

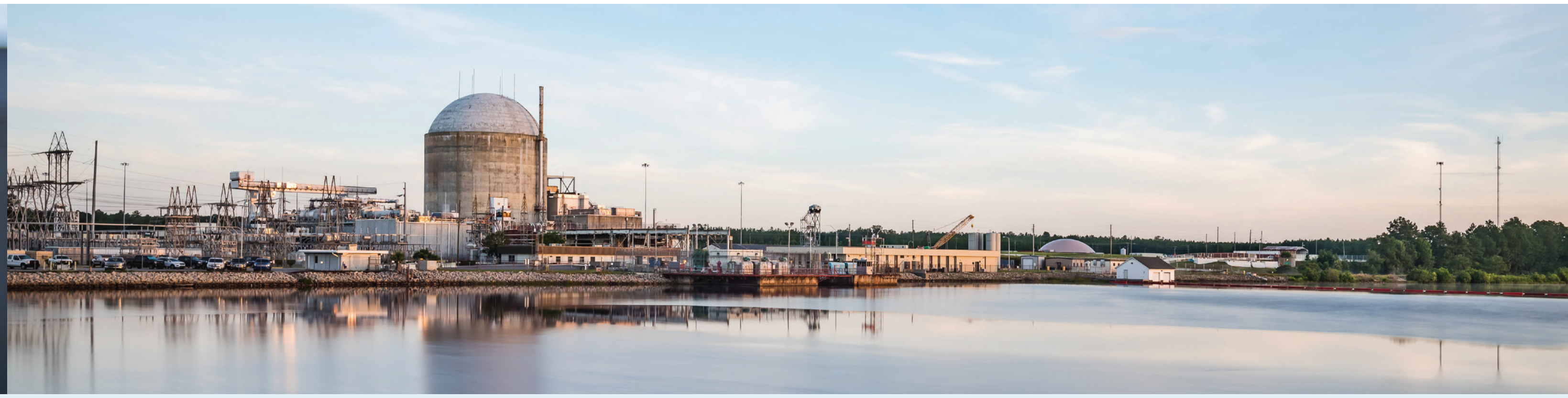



2024 MEDIA GUIDE

Duke Energy Nuclear

DUKE ENERGY

BUILDING A ***SMARTER*** ENERGY FUTURE ®



Contents

This media guide is intended to serve as a reference for Duke Energy's nuclear facilities. Additionally, this guide provides an overview of nuclear generation, the benefits of nuclear power, safety and security, emergency planning, nuclear operations, used nuclear fuel, radiation and other related topics.

Duke Energy is committed to the safe operation of its nuclear fleet. Our goal is to protect the health and safety of our neighbors, employees and the environment, as well as provide accurate information to the news media and public.

You can reach Duke Energy 24 hours a day through our Media Line: 800.559.3853 (DUKE).

This media guide provides information that can help you when covering Duke Energy's nuclear fleet or the nuclear industry. We recognize the challenges of covering news related to nuclear energy, and we appreciate your important role in providing timely and accurate information to the public.

Should an emergency occur at any of our nuclear stations, you can reach Duke Energy for information by calling 800.559.3853 (DUKE). If needed, a media center would be opened based on the location of the affected station.

Thank you for taking time to review the Duke Energy Nuclear Media Guide. If you have any questions about Duke Energy's nuclear fleet or the nuclear industry, please contact us at nucleargenerationcommunications@duke-energy.com.

Overview

Duke Energy, a Fortune 150 company headquartered in Charlotte, N.C., is one of the largest energy holding companies in the U.S., supplying and delivering energy to approximately 8.2 million customers.

Duke Energy operates 11 nuclear units at six sites in the Carolinas. The combined generating capacity of these facilities is nearly 11,000 megawatts. Duke Energy's nuclear fleet generates approximately half of the electricity provided to its customers in the Carolinas, with production costs among the lowest in the nation.

The mission of Duke Energy's Nuclear Generation organization is to generate clean, life-essential electricity around-the-clock to power the lives of our communities. Our stations are designed, built and operated for safety and security, with multiple barriers and redundant safety systems to protect the public, station workers and the environment.

Nuclear energy has been a part of Duke Energy's diverse fuel mix for more than 50 years, setting industry benchmarks for safety, reliability and efficiency. Brunswick Nuclear Plant, Harris Nuclear Plant, McGuire Nuclear Station and Oconee Nuclear Station feature energy education centers, which serve as strong links between the stations and neighboring communities.

Duke Energy Nuclear Facilities:

Additional information about each nuclear facility can be viewed by visiting duke-energy.com or by selecting the plant below.

