Progress Energy Generating Plants

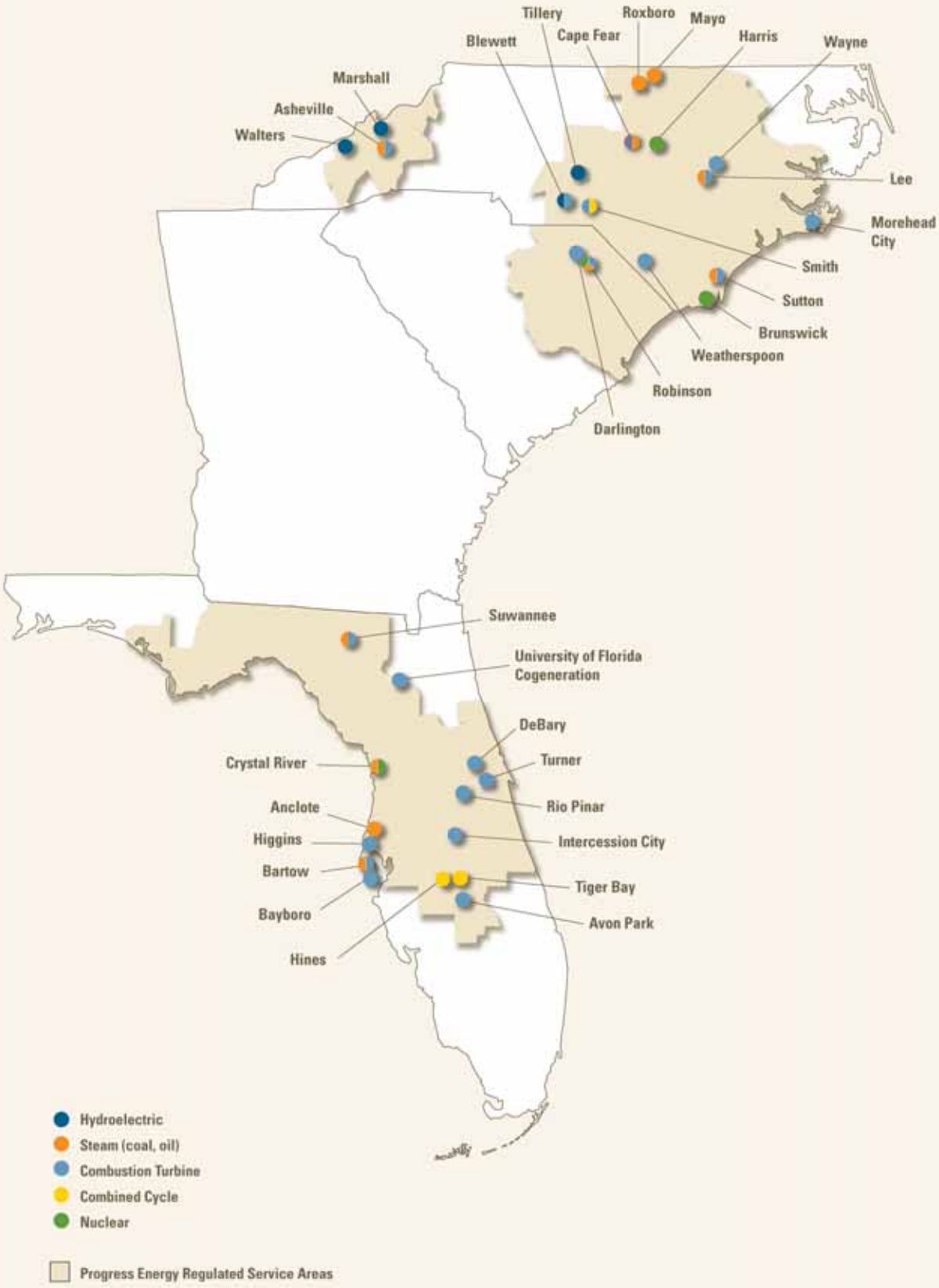
Progress Energy

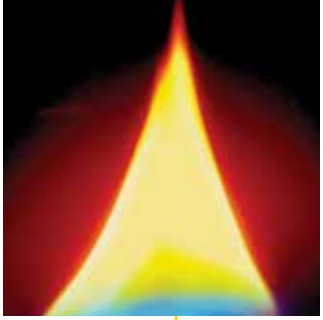
Progress Energy operates power-generating facilities at 32 sites in North Carolina, South Carolina and Florida. Together, the company's power plant fleet is capable of generating approximately 23,000 megawatts of electricity.

Progress Energy operates a diverse mix of plant technologies and fuel sources, including hydroelectric, nuclear, coal, natural gas and oil. This fuel diversity enables the company to minimize cost impacts from any one fuel source and ensures reliable power for our residential, commercial, industrial and wholesale customers.

