



## Keowee-Toxaway Neighbors

Duke Energy received a license for the Keowee-Toxaway Hydroelectric Project in 1966, providing its Carolinas' customers with 820 megawatts (mw) of clean, economical generation. Along the way, we have been fortunate to work with the communities around Lake Keowee and Lake Jocassee. We strive to be a good neighbor and look forward to continuing these relationships well into the future.

Our current license, issued by the Federal Energy Regulatory Commission (FERC), will expire in 2016 and the Federal Power Act requires nonfederal hydroelectric projects like ours to be relicensed after a license expires. We will file a new license application with FERC in 2014.



In my role as project lead for developing a new license application, I look forward to working with many of you as we strive to develop a balanced approach to managing our hydroelectric resources in the years to come.

As a start, let me share a little information about myself. I started my career at Duke Energy as a college student while studying

zoology at North Carolina State University (Go, Pack!). After graduation, I began working full-time in Duke's water quality permitting group. In my almost 17 years with Duke Energy, I've had a number of different roles including facility environmental compliance roles, researching sustainable development, and helping create the Wildlife and Industry Together (WAIT) program. (Here's a little local trivia: the initial meeting of the WAIT program took place at the World of Energy in 1996. Since that time, the program has spread throughout the state of South Carolina and beyond.) I live in Charlotte with my husband who's an engineer with Duke's hydro group, our two young sons, our two cats, and a whole tank full of guppies.

We will be utilizing FERC's Integrated Licensing Process (ILP) in seeking to relicense the Project. The ILP is intended to provide a predictable, efficient, timely and streamlined licensing process.

This is our first stakeholder newsletter issue and we hope to provide you with a brief overview of the licensing process, an update on our stakeholder teams, an overview of our relicensing project timeline and where we stand in terms of rainfall and stream flow into Lake Keowee and Jocassee and other features.

Over the years, the Keowee-Toxaway Project has provided a clean source of electricity for the region, numerous recreational opportunities for local residents and visitors, and significant wildlife habitat. We look forward to many more years of being a "good neighbor" to the many families who live in this truly outstanding area.

*Jen Huff*  
Project Manager

If you have questions or comments, please email [KTrelicensing@duke-energy.com](mailto:KTrelicensing@duke-energy.com)

## Relicensing Process – Key Milestones

Relicensing a hydroelectric project requires years of preparation, input from area stakeholders, state agencies, elected officials, and reams of technical data.

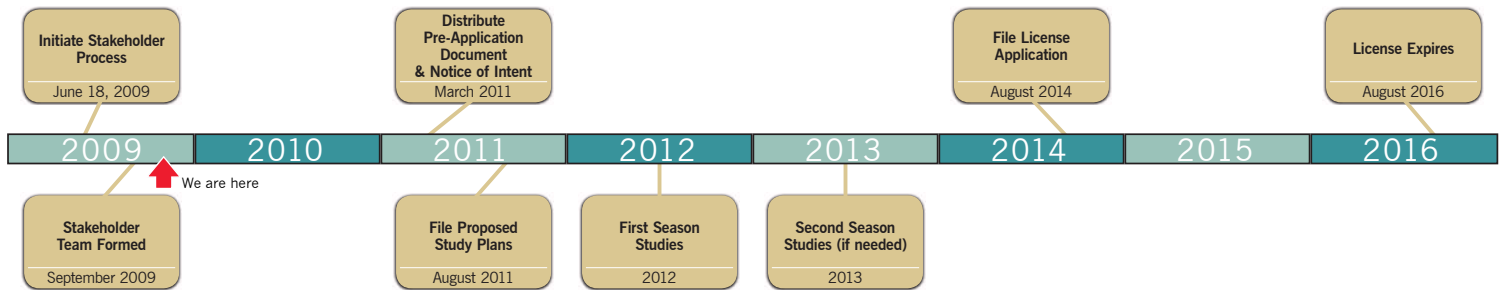
Duke Energy has had a great deal of experience in relicensing its hydroelectric facilities. As in past efforts, we will sponsor a stakeholder team for the Keowee-Toxaway relicensing process with the goal of achieving stakeholder agreements regarding recreation, aquatic habitat and other needs. (See related article)

The licensing process includes numerous steps that Duke Energy

must complete before filing for a new license in 2014. These steps include:

- Filing with FERC a Pre-Application Document (PAD) and Notice of Intent (NOI). The PAD brings together all existing, relevant information about the Project and its effects on resources, as well as a schedule for developing a license.
- Through its scoping process, FERC will identify and refine issues, discuss existing information, identify information gaps, and finalize a process plan.