Brunswick Nuclear Plant

Capacity:	1,870 megawatts
Location:	Southport, N.C.
Number of Units:	2
Commercial Date:	1975

Catawba Nuclear Station

Capacity:	2,310 megawatts
Location:	York, S.C.
Number of Units:	2
Commercial Date:	1985

Harris Nuclear Plant

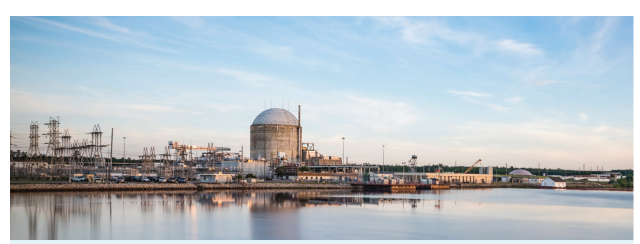
Capacity:	964 megawatts
Location:	New Hill, N.C.
Number of Units:	1
Commercial Date:	1987

McGuire Nuclear Station

Capacity:	2,316 megawatts
Location:	Huntersville, N.C.
Number of Units:	2
Commercial Date:	1981

Oconee Nuclear Station

Capacity:	2,554 megawatts
Location:	Seneca, S.C.
Number of Units:	3
Commercial Date:	1973



Robinson Nuclear Plant

Capacity:	759 megawatts
Location:	Hartsville, S.C.
Number of Units:	1
Commercial Date:	1971

Visiting a Duke Energy Nuclear Education Center

Duke Energy Education Centers

Duke Energy provides energy education centers at four of its nuclear facilities. The Energy and Education Center at Brunswick, the Energy and Environmental Center at Harris, the EnergyExplorium at McGuire and the World of Energy at Oconee serve as strong links between the sites and their communities. Each year, thousands of people visit these education centers to learn more about nuclear power and Duke Energy.

The four centers feature hands-on educational exhibits and resources for anyone interested in learning more about electricity and the benefits of nuclear power. In addition to educational opportunities, the EnergyExplorium and World of Energy each feature a nature trail, picnic facility and butterfly garden. These stations also regularly host free, family-friendly events.

All activities are free at the education centers.

Energy and Education Center at Brunswick Nuclear Plant

Phone:	910.832.2900
Email:	Brunswick.Plant@duke-energy.com
Address:	8520 River Road SE Southport, NC 28461
Hours:	Individual and group visits are arranged by appointment only.

Energy and Environmental Center at Harris Nuclear Plant

Phone:	984.229.6261
Email:	Harris.Plant@duke-energy.com
Address:	3932 New Hill Holleman Road New Hill, NC 27562
Hours:	Individual and group visits are arranged by appointment only.

EnergyExplorium at McGuire Nuclear Station

Phone:	980.875.5600
Email:	EnergyExplorium@duke-energy.com
Address:	13339 McGuire Station Road Huntersville, NC 28078
Hours:	Individual and group visits are arranged by appointment only.

World of Energy at Oconee Nuclear Station

Phone:	864.873.4600
Email:	WorldOfEnergy@duke-energy.com
Address:	7812 Rochester Highway Seneca, SC 29672
Hours:	Wednesday through Friday, 10 a.m. to 4 p.m. Reservations are recommended for group visits. Closed Saturday, Sunday and some holidays.

Nuclear Information Center (NIC)

Please take a moment to visit the NIC, Duke Energy's nuclear blog. The NIC features stories about nuclear plant operations, industry news, environmental stewardship, nuclear energy careers, community volunteerism, emergency planning and more.

News Media Contacts

Duke Energy and Nuclear Site Media Relations Contact Information

Duke Energy 24-hour Media Line:
800.559.3853 (DUKE)

Media center locations are determined based on state, county and Duke Energy considerations.

Federal, State and Local Agencies

Federal Agencies:

Nuclear Regulatory Commission
Public Affairs, Region II, Atlanta, Ga.
404.997.4000 or 800.577.8510 (business hours)
301.816.5100 (after hours, call the Operations Center in Rockville, Md.)

Federal Emergency Management Agency (FEMA)
770.220.5226 (news media)
770.220.5200 (24 hours)

State Agencies:

North Carolina Division of Emergency Management
919.733.3300 or 800.858.0368

North Carolina Department of Health and Human Services
919.855.4800 or 800.662.7030

South Carolina Emergency Management Division
803.737.8500

South Carolina Department of Health and Environmental Control
803.898.3432

Local Emergency Management Agencies:

Brunswick Nuclear Plant

Brunswick County Emergency Management
910.253.5383

New Hanover County Emergency Management
910.798.6900

Catawba Nuclear Station

York County Emergency Management
803.326.2300 (24 hours)
803.818.5212 (Clover, Lake Wylie and Bethel)

Charlotte-Mecklenburg County Emergency Management
704.336.2412 (business hours)
704.336.2441 (after hours)

Gaston County Emergency Management
704.866.3350 (business hours)
704.866.3300 (after hours)

Harris Nuclear Plant

Chatham County Emergency Management
919.542.2911

Harnett County Emergency Management
910.893.7580 (business hours)
910.893.9111 (after hours – sheriff)

