

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

GOAL

The fundamental goal of this Low Inflow Protocol (LIP) is to take staged actions in the Yadkin-Pee Dee River Basin needed to delay the point at which available water storage in the Yadkin Hydroelectric Project (Federal Energy Regulatory Commission – FERC No. 2197) and the Yadkin-Pee Dee Hydroelectric Project (FERC No. 2206) (collectively, projects) reservoirs is fully depleted while maintaining downstream flows. This LIP is intended to provide additional time to increase the probability that precipitation will restore streamflow and reservoir water elevations to normal ranges. The amount of additional time that is gained during implementation of this LIP depends on the diagnostic accuracy of the trigger points, the amount of regulatory flexibility available to operate the projects, and the effectiveness of the projects' operators and the water users in working together to implement required actions and achieve significant water use reductions. It is assumed that water users in the Yadkin-Pee Dee River Basin not subject to this LIP must comply with all applicable State and local drought response requirements.

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

OVERVIEW

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

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

Implementation of this LIP and movement between the various stages are based on measurements of Stream Gage Three-Month Rolling Average Flow, U. S. Drought Monitor Three-Month Numeric Average, and the High Rock Reservoir water elevation. The calculation of these triggers and specific thresholds associated with each stage are detailed in this LIP.

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

KEY DEFINITIONS, FACTS, AND ASSUMPTIONS

1. Low Inflow Watch or Low Inflow Condition – A period of time when there is not enough water flowing into the projects' reservoirs to meet the projects' Required Minimum Instream Flows while maintaining reservoir water elevations within Normal Reservoir Operating Ranges.
2. LIP Flows – For the purposes of this LIP, this term refers to the flows defined in Table 6.
3. Required Minimum Instream Flows – For the purposes of this LIP, this term includes the minimum flow requirements included in the new FERC licenses for the projects.
4. Public Information Obligations – The Licensees will develop and provide information on their respective websites to inform the public on reservoir water elevations, project releases, usability of public access areas, reservoir inflows, meteorological forecasts, Historic and Actual Stream Gage Three-Month Rolling Average Flow calculations, U.S. Drought Monitor Three-Month Numeric Average calculations, LIP status, YPD-DMAG meeting summaries, and implementation of maintenance or emergency operation plans.
5. Stream Gage Three-Month Rolling Average Flow – The three-month rolling average of streamflow will be calculated at the following USGS stream gages:
 - Yadkin River at Yadkin College (02116500)
 - South Yadkin River near Mocksville (02118000)
 - Abbotts Creek at Lexington (02121500)
 - Rocky River near Norwood (02126000)

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

6. Historic Stream Gage Three-Month Rolling Average Flow – The daily flow for each of the four designated USGS stream gages has been used to calculate a monthly average flow for the period of record 1974 through 2003. Because the USGS only began gaging flows for Abbotts Creek in 1988, the historical average for this gage will be based on the period 1988 through 2003. The historic three-month rolling average flow for each month of the year, presented in Table 1, was calculated on the last day of each month of the year by averaging the monthly average flow for each month and the preceding two months. The use of the period of record 1974 through 2003 to calculate the historic three-month rolling average flow will be evaluated every five years during the review of this LIP (see Key Definitions, Facts, and Assumptions No. 18).

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

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

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

Table 2. Full Pond Elevations

Reservoir	Full Pond Elevation (feet, USGS datum - NGVD 1929)
High Rock	623.9
Tuckertown	564.7
Narrows	509.8
Falls	332.8
Tillery	278.2
Blewett Falls	178.1

8. Normal Reservoir Operating Range – The band of reservoir water elevations within which the Licensees normally attempt to maintain a given reservoir on a given day. Each reservoir has its own specific Normal Reservoir Operating Range, bounded by Full Pond Elevation and Normal Minimum Elevation. If net inflows to the reservoir are within a reasonable tolerance of the average or expected amounts, project equipment is operating properly, and if maintenance or emergency operation plans have not been implemented, reservoir water elevation excursions outside of the Normal Reservoir Operating Range should not occur. The new FERC license for the Yadkin Project includes operating curves that establish the Normal Reservoir Operating Range for each Yadkin Project reservoir.

