.

EJ study updates will be provided to the Operations Resource Committee on a quarterly basis leading up the final study report, presently planned as part of the Initial Study Report.

Questions and Comments:

- S. Salazar asked about the EJ boundary and stated a 5-mile radius from the transmission line may be appropriate. **Action Item:** Duke Energy to review PSP and propose expanded buffer to encompass transmission line corridor in the RSP.
- E. Miller asked if there is a non-English option on the recreational use survey. **Action Item:** Duke Energy will consider non-English option.
- D. Wilson asked about public outreach methods other than public meetings. A. Jakupca noted that it depends on the communities present, and that Duke Energy will formulate an approach based on the best way to reach them. Operations Resource Committee will discuss proposed methods. Duke Energy is also internally creating an initiative to develop EJ principles to conducting outreach, which are coming out this year and will be applied to this relicensing.
- D. Wilson suggested evaluating the total minority population percentage, not just the individual race categories.
- Joshua Dub noted that during the initial construction of the existing weir there was some turbidity observed. If spoils are to be added to existing weir, this may impact water quality (downstream effects) regarding the geographic scope of impacts.
- Latest census data will be used and is presently from 2019.

Additional Questions:

- S. Salazar had questions about the Wildlife and Botanical Resource Committee. Duke Energy clarified that the resource committee will continue to meet and if there are any botanical/terrestrial issues or concerns, these will be documented in meeting summaries and incorporated into the appropriate study or section of the license application. S. Salazar confirmed she would appreciate seeing a copy of the Resource Committee meeting summaries and requested a consultation section to the initial study reports to capture this additional resource-related consultation.
- S. Salazar asked whether the U.S. Fish and Wildlife Service (USFWS) is interested in participating in the resource committees. A. Stuart confirmed Melanie Olds is involved in a few of the resource committees.
- C. Starker asked for clarification and how sensitive botanical and wildlife issues like the fern species and migratory birds would be included in the studies. S. Fletcher noted that Duke Energy has standard environmental procedures, and when there is impact to a specific resource, Duke Energy would carry out an assessment for that species and account for mitigation (relevant to migratory birds, breeding birds, and listed species). S.

Fletcher noted that a study of loons on Lake Jocassee was conducted for the KT relicensing, and this information may inform the Bad Creek license application. Reptiles/herpetofauna are also included in the standard Duke Energy protection measures. The Wildlife and Botanical Resource Committee can review through these procedures to make sure they appropriately identify and mitigate impacts.

- S. Bowler described the triggers and study criteria for determining if a resource study should be conducted to inform a licensing. He noted that FERC staff are available to answer procedural questions from all participants.



Attachment 1

Attachment 1 – Meeting
Presentation

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Bad Creek Pumped Storage Project No. 2740

Proposed Study Plan Meeting



BUILDING A SMARTER ENERGY FUTURE®

SEPTEMBER 7, 2022

Proposed Study Plan Meeting Agenda

- Welcome - Meeting Purpose & Expectations
- Safety Moment
- Introductions
- Bad Creek Project Site Orientation
- Proposed Study Plan Review Schedule and Overview
 - Water Resources
 - Aquatic Resources
 - Recreation & Visual Resources
 - Cultural Resources
 - Environmental Justice
- Meeting Wrap-Up and Questions
- Action Items
- Adjourn



Safety Moment

Basic Disaster Supply Kit

- Water – One gallon per person per day for several days (for drinking and sanitation)
- Food – At least a several-day supply of non-perishable food (and can opener)
- Battery-powered or hand crank radio for NOAA weather reports
- Flashlight(s) and batteries
- First aid kit/ medications
- Whistle (to signal for help)
- Dust mask (to help filter contaminated air)
- Plastic sheeting and duct tape (to shelter in place)
- Garbage bags, plastic ties, baby wipes
- Wrench/pliers (to turn off utilities)
- Local maps
- Cell phone, chargers, and back up battery



Resource Committees

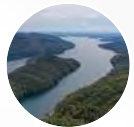
Lead Technical Manager

- John Crutchfield



Aquatic Resources

- Mike Abney
- Nick Wahl



Water Resources

- Maverick Raber



Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher

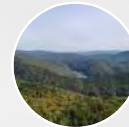
Project Manager

- Alan Stuart



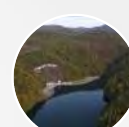
Cultural Resources

- Christy Churchill



Recreation & Aesthetics

- Jennifer Bennett



Operations

- Lynne Dunn
- Ed Bruce



Bad Creek Pumped Storage Project Location and FERC Project Boundary



Bad Creek II Project Overview

Existing Bad Creek Powerhouse

- Four units used for peak load generation
- **1,400 MW** capacity; 23 hours of storage
- Generates using water from Bad Creek Reservoir
- Pumps back water from Lake Jocassee using excess night/weekend energy

Proposed Bad Creek Powerhouse Addition

- Would essentially double existing Bad Creek capacity
- Utilize existing Bad Creek Reservoir
- Two new underground tunnels and powerhouse (4 Units)
- **Additional 1,400 MW** capacity; Total site ~3,360 MWs with 11 hours of storage



Privileged & Confidential/Attorney-Client Communication; Attorney Work Product

Study Plan Development

- **February 2022:** Five proposed studies were included in the Pre-Application Document (PAD) [Submitted to FERC February 23]
- **July 2022:** Six draft study plans were presented to Resource Committees during informal resource meetings (July 18-22)
- **August 2022:** Proposed Study Plan (PSP) was submitted to FERC August 5th, which also addressed stakeholder comments on PAD
- **Scoping & Study Requests**
 - Study requests – not PM&E measures
 - Existing data
 - FERC Study Criteria
 - FERC practice & precedence



FERC ILP Schedule

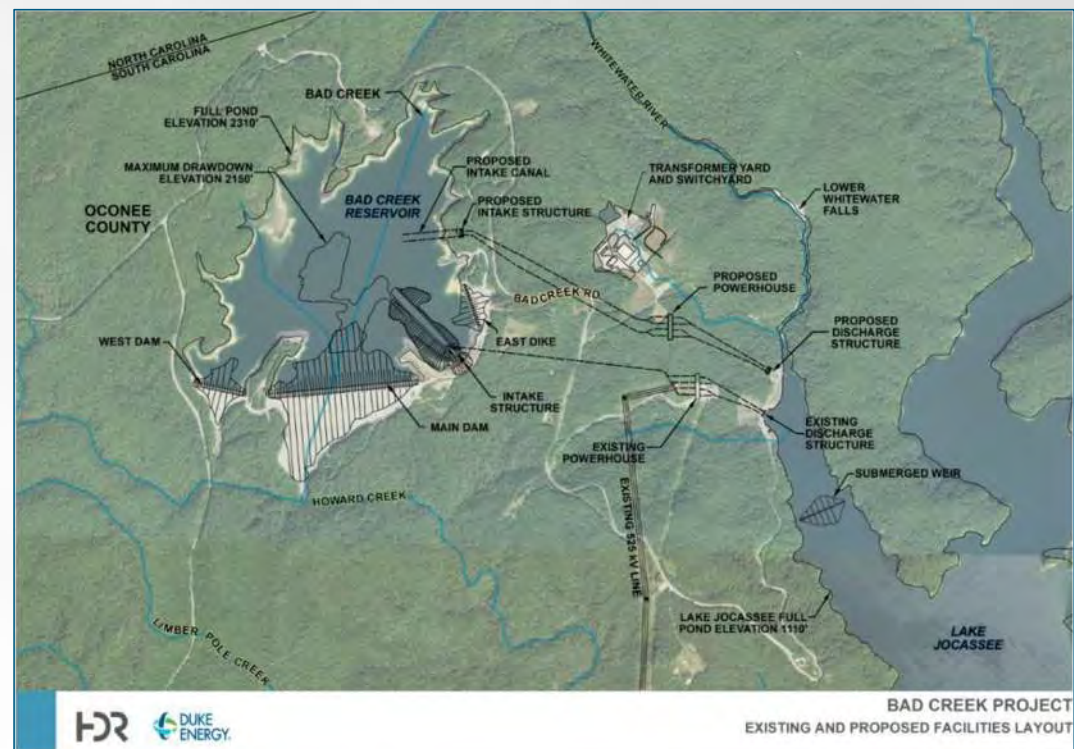
Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) (18 CFR §5.5(d))	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting (18 CFR §5.7)	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) (18 CFR §5.8(a))	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit (18 CFR §5.8(b)(viii))	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on PAD, SD1, and Study Requests (18 CFR §5.9(a))	Licensee Stakeholders	Within 60 days following Notice of NOI/PAD and SD1	June 23, 2022
Issue Scoping Document 2 (SD2) (18 CFR §5.10)	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) (18 CFR §5.11)	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting (18 CFR §5.11(e))	Licensee	Within 30 days following filing of PSP	Sept 7, 2022
Comments on PSP (18 CFR §5.12)	Stakeholders	Within 90 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) (18 CFR §5.13(a))	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP (18 CFR §5.13(b))	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination (18 CFR §5.13(c))	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Season of Studies (18 CFR §5.15)	Licensee	-	Spring-Fall 2023
File Study Progress Reports (18 CFR §5.15(b))	Licensee	Quarterly	Spring 2023 -Fall 2024
File Initial Study Report (ISR) (18 CFR §5.15(c))	Licensee	Pursuant to the Commission-approved study plan or no later than 1 year after Commission approval of the study plan, whichever comes first	Jan 4, 2024

Water Resources Study



Water Resources Proposed Study Plan (PSP)

- No formal study requests related to water resources were submitted during the scoping process
- Several comments from agencies and stakeholder groups were received and considered in the development of the PSP



Background and Existing Information

- Bad Creek Reservoir is used only for Project operations and is inaccessible to the public; it is not designated for any other uses and has no known state or federal water quality standards.
- Lake Jocassee and tributaries in the study area are subject to state and federal water quality standards.
- Monitoring data (e.g. hydrology, water quality) collected as early as 1973.
 - Impacts on Bad Creek I construction and operation.
 - Comparison to applicable water quality standards.
 - Pelagic trout habitat (Aquatic Resources).



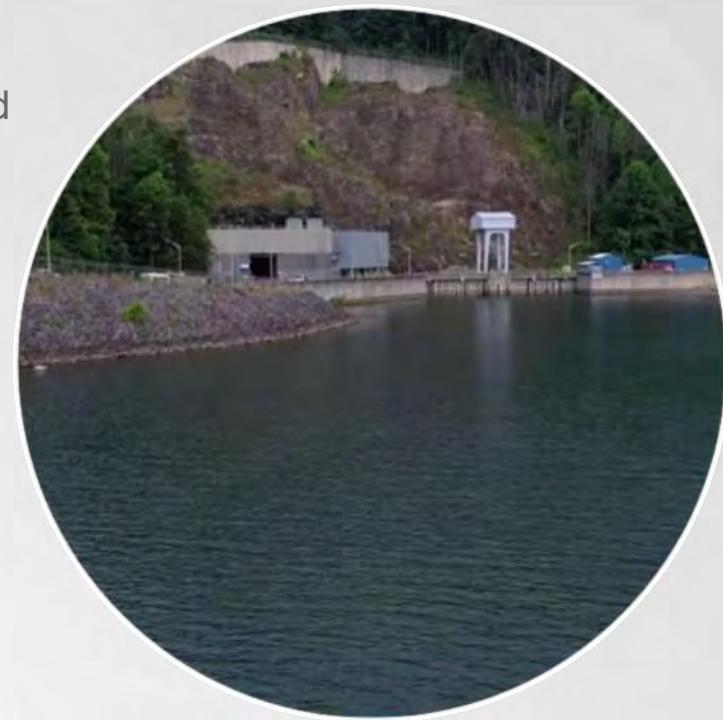
General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
 - Main/primary Project site
 - Proposed Bad Creek II Complex
 - Upper reservoir
 - Lower reservoir (specifically, Whitewater River Cove)
 - Transmission line corridor



Project Nexus

- No anticipated additional potential adverse effects to existing water resources from the continued operation of Bad Creek I.
- The construction and operations of Bad Creek II Complex has the potential to impact water resources in Lake Jocassee.
- The construction of Bad Creek II Complex and spoil disposal in upland areas could result in impacts to upland water resources (tributary streams).



Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 1: Evaluate the impact of current (baseline) operations of Bad Creek I

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

Objective 3: Address stakeholder concerns

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 1: Evaluate the impact of current (baseline) operations of Bad Creek I

Task 1: Summary of Existing Water Quality Data and Standards

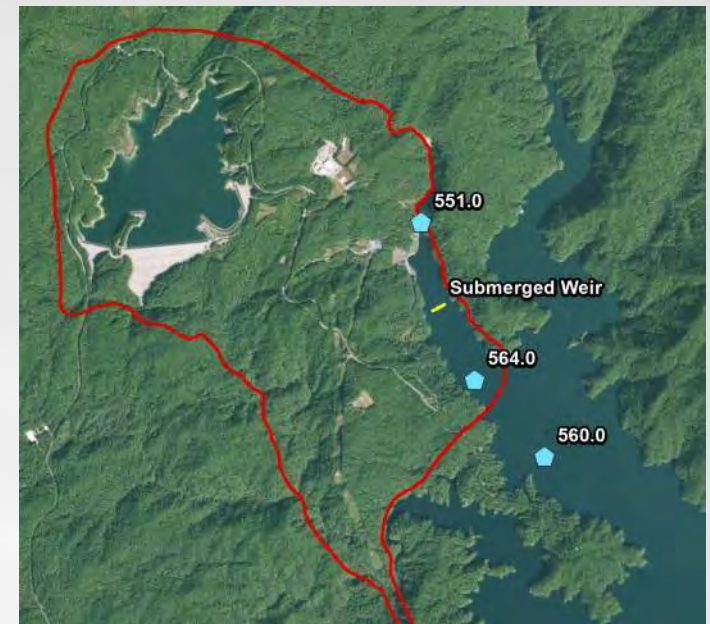
- Current and historical data
- Compare to applicable water quality standards
- Establish baseline conditions

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

- Task 2 – Water Quality Monitoring in the Whitewater River Arm
- Temperature and Dissolved Oxygen (DO) monitoring
 - June – September, 2023 and 2024
 - Continuous temperature and bi-weekly DO vertical profiles
- Task 3 – Velocity Effects and Vertical Mixing in Lake Jocassee
- Hydraulic modeling to determine Computational Flow Dynamics (CFD) model boundary
 - 3-D CFD modeling to determine flow patterns and velocities in Whitewater River arm associated with Bad Creek I and Bad Creek II operations under various Jocassee reservoir elevations and submerged weir configurations
 - Determine potential for shoreline erosion in Whitewater River arm
- Task 4 – Water Exchange Rates and Lake Jocassee Reservoir Levels
- Computer Hydro-Electric Operations and Planning Software (CHEOPS) Model – water exchange rates, magnitude, duration
 - Reservoir elevation effects



Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

Task 5 – Future Water Quality Monitoring Plan Development (WQMP) associated with the following Bad Creek II activities:

- Construction of inlet/outlet structure and submerged weir expansion
- Construction in upland areas
- Potential upland soil disposal

Key components:

- Consultation with Agencies on monitoring locations and parameters (in consideration of existing data and anticipated impacts)
- The WQMP will include pre-construction, construction, post-construction time periods
- Comparison of data to applicable water quality standards
- Water Resource Impacts in support of permitting activities including Clean Water Act 401/404



Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 3: Address stakeholder concerns

Next Step: Stakeholder comments on PSP (due first week of November)

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning and Existing Data Review	August – December 2022
Task 1 – Summary of Existing Water Quality Data and Standards	January 2023 – April 2023
Task 2 – Water Quality Monitoring in Whitewater River Arm	June 2023 – September 2023 June 2024 – September 2024
Task 3 – Velocity Effects and Vertical Mixing in lake Jocassee Due to a Second Powerhouse	April 2023 – October 2023
Task 4 – Water Exchange Rates and Lake Jocassee Reservoir Levels	April 2023 – October 2023
Task 5 – Future Water Quality Monitoring Plan Development	January 2024 – December 2024
Distribute Draft Study Report with the Initial Study Report	January 2024
Distribute Revised Study Report with the Updated Study Report	January 2025

Aquatic Resources Study



Aquatic Resources Study Plan

- No formal study requests related to aquatic resources were submitted during the scoping process
- Comments received from agencies and stakeholder groups considered in the development of the preliminary proposed study plan
- Responses to comments on the PAD were provided in Appendix A of the PSP filing



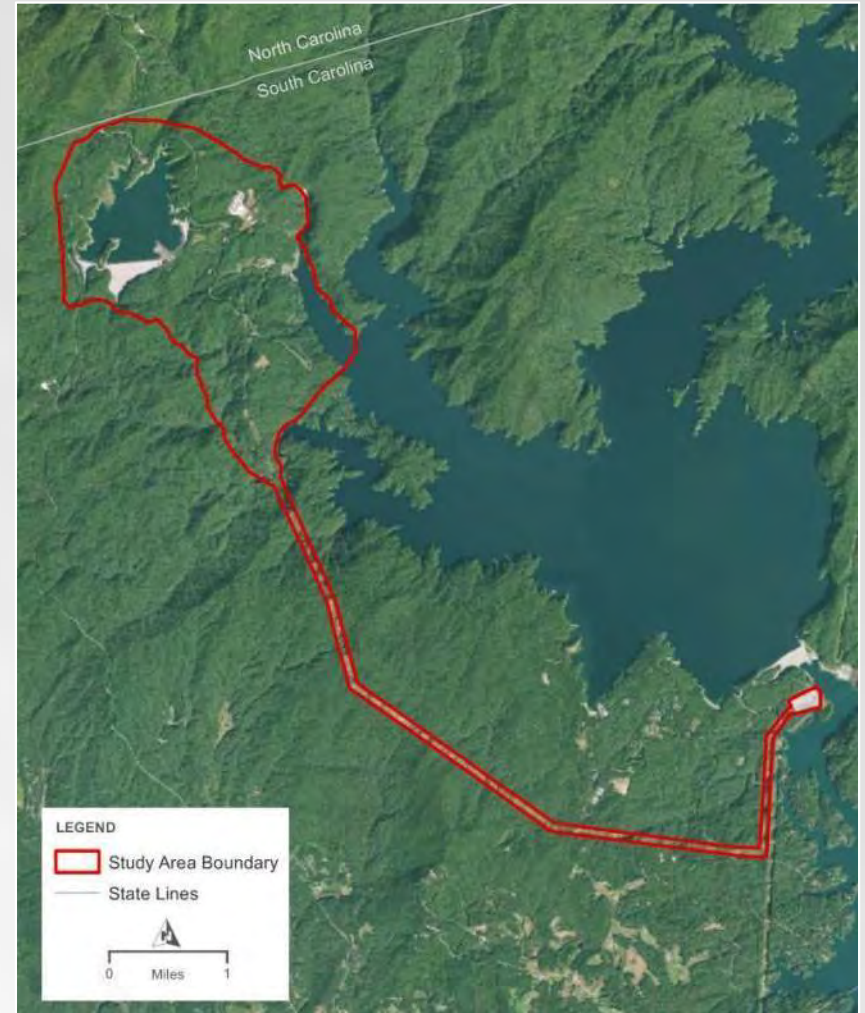
Background and Existing Information

- Bad Creek Reservoir is used only for Project operations; it is not designated for any other uses and therefore has no applicable state or federal water quality standards.
- In 1996, Duke Energy and SCDNR developed a Memorandum of Understanding to help maintain the high-quality fisheries of lakes Jocassee and Keowee. Implemented through 10-Year Work Plans (1996-2005, 2006-2016, 2017-2027).
 - Agreement on minimizing fish entrainment
 - Electrofishing of littoral fish populations
 - Hydroacoustic monitoring of pelagic forage fish populations
 - Cost sharing for trout stocking
 - Cost sharing for fisheries research and enhancements
 - Water quality monitoring for pelagic trout habitat (K-T license)



General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
 - Main/primary Project site
 - Upper reservoir
 - Lower reservoir (specifically, Whitewater River Cove)
 - Preliminary transmission line alignment



Project Nexus

- The construction and operations of Bad Creek II Complex has the potential to impact aquatic habitat and fish populations in Lake Jocassee.
- The construction of Bad Creek II Complex and expansion of the underwater weir may cause direct, permanent and temporary impacts to aquatic resources.



Goals and Objectives

The goal of the Aquatic Resources Study is to evaluate potential impacts to fish and aquatic life populations, communities, and habitats due to the construction and operation of the proposed Bad Creek II Complex.

Objective 1: Evaluate the potential for increased fish entrainment due to the addition of Bad Creek II Complex and consult with agencies and other Project stakeholders regarding results of the updated desktop Entrainment Study (Kleinschmidt 2021).

Objective 2: Assess changes to pelagic and littoral aquatic habitat in Lake Jocassee resulting from the additional discharge and expanded underwater weir using models developed for the Water Resources Study or related relicensings.

Objective 3: Evaluate potential direct impacts to aquatic habitats (including wetlands) related to Bad Creek II Complex construction activities by characterizing surface waters, including resource quality and presence of aquatic biota (e.g., mussels).

Methodology



Objective 1 – Consultation on Entrainment

- Meet with agencies and stakeholders to discuss the results of the updated Entrainment Study and minimization measures.



Objective 2 – Effects of Bad Creek II Complex and Expanded Weir on Aquatic Habitat

- Evaluation of potential effects to Lake Jocassee trout habitat
 - Expanded CFD model
- Evaluation of potential effects to littoral zone habitat
 - CHEOPS™ model



Objective 3 – Impacts to Surface Waters and Associated Aquatic Fauna

- Characterization of affected waters and estimation of potential impacts
 - All affected waters (upland spoil locations, construction of Bad Creek II Complex powerhouse, and expansion of underwater weir)
 - Quantitative estimate of impacts
 - Upland spoil locations
 - Stream habit quality surveys
 - Presence/absence mussel surveys

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Consultation on Entrainment	January – June 2023
Desktop Studies on Pelagic and Littoral Habitat Effects	Spring – Fall 2023
Mussel Surveys and Stream Habitat Quality Surveys	Summer 2023
Initial Study Report	January 2024

Recreation and Visual Resources Study



Visual Resources Study Plan

- The Commission's April 22, 2022, Scoping Document 1 identified the following as a potential visual resource issue:
 - Effects of project construction, operation (including the presence of project facilities), and maintenance activities on visual resources.
- In the PAD, Duke Energy proposed to conduct a Visual Resources Study in support of the proposed Bad Creek II Complex.
- No formal study requests or stakeholder comments related to aesthetic or visual resources were received; comments from the FERC in SD1 will be addressed in the Proposed Study Plan.



Background and Existing Information

- Upper reservoir Project structures as well as the inlet/outlet structure and powerhouse portal are visible from specific vantage points on Lake Jocassee and the surrounding area.
- During a 2013 RUN Study at the KT Project, one third of the people surveyed stated nothing detracts from the scenic quality of the Lake Jocassee.



General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
 - Main/primary Project site
 - Proposed Bad Creek II Complex
 - Upper reservoir
 - Lower reservoir (specifically, Whitewater River Cove)
 - Transmission line corridor



Project Nexus

- A new inlet/outlet structure for a second powerhouse would be viewable from the same viewshed as the existing structures.
- With the construction of the proposed Project expansion, the visual landscape will be altered both during and after construction.



Goals and Objectives

The objective of the Visual Resources Study is to establish the baseline condition of scenery and visual resources near the existing Project and to provide additional information (e.g., including simulations of the expanded Project) to evaluate expected impacts of construction and operation of the Bad Creek II Complex on these resources and any PM&E measures.

Focus on impacts of the construction and operation of the Bad Creek II Complex.

No adverse additional effects to scenery and visual resources are expected to result from the continued operation of the existing Project over the new license term.

