Harris Nuclear Plant



Quick Facts

Groundbreaking: 1978

Commercial operation:
Unit 1 - 1987

Number of units: 1

Reactor type: Pressurized water reactor (PWR)

Station capacity: 964 megawatts, enough to power more than 720,000 homes. According to the Nuclear Energy Institute (NEI), 1 MW of electricity produced by nuclear energy would produce enough electricity to power more than 750 homes.

Employees: More than 450 with additional contract workers during refueling outages

Nuclear fleet taxes: More than $264 million in 2023
(property and payroll taxes)

General Information

Harris Nuclear Plant is located on Harris Lake in New Hill, N.C., approximately 22 miles southwest of Raleigh.

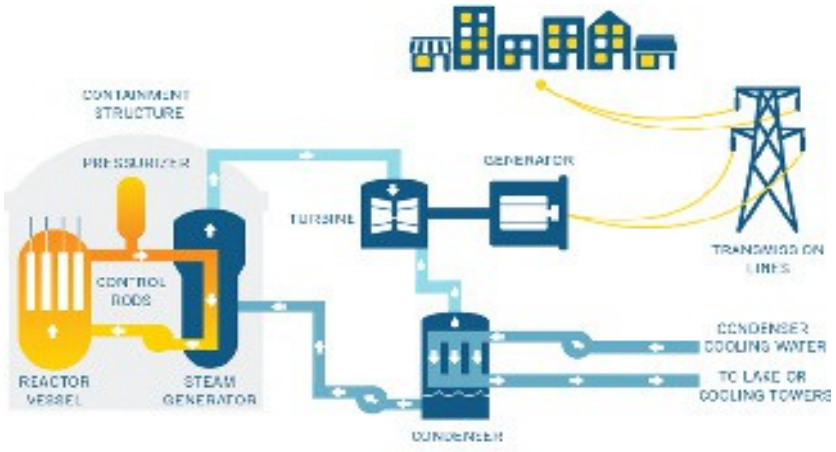
Harris Nuclear Plant personnel remain committed to operating the units safely and reliably and being a good neighbor.

Since it began operating, Harris has accumulated many achievements:

- Issued a 20-year extension on its license by the Nuclear Regulatory Commission or NRC (all U.S. reactors were initially licensed for 40 years).
- The plant is named after Shearon Harris, former president, CEO and chairman of Carolina Power & Light.
- Harris Lake, which supplies cooling water for the plant, includes two boat ramp facilities and a county park that make the lake accessible for fishing, boating and water skiing.

Harris Energy & Environmental Center

Take a self-guided journey through the Harris Energy & Environmental Center, where you can view educational exhibits and learn more about energy and Harris Nuclear Plant. All activities are free and open to the public by appointment only. To plan a visit, call 984.229.6261 or email Harris.Plant@Duke-Energy.com



Nuclear Fundamentals

Harris Nuclear Plant uses uranium as its fuel. Each uranium pellet, less than one inch long, is enclosed in metal rods 13 feet tall. There are approximately 350 pellets per rod, 264 fuel rods in a fuel assembly and 157 fuel assemblies in the reactor core.

In a process called nuclear fission, a source emitting free neutrons is inserted into the uranium fuel core. The uranium fuel absorbs these free neutrons, becomes less stable and releases additional free neutrons. This movement of free neutrons creates heat that is used to generate electricity.

Here is how it works:

- Water circulates through the nuclear core, reaching 590 degrees F by removing heat from the fission process. (Neutron absorbing control rods are lowered into the fuel core to slow or stop this process.)
- This heated water travels to large steam generators or “heat exchangers.”
- This 590-degree F water flows through thousands of tubes inside the steam generators while cooler water circulates on the outside of these tubes and becomes steam.
- The steam flows to a turbine and spins large blades attached to a shaft and generator, producing electricity.
- This steam then flows across a set of metal tubes containing cool water that condenses the steam for reuse in the steam generators.
- This heated water is returned to a cooling tower where it cools and returns to the plant’s condenser system.

Conserving Resources

Because nuclear power plants do not burn fuel, they produce no greenhouse gas emissions while generating electricity. More than half of America’s carbon-free electricity comes from nuclear energy.

Nuclear Safety

- Nuclear stations have multiple, robust safety barriers in place.
- The containment building housing the nuclear fuel core is 4.5 feet of reinforced concrete with a 5/8-inch-thick steel liner.
- The reactor vessel containing the nuclear fuel is 42.5 feet tall and 13 feet in diameter and constructed of 6-inch-thick steel.
- Harris has redundant safety systems, such as multiple pumps and backup electrical supply systems.
- Nuclear stations are built to withstand a variety of external forces, including hurricanes, tornadoes, fires, floods and earthquakes.
- Duke Energy works closely with the Nuclear Regulatory Commission (NRC), various federal agencies, state agencies and local governments to maintain emergency response plans that ensure close coordination with these groups.

Nuclear Security

- Nuclear stations have numerous security features, seen and unseen.
- Armed, highly trained security professionals provide 24-hour protection.
- Physical barriers and electronic surveillance systems surround Harris.
- Access is tightly controlled, and nuclear employees must pass strict background, psychological and drug/alcohol screenings.

Radiation

- Radiation is a natural part of our environment.
- We receive radiation from the sun, minerals in the earth, food, etc.
- The amount of annual radiation at a nuclear plant site boundary is less than a passenger receives during a round-trip, coast-to-coast flight.