Electricity cannot be stored. That means every minute of every day, Progress Energy's generating plants must match changing customer power demands. And each plant has an important role in the company's mission to provide safe, reliable and cost-effective power to the Southeast.

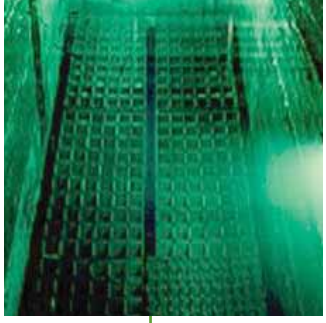
Progress Energy

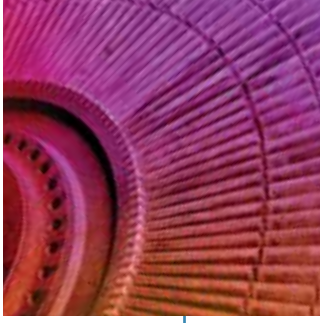

Tillery
Roxboro
Mayo
Blewett
Cape Fear
Harris
Wayne
Marshall
Asheville
Walters
Lee
Morehead City
Smith
Sutton
Brunswick
Weatherspoon
Robinson
Darlington
Suwannee
University of Florida Cogeneration
DeBary
Crystal River
Turner
Rio Pinar
Anclote
Higgins
Intercession City
Bartow
Tiger Bay
Bayboro
Avon Park
Hines
Hydroelectric
Steam (coal, oil)
Combustion Turbine
Combined Cycle
Nuclear
Progress Energy Regulated Service Areas



Generating Technologies

Four **combined-cycle** plants provide a total of 4,334 megawatts of generating capacity. Combined-cycle technology offers an efficient source of electricity with outstanding reliability. With attractive environmental and operating characteristics, our combined-cycle plants make up a valuable part of Progress Energy's generation mix.