No practical or necessary PM&E measures have been identified or proposed for the existing Project structures.

Methodology



Task 1 – Existing Landscape Description

- Review existing information to characterize the scenic quality of the existing landscape and proposed expanded Project area.



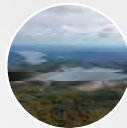
Task 2 – Seen Area Analysis

- Identify areas within the existing landscape from which any part of the proposed Bad Creek II facilities would potentially be visible.



Task 3 – Field Investigation

- Field investigation of "visible" areas identified through Task 2.
- Will include photography and documentation of existing site attributes, and viewing/landscape conditions at potential Key View locations.



Task 4 – Key Views Selection

- Selection of representative photo points investigated during Task 3 and in consultation with stakeholder to identify Key Views that adequately cover potential scenic and visual impacts for the Project

Methodology continued



Task 5 – Existing Visual Quality Assessment

- Assess existing scenic and visual quality at each Key View identified in Task 4.



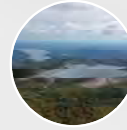
Task 6 – Visual Analysis

- Specific assessment and visual simulation of the expected visual impact at each Key View.



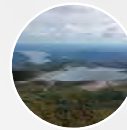
Task 7 – Visual Management Consistency Review

- Review consistency of the proposed Bad Creek II Complex with visual protection guidance established in applicable land use plans and regulations.



Task 8 – Mitigation Assessment

- Identify and assessment of mitigation measures that would address visual impacts of the proposed Bad Creek II Complex.



Task 9 – Conceptual Design of Bad Creek II Complex

- Assess aesthetic resource conditions relative to site layouts, conceptual designs, proposed construction processes, and lighting.
- Three-dimensional renderings will be produced.

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Tasks 1-2 (Existing Landscape Description and Seen Area Analysis)	January 2023 – March 2023
Tasks 3-7 (Field Investigation, Key Views Selection, Existing Visual Quality Assessment, Visual Analysis, Visual Consistency Review)	April 2023 – November 2023
Task 8 and 9 (Mitigation Assessment and Conceptual Design of Bad Creek II Complex)	Spring – Summer 2024
File Initial Study Report	January 2024
File Updated Study Report	January 2025

Recreation Study Plan

- The Commission's April 22, 2022, Scoping Document 1 identified the following as a potential resource issue:
 - Effects of proposed project construction, operation, and maintenance on recreational use in the project-affected area
- In the PAD, Duke Energy proposed to conduct a Recreation Resources Study in support of the proposed Bad Creek II Complex.
- Upstate Forever and the Foothills Trail Conservancy provided recreation related comments on the PAD.



Goals and Objectives

Four main study objectives of the Recreation Study Plan;

1.Foothills Trail Corridor RUN Study: assess current recreation use and identify future recreation needs, inform development of updated RMP.

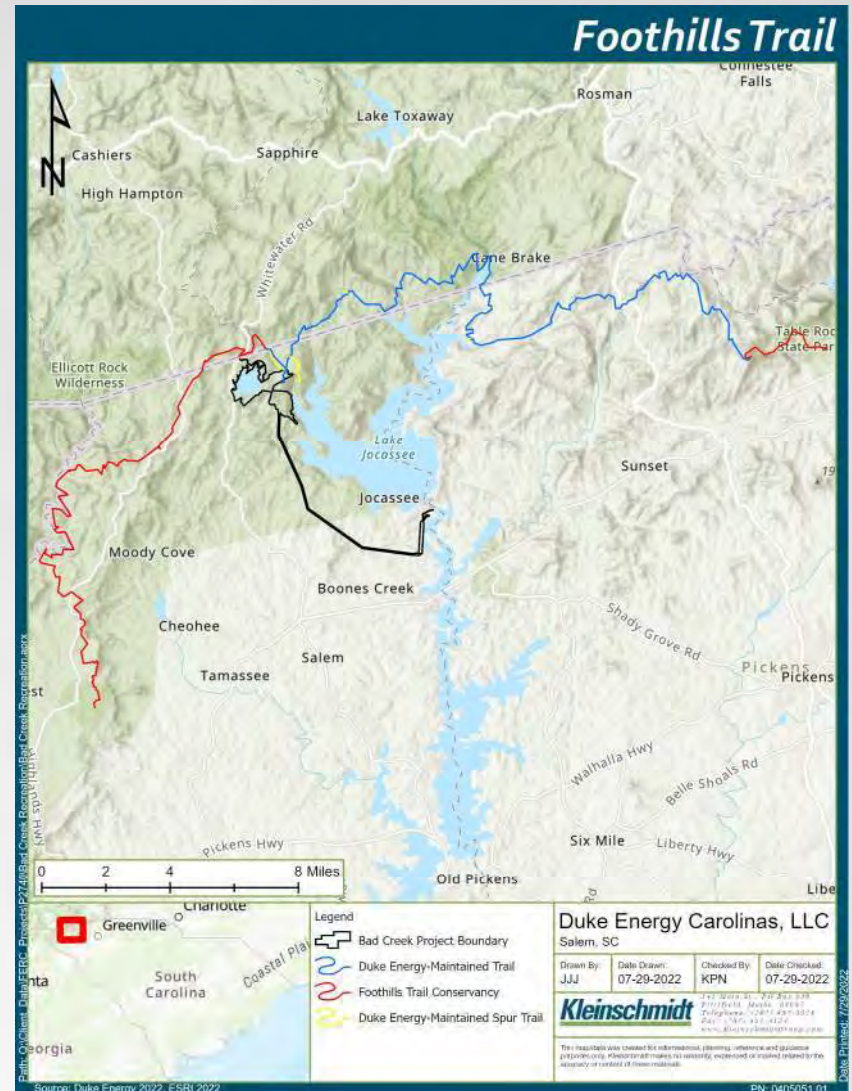
2.Foothills Trail Corridor Conditions Assessment: evaluate the current condition of the foothills trail corridor and identify areas of potential improvements.

3.Whitewater River Cove Existing Recreational Use Evaluation: assess boating use of the Whitewater River Cove and inform Duke Energy on level of use disruption that may occur with Bad Creek II Complex construction.

4.Whitewater River Cove Recreational Public Safety Evaluation: evaluate public safety risks, including those associated with recreation at or near Whitewater River Cove that may be created or exacerbated by Bad Creek II Complex construction.

Proposed Study Area Duke Energy Foothills Trail Corridor

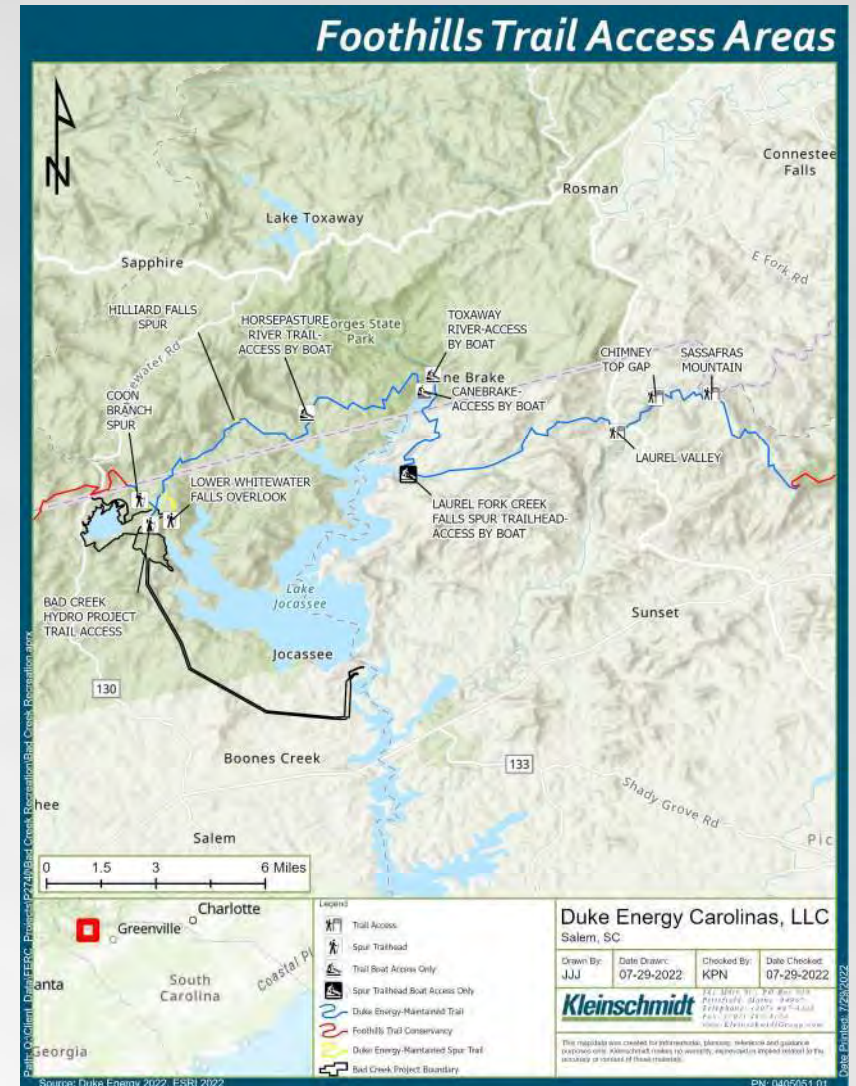
- Recreational Use
- Trail Condition



Proposed Study Area

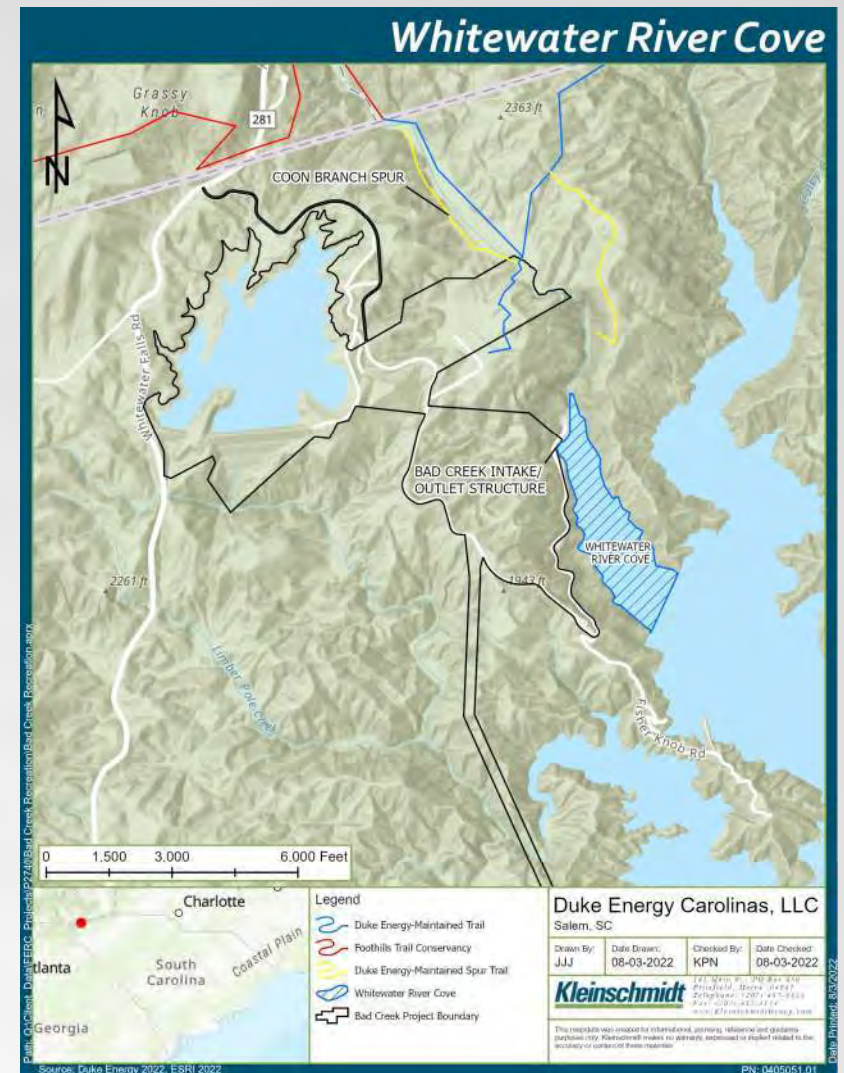
Foothills Trail Access Points

- Duke Energy maintained access points and points of interest.



Proposed Study Area Whitewater River Cove

- Recreational Use
- Public Safety associated with potential Bad Creek II Complex construction



Project Nexus

- Although it is non-Project, the 43-mile segment of the Foothills Trail and 10 access areas are associated with the Project and are maintained by Duke Energy.
- Duke Energy plans to continue to maintain these facilities as non-Project.



Methodology



Task 1 – Foothills Trail Corridor RUN Study

- Facility Inventory
- Traffic and Trail Counters
 - March-November 2023
- User Surveys
 - March-November 2023
 - Mix of weekdays, weekends, holidays
- Analysis:
 - Trail Use
 - Parking Demand
 - Future Recreation Use
 - Recreation Needs
- Data will also inform if needed safety measures related to the Foothills Trail and facilities (if Bad Creek II project proceeds).

Access Area	Data Collection Methods			
	Inventory	Traffic Counter	Trail Counter	Surveys
Table Rock State Park *			*	
Sassafras Mountain Trail Access	*	*	*	
Chimney Top Gap Trail Access	*		*	
Laurel Valley Trail Access	*	*	*	*
Laurel Fork Creek Falls Spur Trail Access	*		*	
Toxaway River Trail Access	*		*	*
Canebrake Trail Access	*		*	
Horsepasture River Trail Access	*		*	
Lower Whitewater Falls Overlook	*		*	
Bad Creek Hydro Project Trail Access	*	*		*
Coon Branch Spur Trail Access	*	*		
Musterground Road		*		

Methodology



Task 2 – Foothills Trail Conditions Assessment

- Professional trail builder will assess conditions of the 43 miles of Foothills Trail and spur trails managed by Duke Energy.

- Analysis:
 - Trail surface and feature assessment
 - Corridor condition
 - Identification and prioritization of major maintenance needs



Methodology



Task 3 – Whitewater River Cove Existing Recreational Use

- Drone flights of the Whitewater River Cove area
 - 10 days between Memorial Day-Labor Day 2023

- Analysis:
 - Level of boating use
 - Type of watercraft

- Data will inform of potential impact of closures of the Whitewater River Cove area during construction if Bad Creek II project proceeds.



Task 4 – Whitewater Cove River Recreational Public Safety Evaluation

- A three-dimensional CFD model will be created as part of the Water Resources Study to evaluate potential water velocities

- Analysis:
 - Impact of water velocity on recreational use of the Whitewater River Cove

Study Logistics

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Study Tasks	Winter 2022 – Winter 2023
Foothills Trail RUN Study Data Collection	September 2022 – January 2023, March – November 2023
Foothills Trail Conditions Assessment	November 2022 – November 2023
Whitewater River Cove Existing Recreational Use	May – September 2023
Whitewater River Cove Recreational Public Safety Evaluation	Spring 2023 – Fall 2023
File Initial Study Report	January 2024

Cultural Resources Study



Cultural Resources Study Plan

- No formal study requests were received during the scoping process; however, Duke Energy will continue consultation with the Indian Tribes and other stakeholders during the preparation of the final study plan.
- In Section 7.1.8.3 of the PAD, Duke Energy proposed to conduct a Cultural Resources Study in support of the Bad Creek Project, including an archaeological study and an architectural survey of structures more than 40 years old.



Background and Existing Information

- Portions of the existing Project that underwent extensive land modification or that are currently under Lake Jocassee, are unlikely to contain significant archaeological resources or historical architectural resources other than the elements of the Project greater than 50 years of age.
- Portions of the Project were subject to prior cultural resource surveys.
- As obtained from the SCDAH/SCIAA ArchSite database, there are 12 known archaeological sites that are within or immediately adjacent to the Project. Three sites are potentially eligible and require additional evaluation. Nine sites were determined to be not eligible.
- The Jocassee Hydrostation is eligible.



General Study Area

- The study area for the Cultural Resources Study is the Area of Potential Effects (APE). The APE will be defined in consultation with the SHPO and THPO's.
 - Main/primary Project site
 - All lands within the Project boundary
 - Lands outside the Project boundary where cultural resources may be affected by Project-related activities
 - Upper reservoir
 - Lower reservoir (specifically, Whitewater River Cove)
 - Transmission line corridor



Project Nexus

- Presently, there is no evidence that archaeological or historic resources are being affected by the Project's existing operations. The proposed Bad Creek II Complex has the potential to effect historic properties that may be eligible for inclusion on the NRHP.



Goals and Objectives

The goal of the Cultural Resources Study is to evaluate potential impacts to historic and archaeological resources, and traditional cultural properties, due to the construction, operation and maintenance of the proposed Bad Creek II Complex.

Objective 1: Consult with the State Historic Preservation Office, Indian Tribes, and other agencies regarding the potential issues to cultural resources located within the area of potential effects for the Bad Creek II Complex.

Objective 2: Complete an architectural survey and National Register evaluation for the existing Bad Creek facilities.

Methodology



Task 1 – APE Determination

- The Project APE has tentatively been proposed. Section 106 Consultation with SHPO and Indian Tribes will finalize and document the final APE.



Task 2 – Cultural Resources Study of the APE

- A cultural resources survey of portions of the APE that will be impacted by the Project is anticipated. Shovel testing of all non-steep landforms, a pedestrian survey and/or drone survey of steeply sloped and rocky areas to look for rock shelters and petroglyphs, as well as an architectural survey of any structures on or near the Project APE that are 40+ years of age.
- Traditional Cultural Properties will be identified in consultation with Indian Tribes.
- Desktop Geomorphological assessment indicates there are six areas within the APE that have potential to contain archaeological resources that may require additional survey and deep testing if impacted by the Project..

Study Schedule

Task	Proposed Timeframe for Completion
Consultation with SHPO and other stakeholders	July-November 2022
Fieldwork, Analysis, and Reporting	Spring – Fall 2023
Initial Study Report	January 2024

Environmental Justice Study



Environmental Justice Study

- FERC has identified that an Environmental Justice review is pertinent to its NEPA analysis for the relicensing and proposed Complex development.
- Comments filed by Upstate Forever in support of an Environmental Justice Study.

What is Environmental Justice?

Environmental Justice (EJ) - The fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies.

Environmental Justice Study

Additional Terms Included in the Analysis

Fair Treatment - The principle that **no group of people**, including a racial, ethnic or a socioeconomic group, **should bear a disproportionate share of the negative environmental consequences** from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies.

Disproportionate Effects - Term used in Executive Order 12898 to describe situations of concern **where there exists significantly higher and more adverse health and environmental effects on minority populations, low-income populations or indigenous peoples.**

Sensitive Receptor Locations - Sensitive receptors include, but are not limited to, **hospitals, schools, daycare facilities, elderly housing and convalescent facilities.** These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants.

PRE-APPLICATION DOCUMENT

Bad Creek Pumped Storage Project FERC Project No. 2740

Oconee County, South Carolina



Prepared by: HDR Engineering, Inc.

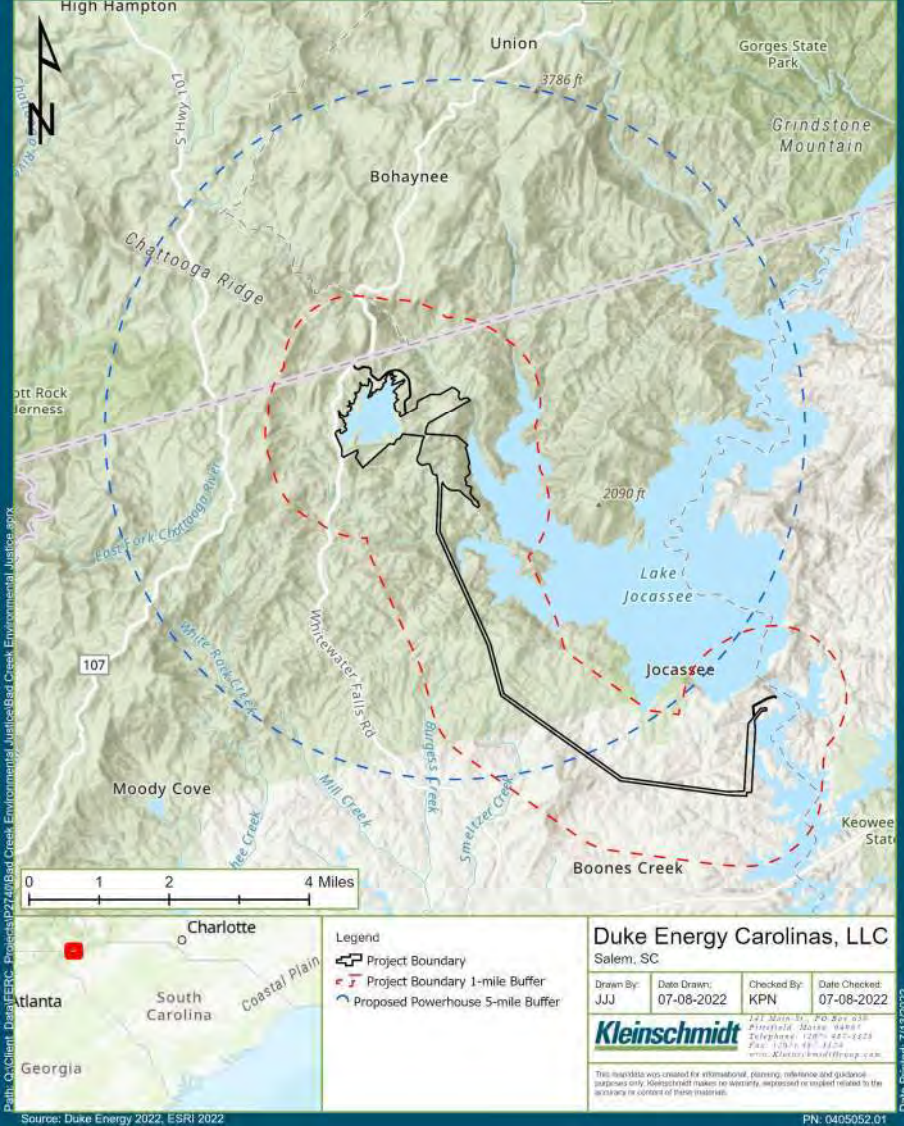


Background and Existing Information

Study Goals and Objectives

1. **Identify presence of environmental justice communities** that may be affected by the relicensing and proposed project expansion.
2. **Identify the presence of non-English speaking populations** that may be affected by the project.
3. **Identify the presence of sensitive receptor locations** in the geographic scope.
4. **Discuss the effects of the relicensing** on any identified environmental justice communities and any affects that are disproportionately high and adverse and potential effects on non-English speaking communities and sensitive receptor locations.
5. **Identify mitigation measures** to avoid or minimize project effects on environmental-justice communities, non-English speaking communities and sensitive receptor locations, if present within the geographic scope

Environmental Justice Geographic Scope



Proposed Study Area

Project Nexus

- Project construction, operation, and maintenance has the potential to affect human health or the environment in environmental justice communities.
- Examples of resource impacts may include, but are not necessarily limited to, project-related effects on:
 - subsistence fishing, hunting, or plant gathering;
 - access for recreation;
 - and construction-or operation-related air quality, noise, and traffic.

Methodology

Consistent with Environmental Protection Agency's *Promising Practices for EJ Methodologies in NEPA Reviews* (2016), the EJ Report will include the following:

Step 1: A table of racial, ethnic, and poverty statistics for each state, county, and census block group within the geographic scope of analysis. (Source: U.S. Census Bureau Data).