9. Normal Minimum Elevation (NME) – The elevation of a reservoir (measured in feet, USGS datum [NGVD 1929]) that defines the bottom of the reservoir’s Normal Operating Range for a given day of the year. NME for each of the projects’ reservoirs is listed in Table 3.

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

Month	High Rock	Tucker-town	Narrows	Falls	Tillery	Blewett Falls
Full Pond	623.9	564.7	509.8	332.8	278.2	178.1
January 1	613.9	561.7	504.8	328.8	273.2	172.1
February 1	613.9	561.7	504.8	328.8	273.2	172.1
March 1	transition	561.7	504.8	328.8	275.7	172.1
April 1	619.9	561.7	504.8	328.8	275.7	172.1
May 1	619.9	561.7	504.8	328.8	275.7	172.1
June 1	619.9	561.7	504.8	328.8	275.7	172.1
July 1	619.9	561.7	504.8	328.8	275.7	172.1
August 1	619.9	561.7	504.8	328.8	275.7	172.1
September 1	619.9	561.7	504.8	328.8	275.7	172.1
October 1	619.9	561.7	504.8	328.8	275.7	172.1
November 1	transition	561.7	504.8	328.8	275.7	172.1
December 1-15	613.9	561.7	504.8	328.8	275.7	172.1
December 16-31	613.9	561.7	504.8	328.8	273.2	172.1

10. Public Water System – For the purposes of this LIP, a Public Water System is any publicly or privately owned water system that supplies potable water to the public having an instantaneous withdrawal capacity of one million gallons per day or more, and withdraws from storage in the projects’ reservoirs.
11. Non-Public Water User – For the purposes of this LIP, a Non-Public Water User is any publicly or privately owned water withdrawer that withdraws water for uses other than supplying potable water to the public, having an instantaneous withdrawal capacity of one million gallons per day or more that withdraws from storage in the projects’ reservoirs.
12. U.S. Drought Monitor – A synthesis of multiple indices, outlooks, and news accounts (published by the U. S. Department of Agriculture) that represent a consensus of federal and academic scientists concerning the drought status of all parts of the United States. Typically, the U.S. Drought Monitor indicates intensity of drought as D0-Abnormally Dry, D1-Moderate, D2-Severe, D3-Extreme and D4-Exceptional. The current U.S. Drought Monitor and explanatory material can be found at <http://www.drought.unl.edu/dm/monitor.html>.
13. U.S. Drought Monitor Three-Month Numeric Average – If the U.S. Drought Monitor has a designation ranging from D0 to D4 as of the last day of a month for any part of the Yadkin-Pee Dee River Basin that drains to the Blewett Falls development, the basin will be assigned a numeric value for that month. The numeric value will equal the highest U.S. Drought Monitor designation (e.g. D0=0, D1=1, D2=2, D3=3 and D4=4) for any part of the Yadkin-Pee Dee River Basin draining to Blewett Falls development as of the last day of the month. A normal condition in the basin, defined as the absence of a drought designation, will be assigned a numeric value of negative one (-1). A rolling average of the numeric values of the current month and previous two months will be calculated by APGI at the end of the month and designated as the U.S. Drought Monitor Three-Month Numeric Average for purposes of this LIP.

14. Critical Reservoir Water Elevation – The reservoir water elevation (measured in feet, USGS datum [NGVD 1929]) below which a Public Water System intake, Non-Public Water User’s intake, or hydropower plant located on the reservoir cannot operate under normal conditions. Critical Reservoir Water Elevations are defined in Table 4.