## Timeline Overview



For additional information about the relicensing project, click here to visit the [Keowee-Toxaway Relicensing](http://www.duke-energy.com/Keowee-Toxaway-Relicensing) Web page on [www.duke-energy.com](http://www.duke-energy.com)

- Duke Energy will file a proposed study plan that describes existing resources and resource management goals of appropriate agencies.

Key milestones that will be met as part of the licensing process include:

- Distribution of a PAD and NOI to file for relicensing with FERC by March, 2011
- The license application will be filed by August, 2014
- The current license expires on August 31, 2016

## KT Relicensing Teams Get to Work

The KT relicensing effort will involve lots of people and organizations over the next five years. To help organize all the people and organizations involved, Duke has identified three different types of teams: the Stakeholder Team, Resource Committees, and Study Teams. Each type of team has specific responsibilities in the relicensing process.

### KT Stakeholder Team

The KT Stakeholder Team will hold its first meeting on September 30 in Greenville, South Carolina. This will be the first of many, many Stakeholder Team meetings as Duke Energy prepares a license application for continued operation of the KT Project for the next 30-50 years. Duke Energy will submit the license application to the Federal Energy Regulatory Commission (FERC) by August, 2014, two years prior to the expiration of the current license. The KT Stakeholder Team will be involved in the development of the license application at every step of the process.

You may be wondering why Duke would go to the trouble to create a Stakeholder Team that's not required by the relicensing regulations. Further, why would anyone sign up to attend many meetings for at least five years? The answer is straightforward: participating on the KT Stakeholder Team makes it easier to participate in the relicensing process effectively. And effective participation in the relicensing process is the best way to ensure that organizations' interests are considered during the relicensing process. In addition, Stakeholder Team members will have access to Duke Energy's relicensing team, FERC staff, and the collective experience and wisdom of agency staff who have worked on other relicensing efforts.

KT Stakeholder Team Members have five broad responsibilities.

- **Process Leadership:** Team Members provide input to Duke Energy's relicensing staff about how to implement the relicensing process.
- **Organization Representation:** Team Members represent their organizations' interests in Stakeholder Team meetings and the relicensing process. Team Members work with the

Stakeholder Team on addressing these issues.

- **Communication:** Team Members communicate with their organizations about the relicensing process, upcoming milestones, and the status of relicensing activities.
- **Identification of Resource Experts:** Team Members are charged with identifying technical experts within their organizations for participation on the Resource Committees (RC) and Study Teams. The RCs and Study Teams are the groups that do the bulk of the studies necessary for the relicensing effort.
- **Negotiation:** Team Members will work together to comprehensively identify conditions for the New License that best balance the many competing interests at the KT Project. These conditions will then be incorporated into a legally-binding contract called a Relicensing Agreement. Relicensing Agreements are not required in the relicensing process, but such agreements can benefit all the Parties to such agreements.

The twenty-two member organizations represented on the Stakeholder Team are:

Advocates for Quality Development; City of Seneca; Duke Energy; Eastern Band of Cherokee Indians; Friends of Lake Keowee Society; Greenville Water System; NC Department of Environment and Natural Resources; NOAA Fisheries; Oconee County; Pickens County; The Reserve at Lake Keowee; SC Department of Archives & History; SC Department of Health and Environmental Control; SC Department of Natural Resources; SC Department of Parks, Recreation & Tourism; SC Wildlife Federation; Upstate Forever; US Army Corps of Engineers; US Fish and Wildlife Service; US Forest Service, Pisgah Forest; US Forest Service, Sumter Forest; Warpath Development.

### Resource Committees & Study Teams

Unlike the Stakeholder Team, which has a broad perspective that embraces all of the issues associated with operation of the

KT Project, Resource Committees (RC) focus on their specific resource area and how that resource area is affected by operation of the KT Project. The RC members identify studies that are needed within their resource area, identify technical experts to conduct the studies, and review the findings of the Study Teams for presentation to the Stakeholder Team. Study Teams are the scientists, engineers, and other technical experts that actually conduct the numerous relicensing studies.