Lee County Office of Emergency Management
919.718.4670 (business hours)
919.775.5531 (after hours – sheriff)
919.775.8268 (after hours – Sanford police)

Wake County Emergency Management
919.856.6480

McGuire Nuclear Station

Charlotte-Mecklenburg County Emergency Management
704.336.2412 (business hours)
704.336.2441 (after hours)

Gaston County Emergency Management
704.866.3350 (business hours)
704.866.3300 (after hours)

Iredell County Emergency Management
704.878.5353 (business hours)
704.878.3039 (after hours)

Lincoln County Emergency Management
704.736.8660 (business hours)
704.735.8202 (after hours)

Catawba County Emergency Services
828.465.8230 (business hours)
828.464.3112 (after hours)

Oconee Nuclear Station

Oconee County Emergency Management
864.638.4200

Pickens County Emergency Management
864.898.5945 (business hours)
864.898.5500 (after hours)

Robinson Nuclear Plant

Chesterfield County Office of Emergency Management
843.623.3362

Darlington County Emergency Management
843.398.4469

Florence County Emergency Management
843.665.7255

Lee County Emergency Management
803.484.5274

Industry Organizations

Nuclear Energy Institute (NEI)
202.739.8000

American Nuclear Society (ANS)
800.323.3044

Electric Power Research Institute (EPRI)
800.313.3774

Emergency Preparedness

Duke Energy is committed to the safe, secure operation of its nuclear stations. A combination of well-trained personnel, physical barriers, advanced surveillance equipment, diverse and redundant safety systems and many other features ensures the safe operation of these stations. Beyond these safeguards, each station has detailed plans for handling emergencies, no matter how unlikely. These plans are closely coordinated and practiced with county, state and federal officials on a regular basis.

Neighbors living within the 10-mile emergency planning zone (EPZ) around nuclear stations receive emergency preparedness information annually in the form of a postcard informing residents of the emergency preparedness information on Duke Energy's website. In addition, nuclear information is shared with local schools and businesses/organizations such as hotels, motels, marinas and post offices that are visited by transient populations. Media outlets around our nuclear stations also receive information regarding our operations. Additional emergency preparedness information can be found on Duke Energy's website.

Duke Energy is responsible for managing any incident at its nuclear stations and would immediately notify federal, state and local authorities per its plans and procedures. These officials would then notify the public if any action were necessary.

Key Emergency Preparedness Terms

Public Protective Actions

In the unlikely event of a nuclear station incident, the public may be instructed to shelter (i.e., stay indoors), evacuate or take potassium iodide (KI). County and state emergency management officials are responsible for making public protective action decisions and providing information to the public, no matter the type of emergency.

Outdoor Warning Sirens

Emergency outdoor warning sirens are located throughout each nuclear station's EPZ. To ensure the sirens operate properly, they are tested in various ways on a weekly and quarterly basis. Testing is part of a formal maintenance program and requires no public action. Quarterly, full-volume test dates are noted in annual emergency planning information provided to EPZ residents.

Warning sirens are for outdoor notification and only sounded at the direction of county/state emergency officials. If a siren sounds for three minutes, multiple times, the public should listen to a local radio or television station to hear emergency information.

Hearing a siren does not mean anyone should evacuate. The emergency information carried on the radio and television will provide what actions, if any, the public should take.

Potassium Iodide (KI)

KI is a non-prescription drug similar to iodized table salt. KI may prevent the thyroid gland from absorbing radioactive iodine and is one protective action that state or county officials may recommend during a nuclear emergency. KI is available to residents living within 10 miles of a nuclear station through county health departments and local pharmacies.

KI should be taken only at the direction of state and county public health officials. Emergency information on the radio and television will advise the public when and how long to take KI, if it is needed.

For more KI information, visit:
Centers for Disease Control and Prevention

North Carolina Department of Health and Human Services

South Carolina Department of Health and Environmental Control

About Nuclear Power

Value of Nuclear Energy

Nuclear power is a safe, reliable and clean source of energy – affordably generating approximately 20% of America's electricity.

Nuclear energy accounted for more than 80% of Duke Energy's carbon-free energy in 2023. The company operates 11 nuclear units in two states: five units at the Brunswick, Harris and McGuire facilities in North Carolina; and six units at the Catawba, Oconee and Robinson facilities in South Carolina. Some states, such as South Carolina, receive more than 50% of their electricity from nuclear power.

Safety and security are the highest priorities for Duke Energy's nuclear fleet, as well as the U.S. nuclear industry. Nuclear stations are designed, built and operated according to extensive safety and security requirements – strictly regulated by the Nuclear Regulatory Commission (NRC) – to protect the public, station workers and the environment.

Nuclear stations can reliably generate large amounts of carbon-free electricity around-the-clock to meet customer energy needs, accounting for more than 50% of all carbon-free electricity generated in the U.S. In fact, nuclear power provides electricity to one in five businesses and homes in the U.S. Nuclear stations are also a low-cost provider of large-scale electricity 24 hours a day (baseload generation).