Table 4. Critical Reservoir Water Elevation

Reservoir	Critical Reservoir Water Elevation measured at the dam (feet USGS Datum - NGVD1929)	Type
High Rock	599.9 (24 ft below full pool)	Hydropower Production
Tuckertown	560.7 (4 ft below full pool)	Public Water Supply
Narrows	486.8 (23 ft below full pool)	Public Water Supply
Falls	322.8 (10 ft below full pool)	Hydropower Production
Tillery	268.2 (10 ft below full pool)	Public Water Supply
Blewett Falls	168 (10.1 ft below full pool)	Public Water Supply/ Hydropower Production

15. Critical Flow – The flows from the projects that are necessary to prevent long-term or irreversible damage to aquatic communities consistent with the resource management goals and objectives for the affected stream reaches and necessary to provide some basic level of water quality maintenance in affected river reaches. For the purposes of this LIP, the Critical Flows are defined as follows:
- Falls Development – the Critical Flow from the Falls Development is equal to 770 cfs measured on a daily average basis.
 - Tillery Development – the Critical Flow from the Tillery Development is the same as required minimum instream flow as defined in the new FERC license for Yadkin Pee-Dee River Hydroelectric Project.
 - Blewett Falls Development – the Critical Flow from the Blewett Falls Development is 925 cfs measured on a continuous basis.
16. Organizational Abbreviations – Organizational abbreviations include Alcoa Power Generating Inc. (APGI), Progress Energy (PE), NC Department of Environment and Natural Resources (NCDENR), North Carolina Division of Water Resources (NCDWR), North Carolina Division of Water Quality (NCDWQ), North Carolina Wildlife Resources Commission (NCWRC), South Carolina Department of Natural Resources (SCDNR), South Carolina Department of Health and Environmental Control (SCDHEC), the United States Fish and Wildlife Service (USFWS), High Rock Lake Association (HRLA), Badin Lake Association (BLA), and South Carolina Pee Dee River Coalition (SCPDRC).

17. Yadkin-Pee Dee River Basin Drought Management Advisory Group (YPD-DMAG) –The YPD-DMAG is established to facilitate implementation and review of this LIP. Members of the YPD-DMAG agree to comply with this LIP. Membership on the YPD-DMAG is open to one representative from each of the following organizations:

- APGI
- PE
- NCDWR
- NCDWQ
- NCWRC
- SCDNR
- SCDHEC
- USFWS
- Duke Power
- HRLA
- BLA
- Lake Tillery homeowners representation
- SCPDR
- All owners of a Public Water System intake or a Non-Public Water User's intake that withdraw from storage in one of the projects' reservoirs.

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

18. Revising this LIP – During the new FERC license period, the YPD-DMAG will be convened by NCDWR and SCDNR at least once every five (5) years to review and, if necessary, update this LIP. Decisions on modifications to the Licensees' responsibilities under this LIP, if any, will be determined by consensus of the Licensees and the States of North Carolina and South Carolina (specifically NCDWR, NCDWQ, SCDNR, SCDHEC) after consultation with other members of the YPD-DMAG. Proposed modification to the Licensees' responsibilities will be submitted to FERC for review and approval as necessary. Modifications to the responsibilities of other members (not the FERC licensees) of the YPD-DMAG under this LIP, if any, will be determined by consensus of those members after consultation with the Licensees. Approved modifications will be incorporated through revision of this LIP. The YPD-DMAG may appoint an *ad hoc* committee to consider issues relevant to this LIP. An issue such as the substitution of a regional drought monitor for the U.S. Drought Monitor, if developed in the future, or proportional drawdown of storage reservoirs during LIP stages are examples of items that may be considered.

19. Consensus – The unanimous support of all Parties, or at least no opposition from any Party.

20. Water Withdrawal Data Collection and Reporting – The owners of all water intakes impacted by this LIP are to comply with water use reporting requirements of the appropriate State

Agencies. The YPD-DMAG can request and should receive relevant water use information from the appropriate state agency or directly from the owners of individual intakes.