The seven RCs are: Aquatics; Cultural Resources; Recreation; Shoreline Management; Water Quality; Water Quantity & Operations; Wildlife & Botanical. RCs will begin meeting in October; Study Teams will begin their work in 2010.



## A Little Background

Duke Energy has a long history of operating hydroelectric stations. Wylie Hydroelectric Station, the company's first generating plant, entered operation in 1904. It helped initiate the electrification of the Carolinas, a process that continues to this day.

### Jocassee Pumped Storage Facility

In the Keowee-Toxaway Project, Duke operates two lakes and two very different hydroelectric stations. The Jocassee Pumped Storage Facility is a four-unit, 662.5 megawatt (mw) generating station located in Pickens County, South Carolina. The commercial operation of units 1 and 2 began in 1973, followed by units 3 and 4 in 1975.

As a pumped-storage facility, water is released through turbines from Lake Jocassee into Lake Keowee. These units are typically used during peak demand periods. In the summer, the peak normally occurs in the late afternoon and in the winter during the early morning hours.

At night, when demand for electricity on the system is very low, the hydro generators are turned into large, electric motors and used to pump water from Lake Keowee back into Lake Jocassee for use during peak periods once again. Since the energy needed to pump the water comes from low-cost nuclear generation, it helps balance our load and keep costs low.

At full pond, Jocassee's surface area is approximately 7,980 acres with approximately 92 miles of shoreline.

### Keowee Hydroelectric Development

Located in Pickens County, Keowee Hydro is a two-unit, 157.5 mw conventional hydroelectric facility. The station entered commercial operation in 1971. At full pond, the surface area of Lake Keowee is approximately 17,700 acres with approximately 388 miles of shoreline.

Keowee Hydro was created by constructing dams across the Keowee River and Little River, creating a reservoir with two distinct halves. Lake Keowee provides a crucial source of cooling water and emergency back-up power to Oconee Nuclear Station.

In addition, during peak periods of demand for electricity, Keowee Hydro's two units can be brought on line within minutes notice to provide additional generation.

## Water and Energy Efficiency Tips

Each of us can do our part to conserve. By using less electricity and conserving water, we can reduce our costs and have a positive impact on the environment.

Try these water and energy conservation ideas:

- Take brief showers instead of baths
- Only run the washing machine or dishwasher when you have a full load
- Use low-flow showerheads and toilets
- Replace leaky faucets
- Make sure gaps are sealed between doors and windows
- Replace your heating and cooling system filters on regular basis
- Use compact fluorescent bulbs instead of incandescent lighting
- Unplug energy "vampires," small chargers that use small amounts of energy if left plugged in while not used for charging



## World of Energy – Celebrate the Outdoors

On October 3, 2009 from 9:00 a.m. to 3:00 p.m., be sure to come out to Duke Energy's World of Energy as we celebrate the great outdoors during the National Hunting and Fishing Day.

In 2008, nearly 1,200 people crowded into the grounds around Oconee Nuclear Station's World of Energy near Seneca, S.C. for the annual celebration. Visitors participated in more than 20 outdoor activities with experts on hand to provide demonstrations and instruction for children and adults.

This year, the World of Energy plans an even bigger celebration for visitors that showcase the wise use and management of our natural resources. Events planned for the October 3rd event include:

- Air rifle shooting by 4-H Shooting Sports
- Archery by SC Bow Hunters Association
- Fishing by S.C. Department of Natural Resources
- Butterfly exhibit by Clemson University
- Butterfly gardening by John and Carolyn Turner

- Camo games by Oconee County Extension Service
- Fly casting by the Chattooga River Chapter of Trout Unlimited
- Fly tying by the Chattooga River Chapter of Trout Unlimited
- Kayaking by Calm Water Kayak Tours based in Ware Shoals, S.C.
- Take One Make One trailer by S.C. Department of Natural Resources Law Enforcement
- Tree stand safety by 4-H Shooting Sports
- Wildlife artifacts by S.C. Department of Natural Resources
- Retriever demonstrations by Foothills Retrievers