RACE AND ETHNICITY DATA

**LOW-
INCOME
DATA**

Geography	Total Population (count)	White Alone Not Hispanic (count)	African American (count)	Native American/ Alaska Native (count)	Asian (count)	Native Hawaiian & Other Pacific Islander (count)	Some Other Race (count)	Two or More Races (count)	Hispanic or Latino (count)	Total Minority (%)	Below Poverty Level (%)
State											
County or Parish											
Census Tract X, Block Group X											

Methodology (cont.)

Step 2: Utilizing data within Step 1 to identify environmental justice populations by block group by applying the following methods to minority populations:

- 50% Analysis Method
- Meaningfully Greater Analysis Method

Step 3: Utilizing data within Step 1 to use the “low-income threshold criteria” method to identify environmental justice communities based on the presence of low-income populations.

- the percent of the population below the poverty level in the identified block group must be equal to or greater than that of the reference population (county)

Methodology (cont.)



Step 4: Identify non-English speaking groups within the geographic scope of analysis **that would be affected by the project.**



Describe planned outreach efforts if these groups exist within the geographic scope.

Reporting: Map Development

Map Components

- FERC Project Boundary
- Project construction areas
- Identify block groups of EJ communities based on the presence of minority population, low-income population, or both
- Sensitive receptor locations (e.g., schools, daycare centers, hospitals, etc.)

Reporting: Sensitive Receptor Locations

A table of distances of sensitive receptor locations from project facilities and proposed facilities.

Discussion of project-related effects on these locations.

Discussions of PM&E measures to avoid or minimize potential effects.

Reporting: Potential Project Effects Discussion

A discussion of potential project-related effects on any environmental justice communities, non-English speaking groups and sensitive receptor locations for all resources where there is a potential nexus between effects and communities/locations.

For any identified effects, describe whether or not any of the effects would be disproportionately high and adverse on environmental justice communities.

Public Outreach



Protection Mitigation and Enhancement Measures

To avoid and/or minimize
project effects on
identified communities:

- Environmental justice communities
- Non-English speaking groups
- Sensitive receptor locations

Schedule



Quarterly
Progress
Reports

On or around
July 2023
On or around
October 2023



Public Outreach Meetings
– October 2023



Final Environmental Justice
Report – January 4, 2024

Resource Committee Members

Type	First Name	Last Name	Company Name
Duke Technical Leader	John	Crutchfield	Duke Energy
Duke Resource Lead	Lynne	Dunn	Duke Energy
Duke Resource Lead	Ed	Bruce	Duke Energy
HDR Support	Sarah	Kulpa	HDR
Environmental Justice -Kleinschmidt Support	Alison	Jakupca	Kleinschmidt Associates
Committee Member	Sarah	Chabaane	South Carolina Department of Natural Resources
Committee Member	Pat	Cloninger	South Carolina Department of Natural Resources
Committee Member	Tom	Daniel	South Carolina Department of Natural Resources
Committee Member	Elizabeth	Miller	South Carolina Department of Natural Resources
Committee Member	Greg	Mixon	South Carolina Department of Natural Resources
Committee Member	Alex	Pellett	South Carolina Department of Natural Resources
Committee Member	Alix	Pedraza	South Carolina Department of Natural Resources
Committee Member	Dan	Rankin	South Carolina Department of Natural Resources
Committee Member	John	Haines	Friends of Lake Keowee Society
Committee Member	Terry	Keene	Advocates for Quality Development (AQD)
Committee Member	Rowdy	Harris	SC Department of Parks, Recreation & Tourism
Committee Member	Morgan	Amedee	SC Depart. Health and Environmental Control
Committee Member	Melanie	Olds	U.S. Fish and Wildlife Service

Questions



Action Items





South Carolina Department of Natural Resources

Robert H. Boyles, Jr.
Director

Lorianne Riggan, Director
Office of Environmental Programs

PO Box 12559
Charleston, SC 29422
843-953-3881 Office
millere@dnr.sc.gov

November 2, 2022

Electronic Transmission

Hon. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

REFERENCE: COMMENTS on the Proposed Study Plan, Bad Creek Pumped Storage Project (P-2740-053).

Dear Secretary Bose:

South Carolina Department of Natural Resources (SCDNR) staff have reviewed the Proposed Study Plan (PSP) prepared by Duke Energy Carolinas, LLC (Duke Energy) for the proposed relicensing of the Bad Creek Pumped Storage Project, FERC Project No. 2740 (hereafter referred to as "Bad Creek" or "Project") and offers the following comments for the Commission's consideration.

SCDNR staff have been actively involved in the stakeholder process for the relicensing of the Project since early 2022. Staff have also participated in all six Resource Teams that were formed by Duke Energy to aid in the development of the Project's PSP. Additionally, SCDNR staff attended the Bad Creek PSP meeting on September 7, 2022, conducted by Duke Energy, which included a presentation and discussion of the six study plans developed by Duke Energy. At the meeting SCDNR staff offered questions and comments that were captured in the PSP meeting summary that was distributed on to the stakeholder distribution list on October 19, 2022.

Aquatic Resources PSP

During the PSP meeting hosted by Duke Energy, the SCDNR raised concerns regarding the Desktop Entrainment Study included in the Bad Creek Pre-Application Document. The SCDNR's concerns were regarding the size and swim speeds of target species used to model the estimated entrainment at the Project. The desktop entrainment study was modeled with threadfin shad that ranged in size from 0.719 to 1.371 feet. According to the Bad Creek Entrainment Study (Barwick et al. 1994), the monthly mean length of threadfin shad captured at the Bad Creek

Live Life Outdoors

Pumped Storage Station from 1991-1993 ranged in size from 56-134 mm (0.18-0.44 feet). Further, the swim speeds associated with the blueback herring and threadfin shad appeared to be much higher than the capabilities of the fish. Table 2 of the report states that relevant source material was not found, therefore, the family Clupeidae swim speeds were used as surrogates for the swim speed analysis. However, the study did not include citations of where the burst swim speeds of Clupeids were sourced. With the incorporation of the high swim speeds as data elements in the desktop model, the results concluded that the species would likely not be entrained. The SCDNR disagrees that the model accurately depicts the average size range and swim speeds of target species in Lake Jocassee and requests the desktop model be rerun with data points more representative of the existing fish population. The SCDNR also requests that the source of the data incorporated into the model be provided in the report.

Recreational Resources PSP

The licensee is proposing to utilize aerial monitoring techniques (drone) to estimate the volume of recreational users in Whitewater Cove. The monitoring data will be collected for ten days from Memorial Day through Labor Day in 2023 and will include a mix of weekdays, weekends, and holidays. The SCDNR finds the currently proposed number of survey days to be insufficient in capturing the recreational use of Whitewater Cove and recommends increasing the number of survey days to twenty days. Surveying the cove for twenty days would capture approximately twenty percent of the recreational use throughout the designated time period and would be more representative of the recreational use that will be impacted by the construction of the Bad Creek II Complex.

Water Resources PSP

The SCDNR continues to have concerns regarding the impacts of spoil materials at the Project due to the proposed construction of the Bad Creek II site and looks forward to working with Duke Energy to minimize impacts to streams and wetlands. At this time, the SCDNR does not offer any additional comments on the Water Resources PSP.

The SCDNR appreciates the opportunity to provide these comments on the Bad Creek Pumped Storage Project's Proposed Study Plan. If you have any questions or need additional information, please do not hesitate to contact me by phone at 843-953-3881 or email at millere@dnr.sc.gov.

Sincerely,



Elizabeth C. Miller
FERC Coordinator, SCDNR

cc: Alan Stuart, Duke Energy
Melanie Olds, USFWS

Kimberly D. Bose, Secretary
COMMENTS on Proposed Study Plan, Bad Creek Pumped Storage Project (Project No. 2740-053)
November 2, 2022

Chuck Hightower, SCDHEC
Derrick Miller, USFS

Reference: Barwick, D.H., T.C. Folsom, L.E. Miller, and S.S. Howie. 1994. Assessment of Fish Entrainment at the Bad Creek Pumped Storage Station. Duke Power Company. Huntersville, NC.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
November 3, 2022

OFFICE OF ENERGY PROJECTS

Project No. 2740-053–South Carolina
Bad Creek Pumped Storage Project
Duke Energy Carolinas, LLC

Via FERC Service

Alan Stuart
Duke Energy Carolinas, LLC
Mail Code EC-12Q
526 S. Church Street
Charlotte, NC 28202

**Subject: Staff Comments on the Proposed Study Plan for the Bad Creek
Pumped Storage Project**

Dear Mr. Stuart:

We have reviewed Duke Energy Carolinas, LLC's (Duke Energy) proposed study plan for the Bad Creek Pumped Storage Project (Bad Creek Project) filed on August 5, 2022, and attended the study plan meetings in Greenville, South Carolina on September 7, 2022. Pursuant to 18 C.F.R. § 5.12 of the Commission's regulations, we provide staff's comments on the proposed study plan in the enclosed schedule A.

We appreciate the opportunity to comment on your proposed study plan for the Bad Creek Project. If you have any questions, please contact Navreet Deo at (202) 502-6304, or at navreet.deo@ferc.gov.

Sincerely,

Stephen Bowler, Chief
South Branch
Division of Hydropower Licensing

Enclosure: Schedule A

SCHEDULE A COMMENTS ON THE PROPOSED STUDY PLAN

General Comments

1. Section 1.1.2, *Bad Creek II Complex Description and Location*, of the Proposed Study Plan (PSP), states that Duke Energy is presently evaluating the potential to develop a 1,400-megawatt (MW) Bad Creek II Power Complex (Complex) as part of an alternative relicensing proposal. In order for Commission staff to analyze all potential operating scenarios under any new license for the Bad Creek Project, all studies conducted as part of the Integrated Licensing Process (ILP) pre-filing period should analyze the effects of both existing operations and the construction and operation of the proposed Complex on any resources that could be affected by the project.

2. Section 1.1.2, *Bad Creek II Complex Description and Location*, of the PSP also indicates that if additional land would be needed to construct the Complex, Duke Energy would conduct a transmission line siting study “under a separate schedule and process, to comply with requirements pursuant to The South Carolina Utility Facility Siting and Environmental Protection Act...” In other words, Duke Energy proposes to conduct at least a portion of its transmission line siting study, if needed, outside of the relicensing process. In the RSP, please include in the schedule the timing for conducting the portions of the transmission line siting study elements related to the relicensing proposal. In addition, Commission staff recommends that the results of all studies related to the relicensing proposal be filed at the earliest milestone of the ILP that they become available (*i.e.*, with the Initial Study Report (ISR), Updated Study Report (USR), the preliminary licensing proposal (PLP), or no later than the license application). Providing all study reports with the ISR and/or USR allows stakeholders adequate time to review the results, and for Duke Energy to consider and include any environmental protection, mitigation, and enhancement (PM&E) measures associated with the study results in the PLP and license application.

Responses to Commission Staff’s PAD Comments

3. Section 5, *FERC Additional Information Requests (AIRs)*, of the PSP, provides responses to Commission staff’s AIR letter, issued July 12, 2022, regarding the Pre-application Document (PAD) for the Bad Creek Project. These comments and responses pertain to the information gathering needs for the Bad Creek relicensing process. Based on Duke Energy’s responses to AIR items #5, #9, #10, #11, and #13b, staff provide the following supplemental comments and AIRs:

Response #5

Duke Energy states that the potential operation of the Complex will not result in any change to the operating band of the upper reservoir ‘from existing conditions.’ The current license order authorizes Duke Energy to operate the upper reservoir between 2,150 feet mean sea level (msl) and 2,310 feet msl (a 160-foot fluctuation band). However, the PAD states that under normal project operation, the upper reservoir is maintained between 2,250 feet msl and 2,310 feet msl (a 60-foot fluctuation band). Please clarify whether ‘existing conditions’ refer to the 160-foot band or the 60-foot band in the Revised Study Plan (RSP).

Response #9

In order to provide stakeholders a complete and accurate understanding of the existing and proposed project features, and vegetation management strategies, in the RSP, please include a map displaying, and a table listing, all primary transmission line right-of-way (ROW) corridors, in the current and proposed project, including, as appropriate, the corridors identified in the PSP by Duke Energy’s names: Jocassee NW 1 (1J2672 BP-#7, 1J2672#13-EP, & 5J2817 BP-EP) and Oconee NW 1 (1J2672 #7-13). On the map, please show all primary transmission ROW corridors as being within the proposed project boundary and label each transmission line corridor with Duke Energy’s names. In the table, please include Duke Energy’s names for each transmission line corridor, as well as the transmission ROW characteristics such as width and length, and line characteristics such as voltage.

Further, in the RSP, please explain which native grasses, wildflowers and herbaceous plants are the “desirable allelopathic” plants that became established in the Jocassee NW 1 Corridor after the 2018 aerial treatment. Also, please note that although *Lespedeza bicolor* was described as a native species in the PSP, it is a non-native invasive species. Please refer to the USDA’s Plants Database (<https://plants.usda.gov/home>) and/or other authoritative sources to confirm origins/nativity of plants for accurate descriptions.

Lastly, the PSP states that Duke Energy uses a “bare ground mix” of herbicides to treat brush and grasses on dam faces to keep them vegetation-free, and that this same mix is used by Duke Energy’s transmission department. However, based on the description of herbicide treatments in the PSP, Duke Energy doesn’t appear to be targeting a “bare ground” result in the project transmission line ROW corridors. In the RSP, please clarify Duke Energy’s target, resulting vegetation types for each treatment area and where

Duke Energy's "bare ground mix" of herbicides is used within the project boundary.

Response #10

Duke Energy states that "future enhancement of Monarch and pollinator habitat, within the project area, will be evaluated by the Wildlife & Botanical R[esource] C[ommittee] (RC) upon better understanding of the transmission project. These areas could then be enrolled into the CCAA [Monarch Candidate Conservation Agreement with Assurances program] acreage of protection." In the RSP please clarify what Duke Energy is referring to by "better understanding of the transmission project." If Duke Energy is referring to answering the question of whether or not Duke Energy would build a new transmission line/corridor as part of the Complex, please make that explicit. In addition, in the RSP please clarify how the existing and potential transmission line corridors would be evaluated by the Wildlife & Botanical RC for the monarch program and when the results of the evaluation would be provided to stakeholders. Please file this evaluation with the study results when available (*e.g.*, ISR, USR), PLP, or no later than the license application. Please state the reasons for including, or excluding, the existing and any proposed transmission line ROW corridor(s) for enrollment in the program.

Response #11

Duke Energy states that there were no known adverse avian interactions at the project transmission lines or switchyard during the past 3 years, and the existing transmission lines are consistent with the Avian Power Line Interaction Committee's (APLIC) and U.S. Fish and Wildlife's (FWS's) guidelines for avian protection (including conductor separation). Other than conductor separation, please clarify in the RSP whether there are avian protection measures installed on the existing transmission lines or at the switchyard (*e.g.*, marker balls, animal guards, *etc.*). In addition, please note that it is staff's understanding that APLIC is in the process of updating its 2006 and 2012 guidance documents on avian electrocution and collision. If the updated APLIC guidance documents become available during the pre-filing portion of the relicensing process, please review them, and provide an updated assessment of the existing, and any proposed, project transmission facilities in the ISR, USR, PLP, or license application (*i.e.*, as soon as feasible).

Further, Duke Energy proposes to evaluate avian protection measures to incorporate in the new transmission line design once the transmission line route is determined, and will discuss the proposed transmission line design standards with the

Wildlife & Botanical RC. In the RSP please clarify whether FWS staff will be included in the Wildlife & Botanical RC.¹

Response #13b

In the RSP, please describe the data types included in “Duke’s Natural Resources GIS Viewer”, the source(s) of those data, and how frequently the data are updated. Also, please clarify whether Duke Energy’s practice of conducting “a known or potential bat roosting habitat review” prior to tree cutting activities includes field surveys using the FWS’s survey protocols.

Commission staff notes that Duke Energy’s existing best management practices (BMPs) to avoid removal of potential roost trees greater than [or equal to] 5 inches in diameter at breast height (dbh) is the correct guidance for Indiana bats, but would not be as protective of northern long-eared bats (NLEBs)² or tricolored bats, which FWS recently proposed for listing as endangered under the Endangered Species Act.³ Current BMPs for areas inhabited by NLEBs include avoiding cutting, trimming, or removing trees that are greater than or equal to 3 inches dbh during the pup season (May through July in South Carolina) or the active season (most protective). BMPs for tricolored bats will likely be developed as part of FWS’s proposed listing process for the tricolored bat. Please ensure that the PLP and license application include information about the proposed tricolored bat in addition to the federally listed species listed in scoping document 2.

Duke Energy states that potential roost trees would be marked with blue paint, a 15-foot buffer would be set with blue flagging, and any hazard/danger tree within the buffer would also be marked with blue paint. In the RSP, please clarify how tree crews would distinguish between potential roost trees and hazard/danger trees if they are both marked with blue paint.

¹ Slide 31 from the May 2022 stakeholder meeting states that these committees were formed on June 23, 2022, but the PSP does not include a list of committee members.

² Please note that FWS also issued a proposed rule to reclassify the NLEB from threatened to endangered. *See* 87 Fed. Reg. 16,442-16,452 (March 23, 2022).

³ 87 Fed. Reg. 56,381- 56,393 (September 14, 2022).

Finally, in the RSP, please elaborate on the methods used for conducting “aerial saw operations” to cut/trim trees (*e.g.*, equipment used, time of year, and frequency of this type of treatment).

Visual Resources Study

4. Section 6.2, *Task 2 – Seen Area Analysis*, of the proposed Visual Resources Study Plan, states that “[t]he initial Seen Area analysis will address the [p]roject reservoirs and directly associated facilities; [and] a subsequent viewshed analysis covering the new transmission corridor may be conducted if a new corridor is defined for the Bad Creek II Complex.” However, the goals of the study include addressing “the effects of continued project operations under the [e]xisting [l]icense as well as potential construction and operation of a second powerhouse during the [n]ew [l]icense term...”. Please provide information about the existing project operations and maintenance activities that affect visual characteristics, such as existing vegetation management treatments, as well as the potential changes to visual resources if the Complex is pursued. Further, the PAD indicates that Duke Energy currently envisions that the new transmission line for the Complex would be constructed parallel to the existing transmission lines within the existing transmission line ROW corridors. Therefore, we recommend that the initial viewshed (Seen Area) analysis include the existing project transmission line corridors.

5. During the PSP meeting on September 7, 2022, Duke Energy explained that the majority of the spoils from the Complex would be bare/solid rocks, with a smaller volume of fine sediment (soil, sand, clay, small stones). Duke Energy also stated that it would develop an erosion and sediment control plan with provisions for revegetation of the spoil areas. Commission staff noted that because bare rock spoils would remain in a primary to early ecological succession state⁴ for longer than the spoils made up of fine sediment, and because the project area is forested with many areas dominated by deciduous trees, the viewsheds could vary seasonally during the short term (*i.e.*, during and immediately after construction) and long term (years after construction). Staff requested clarification on whether tasks 3 and 4 of the proposed Visual Resources Study Plan, which include field investigations and a desktop assessment, would include evaluations both during the spring/summer when the leaves are on the deciduous trees, and during the fall/winter when the deciduous trees have lost their leaves, to assess the potential seasonal differences in the viewsheds. Therefore, staff recommends that Duke Energy clarify the timeframes for field investigations in the RSP.

⁴ Primary ecological succession is a process whereby newly formed land or bare rock (*i.e.*, an area lacking soil) is exposed during a disturbance and is then gradually colonized and inhabited by groups/communities of species. Over time, soil forms and the area is colonized by grasses and other herbaceous species, vines, and shrubs in early successional habitats.

Recreational Resources

6. Section 5.18(b)(5)(ii)(C) of the Commission’s regulations requires that all proposed environmental measures must be provided in the final license application (FLA).⁵ Section 2, *Goals and Objectives*, of the proposed Recreational Resources Study Plan (recreation study plan) states that Duke Energy would update the Recreation Management Plan (RMP) and file it with the license application, or shortly thereafter. Please provide, at a minimum, an outline of the major recreation measures of the plan with the preliminary licensing proposal (PLP) and the FLA for stakeholder and Commission staff’s review.

7. In section 3, *Study Area*, of the recreation study plan, multiple trails are discussed that connect to Duke Energy’s section of the Foothills Trail. In order for staff to understand the location of these trails, please file a map with the FLA that includes the parking areas, trailheads, and access trails to the Foothills Trail and Coon Branch Spur Trail in relation to the project boundary.

8. Section 6.2, *Task 2 – Foothills Trail Corridor Conditions Assessment*, of the recreation study plan, states that a professional trail builder will conduct an assessment from October 22 to October 23, 2022, of the “...trail head, shoulder, backslope, constructed structures (not including engineered bridges) and corridor condition.” Attachment 1 to the recreation study plan includes an assessment form for recreation sites along the trail, but does not include a form specific to assessing the condition of the trail itself. In addition, no further detail on the methods of assessing the trail are provided in the study plan. Please provide: (1) additional details on how the condition of the trail will be assessed, including any template(s) of assessment form(s) that the trail builder would use; (2) any condition or maintenance issues that would be identified and tracked geospatially; and (3) the specific data, and level of detail (i.e., soil erosion, soil compaction, soil porosity, etc.), that is proposed for the final report on the Foothills Trail Corridor Conditions Assessment. Given stakeholders’ comments to date, staff recommends that the assessment also include documentation of any drainage and erosion issues, as well as the locations of any littering or vandalism. If erosion is identified, it would be helpful to have notes on the possible cause(s) at each location.

9. On page 1 of the Recreation Site Inventory Form, it is unclear how the shoreline access condition will be evaluated. Please elaborate on the criteria that will be used to rank the relative shoreline access condition scores, and clarify whether the conditions of

⁵ See Guidance on Environmental Measures in License Application; available at <https://www.ferc.gov/sites/default/files/2020-04/GuidanceonEnvironmentalMeasuresinLicenseApplications.pdf>.

the recreation sites in Table 6-1 will be similarly evaluated. If so, please provide criteria for the assessment(s).

Cultural Resources Study

10. Section 2, *Goals and Objectives*, of the Cultural Resources Study Plan (cultural resources study), defines the area of potential effect (APE) as all lands within the FERC-approved project boundary and lands outside of this boundary where cultural resources may be affected by project-related activities. Section 2 also states that Duke Energy intends to further define the APE in consultation with the South Carolina State Historic Preservation Officer (South Carolina SHPO) and tribes as part of the cultural resources study. As a reminder, Duke Energy must document the concurrence of the South Carolina SHPO and relevant Tribal Historic Preservation Officers (THPOs) (where tribal lands are involved) on the APE. Please document concurrence in the revised cultural resources study plan, including describing the criteria for modifying the APE based on the results of any studies.

11. Table 4-1, *Previously recorded cultural resources within and adjacent to the project*, of the cultural resources study lists 15 sites, of which 3 sites are potentially reported as eligible for inclusion in the National Register of Historic Places (National Register) and require additional evaluation. Additionally, the Lake Keowee (SHPO Site No. 0155) and Lake Jocassee (SHPO Site No. 0156) sites have not been evaluated for National Register eligibility. While the cultural resources study proposed for the Bad Creek relicensing implies that these two sites will be evaluated as part of the study, please confirm this component of the study in the RSP.

12. To the extent possible, we recommend that Duke Energy conduct National Register evaluations and assessments of project effects during the pre-application study period. National Register evaluations and assessments of effect aid Commission staff in evaluating the environmental impacts of the project on historic properties, as required under the National Environmental Policy Act. They are also important in resolving potential adverse effects to historic properties as required under section 106 of the National Historic Preservation Act. National Register eligibility and assessment of effect must be determined in consultation with the South Carolina SHPO and tribal THPOs (where resources occur on tribal lands).⁶ Please include adequate time in the proposed schedule for such consultation.