21. Drought Response Plan Updates – All Public Water Supply System owners and Non-Public Water Users subject to this LIP will review and update their drought response plans, or develop a plan if they do not have one, to ensure compliance and coordination with this LIP, including the authority to enforce the provisions outlined herein. Nothing in this LIP is intended to prevent Public Water System owners or Non-Public Water Users from taking more restrictive actions or from complying with any applicable law or regulation.
22. Relationship Between this LIP and Maintenance and Emergency Plans – Maintenance and emergency plans outline the general approach the Licensees will take under certain maintenance, emergency, equipment failure and other situations to continue practical and safe operation of the projects; to maintain operations consistent with the new FERC license conditions to the maximum extent possible; and to communicate with resource agencies and the affected parties. Under these plans, temporary modifications to Required Minimum Instream Flow releases, and the Normal Reservoir Operating Ranges are allowed. Lowering projects' reservoir water elevations caused by situations addressed under maintenance and emergency plans will not invoke implementation of this LIP. Also, if this LIP has already been implemented at the time that a situation covered by these plans is initiated, the Licensee may suspend implementation of this LIP until the maintenance or emergency situation has been eliminated. Notification will be provided by the Licensees to the State Agencies as soon as practicable.

PROCEDURE

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

Stage	High Rock Reservoir Elevation		US Drought Monitor Three-Month Numeric Average		Stream Gage Three-Month Rolling Average as a percent of the Historical Average
0	< NME minus 0.5 ft	and	any	or	any
	OR				
	< NME	and either	≥ 0	or	< 48 %
1	< NME minus 1 ft	and either	≥ 1	or	< 41 %
2	< NME minus 2 ft	and either	≥ 2	or	<35 %
3	< NME minus 3 ft	and either	≥ 3	or	<30 %
4	< ½ of (NME minus Critical Reservoir Water Elevation)	and either	≥ 4	or	<30 %

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

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

Stage 0 - Low Inflow Watch:

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

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

OR

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

AND EITHER

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

OR

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

When a Stage 0 Low Inflow Watch is declared:

1. The Licensees will notify via email the NCDWR of a Stage 0 Low Inflow Watch as soon as practicable but no later than three business days after the declaration.
2. The NCDWR will activate the YPD-DMAG and initiate monthly meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.

Stage 1 - Low Inflow Condition:

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

- The prior month LIP condition was Stage 0;

AND

- The High Rock Reservoir water elevation is more than 1 ft below the NME;

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 1.

OR

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

When a Stage 1 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of declaration of a Stage 1 Low Inflow Condition via email as soon as practicable but no later than two business days after the declaration.
 - b. Implement LIP Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 1 Low Inflow Condition is declared. To meet the LIP Flows for Stage 1 :
 - APGI will supplement Project inflows by drawing first from Narrows Reservoir until the Narrows Reservoir drawdown below its NME matches the High Rock Reservoir drawdown below its NME at the time that the Stage 1 Low Inflow Condition is declared.
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis below the Normal Minimum Elevation (NME).
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
 - c. Update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with weekly updates on reservoir water elevations and inflow of water into the projects' reservoirs.

2. If they have not already done so, NCDWR will coordinate with SCDNR to conduct monthly meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.
3. Owners of Public Water System intakes will complete the following activities within 14 days after a Stage 1 Low Inflow Condition is declared:
 - a. Notify their water customers of the low inflow condition through public outreach and communication efforts.
 - b. Request that their water customers implement voluntary water use restrictions, in accordance with their drought response plans. At this stage, the goal is to reduce water withdrawals by approximately 5% from the amount that would otherwise be expected. These restrictions may include:
 - Reduction of lawn and landscape irrigation to no more than two days per week (i.e. residential, multi-family, parks, streetscapes, schools, etc).
 - Reduction of residential vehicle washing.
 - c. Provide a status update to the YPD-DMAG on actual water withdrawal trends and discuss plans for moving to mandatory restrictions, if they are required.
4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after a Stage 1 Low Inflow Condition is declared:
 - a. Notify their employees and/or customers of the low inflow condition,
 - b. Request that their employees and customers conserve water through reduction of water use, electric power consumption, and other means, and
 - c. Institute in-house conservation consistent with their drought management plan and minimize consumptive uses to the extent feasible.