Renewable sources like hydroelectric, solar power, geothermal energy, wind power and biomass, and sources like coal and natural gas, all are important to the nation's energy mix. However, we are unable to meet our energy needs around-the-clock with renewable energy sources only, making nuclear energy an attractive source of carbon-free baseload generation.

Nuclear energy currently plays a key role in meeting our nation's electricity needs and will continue to be an important energy source for the world in the years to come.

Safety and Security of Nuclear Stations

Duke Energy, along with the U.S. nuclear industry, is committed to ensuring the safe, secure operation of our nation's nuclear stations every day.

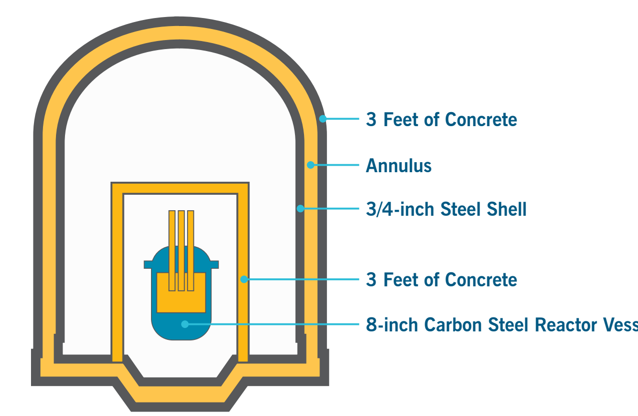
Nuclear stations are among the safest and most secure facilities in the world. Industry organizations promote safety and excellence in the operation of commercial nuclear power plants. The NRC provides strong safety oversight and regulation of the industry, as well.

Nuclear stations are built to withstand a variety of external forces, including hurricanes, tornadoes, fires, floods and earthquakes. Nuclear stations are constructed to withstand earthquakes of the magnitude equivalent to or greater than the largest known earthquake for its geographic location.

The containment buildings that house the nuclear reactor are made of thick concrete and rebar. Nuclear stations also have numerous and diverse safety systems and physical barriers to prevent the release of radioactive materials and to protect the public, station workers and the environment.

A Containment Building's Robust Physical Structure

A study conducted by the Electric Power Research Institute (EPRI) shows that reactor and fuel structures at U.S. nuclear stations would protect against a radiation release even if struck by a large commercial jetliner. A nuclear reactor is surrounded by a number of structures that would limit the effects of such an impact.



Nuclear Security

Nuclear stations have numerous security features. Armed, well-trained security forces guard these stations 24 hours a day. Physical intrusion barriers consisting of concrete structures and razor wire fences, to name a few, surround the stations. Advanced surveillance equipment continually monitors areas surrounding the station.

Station access is tightly controlled by both security forces and sophisticated security systems, such as palm and iris recognition screening, and weapons and explosives detectors. Nuclear employees must pass stringent background investigations, psychological evaluations, and drug and alcohol screenings. Employees and contractors are subject to continual monitoring and screening.

Our nuclear security programs are evaluated for effectiveness on a regular basis by both the company and the NRC. Duke Energy-operated nuclear stations meet all requirements set forth by the NRC and perform well during security drills and tests. The company's security training programs and facilities are among the best in the industry. We work closely with local, state and federal law enforcement agencies, federal security agencies and the intelligence community.

Nuclear Power Generation

Generation of electricity in a nuclear station is similar to a gas-fired station. The difference is the source of heat. Fissioning (splitting) of uranium atoms replaces the use of natural gas as the source for heat. The heat is used to turn water into steam to drive turbine generators.

Duke Energy's McGuire, Oconee, Catawba, Robinson and Harris nuclear plants are pressurized reactor designs. Brunswick is a boiling water reactor design.