13. Section 6.2, *Task 2 – Cultural Resources Survey of the APE*, of the cultural resources study plan states that Traditional Cultural Properties (TCPs) will be identified in consultation with the Tribes. Because of the potential for overlap between TCPs and

⁶ 54 U.S.C. §§ 302104 and 302702

archeological sites, staff recommends that the RSP include identification of any colocation between potential TCPs and documented archaeological sites. While an archaeological site may not be eligible for listing on the National Register under the National Register criteria, it may be eligible for listing if it is associated with an eligible TCP.

Foothills Trail Conservancy
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November 3, 2022

Electronically Filed

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Subject: Foothills Trail Conservancy's Comments on Duke Energy's Bad Creek Pumped Storage Project (P-2740-053) Proposed Study Plan (PSP) Submittals

The Honorable Ms. Bose:

Since 1974, the Foothills Trail Conservancy (FTC) nonprofit organization has been at the forefront of collaborative efforts to create, maintain, protect, and expand the Foothills Trail – a preeminent 77-mile hiking and backpacking trail extending along the Blue Ridge Escarpment in the Carolinas. The existence of the Foothills Trail (FHT or the “Trail”) is an amazing accomplishment that for 40 years has provided an epic outdoor, wilderness experience unique in the Southeast.

The FHT corridor runs through significant segments of the irreplaceable Blue Ridge Escarpment known as the Blue Wall by the Cherokee Nation. This area is filled with wildlife, expansive tree canopies, pristine streams, waterfalls, rare flora and fauna, native fish, unique birds including Bald Eagles and Loons and spectacular gorges and geology.

FTC's comments regarding Duke Energy's PSP are designed and written to achieve two goals. The first is to seek improvements and appropriate expansion in the Duke Energy PSP Recreation Study Plan. We believe such a study will clearly demonstrate to FERC and Duke Energy the need and prior commitments to upgrade, improve and expand the study of the FHT usage, corridor, infrastructure, route, parking and maintenance needs. The second goal is to seek to eliminate the provision which Duke drafted into the original Recreation Study which reserved to Duke a unilateral right to re-route or close the FHT at any time. We believe that this right to “close the trail” should be replaced with a public right and a Duke Energy obligation to transfer the Trail corridor into a public and permanently protected linear park which connects the states of NC and SC and the core of the Duke Energy customer base.

In addition to one-day adventures, the FHT offers an unusual opportunity for immersive, multi-day wilderness trips. For some people it's a training hike before going on to something bigger, like the Appalachian Trail; for others, hiking the entire FHT is a lifetime achievement. Collecting adequate data about current usage and future needs for a trail of this significance is quite different from studying a day-use or non-wilderness area.

The following description of the issues confronting a thru-hike experience is included in this document to help clarify the challenges and obstacles commonly encountered by multi-day wilderness hikers. The write-up therefore provides guidance for improvements to the proposed Recreation Study Plan which will then more accurately outline the needs for a very different

and more intensive Recreation Study than is currently proposed by Duke Energy. FTC strongly asserts that the Recreation Study should reflect fully the expanding use of the Trail and demands for wilderness experiences, including through hikes, section hikes, day hikes, and other outings and adventures. The Recreation Study should also take into account the enormous and unique value of the incredible Blue Ridge Escarpment in the Carolinas.

A Thru-Hike Experience

Those seeking to hike the entire Foothills Trail may hike it in one trip (a "thru hike"), commonly completed in five to seven days, or break it into multiple, shorter trips (a "section hike"). Either way, multi-day backpacking trips are quite different from one-day hikes – and require significantly more planning, preparation, support and infrastructure. For starters, there's the basics of transportation – FHT backpackers typically start and end at different and sometimes distant access points, so either a vehicle must be left at each end of the hike, or you must find someone to "shuttle" you. Since coordinating a start time is usually easier than knowing exactly when you'll finish, it's common to leave a vehicle at your end location and have someone drop you off at the starting location. Once dropped off, it is challenging to end your trip before you've hiked the full distance to your "finish" vehicle. (It is possible, of course, but since cell phone service and access points are limited throughout much of the Trail corridor it may involve hitchhiking with strangers and/or walking for miles along narrow, curvy roadways.)

Once on the Trail, each group is typically and completely self-supporting and unless you've coordinated a re-supply, everything you need for the trip must be carried with you. This includes everything you need to sleep, drink, eat, maintain hygiene, prevent or respond to injuries or illness, and to navigate along the Trail. With plentiful water sources along the Trail, food is often what adds the most weight to your backpack. Food selection is a balance between ensuring you'll have enough food to sustain the heavy physical exertion and avoiding taking too much, which means unnecessary effort to carry it. Many backpackers strive to pack just enough food to last them for the number of days they plan to be on the Trail. With no options for unplanned resupply along the Trail, an unexpected delay or detour during the trip could leave you hungry.

Many backpackers carefully plan anticipated camping locations to be sure they can complete the full trip in their allotted times and to maintain reasonable hiking distances each day which allows for arriving at the campsite before dark and, hopefully, before the site is full. Overnight, food and toiletries must be kept protected from black bears (and other wildlife), which are regularly active throughout the Trail region. This activity typically involves putting all "scented" supplies into either a bear-proof cannister (which can be heavy, uncomfortable to carry, and frustratingly difficult to open) or into a bag that can be hung above the reach of a curious bear – typically at least 15 feet above the ground and 10 feet away from any tree trunk. Accomplishing this task is often a challenging feat; not accomplishing it can result in loss of supplies that are critical for making it home safely. Campsites that provide a cable system for hanging food simplify this storage option and can improve safety. However, if several campers hang their supplies on the same cable, the combined weight may end up pulling all the bags much closer to the ground – and within reach of bears. Increasing the number of cable systems or adding bear-proof metal food lockers could significantly increase safety for people and wildlife.

Conditions on the Trail can change suddenly, and unexpected obstacles should be expected. Backpackers are typically prepared to navigate around a fallen tree that obscures the trail or to

locate a manageable river crossing if a bridge has been damaged by storms. However, making major changes to arrangements at the last minute due to unexpected detours or Trail closures can be complicated and may derail plans altogether. Altering plans may be especially problematic for people who have traveled significant distances and may be unable to reschedule flights, lodging, or vacation time to accommodate necessary schedule changes. All of these issues call for careful planning but also provide a unique and memorable Foothills Trail wilderness experience.

People from around the world are drawn to such natural areas and long-distance trails. For example, an estimated three million people hike a portion of the Appalachian Trail each year.¹ The FHT network today provides thousands of users an access to more than 100 miles of connected, hiking trails, provides critical wilderness retreats, “thru trail” experiences, day-hiking footpaths, helps preserve rare botanical and wildlife corridors, all of which knit together the incredible Blue Ridge Escarpment. The Blue Ridge Escarpment is widely recognized as one of the most ecologically diverse places in the world and includes numerous waterfalls, incredible vistas, many rare plants, abundant wildlife, native fisheries, and unique geology. The FHT itself is regularly recognized in national publications as the finest and most spectacular trail in South Carolina, and the related Jocassee Gorges Management Area has been included in National Geographic as one of the “Fifty of the Last Great Places—Destinations of a lifetime.” The Foothills Trail and Trail corridor is truly a National treasure which must be expanded and protected forever as a critical component of the Bad Creek Relicensing and Expansion Project.

The FHT offers an impressive and rare recreational opportunity. Yet, the Trail’s continued existence is fragile and rests with Duke Energy and FERC’s decision regarding the relicensing and expansion of the Bad Creek Pumped Storage Hydropower facility. This Duke Energy section of the FHT is the critical connecting core and corridor which knits together all these hiking trails and the irreplaceable Blue Ridge Escarpment. This Trail must be preserved, not simply for residents of the nearby towns and counties noted in the PSP, but for people throughout the region who desire a wilderness experience. The importance of preserving forever this Duke Energy section of Trail, known as the “crown jewel” section, cannot be overstated – and cannot be delayed. With great appreciation to Duke Energy for building and maintaining this Trail, now is the critical time for the Foothills Trail to be protected in perpetuity to ensure that future generations continue to have the opportunity to experience this amazingly special place and experience.

The FTC’s priority interests are rebuilding, repairing, enhancing, expanding, and permanently protecting Duke’s 43-mile section of the Trail – to ensure that the exceptional experience provided by the entire Foothills Trail system continues for current and future generations. In fact, in 2022 FTC volunteers have already devoted more than 3,200 hours of maintenance and infrastructure improvements to the trail system.

¹ Appalachian Trail Conservancy <https://appalachiantrail.org/explore/hike-the-a-t/thru-hiking/2000-milers/>

Foothills Trail Conservancy's Comments on Bad Creek Pumped Storage Project (P-2740)

We applaud Duke Energy's strong conservation ethic and their interest in continued support of the Trail, and we respectfully request inclusion of expanded studies, assessments and additional improvement measures as part of the Relicensing and Construction process for the expanding Bad Creek Complex. As drafted, the Proposed Recreation Study Plan is unlikely to capture accurate and appropriate recreation demands and will not adequately inform future recreation needs.

To assist in this process the Foothills Trail Conservancy is pleased to offer the following detailed comments and recommendations on Duke's Proposed Study Plan (PSP).

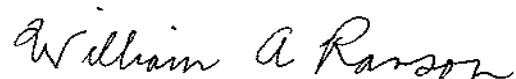
Sincerely,



Andrew Gleason
Foothills Trail Conservancy Board Chairman



Glenn Hilliard
Foothills Trail Conservancy Founder & Advisor



Dr. William A. Ranson
Foothills Trail Board Member

COMMENT 1: The proposed goals and objectives included in Section 2 are overly limited and should be expanded to ensure recreational needs are provided for throughout the entire next license period. FTC asserts the goals and objectives of the Recreational Study for Bad Creek should be comparable to those offered by Duke for the KT Relicensing Project (20110826 Duke PSP). Suggested goals include:

- Characterize current public recreation usage, activity, and satisfaction levels at the Project-related recreation;
- Estimate future demand for and identify needs for expanded or enhanced trails and appurtenances of the Project-related recreation throughout the entire new license period;
- Estimate current hiking and backpacking density and carrying capacity of the Project-related recreation that will provide high quality, wilderness-type experiences without causing ecological damage within these rare and sensitive habitats;
- Create a comprehensive inventory of Trail infrastructure including construction details (plans, as-builts, costs, special considerations, etc.), current condition, previous and anticipated maintenance schedules, and associated costs, for all Project-related recreation;
- Benchmark best practices for enhancing hiker and backpacker safety in the Project-related recreation;
- Characterize the economic value of recreation generated by the Project;
- Provide all data needed to inform revisions to the Recreation Management Plan (RMP).

COMMENT 2: The Duke Energy Proposed Study Plan Section 6.1.5 proposes a narrow and restricted analysis of population forecasts from very few – and only rural – counties. This is a much narrower evaluation than population discussed in the Original License Exhibit R, which notes that the “Project is located about midway between Atlanta, Georgia and Charlotte, North Carolina, with a 1970 population of about 3.5 million within a 100-mile radius.” The current discussion seems particularly limited when considering that projections are for the sprawling development from Atlanta, GA and Charlotte, NC will merge into a “mega-region” – Char-lanta, with Bad Creek near the epicenter, by 2060.²

This predicted explosion in the population will mean significantly higher recreational needs and cannot be ignored. The limited discussion also ignores the overflowing crowds who visit the Great Smoky Mountains National Park, the Blue Ridge Parkway, the nearby SC State Parks, and the negative impact of weekend parking restrictions already imposed at times upon hikers and those wishing to use the nearby state parks in both NC and SC. The Upstate region of South Carolina features the Jocassee Gorges, included in National Geographic magazine’s “50 of the Last Great Places – Destinations of a Lifetime” issue. In 2015, visitation has been continually increasing to State Parks throughout SC, with some of the highest increases in visits to parks

² Behold the sprawl of 2060, when Atlanta and Charlotte finally converge (<https://www.atlantamagazine.com/news-culture-articles/behold-the-sprawl-of-2060-when-atlanta-and-charlotte-finally-converge/>)

located in the Upstate region.³ Since their reopening after the start of the COVID-19 pandemic, visitor use has spiked and many state parks – especially in the mountains – have begun regularly reaching capacity, having to close their gates early and turn away intended park visitors.⁴ Clearly, the outdoor Recreational Use and Needs for this area of the Carolinas are enormous, outpacing current supply, and are continue to grow at an accelerated rate.

The outdoor recreation needs and demands of the surrounding Duke Energy customer base is enormous and growing rapidly. The measures of usage proposed by Duke Energy are woefully inadequate to account for the populations and population growth within this entire customer base area. At a minimum, the population area should match that which was considered in the Original License Exhibit R – from Atlanta, GA to Charlotte, NC. While the distance to these cities is slightly farther than previously indicated, closer to 130 miles vs 100 miles, travelling these distances is quite common and easily justifies their inclusion. The Foothills Trail has seen a huge leap in popularity nationally, and even globally, not just in the adjoining counties.

COMMENT 3: The general methods proposed in Section 6.1 are not appropriate for evaluating usage along a linear, long-distance hiking trail that is intended to provide a wilderness-type experience. The proposed methods present distinct challenges with capturing feedback from backpackers – the main intended use group - and will not provide adequate information to inform future needs. Additional, enhanced, and revised methodology should be provided to better capture the unique usage patterns and feedback along this unusual recreational feature.

As proposed, in-person User Surveys may not offer a suitable option for backpackers. If excited (or anxious) to get started, pushed for time to make camp, or tired after several days of hiking and camping, backpackers may be less able to allow time to thoughtfully respond to this type of in-person user survey. However, these individuals are also the best source of information regarding needs and conditions of the Trail and appurtenances. Providing forms for backpackers to self-complete at all campsites may increase responses from this critical target user group. [Pens/pencils and a box to leave completed forms should also be provided, to avoid asking backpackers to carry any extra weight while hiking.] Forms could also be made available to backpackers after completing a hike to fill out after returning home. Providing QR codes to access an online survey could be an option for day-use visitors at specific locations with a reasonable cell phone signal. However, offering QR codes along the Trail would likely result in few responses from backpackers, mainly due to lack of cell service along much of the Trail and limited willingness to utilize precious cell phone battery life for a non-essential, non-urgent task.

Adding trail registers to access locations and campsites could be a simple solution to improve the accuracy of Trail and campsite usage data. This feature could also improve safety, by creating a record of a hiking group's information and intended plans. This is common practice at

³ State parks see highest visitation in past decade

<https://www.greenvilleonline.com/story/news/environment/2015/02/01/south-carolina-state-parks-nature-table-rock-paris-mountain-visits/22693229/>

⁴ SC State Park visitation excels prepandemic levels as more people flock outdoors

<https://www.wltx.com/article/news/local/sc-park-visitation-up-as-more-people-head-outdoors/101-ff77371c-98fd-4610-8d5a-815e70dc2113>

other strenuous day-hiking trailheads and would be an inexpensive, efficient option to expand data collection.

Many people rely heavily on internet resources to help plan a long-distance hiking trip. A Google search for "Foothills Trail" returns seemingly endless resources - websites, interactive maps, YouTube videos, social media posts and groups, blog posts, subreddit threads, etc. Including information from these resources (number of visitors to a website, for example), could improve understanding of Trail usage and help capture non-local visitors to the Trail. Several options were utilized by Duke in the Keowee Toxaway Relicensing (20110826 Duke PSP), such as web-based and targeted electronic surveys, that would also be appropriate for the Bad Creek Project.

Additional information is likely also available from local organizations engaged in Trail operations. For example, over the past seven (7) months, the FTC has surveyed hikers from 17 states as well as from Europe. Some examples of more accurate ways to capture the usage would be to seek information from the FTC files and reports, boat and vehicle shuttle reports, and feedback from groups such as outdoor outfitter stores, shuttle drivers, and Jocassee tour operators.

A literature review should also be included that compares the Foothills Trail usage and appurtenances to other similar linear, long-distance trails providing a strenuous, wilderness-type experience. Paved trails, loop trails, or rail-trail conversions are unlikely to provide an appropriate comparison.

COMMENT 4: Proposed timeframes and locations for Trail and Traffic Counters will not provide sufficient data for future decisions. These times should be expanded and should target peak usage times to determine if recreational needs are currently being met and if usage is exceeding the carrying capacity of the Trail. Proposed Trail Counter locations will underreport user counts, including backpackers, and proposed Traffic Counter locations are overly limited. In fact, none of the proposed Trail Counter locations are on the actual mainstem of the Trail.

Although the Trail receives usage year-round, the proposal allows for less than a year of data collection. It also proposes to collect user surveys for only 360 total hours, or about 4.1% of the total 8,760 hours in a year. Additionally, the Study Plan schedule proposed in Section 7 is not consistent with the schedule outlined in Section 6.1.2 Traffic and Trail Counts, which indicates that this data collection work began September 15, 2022. If Section 6.1.2 is accurate, then the study plan work began before stakeholder comments were received or considered and before FERC approval was granted. Recreation plans typically focus on peak usage periods. At a minimum, the PSP should provide the rationale for the selected days/times and that they will capture peak usage. If the selected days/times do not capture peak usage, justification should be provided for their selection.

Trail Counters are currently proposed at eleven (11) total locations, including five (5) vehicle access locations, three (3) boat access locations, and three (3) spur trails. Depending on exact placement of the counter, it may only count individuals walking from a vehicle to the Trail, rather than those walking on the actual Trail. The proposed spur trails are more likely to capture information from day-hikers, rather than backpackers who may not have time or

energy to hike the extra miles offered by a spur trail. Additionally, the Coon Branch Spur Trail is not shown on the Official Map of the Foothills Trail, the Foothills Trail Guidebook, or the [Foothills Trail Interactive Map](#). The Upper Whitewater Falls Loop Trail would be a more appropriate location for this Trail Counter.

Based on personal observation, boat access to the Trail is less popular among backpackers, which may be due to additional expense, time, or complications of coordinating this mode of transportation – so information from the boat access locations is unlikely to include backpacker usage. Rather than locate “at” the boat access locations, Trail Counters could be placed on bridges near these access locations. These bridges offer much needed river crossings for hikers and backpackers and are a draw to most types of Trail users.

Additional traffic counters should be provided at the Upper Whitewater Falls Access and at the NC 281 gravel parking area to provide insight into how usage patterns may vary between these accesses and the Bad Creek Access and parking lot. This information is essential to evaluate available capacity at these lots to handle increased traffic that would directly result if the Bad Creek Access were temporarily closed due to construction of the proposed Complex II expansion. As the closest alternative for paved, off-road parking, the Upper Whitewater Falls Access would likely receive significant increases in vehicle and hiker counts. With the potential for this “temporary” closure to last five (5) years, this is a serious issue that should be closely evaluated. If Duke closes the Bad Creek access for any extended period of time then additional and comparable access locations must be installed to ensure there is no reduction in safe parking availability.

COMMENT 5: The Parking Demand Analysis, outlined in Appendix 7, Section 6.1.4, needs to consider the extra demand placed on the Laurel Fork access parking by ATV users on the Horsepasture Road during hunting season.

These ATV users will have a truck and trailer combination that takes up several parking spots, limiting the number of users able to park and utilize specific access location.

COMMENT 6: The proposed locations and limited times for the User Survey are unlikely to capture adequate usage data from backpackers – who are one of the main intended users of this linear, long-distance trail. Additionally, the sample User Survey form included in Appendix 7, Attachment 2 is not appropriate for and will not capture important usage information associated with a linear, long-distance hiking and backpacking trail, which is intended to provide a wilderness-type experience. Significant revisions to the user survey form and enhanced data collection methods are needed.

The plan proposes only three locations for User Survey collection, including two vehicle accesses and one boat access. The boat access location may present a unique challenge for communicating with users, depending on the specific location of the survey clerk. The shoreline near the lake access may present numerous opportunities for landing a boat; these may be easily migrated by water, but are likely much slower by land so it may be challenging for the surveyor to speak directly with individuals utilizing boat access. Collecting User Surveys from a broader range of locations would provide more complete information. FTC suggests adding User Survey locations at Sassafras Mountain Trail Access, the Upper Whitewater Falls Access,

the NC 281 (gravel) access, as well as at campgrounds and during alternate hours (see Comment 3 for additional details.)

The PSP proposes that User Surveys will be collected during a four-hour shift. However, a four-hour timeframe is far too narrow to capture full Trail usage. When beginning a hike, backpackers may arrive at the access location early to allow time to reach camp before the sunset. When ending a hike, backpackers may arrive at access locations later, after hiking a full day. And during a multi-day hiking trip, backpackers may pass through access areas at any time of day. Regardless of the timing of a four-hour shift, surveys are unlikely to capture many backpackers. However, these individuals are also the best source of information regarding needs and conditions of the Trail and appurtenances.

Comment 3 discusses details of alternative options for expanding backpacker responses by allowing them to self-report at campsites, allowing them to return the survey form after completing their trip, or adding trail registers at access locations, bridges, and/or campsites. These features could provide low-cost, efficient opportunities to expand data collection, while improving safety of all Trail users.

Suggestions revisions to the data collection form include, but are not limited to:

1. #1 Add space for country of residence as well as county and state
2. #2 Revise to "How many people are in your group today?" Backpackers may not access a vehicle for many days.
3. #7 Add "backpacking", "birding", and "wildflower viewing" as additional types of uses.
4. #8 Remove "today" as too limiting for multi-day backpacking use.
5. #9: Revise to expand beyond the "facilities at this access area" – much of the Trail infrastructure is not "at" the access area – for example, there are very few bridges or campsites adjoining access areas, so the question may limit information gleaned. Also, consider revising rankings to include Unavailable (e.g., the user may have wanted that amenity but it was not provided) and Not Applicable (e.g., the user was not interested in use of this amenity)
6. #10: Expand question by adding wording "List any specific improvements you would like to see for the Foothills Trail or parking access areas, and any other comments or suggestions."
7. While turnover rate is discussed, the survey lacks a question about length of stay. Add question regarding length of stay.
8. The survey does not include experiential questions that evaluate if the Trail provided the experience the user was seeking. For example, if a user is seeking solitude, how many people are acceptable to encounter and how many people did the user encounter. If the user is seeking a wilderness-type experience, how much noise or visible non-trail infrastructure (e.g., power lines, roads) is tolerable to still obtain that experience, and how much of that disturbance was encountered.

COMMENT 7: The site inventory proposed in Section 6.1.1 needs to be comprehensive, including all man-made infrastructure provided as a requirement of the Original License including, at a minimum, along the 43 miles of main trail, 8 access points, and the 4 spur trails. Additionally, evaluation metrics must have clearly defined criteria to ensure consistency of information.

Having overseen construction and maintenance of these sections, Duke Energy should have access to relevant records and all details requested. The inventory should include all infrastructure that may require future maintenance, replacement, or enhancement; these include, but are not limited to: bridges, regardless of size or engineering; signs and signposts; constructed steps and handrails; kiosks; parking areas and adjoining facilities; campsites, including features such as bear cables; etc.