Stage 2 – Low Inflow Condition:

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

- The prior month LIP condition was Stage 1;

AND

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

AND EITHER

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

OR

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

When a Stage 2 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of a declaration of Stage 2 Low Inflow Condition via email as soon as practicable but no later than two business days after the declaration.
 - b. Implement LIP Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 2 Low Inflow Condition is declared. To meet the LIP Flows for Stage:
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis.
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
 - c. Update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with updates twice per week on reservoir water elevations and inflow of water into the system.
 - e. Continue participation in monthly or more frequent meeting or conference calls of the YPD-DMAG
2. NCDWR will coordinate with SCDNR to conduct monthly YPD-DMAG meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:

- a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.
3. Owners of Public Water System intakes will complete the following activities within 14 days after the Stage 2 Low Inflow Condition is declared:
- a. Notify their water customers of the continued low inflow condition and movement to more stringent mandatory water use restrictions through public outreach and communication efforts.
 - b. Require that their water customers implement mandatory water use restrictions, in accordance with their drought response plans. At this stage, the goal is to reduce water withdrawals by approximately 10% from the amount that would otherwise be expected. These restrictions may include:
 - Limiting lawn and landscape irrigation to no more than one day per week (i.e. residential, multi-family, parks, streetscapes, schools, etc).
 - Eliminating residential vehicle washing.
 - Limiting public building, sidewalk, and street washing activities except as required for safety and/or to maintain regulatory compliance.
 - Limiting construction uses of water such as dust control.
 - Limiting flushing and hydrant testing programs, except to maintain water quality or other special circumstances.
 - Eliminating the filling of new swimming pools.
 - Enforce mandatory water use restrictions through the assessment of penalties.
 - Encourage industrial/manufacturing process changes that reduce water consumption.
 - Provide a status update to the YPD-DMAG on actual water withdrawal trends.
4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after the Stage 2 Low Inflow Condition is declared:
- a. Notify their employees and/or customers of the low inflow condition through public outreach and communication efforts.
 - b. Request that their employees and customers conserve water through reduction of water use, electric power consumption, and other means.
 - c. Institute in-house conservation consistent with their required drought management plans and minimize consumptive uses to the extent feasible.

Stage 3 - Low Inflow Condition:

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

- The prior month LIP condition was Stage 2;

AND

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

AND EITHER

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

OR

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

When a Stage 3 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of a declaration of Stage 3 Low Inflow condition via email as soon as practicable but no later than 48 hours after the declaration.
 - b. Implement LIP Flows to designated Critical Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 3 Low Inflow Condition is declared. To meet the Critical Flows:
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis.
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
 - c. Update their respective websites as noted in Key Definitions, Facts, and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with bi-weekly (twice each week) updates on reservoir water elevations and inflow of water into the system.
 - e. Continue participation in monthly or more frequent meeting or conference calls of the YPD-DMAG.

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

Stage 4 - Low Inflow Condition:

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

- The prior month LIP condition was Stage 3;

AND

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

AND EITHER

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

OR

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

When a Stage 4 Low Inflow Condition is declared:

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

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

¹ Less than one half the distance between the NME and the Critical Reservoir Water Elevation.

Recovery from LIP Stages

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

- Condition 1: All three triggers associated with a lower numbered LIP Stage are met.

OR

- Condition 2: High Rock Reservoir water elevations return to at or above the NME PLUS 2.5 ft.

OR

- Condition 3: High Rock Reservoir water elevations return to at or above the NME for 2 consecutive weeks.

When any of these three conditions occurs:

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