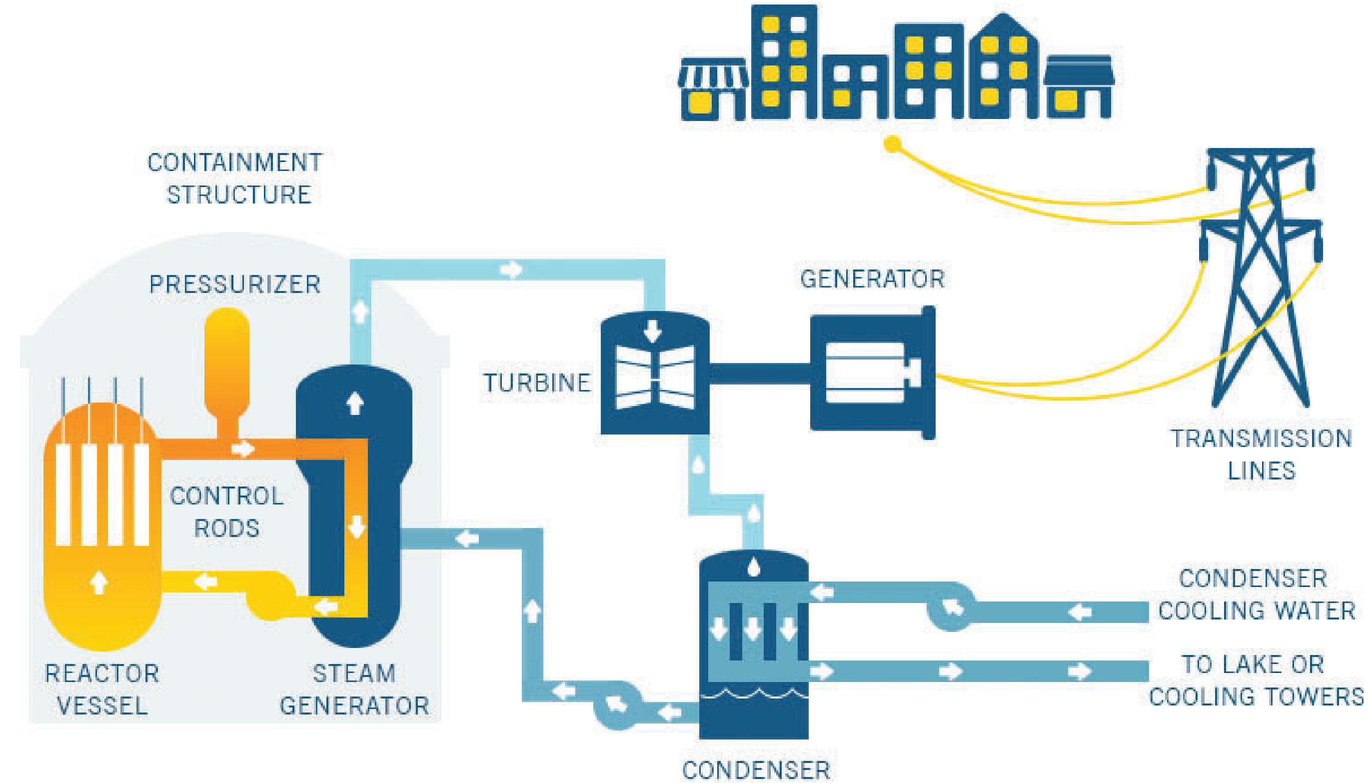
Pressurized Water Reactor

Pressurized water reactors (also known as PWRs) keep water under pressure so that it heats but does not boil. This heated water is circulated through tubes in steam generators. Water inside the steam generators circulates around these tubes and is heated into steam, which then turns the turbine generator. Water from the reactor and water that is turned into steam are in separate systems and do not mix.

How a Nuclear Pressurized Water Reactor Works

Reactor

The fuel used in nuclear generation is uranium-235. It is manufactured as small pellets. A single pellet is less than an inch long, but it produces the energy equivalent to using 17,000 cubic feet of natural gas. The pellets are placed end to end into fuel rods 12 feet long. Approximately 200 of these rods are grouped together into what is called a fuel assembly.



Nuclear Pressurized Water Reactor

Learn more about how a pressurized water reactor works.

Nuclear fission occurs when uranium atoms are split by particles known as neutrons. Uranium-235 atoms have a unique quality that causes them to break apart after colliding with a free neutron. Once a uranium-235 atom splits, neutrons are released that collide with other uranium-235 atoms. A chain reaction begins, and heat is released as a byproduct.

Control rods are inserted among the fuel assemblies to regulate or stop the fission process. These control rods absorb neutrons. When fully inserted among the fuel assemblies, nuclear fission stops. Withdrawing the control rods allows fission to occur.