Requested information regarding Duke's 43-mile section includes, but is not limited to:

- Summary of recreation-related requirements from the Original License and actions taken to meet those requirements, including specific measurables.
- Status and durability of trail-related agreements with landowners.
- Copies of all trail-related legal agreements (lease agreements, etc.).
- Comprehensive inventory for all structures (e.g., parking lots, bridges, stairs, campsites), including, but not limited to structure name, structure material, year constructed, cost of installation, special considerations for construction (e.g., helicopter used for material delivery), expected lifespan, assessment of current condition, and maintenance records (including costs).
- Current conditions, such as "trail tread" and "corridor condition", must have clearly defined and useful metrics, not just an arbitrary scale with no explanation. Best practices for recreation studies typically include a narrative description of what evaluators are basing their judgement on, otherwise the results will be subjective and unrepeatable.
- Additional standard metrics should be added to better evaluate trail conditions, for example assessing trail incision and noting the existence of parallel or unauthorized paths (e.g., people are stepping off the trail or trying to take short cuts).
- Associated costs, including past land/easement procurement, trail and infrastructure construction, and trail and infrastructure repairs and maintenance.
- Schedule of anticipated maintenance needs and costs.
- Potential need for acquisition of land and/or easements to ensure existence of Trail corridor in perpetuity for future generations, including projected costs.
- Detailed map(s) of Duke's 43-mile Trail section should be added that includes, at a minimum, the following information: parcel boundaries, current property owner(s), access locations (from water and land), spur trails, land use, structures (e.g., parking lots, bridges, stairs, campsites), streams/wetlands, areas of concern (e.g., erosion, overused parking/campsites), and points of interest.
- The history of compliance, including inspection reports should be included. For example, in 2000, FERC conducted an Environmental and Public Use Inspection (EPUI), which covered 24 miles of trail and identified a range of maintenance deficiencies that included trees across the trail, footbridges in need of repair, smaller bridges that had been washed out, loose handrails, missing footing steps, soil erosion, etc.

- Erosion throughout the trail corridor is a serious concern. Within the last six years, the Trail has experienced several landslides that required rebuilding portions of the Trail. Records of erosion-related problems, best management practices (BMPs), maintenance, and repairs should be included.
- The study should include an assessment of drainage issues along the Trail, spur trails, and in campsites.

COMMENT 8: The Recreation Site Inventory Form included in Appendix 7, Attachment 1 should be revised to capture appropriate and comprehensive information for this long-distance backpacking trail. Suggestions include, but are not limited to:

1. Site Address – revise to Trail Mile
2. Road Access – include name of and distance to nearest paved and unpaved road access as well as boat access.
3. Parking (# of spaces): this is only applicable to Trail access locations/parking lots.
4. Shoreline Access Condition: this is only applicable to boat access locations. An additional question should be added to evaluate “Trail Conditions”.
5. Camping: all locations have “primitive” sites only. More appropriate information would include: # tents that can be accommodated (remember, there are not tent pads that direct users to specific locations); add # of and height of bear cable(s); # primitive latrines; indicate problematic vegetation within campsites (e.g., there are several campsites with poison ivy or stinging nettle encroaching into middle of campsite areas. FTC understands it’s not reasonable to eradicate these plants, but regular removal from normal travel areas should occur.
6. Remove Operations since all campsites are unmanned, year-round, and do not have fees.
7. Add criteria for non-campsite infrastructure.
8. Add question for listing observable recreation impacts and issues. For example, the current form may capture if trash cans are available, but not if they are in need of repair or maintenance.

COMMENT 9: The Original Project License’s Exhibit R (August, 1980) called for certain amenities such as parking, toilet areas, etc. and these amenities should have been built and providing benefits for decades. Discrepancies from Exhibit R should be listed and an explanation provided for the deficiency.

The missing amenities may have been intended to help protect the natural areas, waters, lands and visual features of The Trail, the Blue Wall lands and the surrounding Blue Ridge Escarpment. For example, Exhibit R (page 53) indicates that a “single latrine building constructed over a percolating pit according to applicable health regulations will be provided near each camp area.” However, no such facilities exist near camp locations. Instead, thousands of hand-dug individual pit “toilets” have been created in and around the existing camping areas. The impact of continuing these current unsafe and unsanitary practices may be degrading water quality of nearby streams throughout the Blue Ridge Escarpment and impacting Lakes Jocassee and Keowee.

Additional amenities and enhancements should be provided to mitigate for Duke not meeting those commitments within a reasonable timeframe. This should include additional camping areas, sanitary and appropriate toilets, and additional features to enhance the health, safety, and enjoyment of Trail users.

COMMENT 10: Copies of legal documents should be provided and complete information should be presented clearly, accurately, and consistently throughout text and figures.

- A. Copies of all MOU and legal documents related to the Trail, access, and/or appurtenances should be provided to the stakeholders to provide transparency.
- B. A copy of the *1996 Duke Power Company Lake Management Foothills Trail Maintenance Program Policy and Procedures*, which is referenced in Appendix 7, Section 3 should be provided to FERC and stakeholders.
- C. The Study Area described in Appendix 7, Section 3 should specifically include all Project lands and waters that are utilized for access to or use of the Trail, in addition to the non-Project lands and waters. For example, visitors currently utilize Bad Creek Road to access the popular Bad Creek Access parking lot, including kiosk and two (2) portable toilets (aka port-a-potties). These areas must be included in the Study Area, should be labeled on all relevant maps, and any impacts or potential temporary (five-year) closures during construction should be evaluated.
- D. Figure 3-2 includes some inaccuracies: the Bad Creek Hydro Project Trail Access is labeled with the "Spur Trail" icon but should also include the "Trail Access" icon as it is a popular location for parking and accessing the main Trail. Trail features that appear on the map should be labeled, whether or not they are provided by Duke. For example, the Upper Whitewater Falls Trail Access is missing and should be added. Musterground Road access is not shown – details about forest road access, including general schedule, should be included. The current wording for boat access locations may create confusion; by saying "Boat Access Only" it may incorrectly convey that the location is only accessible by boat when, in fact, these locations are accessible by foot (by hiking the main Trail) as well. We suggest revising these to "Boat Access to Trail" and "Boat Access to Spur Trailhead".
- E. Figure 3-3 should include labels for the Lower Whitewater Falls Spur Trail, the Bad Creek Hydro Project parking area, and the Bad Creek Spur Trail should be indicated in yellow and labeled. Additionally, Musterground Road should be shown and labeled.
- F. Appendix 7, Section 4 states that "no facilities other than the small segment of trail are located within the existing Project Boundary. However, Figure 3-3 appears to show at least a portion of Bad Creek Road, the Bad Creek Hydro Project Trail Access (parking lot), and the entrance to Musterground Road, each located at least partially within the Project Area. A more detailed figure should be provided that clearly shows each of these features, accurate and complete labels, and the location of the proposed Project Boundary.
- G. Throughout the Recreation PSP, references are made to spur trails – sometimes referred to as 3 miles and others as 4 trails. A list of spur trails, including mileage, and a map showing locations should be included to clarify and support clear communication.

COMMENT 11: Rather than just evaluate current use, Section 6.1.6 must provide consideration of future needs for expanded, enhanced, or modified recreation resources to serve the regional population. Given the important and pristine habitats throughout the Trail corridor, it is especially important to consider the carrying capacity of the current recreation resources and evaluate if expanded options are needed to provide adequate recreation opportunities while avoiding ecological damage. These results should be used to inform collaborative decisions with the Recreational Resource Committee to update the Recreational Management Plan.

The results of this study should be utilized by Duke, qualified consultants, and the Recreation Resource Committee as the basis for (1) determining whether current use and/or projected future demand for public recreation at Project-related recreation facilities warrants consideration of possible enhancement measures during the term of the New License; (2) developing an update to the RMP for any proposed recreation facility enhancements or new construction; and (3) additional recreation requirements necessary to provide PM&E for the proposed Expansion of this facility.

In the current draft, Duke states that “Information collected during the RUN Study *could* [emphasis added] be used to develop an updated Recreation Management Plan...” FTC asserts that Duke *should* use the knowledge gained from this study and, furthermore, that updates to the RMP must be done in collaboration with the Recreation Resource Committee. Additionally, Duke should host a public meeting to allow all interested individuals, including those unable to fully participate in the stakeholder meetings, to provide input regarding the study results and proposed future plans.

As built, there are extremely limited options for hiking the Duke section of Trail. The addition of access locations, spur trails, and building connecting trails to nearby trail systems would significantly expand single and multi-day options for use. For example, the original Project application included a spur trail to Lake Toxaway and to Panthertown Valley. It was never constructed. This spur trail would provide important connections and should be built. Additional spur trails to vehicle access locations in NC’s Gorges State Park should be added or improved in order to allow more options for users to experience the interior segments of these spectacular areas.

Additional enhancements should be considered to ensure continued safety of Trail users and wildlife. With expanding development, shrinking bear habitat, and more people on our trails, it’s no surprise that bear encounters are increasing in our area.⁵ Backpackers are often the most vulnerable to dangerous bear encounters. Properly hanging a food bag is an art (especially after a long day of hiking), and black bears are becoming increasingly skilled at gaining access to food bags. Food-conditioned bears are often bolder with human encounters, sometimes becoming aggressive, and often leading to the bear being euthanized. (See <https://www.usatoday.com/story/news/nation/2022/06/14/bear-euthanized-scratching-woman-child-national-park/7626099001/>)

Some campsites throughout the Trail feature metal “bear bag cables”, installed by FTC, for simplifying hanging food bags. These are a welcome and much appreciated addition; however,

⁵ <https://www.outsideonline.com/outdoor-adventure/environment/bears-north-carolina-encounters/>

the combination of multiple people's food weight can make the cables fairly ineffective – with reports of the food bags hanging nearly at a human's eye level, which is likely accessible to many bears. Some National Parks and long-distance trails in bear territory provide bear proof lockers at designated campsites to simplify proper food storage and enhance safety for humans and bears. This option should be considered for campsites throughout the Trail as a preventive safety measure.

COMMENT 12: This Project is both (1) a license renewal including a 30-40 year extension for the existing Bad Creek Pumped Storage Facility, and (2) a new and second Pumped Storage Project which will practically double the power production of the Bad Creek Project. Impacts of the potential construction of the Complex II must be fully evaluated and additional mitigation should be provided both for the significantly increased capacity as well as for the construction impacts that may last up to five (5) years and cause significant disruption to use of popular recreation features.

These two distinct proposals clearly justify expanded recreational studies and increased PM&E for recreation needs – including additional features and increased and protected acreage; and most importantly, the permanent protection of the Trail, the Trail corridor and the related lands, streams and vistas along the Blue Ridge Escarpment.

Evaluating the potential expansion of the Trail corridor width is of particular importance to maintain the current nearly-wilderness user experience. Currently, Duke's large parcels of undeveloped land are providing buffer from human encroachment, as well as critical habitat that supports the resiliency of wildlife and birds, which are a valuable part of the Trail experience. If surrounding lands are developed, the Trail corridor could provide the only connection between critical habitats. Considering the anticipated acceleration of species migration due to climate change, the Trail corridor could become vital to supporting genetic diversity - or even the survival of - some wildlife and bird species. The USDA's *Conservation Buffers: Design Guidelines for Buffers, Corridors, and Greenways Manual* (2008)⁶ recommends minimum widths for corridors to support various species – invertebrates can utilize the narrowest corridors (100-200 feet) and large predator mammals need the largest corridors (330 feet to ≥3 miles). The Manual also notes that as “the length of the corridor increases, so should the width.” Consideration must be given to the increased importance of the Trail corridor should the surrounding land develop within the next 50 years. The Recreation Study should fully evaluate the necessary width to maintain or enhance the current Trail experience, including existence of large predator mammals and birds.

- A. Appendix 7, Section 3 indicates that “the study will also include an evaluation of recreation use in Whitewater Cove that may be temporarily affected if the Bad Creek II Complex is constructed.” All impacts to recreation by the construction, including access to Bad Creek Road, the Bad Creek Hydro Project Trail Access (parking lot), the Bad Creek Spur Trail, and use of Musterground Road should be fully evaluated. If the Bad Creek II Complex is constructed, additional mitigation should be provided both for the significantly increased capacity as well as for the construction impacts that may last up

⁶<https://www.csu.edu/cerc/researchreports/documents/ConservationBuffersDesignGuidelinesForBuffersCorridorsGreenways2008B.pdf>

to five years and cause significant disruption to use of this popular parking lot, Trail access, and spur trail.

- B. The Whitewater River Cove Recreational Public Safety Evaluation, outlined in Appendix 7.6.4, should also evaluate potential impacts of the Bad Creek II Complex, including during construction, on fishing throughout the impacted area. This should include both temporary and permanent impacts due to changes in flows, water quality, or habitat that may have impacts on fish health, populations, or behaviors.
- C. Appendix 7, Section 4 conveys that potential closure of the Bad Creek Hydro Project Trail Access parking area would not impact Trail access without actual evaluation of these potential impacts. At best, it's premature to make this statement without data from the study. Additionally, as the most secure parking area, it is quite popular and provides important access to the Trail. Alternate parking areas may consist of a gravel lot on the side of a remote highway, where vandalism and theft are common. For example, in May 2022 at a similar nearby gravel access lot, a couple's vehicle was heavily vandalized – with multiple broken windows and a hole drilled into the gas tank.⁷ Additionally, the next access point is 2.3 miles to the west and has an estimated 1,000 feet elevation change, adding an estimated 2.5 hours of “Strenuous” hiking. For those hiking a portion of the Trail, this may significantly impact trip plans and limit opportunities, especially for those relying on this access to make the “middle” section of the Trail more accessible. At a minimum, all potential impacts must be evaluated during the study to understand the severity and to inform decisions regarding mitigation requirements.

All short-term, long-term, and permanent impacts of the potential construction of the Bad Creek II Complex should be fully evaluated.

COMMENT 13: FTC should be given an opportunity to be represented during the conditions assessment. Our valuable in-depth knowledge and unique insight regarding Trail and infrastructure concerns will enhance these evaluations.

A 43-mile segment of the Foothills Trail is maintained by Duke Energy and Duke's private contractors, with coordination and assistance from the Foothills Trail Conservancy. However, FTC has remained primarily responsible for major and minor maintenance for the remaining 50-plus miles of the Trail network, including spur trails, built separately from requirements of the Original License. Duke has verbally indicated the desire to transition maintenance throughout Duke's 43-mile section of the Trail to FTC. As such, it is particularly relevant for FTC representatives to participate in the conditions assessment to better understand the extent of current conditions and anticipated maintenance, including site specific challenges associated with infrastructure projects located in this Trail section with extremely limited vehicular access.

The Foothills Trail Conservancy welcomes the opportunity to negotiate with Duke Energy any maintenance arrangements which will provide long-term continuance of the quality of the Foothills Trail, trail corridor and infrastructure.

⁷ See WYFF: [Thieves, vandals strike Foothills Trail parking lot, leaving hikers stranded, woman says](#) 5/30/22



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ELECTRONICALLY FILED

November 3, 2022

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Alan Stuart
Duke Energy Carolina, LLC
Mail Code EC012Q
526 Church Street
Charlotte, NC 28202

Re: **Bad Creek Pumped Storage Project (FERC No. 2740-053)**
Comments on Proposed Study Plan

Dear Secretary Bose and Mr. Stuart:

Upstate Forever is a nonprofit organization working on conservation, water quality, and sustainable development issues in the Upstate region of South Carolina. Our mission is to protect critical lands, waters, and the unique character of the Upstate of South Carolina, including the Upper Savannah Watershed where many of our members live, work, and recreate. Over the past two decades, we have worked to protect the natural assets that make the Upstate special, such as our farmlands, forests, natural areas, rivers, and clean air.

On February 23, 2002, Duke Energy (“Duke”) filed a Notice of Intent and Pre-Application Document (“PAD”) for its Bad Creek Pumped Storage Project (FERC No. 2740, “Project”). As part of the integrated licensing process (“ILP”), Duke held a meeting on September 7, 2002, which included a presentation of the six proposed studies in the Proposed Study Plan (“PSP”) along with discussion among stakeholders, Duke Energy staff, and FERC staff. Upstate Forever has participated in the stakeholder process for the relicensing of the Bad Creek Project (“Project”) since Duke Energy filed a Notice of Intent and Pre-Application document on February 23, 2002,

including most of the Resource Teams. The existing FERC license for the Project expires on July 31, 2027.

We are pleased to participate as a stakeholder for the relicensing of the Bad Creek Pumped Storage Facility. Our primary interests in this Project are related to water quality and quantity, fish and wildlife habitat, recreation resources and opportunities, and land conservation. We look forward to working with Duke Energy and other stakeholders to ensure that the new license provides for the protection, restoration, and mitigation of the natural resources within the Upper Savannah Watershed for the duration of the next license term and more. We have completed a review of the Proposed Study Plan and are pleased to offer the following comments.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris Starker", with a long horizontal flourish extending to the right.

Chris Starker
Land Conservation Manager

WATER RESOURCES STUDY PLAN

Appendix C of the PSP describes the proposed Water Resources Study Plan, which states that there are no anticipated adverse effects to water resources or water quality due to existing operations, but that the only anticipated adverse effects would be the result of the construction of Complex II. Upstate Forever still questions the legitimacy of this statement considering that no historic water quality data has been collected for the upper reservoir and associated tributaries.

Section 6.3.7 of the PAD provided a summary of existing water quality data collected for waters within the Project Boundary and vicinity but is limited to only the upper reservoir and lower reservoir. No water quality data is included for Bad Creek or West Bad Creek, which are tributaries of the Bad Creek reservoir, Howard Creek, which receives seepage flows from the Main Dam and West Dam, or Whitewater River, which is the receiving water from daily Project operations (as well as the location of a submerged weir designed to minimize the effects of Project operations on lake stratification, protect cold-water fish habitat, and dissipate energy from discharged water). In addition, neither the upper reservoir nor its tributaries have historically been monitored for water quality, which is an erroneous oversight providing no baseline water quality data for waters in the Project vicinity.

According to the current implementation of the Waters of the US (WOTUS), Pre-2015 Regulatory Definition and Practice, the Bad Creek Reservoir is included under WOTUS and Waters of the State (WoS) protections because it was formed by the impoundment of two free-flowing rivers or streams, Bad Creek and West Bad Creek, and as such regulatory designations do apply. More information is needed for these Project-related water resources to better understand its impact on existing watershed health. Please provide a rationale for excluding these significant water resources and include measures for updating and collecting water quality data in the Revised Study Plan (“RSP”).

To assess the potential impacts to water resources and water quality resulting from the construction and operation of Complex II, this Study plans to use “existing data” but does not provide any details on the which data sources will be used for this analysis, such as SCDHEC, USGS, SCDNR, or data collected by Duke. Please clarify in the RSP the data sources and how they are relevant to the Study.

In addition, the Study neglects to assess the impacts of the current project independently related to climate change. Increases or decreases in precipitation could have noticeable impacts on lake levels and therefore operation of the current facility and downstream facilities. SC has seen a dramatic increase in the frequency and intensity of extreme weather events over the past several decades, including flooding and drought. This

Study should attempt to assess climate-related impacts to water resources and project operations.

Further, Duke’s current proposed study area focuses only on the Whitewater River Cove. Additional modeling beyond the length of the Cove should be evaluated to determine the extent of increased flow velocities, vertical mixing, and water quality impacts associated with the operations of Bad Creek II on Lake Jocassee, including but not limited to shoreline erosion.

Upstate Forever supports the requested assessment for the evaluation of the potential impacts on discharges to Lake Keowee with the operation of Bad Creek II to ensure that the construction of the Bad Creek II complex does not adversely impact lake levels in Lake Keowee. We also support plans to collect continuous temperature data and periodic (bi-weekly) Dissolved Oxygen (DO) measurements from three historic locations in the Whitewater River Arm in 2023 and 2024. The continuous monitoring of these water quality parameters under these conditions (two-unit operation and four upgraded units) and at the proposed locations as this data will help inform the need for future water sampling and modeling.

Upstate Forever continues to have concerns regarding the impacts of spoil materials and upland fill resulting from the proposed construction of Bad Creek Complex II (“Complex II”). The PAD estimated that approximately 4 million cubic yards of spoil material will need to be disposed because of construction, including dredging, filling, clearing, and de-watering. During the September 7 meeting (“Meeting”), Duke clarified that of the eight (8) potential sites identified for placement of upland spoils, not all would be utilized, and that the selected locations would avoid sensitive streams. Upstate Forever continues to stress that impacts to water resources resulting from construction should be avoided regardless of stream conditions, and that to minimize impacts Duke should consider alternatives such as removing the spoils to another location entirely for proper disposal. The Clean Water Act requires consideration for avoiding and minimizing impacts before a Section 404 permit can be obtained for placing fill in waters of the US, and before a water quality certification can be awarded by the State. Due to the sheer magnitude of these spoils, off-site material disposal for the excavated materials should be the only consideration to avoid impacting streams and wetlands in the project area unless such disposal methods can be justified.

AQUATIC RESOURCES STUDY PLAN

Appendix D of the PSP describes the proposed Aquatic Resources Study Plan. During the Meeting hosted by Duke Energy on September 7, the SC Department of Natural Resources (“DNR”) commented on the size and swim speeds of target species used to model the estimated mortality for impingement and entrainment in the Desktop Entrainment Study (“DES”) included in the Pre-Application Document (“PAD”). Specifically, DNR voiced concerns

that surrogate fish species used in the DES misrepresent existing species and provides erroneous results. We agree with DNR that the DES should be updated using appropriate input data that will provide more reliable results.

VISUAL RESOURCES STUDY PLAN

Appendix E of the PSP describes the proposed Visual Resources Study Plan, which primarily concerns the visibility of the Project and its potential impact on the quality of recreation experiences on Project related resources such as Lake Jocassee. However, other factors such as lighting standards at the Project can affect resources besides recreation, including but not limited to bird migration, aquatic species behavior, and noise pollution. At the Meeting on September 7, it was noted that lighting at the Project could attract some fish species and thereby influence impingement and entrainment. Upstate Forever recommends that Duke update this Study to assess visual impacts due to lighting on other resources based on International Dark Sky standards. Further, we also recommend that Duke Energy consider seeking the highest designation through the International Dark Sky Places conservation program for the Project and the surrounding lands, which are also owned by Duke Energy. Such a designation would be the first and only such designation in SC and likely the first landscape-scale project achieved by a utility that addresses light pollution, and would provide benefits to wildlife and ecosystems, recreation, and human health.

RECREATIONAL RESOURCES STUDY PLAN

Appendix F of the PSP describes the proposed Recreational Resources Study Plan, which includes four (4) main components:

1. A Recreation Use and Needs (RUN) Study for the 43-mile-long portion of the Foothills Trail managed by Duke Energy;
2. A Conditions Assessment of the 43-mile-long portion of the Foothills Trail managed by Duke Energy;
3. An Existing Recreational Use Characterization of Whitewater River cove; and
4. A Recreational Public Safety Evaluation of Whitewater River cove.

Due to the exclusionary nature of the Bad Creek Pumped Storage Facility, and because there is no recreational access to the Bad Creek reservoir, there is considerable emphasis on off-project recreation opportunities well outside the Project area. The Recreational component (Exhibit R) of the original license was provided through the creation and management of a 43-mile central section of the Foothills Trail ("Trail"). Exhibit R included public access and parking,

trail kiosks and directional signs, additional spur trails, and stream crossings as well as continual maintenance and operational activities for limited recreation uses, primarily hiking. This Study should include an audit of all facilities and infrastructure provided as a requirement of Exhibit R of the original license.

The Foothills Trail system provides important recreational and educational opportunities to both Upstate residents and visitors from around the world. Upstate Forever readily acknowledges the unique opportunity the Foothills Trails offers and appreciates Duke Energy's long-term dedication to the continued management and maintenance of the Trail. However, we are concerned that the Recreational Resources Study will not adequately capture the current conditions of the Trail, its ability to provide high-quality recreation experiences, or its capacity to meet the escalating rate of demand. The Upstate is experiencing unprecedented and accelerating population growth and is expected to grow rapidly for decades to come. Already our natural resources are stretched thin, and the recent pandemic has revealed how fragile and overburdened our public recreation areas have become. And yet the continued growth in development, strain on resources, and demand for recreation areas indicates that ensuring that recreation opportunities centered on the Foothills Trail continue to provide quality recreation opportunities in perpetuity and that the Foothills Trail can continue to grow to meet additional demand should be paramount in this licensing.