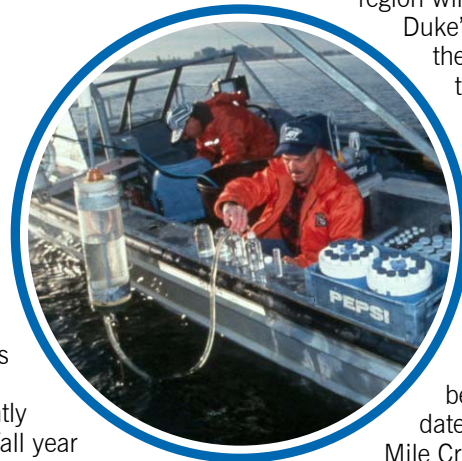
The event is a partnership between Duke Energy, Upstate Forever, South Carolina Department of Natural Resources, Clemson University 4-H Shooting Sports, Trout Unlimited, Clemson Extension 4-H, South Carolina Wildlife Federation, Harry Hampton Wildlife Fund, the Weatherby Foundation, and Calm Waters Kayak Tours of Ware Shoals.

## Water Resources Update Late Summer – Fall 2009

What a difference a year makes! Through late August 2009 Greenville has seen 81.5% of long term average precipitation. This has allowed Duke Energy to fill and store water in Lake Jocassee and to maintain lake levels on Lake Keowee. It has been two years since Lake Jocassee has been this high. With the good news comes the reality and the variability of a natural process such as precipitation and meeting the requirements of Duke Energy's contract with the Corps of Engineers. Greenville, SC and Hartwell Hydro Station are currently reporting six inches and above deficits in rainfall year to date. To balance the water between the Corps of Engineers' Lake Hartwell and Thurmond Lake and Duke's Lakes Keowee and Jocassee, Duke Energy had to begin making weekly releases from Keowee Hydro in mid-June. This in turn has caused the gradual decline of Lake Jocassee's levels.

What is the late summer and fall outlook for rainfall? The National Oceanic and Atmospheric Administration (NOAA) forecasts an equal chance for September and the period September through November of having above, below or normal precipitation. That is essentially no guidance and not much to take to the planning bank. One Duke Energy meteorological consultant has forecast that the period September through November will be 10-30 % below normal values for the Keowee-Toxaway River Basin. And we can't overlook the other natural processes such as evaporation and transpiration which are highest typically in July but still high going into the fall.

What about tropical storms or hurricanes this season? Historically speaking, in August of 1814, in Washington, D.C., President James Madison along with the Senate and the House were driven out of Washington, D.C. by the British Army. The British set the President's residence, later "The White House," on fire, which burned into the next day. Then a hurricane struck Washington helping to put out the fires and drive the British back to their



ships. Unfortunately, there is no forecast to suggest that the region will see any rainfall from such storms this year.

Duke's consultant has downgraded his forecast for the total number of storms. Primary reasons for this decrease in storm activity include continued cooler-than-normal sea surface temperatures across the Atlantic and the developing El Nino in the Central Pacific. The El Nino is expected to lead to greater wind shear across the Gulf which will be an inhibiting force relative to tropical storm development.

What about streamflow? Streams like the Chattooga River have responded to periodic rainfall, but have receded gradually to a position below the long term median streamflow for the date. Streams from the Piedmont such as Twelve Mile Creek have not benefited significantly from the rainfall events like the mountain streams have and are running significantly below the median values.

Why does the Lake Keowee level remain where it is? The simple answer is that we need significantly more rainfall in the basin to allow Lakes Keowee and Jocassee to fill up and allow Duke Energy to make required releases downstream to the Corps of Engineers without adversely impacting lake levels. Remember that Lakes Keowee and Jocassee fluctuate with pumped storage operations by the Jocassee Pumped Storage Hydroelectric Station. Lake Jocassee had been down due to the prolonged effects of the drought for two years, and Duke Energy stored as much water in Lake Jocassee as possible when it started raining this spring. That stored water is being used currently to address the required weekly releases to the Corps.

Putting it all together, without more rainfall than we are currently seeing, Lake Jocassee will gradually decline and Lake Keowee will stay generally where it is now through the fall.

*George Galleher, PE  
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August 26, 2009*