Pressurizer

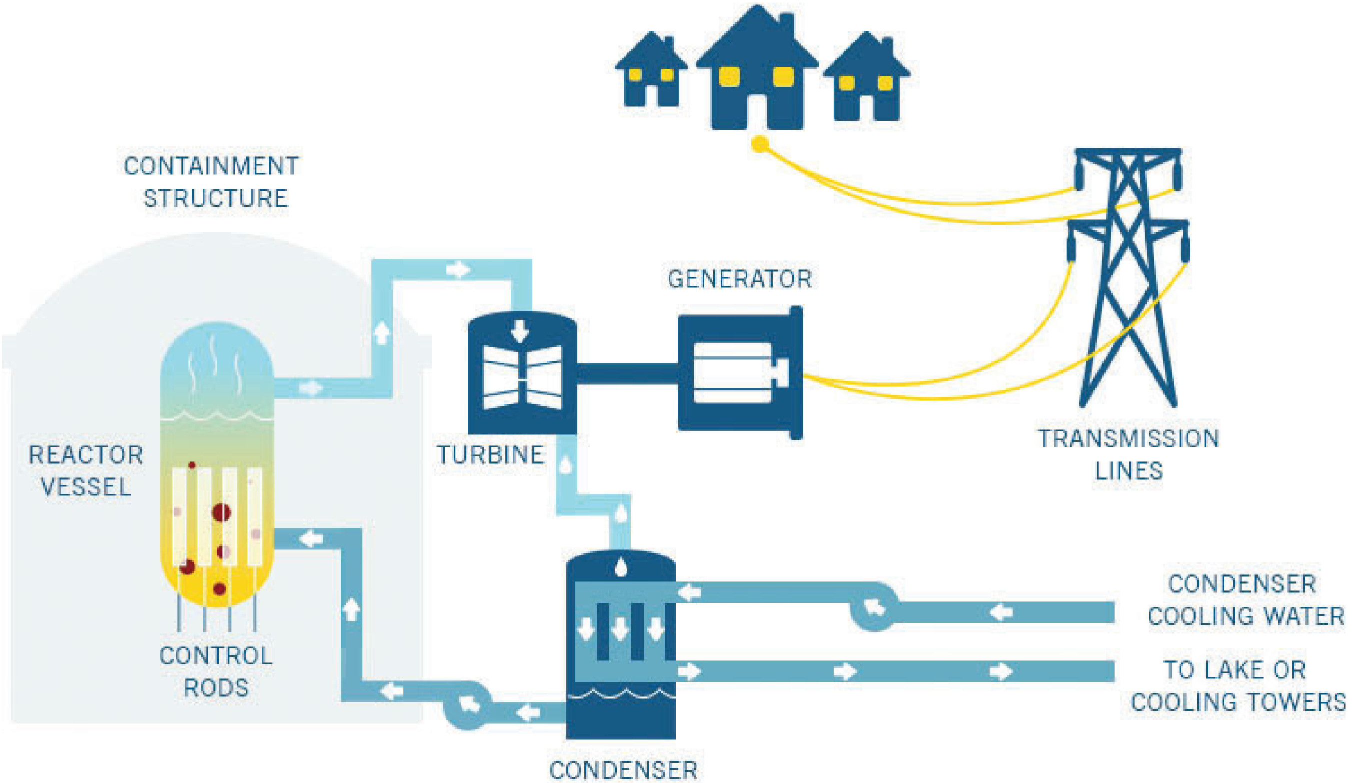
In a pressurized water reactor, the heat produced in the reactor is transferred to the first of three separate water systems: the primary coolant (reactor), secondary coolant (steam supply) and condenser systems. The primary coolant is heated to more than 600 degrees Fahrenheit. A pressurizer keeps the primary coolant under pressure to prevent boiling.

Steam Generator

The hot, pressurized water from the reactor (primary coolant) passes through thousands of tubes in nearby steam generators. The outside of these tubes is surrounded by water from the secondary coolant system. The heat from the primary coolant is transferred to the secondary coolant system, which then turns into steam. The primary and secondary systems are closed systems. This means the water flowing through the reactor remains separate and does not mix with water from the other system or the lake.

Turbine Generator

Steam produced in the secondary coolant system is piped from the containment building into the turbine building to push the blades of a turbine. The turbine is connected to an electric generator by a long shaft. As the turbine blades spin, the shaft turns a magnet inside the generator to produce electricity.



Nuclear Boiling Water Reactor

Learn more about [how a boiling water reactor works](#).

Condenser Coolant

After spinning the turbines, the steam flows across condenser cooling system tubes. The steam is cooled, condensed back into water and returned to the steam generator to be used again and again.

Lake Cooling or Cooling Towers

At some nuclear stations, lake water flows through thousands of condenser tubes to cool steam back to water. Water from the condenser system is then discharged down a long canal (for cooling) and eventually enters the main part of a lake, river or ocean.

At other plants, the condenser cooling water is circulated through cooling towers to remove the extra heat it has absorbed. The water is pumped to the top of the cooling towers and is allowed to pour down through the structure. Natural-draft towers utilize the upward flow of air through the towers to cool the condenser water. In mechanical-draft towers, several fans pull air inside to cool the condenser water. After it is cooled, the condenser water is pumped back into the turbine building to cool and condense the steam.

How a Nuclear Boiling Water Reactor Works

Boiling water reactors (also known as BWRs) operate in a fashion similar to a PWR. Water in the reactor vessel is allowed to boil into steam to spin a turbine generator. A closed condenser water system cools this steam back into water so it can be pumped back into the reactor vessel. The nuclear fuel core is cooled in the process.

A BWR uses two separate water systems called "cycles." To begin, water is pumped through the reactor core, where a controlled nuclear reactor releases heat. The water inside the reactor vessel boils into superheated steam. This steam is then directed against the turbine blades to make the turbine and electric generator spin at approximately 1,800 revolutions per minute (rpm), producing electricity.

After passing through the turbine, the steam passes through a condenser, where it is cooled by water drawn from a body of water, converting it back to a liquid state. The water is then returned to the reactor, where it is converted to steam again. The water from the reactor cycle never comes into direct contact with the plant's other water systems and is contained within the reactor building and the turbine/generator building.