Visitation to public spaces saw an unprecedented spike during the recent pandemic, particularly in the Upstate. The demand for outdoor recreation areas surrounding the Bad Creek Project is no exception. Upstate Forever is concerned that the proposed methods of the RUN Study will fall short of accurately accounting for the demand and expectations of visitors to the area. We believe the Recreation Use Survey captures only limited information and its design appears outdated. Specifically, the survey instrument assumes visitors are from nearby counties and states and discounts the notion that some visitors travel here from other countries. Furthermore, the specific question related to visitors' primary reasons for visiting are in an awkward order that may lead to unintended responses (e.g., what's the difference between "boating" and "canoeing/kayaking" and why are they not listed together?). In general, the instrument will only measure what is asked and does not encourage responses that may be unique to the recreation experience such as trail conditions, campsite conditions, and general feelings of security and well-being, among other things.

Continued support of the Foothills Trail is a critical component of the New License and expansion of the recreation provisions should be considered to account for the population growth, increased demand for outdoor recreational needs, and expansion of project operations from the ongoing upgrades. More importantly, continued use of natural resources for energy production limits the ability of South Carolina residents to enjoy a large portion of the Upstate's amazing beauty, and Duke Energy must earnestly evaluate the potential for expanding

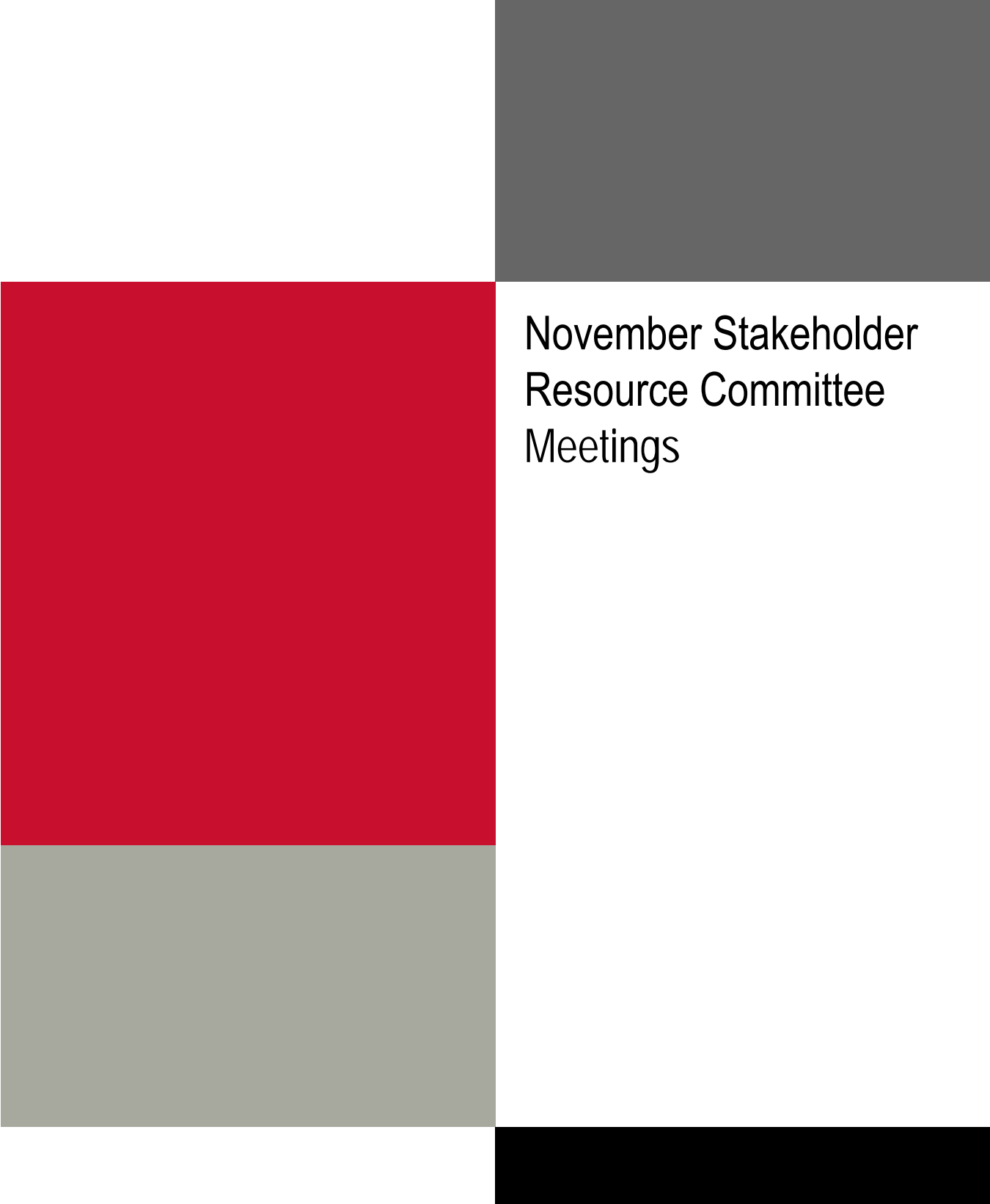
opportunities to its lands surrounding the Project. A meaningful and intentional Recreational Resource Study should include consideration for some or all of the following:

1. An endowment provided to the Foothills Trail Conservancy for ongoing management and maintenance of the Foothills Trail system;
2. Fee-simple donations of land to be included in the Foothills Trail system, or to State resource agencies for various purposes, including recreation, habitat management, and water quality protection;
3. Conservation easements on lands owned by Duke Energy, which would protect the Foothills Trail corridor, or allows for other recreation opportunities (a conservation easement would limit specific land development practices but would allow for recreation uses and facilities, and would reserve rights to Project related activities), including the 6,700-ac tract surrounding the Project;
4. Expand the Foothills Trail system to connect with other trail systems, including the Palmetto Trail at Stumphouse Tunnel, the Panthertown trail system, the Tuskaseegee, the Art Loeb Trail, and the Appalachian Trail;
5. Designation through the International Dark Sky Places conservation program for the Project and the surrounding lands, creating the first of its kind in the State and expanding on the world-class distinction; and
6. Providing a financial contribution to the Oconee County Conservation Bank, which would then be used to protect additional lands in the County near the Project boundary.

Furthermore, government agencies mandated with multiple directives can attest that the quality of any recreation experience is directly related to the quality of its related resources, including habitat and fisheries. For example, hunters and anglers depend entirely on high-quality habitat and water resources to provide viable game. The same is true for recreation activities like hiking, backpacking, birdwatching, wildflower viewing, and other passive recreation uses. Poor land and water management leads to poor recreation experiences. Therefore, it is just as important for Duke Energy to develop a land management plan that supports the recreation activities as it is to develop a recreation management plan that supports the natural resources. We believe this Study should include an evaluation of habitat quality and, similarly, a determination of the existing carrying capacity and an estimation of future carrying capacity that minimizes impacts to recreation resources, thereby maximizing benefits to both users and existing species.

Parallel to this notion, this Study should include an analysis of current project construction, operation, and maintenance activities on ecological communities and rare,

threatened, and endangered species, as well as its effects on *potential* habitats. Furthermore, we believe this should be expanded to include the effects of non-native, invasive, and noxious species on ecological communities and potential habitat areas as well. Habitat and corridor protection is one of the most critical needs for the protection and preservation of species. Like the multi-pronged approach to studying the recreational needs of the Project – and to support both recreation and habitat provisions – Duke Energy should examine past habitat availability, current habitat availability, and determine trends for habitat loss or creation through the term of the new license based on the identified trends. This information can then be used to identify target values for habitat protection and restoration in and near the Project. Lastly, the impacts of climate change should also be evaluated and discussed. Wildlife habitat corridors may be necessary for species migration due to climate change and should be of particular interest throughout the life of the proposed new license.



November Stakeholder
Resource Committee
Meetings

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Meeting Summary

Project: Bad Creek Pumped Storage Project Relicensing

Subject: Resources Committee Meeting Summary - Proposed Study Plan Comments

Date: Thursday, November 17, 2022

Location: Teams Meeting

Attendees:

Alan Stuart (Duke Energy)	Elizabeth Miller (SCDNR)
Mike Abney (Duke Energy)	Lynn Quattro (SCDNR)
Jennifer Bennett (Duke Energy)	William Wood (SCDNR)
Ed Bruce (Duke Energy)	Greg Nixon (SCDNR)
Christy Churchill (Duke Energy)	Alex Pellett (SCDNR)
Lynne Dunn (Duke Energy)	Tom Daniel (SCDNR)
Maverick Raber (Duke Energy)	Andrew Gleason (Foothills Trail Conservancy)
Scott Fletcher (Duke Energy)	Bill Ranson (Foothills Trail Conservancy)
Nick Wahl (Duke Energy)	Dale Wilde (Lake Keowee Society)
Erin Settevendemio (HDR)	Erika Hollis (Upstate Forever)
Maggie Salazar (HDR)	Chris Starker (Upstate Forever)
Sarah Kulpa (HDR)	Terry Keane (AQD)
Kerry McCarney-Castle (HDR)	Gerry Yantis (AQD)
Eric Mularski (HDR)	Jeff Phillips (Greenville Water)
Ty Ziegler (HDR)	Rowdy Harris (S.C. Department of Parks, Recreation and Tourism)
Alison Jakupca (KA)	Wes Cooler (Naturaland Trust)
Kelly Kirven (KA)	
Amy Chastain (SCDNR)	
Dan Rankin (SCDNR)	

Introduction

Alan Stuart began the Resources Committee Meeting and participants introduced themselves. The purpose of the meeting is to discuss Proposed Study Plan (PSP) comments received from stakeholders. A. Stuart provided a safety moment (winter driving tips), reviewed the agenda, schedule, objectives, and logistics for the meeting.

Erika Hollis asked for clarification on the difference between what Duke Energy considers to be a comment regarding Protection Mitigation & Enhancement (PM&E) measures vs. an Integrated Licensing Process (ILP) study request. A. Stuart provided a PM&E example and mentioned we would have more examples during discussions of resource-specific comment responses.

A. Stuart provided an overview of the existing Bad Creek Pumped Storage Project (Project) and the FERC Project Boundary. A. Stuart presented an updated Exhibit G, which shows the expanded Bad Creek Pumped Storage Project Boundary to include the proposed Bad Creek II Power Complex (Bad Creek II Complex) and the conceptual layout for the new facilities. Sarah Kulpa noted the Exhibit G drawing is preliminary and may be revised for final layout and construction plans but is not expected to change significantly between now and the filing of the Final License Application in July 2025. The expanded Project Boundary will be used as the

study area for some of the studies, to better focus field studies and surveys on impacted areas. Dale Wilde requested a single map that shows both the existing and expanded Project Boundaries. **Action Item:** HDR to create a new map or figure showing both boundaries or highlighting areas that are added with the expanded Project Boundary, to include in the Revised Study Plan (RSP).

Wes Cooler asked if Duke Energy had an update on whether there would be an expansion of the transmission line corridor or route selection. A. Stuart confirmed that Duke Energy's Transmission group is closer to finishing the first phase of the transmission siting study, and results are expected to be released internally within Duke by the end of this month. A. Stuart noted that typically Duke has approximately 95% confidence in the route selection after the first phase of study. A. Stuart acknowledged that expansion of the transmission corridor or identification of another one would require additional expansion of the Project Boundary.

In response to a question from Elizabeth Miller, S. Kulpa noted that the preliminary areas identified for the spoil locations were selected to optimize re-use of original spoil areas, proximity to access roads, and topography (i.e., limited by terrain). S. Kulpa confirmed that the identified upland spoil locations may all be used (for fines), dependent on which areas are being excavated or graded at the time. S. Kulpa also noted that a spoil disposal alternative analysis (including evaluation of offsite disposal) will be required for the Clean Water Act Section 404 permit and associated 401 water quality certification. E. Miller asked whether stream impacts will be field verified, and S. Kulpa confirmed any disturbance to streams would require targeted studies (including jurisdictional determination for wetlands and streams) to determine impacts. A. Stuart asked S. Kulpa to confirm whether any additional spoil areas will be identified. S. Kulpa noted that it is unlikely more spoil areas will be added prior to the Final License Application and 404 permit application, but if in the future additional spoil areas would be needed, Duke Energy understands that would require an amended permit, authorization, and additional targeted surveys.

William Wood and Dan Rankin asked why the proposed Project Boundary extends from the Project site to the Whitewater River. S. Kulpa noted that it is part of the original Project Boundary and may align with parcel boundary. S. Kulpa noted the relicensing process provides an opportunity to remove lands not needed for Project construction or operation from the Project Boundary, though that requires further analysis by FERC. W. Wood also asked about the redline of the study area in the PSP and A. Stuart confirmed that the PSP included preliminary broader study areas than the existing FERC Project Boundary, and some studies may require study areas outside of even the expanded Project Boundary.

Water Resources Study

Maverick Raber reviewed Water Resource Study comments on the PSP. Official PSP comment responses are provided in Appendix A of the RSP.

Additional Questions and Comments Included:

- E. Hollis asked for clarification on safety issues in the upper reservoir associated with water quality sampling. She also suggested there may be a difference in water quality based on how water is retained in the upper reservoir vs the Whitewater River arm. M.

Raber noted that there is little to no inflow into in the upper reservoir (due to location in upper, undeveloped watershed) and because water is exchanged so rapidly between the upper and lower reservoirs, water in the Whitewater River arm represents conditions in the upper reservoir. Additionally, safety issues preclude monitoring in the upper reservoir due to rapid water level fluctuations. E. Hollis also clarified her comment on climate-related impacts i.e., drought or flood conditions, noting these could impact biota and water quality in the Whitewater River. Because water in the upper reservoir has a short residence time, changes in precipitation or temperature would likely not significantly impact the water quality of discharge to the Whitewater River arm. M. Raber confirmed that while no studies are proposed to evaluate such impacts, evaluations related to climate impacts on natural resources, where there is a nexus to Project construction or operation over the new license term, could be addressed in Exhibit E of the Draft License Application (DLA).

- D. Rankin asked about the water quantity concerns and noted that for the original project seepage of 3-5 cubic feet per second from the upper reservoir was recorded and wondered how much seepage could impact water quality in receiving stream(s). Mike Abney confirmed the study referenced by D.Rankin concluded that seepage provided sufficient flow to Howard Creek and supplemental flow from the upper reservoir was not needed or desired. M. Abney confirmed that water quantity will be addressed in this study.

Aquatic Resources Study

M. Abney reviewed the Aquatic Resources Study comment from the South Carolina Department of Natural Resources (SCDNR) on the PSP. Official PSP comment responses are provided in Appendix A of the RSP.

Additional Questions and Comments included:

- Duke Energy intends to host a Resource Committee consultation meeting focused on the entrainment study and modeling in Q1 or Q2 2023.
- D. Rankin informed Duke Energy that during their annual meeting in support of the existing fisheries Memorandum of Understanding (MOU), the SCDNR plans to raise some suggestions relative to the timing and design of creel surveys relative to Bad Creek II design and construction schedule. Previously the SCDNR had timed surveys with Bad Creek Project runner upgrades (e.g., before/after this change in operations). Creel surveys help provide characterization of the fishery, including recreation and economic impacts. Conducting creel surveys prior to Bad Creek II construction will support baseline data for comparison with post-construction fishery conditions. M. Abney noted that the MOU does provide flexibility to provide additional Lake Jocassee fishery data. A. Stuart noted the existing MOU expires at the end of the current license term (2027).

Recreational Resources Study

Jennifer Bennett and Kelly Kirven reviewed the Recreational Resources comments on the PSP. Official PSP comment responses are provided in Appendix A of the RSP.

Additional Questions and Comments included:

- J. Bennett asked for clarification of Upstate Forever's comment regarding development of a land management plan, given most lands around the Project are under USFS control or protected by conservation easements. Chris Starker explained that the health of the land and the recreation experience are intertwined. Land management activities that benefit the recreation experience include, for example, invasive species removal and stream restoration. Upstate Forever and the Foothills Trail Conservancy have interest in the entire Foothills Trail Corridor and surrounding lands owned by Duke Energy. The primary concern is that these lands could be mismanaged in the future if the right protections are not in place. J. Bennett indicated that land management could be part of an expanded Recreation Management Plan (RMP) that considers parcels and landowners and managing entities, etc.
- J. Bennett noted that to support the Recreation Study, Duke Energy is bringing on an independent expert, Applied Trails Research, to evaluate the trail experience now and potentially over the new license term. Development of the Recreation Plan typically follows completion of the Recreation Use Need Study (RUNS). C. Starker agreed that land and recreational management do go hand in hand and went on to say that the stakeholders are interested in understanding whether land use and trail management practices are consistent across the Duke Energy-maintained section and portions of the trail managed by others. FTC would like some consistency and standards between different portions. J. Bennett mentioned that that a detailed Foothills Trail parcel map is being developed and will help distinguish different portions and different owners. K. Kirven noted (similar to what J. Bennett stated) that Duke Energy will be including a land parcel map in the RSP. When the Recreation Management Plan (which will replace the Exhibit R developed for the original license) is developed, that will include maintenance details.
- D. Wilde asked if there was land plan underway for the spoil assessment areas. K. Kirven stated that the spoils and construction impacts will be located away from the trail. A. Stuart mentioned the Bad Creek trail access point is close to the Project center; however overall, spoils are far removed from recreation or publicly-accessible areas.
- K. Kirven asked Andrew Gleason to provide some additional insight about benchmark best practices. A. Gleason provided a response that benchmark best practices should set a standard for what trail conditions should be. A. Gleason stated they would like to set a standard for trail health and practice, with a goal to make sure people aren't unprepared or that the trail would be in a condition that puts users at undue risk. K. Kirven responded that some of the best practices/standards could be assessed later in the study, when we start to focus on potential PM&Es, and such information would be used to develop the RMP. Emergency response coordination or planning for the trail may be a PM&E.

- A. Gleason noted that as the PSP is written, the inventory includes everything. He recommended that if a feature is man-made it should be inventoried and noted that there are hundreds of structures. J. Bennett clarified that the inventory will include access areas, parking areas, trailheads and each area would have a specific sheet for inventory. The condition of engineered bridges are addressed outside of this study, through the 5-year engineering inspections, but they will also be inventoried. J. Bennett noted that areas change with use/weather and there may be smaller structures that are not included (i.e., water break). A. Stuart noted that when the initial study report(s) generated for the recreation studies are developed, if the stakeholders believe there is insufficient methods/results, there will be a period for comments. A. Gleason suggested that the Foothills Trail accompany the trail inspector. A. Stuart noted that inspection by an independent entity alone is desirable to provide an objective assessment that also takes into account prevailing standards and best practices (i.e., from other trails).
- C. Starker cautioned against evaluating carrying capacity relative to only local County populations, as some neighboring Counties have a significant amount of protected land, resulting in less development and smaller populations. Visitors are known to travel to the Foothills Trail from across a broad geography. A. Gleason noted that based on recent surveys conducted by FTC (and only a 4% response rate), visitors from 18 states were identified.
- A. Gleason asked if Duke Energy would be amenable to putting hard copy surveys out at specific sites (e.g., campsites), instead of just relying on QR code follow-up. K. Kirven noted that presently paper surveys are not planned, due to the challenges of timely collecting and replenishing supplies of forms, as well as the potential for introducing litter on the trail.
- A. Gleason asked whether Duke Energy would use social media as a tool for gathering data. A. Gleason noted that Facebook posts commonly provide the Foothills Trail Conservancy with a timely and primary source of information regarding trail conditions. K. Kirven noted that it would be difficult to quantitatively use or analyze this information but acknowledged it does provide FTC and other stakeholders with additional means of obtaining insights as trends and emergent issues.
- K. Kirven provided clarification that the traffic counter at Mustard Ground Rd. was installed September 15, 2022 because that access road is open seasonally (closed after Jan. 15th). This early installation provides an opportunity for seasonal data to be collected for the first study season, and the counter can be reinstalled if needed in late 2023. **Action Item:** This location will be included on the appropriate figure(s) in the RSP.
- In response to comment from A. Gleason, the Coon Branch Spur trail is managed by Duke Energy and that is why it is included in the study. The Upper Whitewater Falls loop trail and the NC 281 gravel parking area are not managed by Duke Energy and that is why they are not included. A. Gleason noted that if during Bad Creek II construction access is restricted at Coon Branch Spur trail, users will go to the Upper Whitewater Falls loop and NC 281 gravel parking area. K. Kirven acknowledged this connection.

- Parking Demand Analysis in regards with ATV use – K. Kirven noted that spot counts will be incorporated at the Laurel Valley access area to determine if multiple parking spots are taken up by trailers/trucks, etc. A. Gleason noted that there are only specific days when ATV use is allowed. A. Gleason will provide those dates to Duke Energy.
- K. Kirven explained that there may not be complete documentation of past decisions regarding deviation from the original Exhibit R. Discrepancies will be noted in the study report and the results of the study will inform the development of an updated Recreation Management Plan. Jennifer added that all relevant legal/land agreements will not be part of the study plan but may be included in future management plans, as relevant.
- Regarding FTC's recommendation for public meetings as part of this study, K. Kirven noted that the ILP provides multiple opportunities for public participation.
- In the Microsoft Teams chat (not discussed during meeting), Gerry Yantis suggested Duke consider engaging Appalachian Trails groups to issue a survey to their members since the Foothills Trail is known to be a popular Appalachian Trail "training ground".

Visual Resources Study

J. Bennett responded to Visual Resources Study comments on the PSP. Official PSP comment responses are provided in Appendix A of the RSP. There was no additional discussion regarding the Visual Resources Study.

Cultural Resources Study

Christy Churchill responded to the cultural resource comments on the PSP. Official PSP comment responses are provided in Appendix A of the RSP. There was no additional discussion regarding the Cultural Resources Study.

Environmental Justice Study

There were no Environmental Justice PSP Comments and no additional discussion or questions from the group.

FERC Additional Information Requests

Scott Fletcher responded to FERC staff's PSP comments and additional information requests regarding wildlife and botanical resources. Official comment responses are provided in Appendix A of the RSP.

Additional Questions and Comments included:

- D. Wilde asked about the monarch butterfly and wondered whether there was a pre-stance to protect the monarch butterfly. S. Fletcher noted Duke Energy is part of a Candidate Conservation Agreement with Assurances (CCAA) with the U.S. Fish and Wildlife Service (USFWS) that includes integrated vegetation management methods (helicopters, side trim, herbicide, etc.). The USFWS had reviewed each of Duke Energy's vegetation management practices to determine potential harm to monarchs and habitat. Duke Energy made insignificant changes to the management practices

since the transmission maintenance is actually beneficial to the monarch butterfly. Duke Energy does not anticipate changing those measures if the monarch does become listed since best management practices are already in place.

- A. Stuart asked for clarification regarding the Monarch Butterfly being listed (as opposed to candidate). By being a partner in the CCAA, once a species is listed, Duke Energy won't be subject to additional terms (for that listed species) and is assured there will be no additional conditions imposed upon Duke Energy. Revising to expand the property covered by the agreement would not affect this standing - the updated description would simply be captured in the annual CCAA report.
- D. Wilde asked if Exhibit R would be updated – A. Stuart clarified that Exhibit R will be replaced by what FERC now calls a Recreation Management Plan. The group discussed that agreements other than the Recreation Management Plan and potentially outside of the FERC license may also be developed for the new license term. Either type of agreement would be legally binding, but off-license agreements may provide more flexibility for modifications over the new (expected to be 50-year) license term.

