

# Bridgewater Hydroelectric Project

ADDRESSING NEW FEDERAL GUIDELINES



Duke Energy's Bridgewater Hydroelectric Project on Lake James near Nebo, N.C. consists of three dams: Linville, Paddy Creek and Catawba. Created in 1919, this project is licensed and regulated by the Federal Energy Regulatory Commission (FERC).

Because new FERC guidelines are being used to assess the physical condition of dams in the event of a large earthquake (predicted ground movements from earthquakes are based on the regional geology and records from historical events including the 1886 Charleston, S.C. earthquake), Duke Energy has begun field studies, seismic stability analyses and engineering design for modifications to these dams to comply with the new guidelines.

Construction on the first of these dams (Paddy Creek) began in 2005. Project modifications should be completed for all three dams in 2012 and will ensure the facility complies with these new changes in federal regulations. The new engineering design includes the construction of large earth and/or concrete structures along the downstream slopes of the dams. These structures will add strength to the dams in the unlikely event of a large earthquake. This design, for the three Bridgewater dams, is similar to the design used at the Wateree Hydroelectric Station in 2002.

The design concept completed or underway at the Bridgewater dams includes the following:

1. Identifying area for obtaining soil, sand and rock materials needed for construction.
2. Excavation downstream of the existing dams to prepare the foundation for the proposed berms.
3. Construction of earth, rock or concrete components of the berms. Materials used in the construction will be from areas developed on Duke Energy-owned properties and/or from commercial quarries located near the site.
4. Reclamation and revegetation of disturbed areas after construction is completed.



Constructed Berm at Wateree Dam, 2002



Excavation at the bottom of Wateree Dam



Paddy Creek Dam



Catawba Dam



Linville Dam

## Project Facts and Information

- Bridgewater Hydroelectric Station – commercial operation 1919.
- Consists of three semi-hydraulic fill dams: Paddy Creek, Linville and Catawba which form Lake James.
- Lake James and the Bridgewater Hydroelectric Station, located at the bottom of Linville Dam, have lessened the effects of low and high river flows, while providing drinking water, recreation and electricity for many decades.

- Duke Energy dams are safe and are inspected routinely by Duke Energy personnel, annually by the FERC, and every five years by an independent engineering consultant.
- This project is required by the FERC and is part of their nationwide effort to improve the performance of existing dams during potentially catastrophic events. It is extremely unlikely the region would have an earthquake the size of the ones used in the evaluations.
- The projects for the three dams will be constructed separately. The engineering consultant/project manager performing the analysis and design is Devine Tarbell & Associates (DTA). DTA engineers have provided engineering and project management services on Duke Energy dam safety projects for over 20 years.

## General Design Concept