[Learn more about nuclear power](#).

Used Nuclear Fuel

Storage

Used nuclear fuel is a solid byproduct of the fission process used to generate electricity in nuclear stations. If all the used fuel produced in nearly 50 years of U.S. nuclear station operation were stacked end to end, it would cover a football field to a depth of less than 10 yards. Of this fuel, 95% could be recycled.

Duke Energy has more than 50 years of experience handling used nuclear fuel. Our employees are well-trained, environmentally conscious professionals who take pride in their work, including safely managing used fuel.

Duke Energy safely stores used nuclear fuel at its facilities in two ways – in steel-lined, concrete storage pools filled with water and in large, airtight steel canisters (dry cask storage). As with every other vital system at a nuclear station, the used fuel pools and dry storage canisters have numerous and redundant safety and security systems that ensure the fuel remains safe and secure.

The federal government has responsibility for permanently disposing of used nuclear fuel. Until a national repository or recycling is available, utilities will continue to safely and securely store used fuel at nuclear stations in storage pools or dry storage containers.

Reprocessing (Recycling)

Used nuclear fuel recycling technology does exist, although not commercially in the U.S. For many years, a number of other countries (India, Japan, France, United Kingdom and Russia) have successfully used recycling to reduce the volume of content of used fuel. The pursuit of these advanced technologies in the U.S. does not relieve the federal government of its statutory responsibility to provide a disposal facility since recycling does not eliminate all used fuel constituents.

Radiation and Health

Radiation is a natural part of our environment. It is not new or mysterious. We receive radiation from the sun, minerals in the Earth, the food we eat and building materials in our houses. Even our bodies give off small amounts of radiation.

Exposure to extremely large amounts of radiation can be harmful. However, the amount of radiation given off in the normal operation of a nuclear station is very small – smaller, in fact, than the amount we would receive on a coast-to-coast airplane flight.

Although radiation is invisible, it can be accurately measured. Radiation is measured in units called rem and millirem. The rem is a unit of measure that takes into account the effects different types of radiation have on the body. A millirem is 1/1,000 of a rem. [Compute your dose](#).

Nuclear Industry Operating Experience

The U.S. nuclear industry relies on a program of continuous improvement based on ongoing lessons learned from worldwide operating experience to further enhance safety. In addition to the NRC's regulation, other industry organizations like the Nuclear Energy Institute, the World Association of Nuclear Operators and the Institute of Nuclear Power Operations provide significant oversight to ensure the operational safety of nuclear stations worldwide.

Glossary of Nuclear Terms

Here are a few commonly used terms in the nuclear industry. Visit the NRC website for additional information.

Atom: The smallest particle of an element that cannot be divided or broken up by chemical means. It consists of a central core called a nucleus, which contains protons and neutrons. Electrons revolve around the nucleus.

Atomic Energy: Energy produced in the form of heat during the fission process in a nuclear reactor. When released in a sufficient and controlled quantity, this heat energy may be used to produce steam to run a conventional turbine generator to produce electrical power. Atomic energy is usually referred to as nuclear energy.

Background Radiation: Radiation from cosmic rays and radioactive material that naturally exists in soil, water and air as part of our environment. The amount of radiation a person gets is measured in millirems, and the average person in the U.S. receives about 620 millirem of radiation each year – about 50% from natural sources and the rest from man-made sources.

Boiling Water Reactor (BWR): In this reactor design, water flows upward through the core, where it is heated by fission and allowed to boil in the reactor vessel. The resulting steam drives turbine blades and a shaft connected to a generator to produce electrical power.

Radiation from Common Sources

Radiation Source	Dose (millirem)
Average annual radiation exposure from all sources	620
Natural background radiation (radon gas, cosmic, etc.)	310
Man-made Source	
Medical sources	298
Consumer products (fertilizer, tobacco, smoke detectors, etc.)	12
Living next to a nuclear power station	Less than 1

Capacity Factor: A measure of reliability reflecting the amount of electricity a generating unit provides versus how much it could provide if operating at all times.

Containment Building: The structure housing the nuclear reactor, pressurizer, reactor coolant pumps, steam generators and other associated piping and equipment. It is an airtight, steel-lined structure with heavily reinforced concrete walls several feet thick. It is designed to withstand tremendous physical forces.

Control Rods: Rods made of material that absorbs neutrons. When inserted into the nuclear fuel, the rods stop the fission process, thereby shutting down the reactor.

Cooling Tower: A large structure that serves as a heat exchanger to aid in the cooling of water used to cool exhaust steam leaving the turbines of a power plant. Cooling towers transfer this heat into the air, instead of into a body of water.

Core: The central portion of a nuclear reactor, which contains the fuel assemblies, moderator, neutron poisons, control rods and support structures. The reactor core is where fission takes place.