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Attachment 1

Attachment 1 – Resources
Committee Meeting
Presentation

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Bad Creek Pumped Storage Project No. 2740

Resource Committees Meeting



BUILDING A SMARTER ENERGY FUTURE®

NOVEMBER 17, 2022

Resource Committees Meeting Agenda

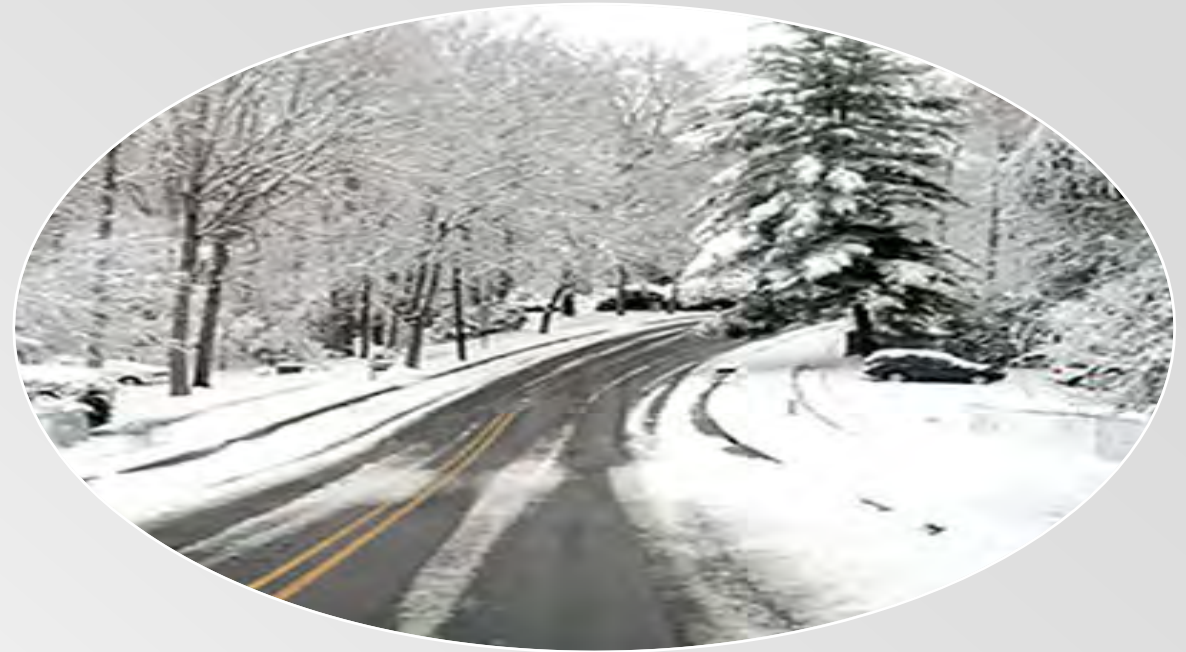
- Welcome and Meeting Purpose
- Safety Moment
- Resource Committees
- FERC ILP Schedule
- Progress to Date
- Review and Discuss Proposed Study Plan Comments
 - Water Resources
 - Aquatic Resources
 - Recreational Resources
 - Visual Resources
 - Cultural Resources
 - Wildlife & Botanical Resources
 - Environmental Justice
 - General Comments
- Action Items
- Adjourn



Safety Moment

Winter Driving Tips

- Check forecast BEFORE you head out the door
- Drive SLOWLY in inclement weather
- Increase distance between you and other cars
- Lightly tap brakes when driving on ice – don't slam on brakes
- If you start to slide, steer in direction of skid
- Check tire pressure and battery power regularly – cold weather can result in a drop to both
- Always keep gas tank at least half full to prevent fuel-line freeze up
- If disabled, stay with your vehicle (if safe to do so)
- Make a winter car kit
 - Flashlights, gloves, blanket, extra radio, salt, shovel, battery starter, ice scraper, phone charger, drinking water



Resource Committees

Lead Technical Manager

- John Crutchfield



Aquatic Resources

- Mike Abney
- Nick Wahl



Water Resources

- Maverick Raber



Wildlife & Botanical Resources

- Scott Fletcher
- Mike Abney

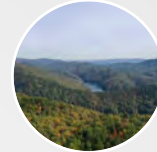
Project Manager

- Alan Stuart



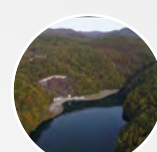
Cultural Resources

- Christy Churchill



Recreation & Aesthetics

- Jennifer Bennett



Operations

- Lynne Dunn
- Ed Bruce

FERC ILP Schedule

Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) (18 CFR §5.5(d))	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting (18 CFR §5.7)	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) (18 CFR §5.8(a))	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit (18 CFR §5.8(b)(viii))	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on PAD, SD1, and Study Requests (18 CFR §5.9(a))	Licensee Stakeholders	Within 60 days following Notice of NOI/PAD and SD1	June 23, 2022
Issue Scoping Document 2 (SD2) (18 CFR §5.10)	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) (18 CFR §5.11)	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting (18 CFR §5.11(e))	Licensee	Within 30 days following filing of PSP	Sept 7, 2022
Comments on PSP (18 CFR §5.12)	Stakeholders	Within 90 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) (18 CFR §5.13(a))	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP (18 CFR §5.13(b))	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination (18 CFR §5.13(c))	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Season of Studies (18 CFR §5.15)	Licensee	-	Spring-Fall 2023
File Study Progress Reports (18 CFR §5.15(b))	Licensee	Quarterly	Spring 2023 -Fall 2024
File Initial Study Report (ISR) (18 CFR §5.15(c))	Licensee	Pursuant to the Commission-approved study plan or no later than 1 year after Commission approval of the study plan, whichever comes first	Jan 4, 2024



Progress to Date

- **February 23, 2022:** Five studies were proposed in the Pre-Application Document (PAD)
- **July 2022:** Six draft study plans were presented to Resource Committees during informal meetings (July 18-22)
- **August 5, 2022:** Proposed Study Plan (PSP) was submitted to FERC August 5th, which also addressed stakeholder comments on PAD
- **September 7, 2022:** Duke Energy held PSP Meeting in Greenville, South Carolina
- **November 5, 2022:** Comments received from FERC and Stakeholders on the PSP
- **November 17, 2022:** Resource Committees Meeting to discuss PSP comments



FERC Study Criteria

Identify study goals and objectives

Consider resource management goals

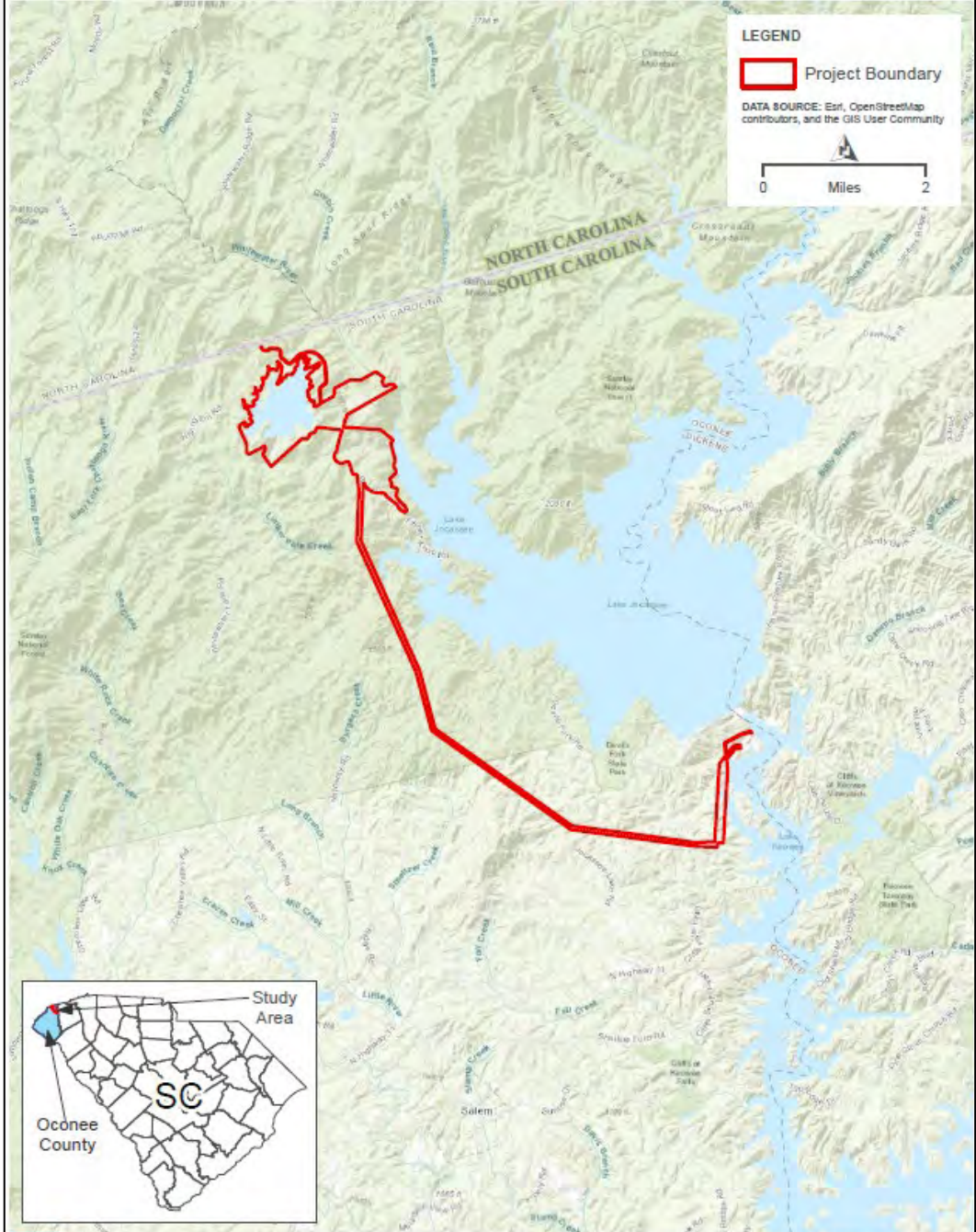
Consider public interest

Consider existing information and need for more

Nexus to project operations and effects and how results would inform the development of license requirements

Methodology consistent with accepted practice

Consideration of level of effort and cost, and why alternative studies would not work



Bad Creek Pumped Storage Project Location and FERC Project Boundary



EXHIBIT G-1 SHEET 1 OF 4

PROJECT LOCATION MAP

BAD CREEK PUMPED STORAGE PROJECT
 OCONEE COUNTY, SOUTH CAROLINA
 NAD83, SOUTH CAROLINA STATE PLANE, US FEET
 N: 118048.5407 E: 1387561.0082

APPROXIMATE SCALE: 1"=60 MILES

MAP KEY

APPROXIMATE SCALE: 1"=25 MILES

LEGEND

- LANDS UNDER EASEMENT
- PROJECT BOUNDARY POINT NUMBER
- PROJECT BOUNDARY
- RIGHT OF WAY
- CITY/COUNTY BOUNDARY
- SHORELINE/STREAM
- OVER-BAD ELECTRICAL
- PRIMARY ROADS
- PRIMARY ROADS

PROJECT BOUNDARY TIE DATA
 THE PROJECT BOUNDARY IS TIED TO NATIONAL GEODETIC SURVEY BENCHMARK PD 73553 N: 118027.631 E: 138690.800
 TIE POINT 1: 1046.74, 5.48756" E

REFERENCE COORDINATE METADATA
 PROJECTION: SOUTH CAROLINA STATE PLANE
 DATUM: NAD83
 UNITS: U.S. SURVEY FEET

GEOREFERENCE SOURCE DATA
 DIGITIZED DATA: PHOTO METRY ORTHOREGISTRY <http://www.orthoimg.com>
 REPORTED ACCURACY: EXCEEDING NMAAS (13.3FT) 1:4000
 LIDAR ELEVATION DATA: U.S. GEOLOGICAL SURVEY, USGS LIDAR POINT CLOUD (LPC) SOUTH CAROLINA, OCONEE COUNTY, 2011, (DATA ACQUIRED: 1/18/2011)
 PROPERTY DATA: OCONEE COUNTY, http://data-conways.com/arcgis/rest/services/BOUNDARY_DATA/FERC_EXHIBIT_1_BAD_CREEK_PUMPED_STORAGE_PROJECT/SHEETS

NOTES

1. THE LICENSEE EITHER OWNS IN SIMPLE FEE OR POSSESSES FLOWAGE EASEMENTS OVER ALL LANDS WITHIN THE PROJECT BOUNDARY REQUIRED TO OPERATE THE FACILITY.
2. SEE EXHIBIT G-2 FOR PROJECT BOUNDARY TABLES.

SURVEYORS STATEMENT
 I HEREBY CERTIFY TO THE FEDERAL ENERGY REGULATORY COMMISSION (FERC) THAT THIS PLAN MEETS THE CONDITIONS SET FORTH BY FERC FOR ITS EXPRESSED PURPOSES. THE PURPOSE OF THIS MAP IS TO PROVIDE A GEOREFERENCED VISUAL DEPICTION OF THE LOCATION OF PROJECT FEATURES AND BOUNDARIES BASED ON THE BEST AVAILABLE HISTORICAL DRAWINGS AND DIGITAL REFERENCE SOURCES INCORPORATED INTO THE GEOGRAPHIC INFORMATION SYSTEM (GIS). LOCATIONS HAVE NOT BEEN VERIFIED BY PHYSICAL FIELD SURVEYS AND THIS DRAWING SHOULD NOT BE USED FOR PURPOSES OF DEVELOPING PROPERTY BOUNDARY DESCRIPTIONS.

EXHIBIT G-1 SHEET 1 OF 1
BAD CREEK PUMPED STORAGE PROJECT FERC # 2740
PRELIMINARY EXPANDED PROJECT BOUNDARY MAP
 DUKE ENERGY CAROLINAS, LLC

0 500 1000 SCALE: 1"=600

Expanded Bad Creek Pumped Storage Project Boundary

Proposed Study Plan Comments - Water Resources Study



Proposed Study Plan Comments - Water Resources Study

Upstate Forever – Comment Summary

1. Upstate Forever questions the legitimacy of Duke Energy's statement that there are no anticipated adverse effects to water resources based on the existing Project, especially when no baseline water quality data has been included for Bad Creek, West Bad Creek, Howard Creek, or the upper reservoir.

Include source of data Duke Energy will use for the water quality baseline.

2. According to the current implementation of the Waters of the US (WOTUS), Pre-2015 Regulatory Definition and Practice, the Bad Creek Reservoir is included under WOTUS and Waters of the State (WoS) protections - more information is needed to better understand its impact on existing watershed health. Please provide a rationale for excluding these significant water resources and include measures for updating and collecting water quality data in the RSP.

3. This Study should attempt to assess climate-related impacts to water resources and project operations.

4. The proposed study area focuses only on the Whitewater River Cove. Additional modeling beyond the length of the Cove should be evaluated to determine the extent of increased flow velocities, vertical mixing, and water quality impacts associated with the operations of Bad Creek II on Lake Jocassee.

5. Impacts to water resources resulting from construction should be avoided regardless of stream conditions, and that to minimize impacts Duke should consider alternatives such as removing the spoils to another location entirely for proper disposal...Due to the sheer magnitude of these spoils, off-site material disposal for the excavated materials should be the only consideration to avoid impacting streams and wetlands in the project area unless such disposal methods can be justified.

Proposed Study Plan Comments - Aquatic Resources Study



Proposed Study Plan Comments - Aquatic Resources Study

Upstate Forever and SCDNR

1. The size and swim speeds of target species "used to model the estimated entrainment at the Project" do not correspond with the Barwick et al. (1994) study; specifically, threadfin shad. . . .

The SCDNR also requests that the source of the data incorporated into the model be provided in the report.

Proposed Study Plan Comments - Recreational Resources Study



Proposed Study Plan Comments - Recreational Resources Study

SCDNR – Comment Summary

1. The SCDNR finds the currently proposed number of survey days (N=10) to be insufficient in capturing the recreational use of Whitewater Cove and recommends increasing the number of survey days to **twenty days**. Surveying the cove for twenty days would capture approximately twenty percent of the recreational use throughout the designated time period and would be more representative of the recreational use.

Upstate Forever – Comment Summary

1. This Study should include an audit of all facilities and infrastructure provided as a requirement of Exhibit R of the original license... .

Upstate Forever is concerned the Recreational Resources Study will not adequately capture the current conditions of the Trail, its ability to provide high-quality recreation experiences, or its capacity to meet the escalating rate of demand.

Proposed Study Plan Comments - Recreational Resources Study

Upstate Forever – Comment Summary

2. Upstate Forever is concerned that the proposed methods of the RUN Study will fall short of accurately accounting for the demand and expectations of visitors to the area – the Recreation Use Survey captures only limited information and its design appears outdated, discounts the notion that some visitors travel here from other countries, asks questions in an awkward order that may lead to unintended responses, and does not encourage responses that may be unique to the recreation experience such as trail conditions, campsite conditions, and general feelings of security and well-being.

3. Recreational Resource Study should include consideration for:

- 1. An endowment provided to the Foothills Trail Conservancy for ongoing management and maintenance of the Foothills Trail system;
- 2. Fee-simple donations of land to be included in the Foothills Trail system, or to State resource agencies for various purposes, including recreation, habitat management, and water quality protection;
- 3. Conservation easements on lands owned by Duke Energy, which would protect the Foothills Trail corridor, or allows for other recreation opportunities including the 6,700-ac tract surrounding the Project;
- 4. Expand the Foothills Trail system to connect with other trail systems, including the Palmetto Trail at Stumphouse Tunnel, the Panthertown trail system, the Tuskaseegee, the Art Loeb Trail, and the Appalachian Trail;
- 5. Designation through the International Dark Sky Places conservation program for the Project and the surrounding lands, creating the first of its kind in the State and expanding on the world-class distinction; and
- 6. Providing a financial contribution to the Oconee County Conservation Bank, which would then be used to protect additional lands in the County near the Project boundary.

Proposed Study Plan Comments - Recreational Resources Study

Upstate Forever – Comment Summary

4. Upstate Forever believes this Study should include development of a Land Management Plan, an evaluation of habitat quality, and a determination of the existing carrying capacity and an estimation of future carrying capacity that minimizes impacts to recreation resources, thereby maximizing benefits to both users and existing species.

Foothills Trail Conservancy (FTC) – Comment Summary

1. As drafted, the Proposed Recreation Study Plan is unlikely to capture accurate and appropriate recreation demands and will not adequately inform future recreation needs.

With great appreciation to Duke Energy for building and maintaining this Trail, now is the critical time for the Foothills Trail to be protected in perpetuity. The FTC's priority interests are rebuilding, repairing, enhancing, expanding, and permanently protecting Duke's 43-mile section of the Trail. FTC respectfully requests inclusion of expanded studies, assessments and additional improvement measures as part of the Relicensing and Construction process for the expanding Bad Creek Complex.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

2. The proposed goals and objectives included in Section 2 are overly limited and should be expanded to ensure recreational needs are provided for throughout the entire next license period. FTC asserts the goals and objectives of the Recreational Study for Bad Creek should be comparable to those offered by Duke for the KT Relicensing Project. Suggested goals include:

- Characterize current public recreation usage, activity, and satisfaction levels at the Project-related recreation;
- Estimate future demand for and identify needs for expanded or enhanced trails and appurtenances of the Project-related recreation throughout the entire new license period;
- Estimate current hiking and backpacking density and carrying capacity of the Project-related recreation that will provide high quality, wilderness-type experiences without causing ecological damage within these rare and sensitive habitats;
- Create a comprehensive inventory of Trail infrastructure including construction details (plans, as-builts, costs, special considerations, etc.), current condition, previous and anticipated maintenance schedules, and associated costs, for all Project-related recreation;
- Benchmark best practices for enhancing hiker and backpacker safety in the Project-related recreation;
- Characterize the economic value of recreation generated by the Project;
- Provide all data needed to inform revisions to the Recreation Management Plan (RMP).

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

3. The Duke Energy Proposed Study Plan Section 6.1.5 proposes a narrow and restricted analysis of population forecasts from very few – and only rural – counties. This is a much narrower evaluation than population discussed in the Original License Exhibit R, which notes that the “Project is located about midway between Atlanta, Georgia and Charlotte, North Carolina, with a 1970 population of about 3.5 million within a 100-mile radius.” The current discussion seems particularly limited when considering that projections are for the sprawling development from Atlanta, GA and Charlotte, NC will merge into a “mega-region” – Char-lanta, with Bad Creek near the epicenter, by 2060. This predicted explosion in the population will mean significantly higher recreational needs. At a minimum, the population area should match that which was considered in the Original License Exhibit R – from Atlanta, GA to Charlotte, NC.

4. The methods proposed in Section 6.1 are not appropriate for evaluating usage along a linear, long-distance hiking trail that is intended to provide a wilderness-type experience. The proposed methods present distinct challenges with capturing feedback from backpackers – the main intended use group - and will not provide adequate information to inform future needs. Additional, enhanced, and revised methodology should be provided to better capture the unique usage patterns and feedback along this unusual recreational feature... (e.g., forms for backpackers to self-complete at all campsites/ providing QR codes to access an online survey/ adding trail registers to access locations and campsites, etc). Can also improve safety, by creating a record of a hiking group’s information and intended plans. This is common practice at other strenuous day-hiking trailheads and would be an inexpensive, efficient option to expand data collection.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

5. A literature review should also be included that compares the Foothills Trail usage and appurtenances to other similar linear, long-distance trails providing a strenuous, wilderness-type experience. Paved trails, loop trails, or rail-trail conversions are unlikely to provide an appropriate comparison.
6. Proposed timeframes and locations for Trail and Traffic Counters will not provide sufficient data for future decisions. These times should be expanded and should target peak usage times to determine if recreational needs are currently being met and if usage is exceeding the carrying capacity of the Trail. Proposed Trail Counter locations will underreport user counts, including backpackers, and proposed Traffic Counter locations are overly limited. In fact, none of the proposed Trail Counter locations are on the actual mainstem of the Trail. Although the Trail receives usage year-round, the proposal allows for less than a year of data collection. It also proposes to collect user surveys for only 360 total hours, or about 4.1% of the total 8,760 hours in a year.
7. The Study Plan schedule proposed in Section 7 is not consistent with the schedule outlined in Section 6.1.2 Traffic and Trail Counts, which indicates that this data collection work began September 15, 2022. If Section 6.1.2 is accurate, then the study plan work began before stakeholder comments were received or considered and before FERC approval was granted. Recreation plans typically focus on peak usage periods. At a minimum, the PSP should provide the rationale for the selected days/times and that they will capture peak usage. If the selected days/times do not capture peak usage, justification should be provided for their selection.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

8. Trail Counters are currently proposed at 11 locations, including 5 vehicle access locations, 3 boat access locations, and 3 spur trails. Depending on exact placement of the counter, it may only count individuals walking from a vehicle to the Trail, rather than those walking on the actual Trail. *Additionally, the Coon Branch Spur Trail is not shown on the Official Map of the Foothills Trail, the Foothills Trail Guidebook, or the Foothills Trail Interactive Map.* The Upper Whitewater Falls Loop Trail would be a more appropriate location for this Trail Counter..... information from the boat access locations is unlikely to include backpacker usage. Rather than locate “at” the boat access locations, Trail Counters could be placed on bridges near these access locations.

Additional traffic counters should be provided at the Upper Whitewater Falls Access and at the NC 281 gravel parking area to provide insight into how usage patterns may vary between these accesses and the Bad Creek Access and parking lot. As the closest alternative for paved, off-road parking, the Upper Whitewater Falls Access would likely receive increases in vehicle and hiker counts. If Duke closes the Bad Creek access for any extended period of time then additional and comparable access locations must be installed to ensure there is no reduction in safe parking availability.

9. The Parking Demand Analysis needs to consider the extra demand placed on the Laurel Fork access parking by ATV users on the Horsepasture Road during hunting season. These ATV users will have a truck and trailer combination that takes up several parking spots.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

10. The proposed locations and limited times for the User Survey are unlikely to capture adequate usage data from backpackers. The User Survey form included in Appendix 7, Attachment 2 is not appropriate for and will not capture important usage information associated with a linear, long-distance hiking and backpacking trail, which is intended to provide a wilderness-type experience. Significant revisions to the user survey form and enhanced data collection methods are needed.

The plan proposes only three locations for User Survey collection, including two vehicle accesses and one boat access. The boat access location may present a unique challenge for communicating with users, depending on the specific location of the survey clerk... Collecting User Surveys from a broader range of locations would provide more complete information. FTC suggests adding User Survey locations at Sassafras Mountain Trail Access, the Upper Whitewater Falls Access, the NC 281 (gravel) access, as well as at campgrounds and during alternate hours (see Comment 3 for additional details.).

The PSP proposes that User Surveys will be collected during a four-hour shift - surveys are unlikely to capture many backpackers. These individuals are the best source of information regarding needs and conditions of the Trail and appurtenances.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

11. The site inventory comprehensive, including all man-made infrastructure provided as a requirement of the Original License including, at a minimum, along the 43 miles of main trail, 8 access points, and the 4 spur trails. FHT requests information regarding Duke Energy’s 43-mile portion (listed in comments).

- Summary of recreation-related requirements from the Original License and actions taken to meet those requirements, including specific measurables.
- Status and durability of trail-related agreements with landowners.
- Copies of all trail-related legal agreements (lease agreements, etc.).
- Comprehensive inventory for all structures (e.g., parking lots, bridges, stairs, campsites), including, but not limited to structure name, structure material, year constructed, cost of installation, special considerations for construction (e.g., helicopter used for material delivery), expected lifespan, assessment of current condition, and maintenance records (including costs).
- Current conditions, such as “trail tread” and “corridor condition”, must have clearly defined and useful metrics, not just an arbitrary scale with no explanation. Best practices for recreation studies typically include a narrative description of what evaluators are basing their judgement on, otherwise the results will be subjective and unrepeatabe.
- Additional standard metrics should be added to better evaluate trail conditions, for example assessing trail incision and noting the existence of parallel or unauthorized paths (e.g., people are stepping off the trail or trying to take short cuts).
- Associated costs, including past land/easement procurement, trail and infrastructure construction, and trail and infrastructure repairs and maintenance.
- Schedule of anticipated maintenance needs and costs.
- Potential need for acquisition of land and/or easements to ensure existence of Trail corridor in perpetuity for future generations, including projected costs.
- Detailed map(s) of Duke’s 43-mile Trail section should be added that includes, at a minimum, the following information: parcel boundaries, current property owner(s), access locations (from water and land), spur trails, land use, structures (e.g., parking lots, bridges, stairs, campsites), streams/wetlands, areas of concern (e.g., erosion, overused parking/campsites), and points of interest.
- The history of compliance, including inspection reports should be included. For example, in 2000, FERC conducted an Environmental and Public Use Inspection (EPUI), which covered 24 miles of trail and identified a range of maintenance deficiencies that included trees across the trail, footbridges in need of repair, smaller bridges that had been washed out, loose handrails, missing footing steps, soil erosion, etc.
- Erosion throughout the trail corridor is a serious concern. Within the last six years, the Trail has experienced several landslides that required rebuilding portions of the Trail. Records of erosion-related problems, best management practices (BMPs), maintenance, and repairs should be included.
- The study should include an assessment of drainage issues along the Trail, spur trails, and in campsites.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

12. The Recreation Site Inventory Form included in Appendix 7, Attachment 1 should be revised to capture appropriate and comprehensive information for this long-distance backpacking trail. Suggestions include, but are not limited to:

1. Site Address – revise to Trail Mile
2. Road Access – include name of and distance to nearest paved and unpaved road access as well as boat access.
3. Parking (# of spaces): this is only applicable to Trail access locations/parking lots.
4. Shoreline Access Condition: this is only applicable to boat access locations. An additional question should be added to evaluate “Trail Conditions”.
5. Camping: all locations have “primitive” sites only. More appropriate information would include: # tents that can be accommodated (remember, there are not tent pads that direct users to specific locations); add # of and height of bear cable(s); # primitive latrines; indicate problematic vegetation within campsites (e.g., there are several campsites with poison ivy or stinging nettle encroaching into middle of campsite areas. FTC understands it’s not reasonable to eradicate these plants, but regular removal from normal travel areas should occur.
6. Remove Operations since all campsites are unmanned, year-round, and do not have fees.
7. Add criteria for non-campsite infrastructure.
8. Add question for listing observable recreation impacts and issues. For example, the current form may capture if trash cans are available, but not if they are in need of repair or maintenance.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

13. The Original Exhibit R called for certain amenities such as parking, toilet areas, etc. Discrepancies from Exhibit R should be listed and an explanation provided for the deficiency. The missing amenities may have been intended to help protect the natural areas, etc.

For example, Exhibit R (page 53) indicates that a “single latrine building constructed over a percolating pit according to applicable health regulations will be provided near each camp area.” However, no such facilities exist near camp locations. Additional amenities and enhancements should be provided to mitigate for Duke not meeting those commitments within a reasonable timeframe. This should include additional camping areas, sanitary and appropriate toilets, and additional features to enhance the health, safety, and enjoyment of Trail users.

14. Copies of legal documents should be provided (listed in comments and include MOU, Trail Maintenance Policy, etc.) and complete information should be presented clearly, accurately, and consistently throughout text and figures. Some figures need revised for icon revisions spur trail vs. trail access and other language changes as well as additional labels. Throughout the Recreation PSP, references are made to spur trails – sometimes referred to as 3 miles and others as 4 trails. A list of spur trails, including mileage, and a map showing locations should be included to clarify and support clear communication.

15. Rather than just evaluate current use, Section 6.1.6 must provide consideration of future needs for expanded, enhanced, or modified recreation resources to serve the regional population. Examine carrying capacity of the current recreation resources and evaluate if expanded options are needed to provide adequate recreation opportunities while avoiding ecological damage. These results should be used to inform collaborative decisions with the Recreational Resource Committee to update the Recreational Management Plan.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

16. Duke states that “Information collected during the RUN Study could [emphasis added] be used to develop an updated Recreation Management Plan...” FTC asserts that Duke should use the knowledge gained from this study and, furthermore, that updates to the RMP must be done in collaboration with the Recreation Resource Committee. Additionally, Duke should host a public meeting to allow all interested individuals, including those unable to fully participate in the stakeholder meetings, to provide input.

17. There are limited options for hiking the Duke section of Trail. The addition of access locations, spur trails, and building connecting trails to nearby trail systems would expand single and multi-day options for use. (For example, the original Project application included a spur trail to Lake Toxaway and to Panthertown Valley and was never constructed). Additional spur trails to vehicle access locations in Gorges State Park should be added or improved to allow more options for users to experience the interior segments.

18. Additional enhancements should be considered to ensure continued safety of Trail users and wildlife. With expanding development, shrinking bear habitat, and more people on our trails, it’s no surprise that bear encounters are increasing in our area. Some National Parks and long-distance trails in bear territory provide bear proof lockers at designated campsites to simplify proper food storage and enhance safety for humans and bears. This option should be considered for campsites throughout the Trail as a preventive safety measure.

Proposed Study Plan Comments - Recreational Resources Study

Foothills Trail Conservancy (FTC) – Comment Summary

19. This Project is both (1) a license renewal and (2) a new and second Pumped Storage Project. Impacts of the potential construction of the Complex II must be fully evaluated and additional mitigation should be provided both for the significantly increased capacity as well as for the construction impacts that may last up to five (5) years and cause significant disruption to use of popular recreation features. Expanded recreational studies and increased PM&E for recreation needs are justified.

Potential expansion of the Trail corridor width is of particular importance. Consideration must be given to the increased importance of the Trail corridor should the surrounding land develop within the next 50 years. The Recreation Study should fully evaluate the necessary width to maintain or enhance the current Trail experience, including existence of large predator mammals and birds.

20. Appendix 7, Section 4 conveys that potential closure of the Bad Creek Hydro Project Trail Access parking area would not impact Trail access. At best, it's premature to make this statement without data from the study. As the most secure parking area, it is quite popular and provides important access to the Trail. At a minimum, all potential impacts must be evaluated during the study to understand the severity and to inform decisions regarding mitigation requirements. All short-term, long-term, and permanent impacts of the potential construction of the Bad Creek II Complex should be fully evaluated.

21. FTC should be given an opportunity to be represented during the conditions assessment. Duke has verbally indicated the desire to transition maintenance throughout Duke's 43-mile section of the Trail to FTC. As such, it is particularly relevant for FTC representatives to participate in the conditions assessment. FTC welcomes the opportunity to negotiate with Duke Energy any maintenance arrangements which will provide long-term continuance of the quality of the Foothills Trail, trail corridor and infrastructure.

Proposed Study Plan Comments - Recreational Resources Study

FERC – Comment Summary

1. Section 5.18(b)(5)(ii)(C) of the Commission’s regulations requires that all proposed environmental measures must be provided in the final license application (FLA). Section 2 states that Duke Energy would update the Recreation Management Plan (RMP) and file it with the license application, or shortly thereafter. Please provide, at a minimum, an outline of the major recreation measures of the plan with the preliminary licensing proposal (PLP) and the FLA for stakeholder and Commission staff’s review.

2. Multiple trails are discussed that connect to Duke Energy’s section of the Foothills Trail. In order for staff to understand the location of these trails, please file a map with the FLA that includes the parking areas, trailheads, and access trails to the Foothills Trail and Coon Branch Spur Trail in relation to the project boundary.

3. Section 6.2 states that a professional trail builder will conduct an assessment from October 22 to October 23, 2022, of the “...trail head, shoulder, backslope, constructed structures (not including engineered bridges) and corridor condition.” Attachment 1 to the recreation study plan includes an assessment form for recreation sites along the trail, but does not include a form specific to assessing the condition of the trail itself. In addition, no further detail on the methods of assessing the trail are provided in the study plan.

Please provide: (1) additional details on how the condition of the trail will be assessed, including any template(s) of assessment form(s) that the trail builder would use; (2) any condition or maintenance issues that would be identified and tracked geospatially; and (3) the specific data, and level of detail (i.e., soil erosion, soil compaction, soil porosity, etc.), that is proposed for the final report on the Foothills Trail Corridor Conditions Assessment. Given stakeholders’ comments to date, staff recommends that the assessment also include documentation of any drainage and erosion issues, as well as the locations of any littering or vandalism. If erosion is identified, it would be helpful to have notes on the possible cause(s) at each location.

4. On page 1 of the Recreation Site Inventory Form, it is unclear how the shoreline access condition will be evaluated. Please elaborate on the criteria that will be used to rank the relative shoreline access condition scores, and clarify whether the conditions of the recreation sites in Table 6-1 will be similarly evaluated. If so, please provide criteria for the assessment(s).

Proposed Study Plan Comments - Visual Resources Study



Proposed Study Plan Comments - Visual Resources Study

Upstate Forever – Comment Summary

1. Other factors such as lighting standards at the Project can affect resources besides recreation, including but not limited to bird migration, aquatic species behavior, and noise pollution. Upstate Forever recommends that Duke update this Study to assess visual impacts due to lighting on other resources based on International Dark Sky standards. We recommend that Duke Energy consider seeking the highest designation through the International Dark Sky Places conservation program for the Project and the surrounding lands, which are also owned by Duke Energy. Such a designation would be the first and only such designation in SC and likely the first landscape-scale project achieved by a utility that addresses light pollution, and would provide benefits to wildlife and ecosystems, recreation, and human health.

Proposed Study Plan Comments - Visual Resources Study

FERC – Comment Summary

1. Section 6.2, Task 2 – Seen Area Analysis, of the proposed Visual Resources Study Plan, states that “[t]he initial Seen Area analysis will address the [p]roject reservoirs and directly associated facilities; [and] a subsequent viewshed analysis covering the new transmission corridor may be conducted if a new corridor is defined for the Bad Creek II Complex.” However, the goals of the study include addressing “the effects of continued project operations under the [e]xisting [l]icense as well as potential construction and operation of a second powerhouse during the [n]ew [l]icense term...”. Please provide information about the existing project operations and maintenance activities that affect visual characteristics, such as existing vegetation management treatments, as well as the potential changes to visual resources if the Complex is pursued.

Further, the PAD indicates that Duke Energy currently envisions that the new transmission line for the Complex would be constructed parallel to the existing transmission lines within the existing transmission line ROW corridors. Therefore, we recommend that the initial viewshed (Seen Area) analysis include the existing project transmission line corridors.

2. During the PSP meeting, Duke Energy explained that the majority of the spoils from the Complex would be bare/solid rocks, with a smaller volume of fine sediment (soil, sand, clay, small stones). Duke Energy also stated that it would develop an erosion and sediment control plan with provisions for revegetation of the spoil areas. Commission staff noted that because bare rock spoils would remain in a primary to early ecological succession state for longer than the spoils made up of fine sediment, and because the project area is forested with many areas dominated by deciduous trees, the viewsheds could vary seasonally during the short term (i.e., during and immediately after construction) and long term (years after construction). Staff requested clarification on whether tasks 3 and 4 of the proposed Visual Resources Study Plan, which include field investigations and a desktop assessment, would include evaluations both during the spring/summer when the leaves are on the deciduous trees, and during the fall/winter when the deciduous trees have lost their leaves, to assess the potential seasonal differences in the viewsheds. Therefore, staff recommends that Duke Energy clarify the timeframes for field investigations in the RSP

Proposed Study Plan Comments - Cultural Resources Study



Proposed Study Plan Comments - Cultural Resources Study

FERC – Comment Summary

1. Duke Energy intends to further define the APE in consultation with the South Carolina State Historic Preservation Officer (South Carolina SHPO) and tribes as part of the cultural resources study. As a reminder, Duke Energy must document the concurrence of the South Carolina SHPO and relevant Tribal Historic Preservation Officers (THPOs) (where tribal lands are involved) on the APE. Please document concurrence in the revised cultural resources study plan, including describing the criteria for modifying the APE based on the results of any studies.
2. Table 4-1 (Previously recorded cultural resources within and adjacent to the project) lists 15 sites, of which 3 sites are potentially reported as eligible for inclusion in the National Register of Historic Places (National Register) and require additional evaluation. Additionally, the Lake Keowee (SHPO Site No. 0155) and Lake Jocassee (SHPO Site No. 0156) sites have not been evaluated for National Register eligibility. While the cultural resources study proposed for the Bad Creek relicensing implies that these two sites will be evaluated as part of the study, please confirm this component of the study in the RSP.
3. To the extent possible, we recommend that Duke Energy conduct National Register evaluations and assessments of project effects during the pre-application study period. National Register evaluations and assessments of effect aid Commission staff in evaluating the environmental impacts of the project on historic properties, as required under the National Environmental Policy Act. They are also important in resolving potential adverse effects to historic properties as required under section 106 of the National Historic Preservation Act. National Register eligibility and assessment of effect must be determined in consultation with the South Carolina SHPO and tribal THPOs (where resources occur on tribal lands). Please include adequate time in the proposed schedule for such consultation.

Proposed Study Plan Comments - Cultural Resources Study

FERC – Comment Summary

4. Section 6.2, Task 2 states that Traditional Cultural Properties (TCPs) will be identified in consultation with the Tribes. Because of the potential for overlap between TCPs and archeological sites, staff recommends that the RSP include identification of any colocation between potential TCPs and documented archaeological sites. While an archaeological site may not be eligible for listing on the National Register under the National Register criteria, it may be eligible for listing if it is associated with an eligible TCP.

Proposed Study Plan Comments - Wildlife and Botanical



Proposed Study Plan Comments - Wildlife and Botanical

Upstate Forever – Comment Summary

1. This Study should include an analysis of current project construction, operation, and maintenance activities on ecological communities and rare, threatened, and endangered species, as well as its effects on potential habitats. Furthermore, we believe this should be expanded to include the effects of non-native, invasive, and noxious species on ecological communities and potential habitat areas as well. Habitat and corridor protection is one of the most critical needs for the protection and preservation of species... Duke Energy should examine past habitat availability, current habitat availability, and determine trends for habitat loss or creation through the term of the new license based on the identified trends. This information can then be used to identify target values for habitat protection and restoration in and near the Project.

The impacts of climate change should also be evaluated and discussed. Wildlife habitat corridors may be necessary for species migration due to climate change and should be of particular interest throughout the life of the proposed new license.

Proposed Study Plan Comments Environmental Justice Study

No Comments Received



Proposed Study Plan Comments - General Comments



Proposed Study Plan Comments – General Comments

FERC – Comment Summary

1. In order for Commission staff to analyze all potential operating scenarios under any new license for the Bad Creek Project, all studies conducted as part of the Integrated Licensing Process (ILP) pre-filing period should analyze the effects of both existing operations and the construction and operation of the proposed Complex on any resources that could be affected by the project.
2. Section 1.1.2, Bad Creek II Complex Description and Location, of the PSP also indicates that if additional land would be needed to construct the Complex, Duke Energy would conduct a transmission line siting study “under a separate schedule and process, to comply with requirements pursuant to The South Carolina Utility Facility Siting and Environmental Protection Act...” In other words, Duke Energy proposes to conduct at least a portion of its transmission line siting study, if needed, outside of the relicensing process. In the RSP, please include in the schedule the timing for conducting the portions of the transmission line siting study elements related to the relicensing proposal. In addition, Commission staff recommends that the results of all studies related to the relicensing proposal be filed at the earliest milestone of the ILP that they become available (i.e., with the Initial Study Report (ISR), Updated Study Report (USR), the preliminary licensing proposal (PLP), or no later than the license application).

Providing all study reports with the ISR and/or USR allows stakeholders adequate time to review the results, and for Duke Energy to consider and include any environmental protection, mitigation, and enhancement (PM&E) measures associated with the study results in the PLP and license application.

Questions



Action Items



FERC Additional Information Requests (AIRs)



FERC AIRs

FERC – Comment Summary

Response #5: Duke Energy states that the potential operation of the Complex will not result in any change to the operating band of the upper reservoir ‘from existing conditions.’ The current license order authorizes Duke Energy to operate the upper reservoir between 2,150 feet mean sea level (msl) and 2,310 feet msl (a 160-foot fluctuation band). However, the PAD states that under normal project operation, the upper reservoir is maintained between 2,250 feet msl and 2,310 feet msl (a 60-foot fluctuation band). Please clarify whether ‘existing conditions’ refer to the 160-foot band or the 60-foot band in the Revised Study Plan (RSP).

Response #9: In order to provide stakeholders a complete and accurate understanding of the existing and proposed project features, and vegetation management strategies, in the RSP, please include a map displaying, and a table listing, all primary transmission line right-of-way (ROW) corridors, in the current and proposed project, including, as appropriate, the corridors identified in the PSP by Duke Energy’s names: Jocassee NW 1 (1J2672 BP-#7, 1J2672#13-EP, & 5J2817 BP-EP) and Oconee NW 1 (1J2672 #7-13). On the map, please show all primary transmission ROW corridors as being within the proposed project boundary and label each transmission line corridor with Duke Energy’s names.

Further, in the RSP, please explain which native grasses, wildflowers and herbaceous plants are the “desirable allelopathic” plants that became established in the Jocassee NW 1 Corridor after the 2018 aerial treatment.

Also, please note that although *Lespedeza bicolor* was described as a native species in the PSP, it is a non-native invasive species. Please refer to the USDA’s Plants Database (<https://plants.usda.gov/home>) and/or other authoritative sources to confirm origins/nativity of plants for accurate descriptions.

Lastly, the PSP states that Duke Energy uses a “bare ground mix” of herbicides to treat brush and grasses on dam faces to keep them vegetation-free, and that this same mix is used by Duke Energy’s transmission department. However, based on the description of herbicide treatments in the PSP, Duke Energy doesn’t appear to be targeting a “bare ground” result in the project transmission line ROW corridors. In the RSP, please clarify Duke Energy’s target, resulting vegetation types for each treatment area and where Duke Energy’s “bare ground mix” of herbicides is used within the project boundary.

FERC AIRs

FERC – Comment Summary

Response #10: Duke Energy states that “future enhancement of Monarch and pollinator habitat, within the project area, will be evaluated by the Wildlife & Botanical R[esource] C[ommittee] (RC) upon better understanding of the transmission project. These areas could then be enrolled into the CCAA [Monarch Candidate Conservation Agreement with Assurances program] acreage of protection.”

In the RSP please clarify what Duke Energy is referring to by “better understanding of the transmission project.” If Duke Energy is referring to answering the question of whether or not Duke Energy would build a new transmission line/corridor as part of the Complex, please make that explicit.

In addition, in the RSP please clarify how the existing and potential transmission line corridors would be evaluated by the Wildlife & Botanical RC for the monarch program and when the results of the evaluation would be provided to stakeholders. Please file this evaluation with the study results when available (e.g., ISR, USR), PLP, or no later than the license application. Please state the reasons for including, or excluding, the existing and any proposed transmission line ROW corridor(s) for enrollment in the program.

FERC AIRs

FERC – Comment Summary

Response #11: Duke Energy states that there were no known adverse avian interactions at the project transmission lines or switchyard during the past 3 years, and the existing transmission lines are consistent with the Avian Power Line Interaction Committee's (APLIC) and U.S. Fish and Wildlife's (FWS's) guidelines for avian protection (including conductor separation). Other than conductor separation, please clarify in the RSP whether there are avian protection measures installed on the existing transmission lines or at the switchyard (e.g., marker balls, animal guards, etc.).

In addition, please note that it is staff's understanding that APLIC is in the process of updating its 2006 and 2012 guidance documents on avian electrocution and collision. If the updated APLIC guidance documents become available during the pre-filing portion of the relicensing process, please review them, and provide an updated assessment of the existing, and any proposed, project transmission facilities in the ISR, USR, PLP, or license application (i.e., as soon as feasible).

Further, Duke Energy proposes to evaluate avian protection measures to incorporate in the new transmission line design once the transmission line route is determined and will discuss the proposed transmission line design standards with the Wildlife & Botanical RC. In the RSP please clarify whether FWS staff will be included in the Wildlife & Botanical RC.

FERC AIRs

FERC – Comment Summary

Response #13b: In the RSP, please describe the data types included in “Duke’s Natural Resources GIS Viewer”, the source(s) of those data, and how frequently the data are updated. Also, please clarify whether Duke Energy’s practice of conducting “a known or potential bat roosting habitat review” prior to tree cutting activities includes field surveys using the FWS’s survey protocols.

Commission staff notes that Duke Energy’s existing best management practices (BMPs) to avoid removal of potential roost trees greater than [or equal to] 5 inches in diameter at breast height (dbh) is the correct guidance for Indiana bats, but would not be as protective of northern long-eared bats (NLEBs)² or tricolored bats, which FWS recently proposed for listing as endangered under the Endangered Species Act.³ Current BMPs for areas inhabited by NLEBs include avoiding cutting, trimming, or removing trees that are greater than or equal to 3 inches dbh during the pup season (May through July in South Carolina) or the active season (most protective). BMPs for tricolored bats will likely be developed as part of FWS’s proposed listing process for the tricolored bat.

Please ensure that the PLP and license application include information about the proposed tricolored bat in addition to the federally listed species listed in scoping document 2. Duke Energy states that potential roost trees would be marked with blue paint, a 15-foot buffer would be set with blue flagging, and any hazard/danger tree within the buffer would also be marked with blue paint. In the RSP, please clarify how tree crews would distinguish between potential roost trees and hazard/danger trees if they are both marked with blue paint.

Finally, in the RSP, please elaborate on the methods used for conducting “aerial saw operations” to cut/trim trees (e.g., equipment used, time of year, and frequency of this type of treatment).