Fission: The splitting of atoms, which releases tremendous amounts of heat energy.

Fuel Rod: A long, slender, zirconium metal tube containing pellets of fissionable material that provide fuel for nuclear reactors. Fuel rods are assembled into bundles called fuel assemblies, which are loaded individually into the reactor core.

Pressurized Water Reactor (PWR): The reactor heats water in a closed system that then transfers its heat to another closed system in the steam generators to produce steam to turn the turbine generator.

Radiation: Particles and/or energy given off by unstable atoms as they undergo radioactive decay to a stable state.

Reactor: A cylindrical, steel vessel that contains the core, control rods, coolant and structures that support the core.

Steam Generator: In a pressurized water reactor, it's the large steel component where steam is produced. It is located inside the containment building.

Subsequent License Renewal: A license that is issued by the NRC authorizing a licensee to operate a nuclear generating unit at a specific site in accordance with established laws and regulations. A subsequent license renewal allows for a plant to operate for a total of 80 years.

Turbine Generator: A steam (or water) turbine directly coupled to an electrical generator. The two devices are often referred to as one unit.

Uranium: The fuel used in nuclear power reactors because of the ability of its atoms to undergo fission.

Energy Education Websites

ABC's of Nuclear Science
lbl.gov/abc

American Nuclear Society
ans.org

Center for Energy Workforce Development
cewd.org

Contemporary Physics Education Project
cpepweb.org

Duke Energy Nuclear Information Center
Nuclear.Duke-Energy.com

Edison Electric Institute (EEI)
eei.org

Electric Power Research Institute (EPRI)
epri.com

The Energy Collective
TheEnergyCollective.com

EnergyExplorium at McGuire Nuclear Station
duke-energy.com/EnergyExplorium

Energy Information Administration
eia.gov

Federal Energy Regulatory Commission
ferc.gov

Foundation for Water and Energy Education
fwee.org

Get Into Energy
getintoenergy.com

Energy & Environmental Center at Harris Nuclear Plant
duke-energy.com/EECenter

International Atomic Energy Agency
iaea.org

Jefferson Lab
jlab.org

National Science Teaching Association
nsta.org

Nuclear Energy Institute
nei.org

Oak Ridge National Laboratory
ornl.gov

U.S. Nuclear Regulatory Commission (NRC)
nrc.gov

U.S. Department of Energy (DOE)
energy.gov

World of Energy at Oconee Nuclear Station
duke-energy.com/worldofenergy

World Nuclear Association
world-nuclear.org

Nuclear Emergency Classifications

Four classifications are used to describe an emergency at a nuclear station. Appropriate federal, state and local authorities are informed in each of the following classifications:

Class	General Description	Examples
Unusual Event	The least serious of the four classifications. It means that a minor event – either operational or security – has occurred at the station. Unusual events pose no threat to public safety but due to strict federal regulations warrant an increased awareness by the plant operator and off-site emergency response agencies. No release of radioactive material is expected.	1. A natural or other destructive event (i.e., tornado, earthquake, vehicle crash, etc.) occurs that affects the station. 2. A fire lasting more than 15 minutes in an area where station safety equipment is located. 3. A loss of AC electrical power from all off-site electrical transmission lines for more than 15 minutes.
Alert	In this classification, an event – either operational or security-based – has occurred that could reduce the plant's level of safety. Although there would be no threat to public safety, county and state officials and the plant operator would prepare emergency operation centers in case the situation worsens. Any radioactive release associated with the event would be minimal.	1. Indications of possible damage to the used fuel stored at the station. 2. A failure of the automatic system used to shut down the reactor. 3. A fire or explosion causing significant damage to permanent plant equipment and/or structures.
Site Area Emergency	This classification means an event has occurred in which major safety equipment has failed or is likely to fail, or a security event has occurred in an area where the reactor (and/or equipment used to safely shut down the reactor) is located. The sirens could be sounded. The public should listen to the Emergency Alert System (EAS) for information and instructions. Any release of radioactive materials would be expected to stay within strict federal guidelines.	1. Failure of the plant systems needed to cool the fuel or keep the reactor shut down. 2. A confirmed act of sabotage in an area containing vital plant structures. 3. Radiation doses projected to exceed 0.1 rem total body (i.e., one-fourth the amount in a typical upper GI medical X-ray) at the site boundary.
General Emergency	The most serious of the four classifications. It means that an event has occurred in which actual or imminent fuel damage is likely. State and local authorities would take action to protect the public. EAS would give information and instructions for people in the affected areas. Any release of radioactive materials associated with the event could exceed strict federal guidelines.	1. Radiation doses projected to exceed one (1) rem total body (i.e., four times the amount in a typical upper GI medical X-ray) at the site boundary. 2. All AC electrical power sources (on-site and off-site) are lost and recovery is not expected for a long period of time.

DUKE ENERGY.

BUILDING A SMARTER ENERGY FUTURE®