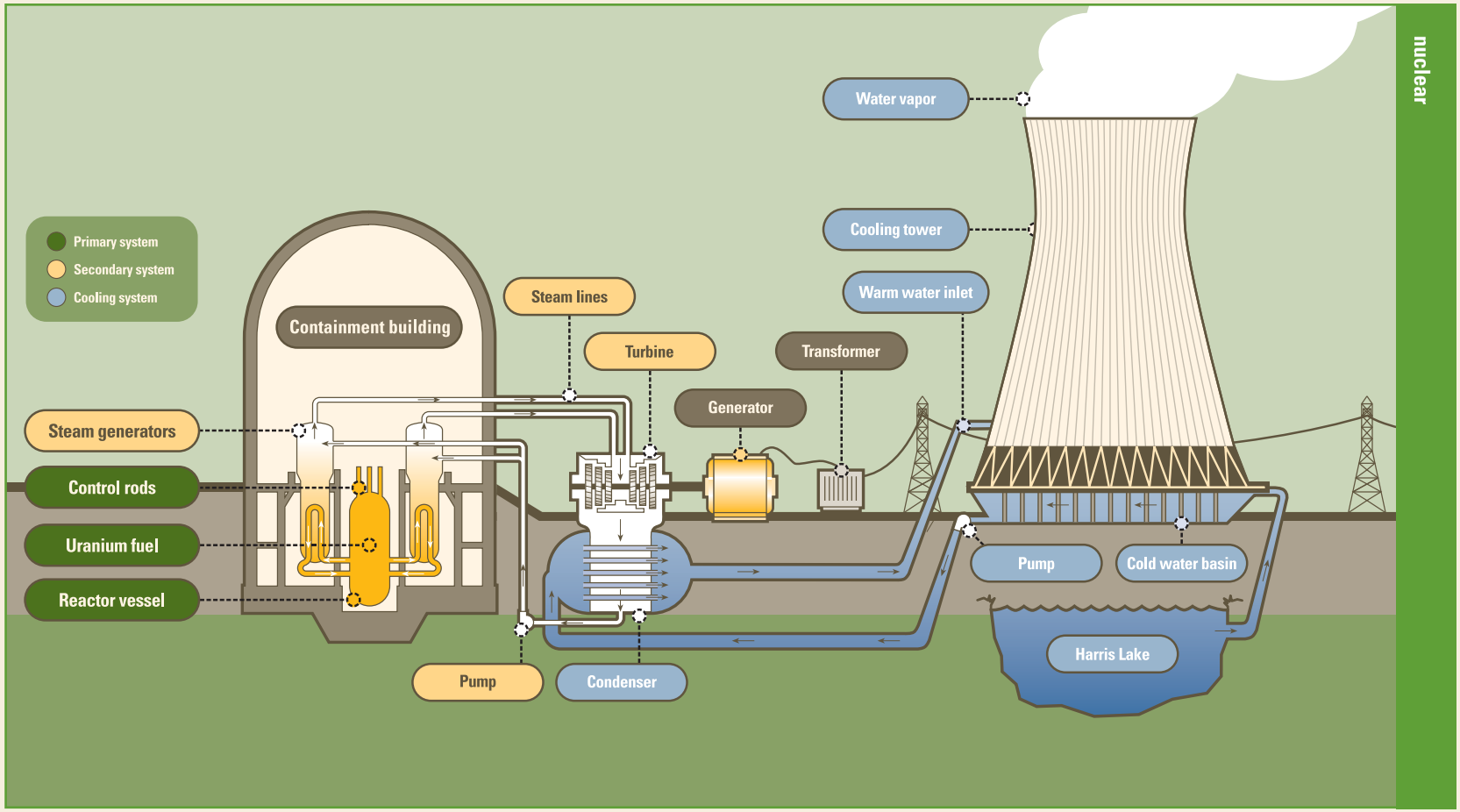


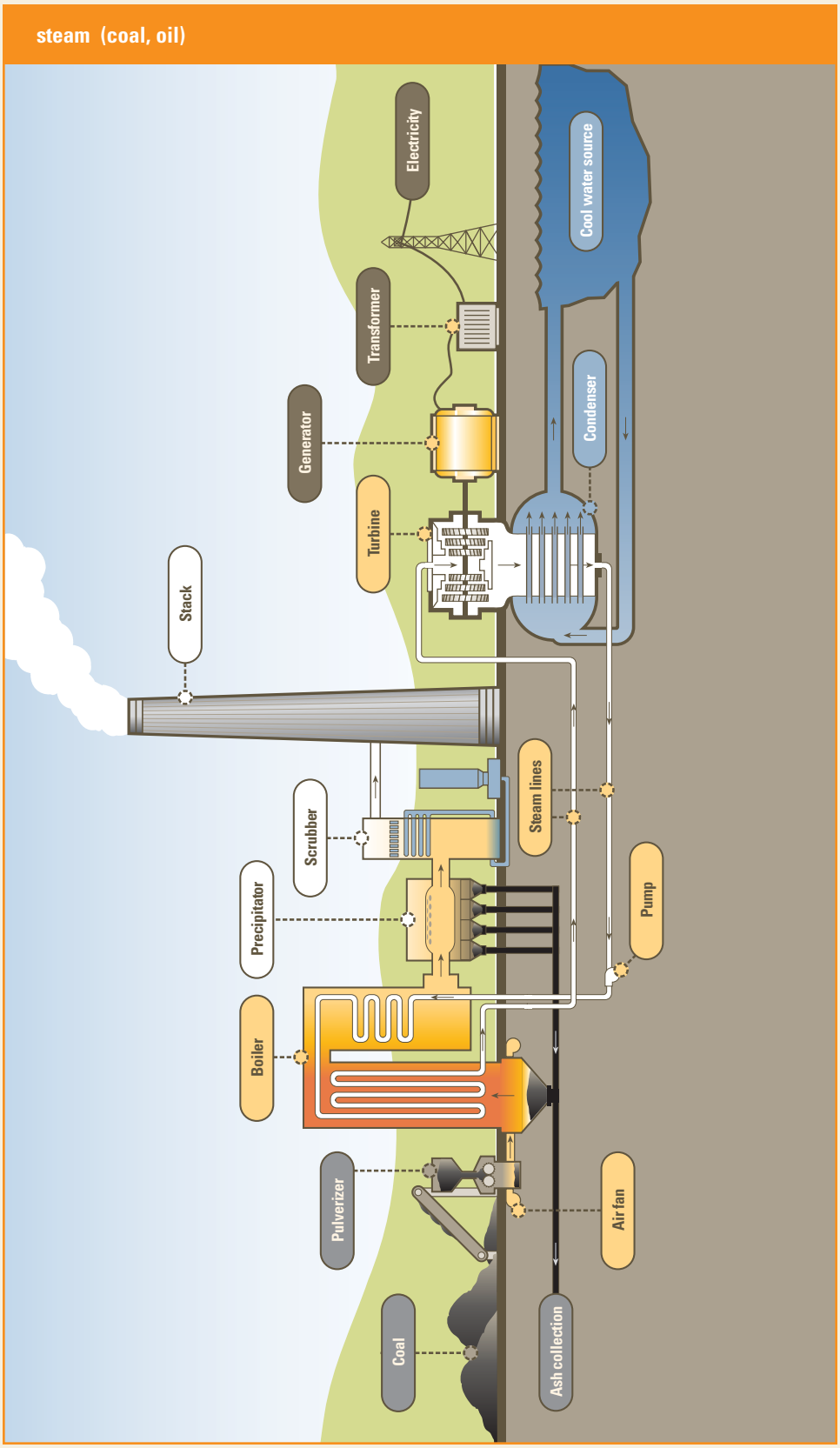
Nuclear power generation represents about 19 percent of Progress Energy's installed generation capacity – 4,354 megawatts – enough electricity to power more than 2.5 million homes. In addition to being reliable, cost-effective and resource-efficient, nuclear energy is a safe and clean energy source that helps meet the increasing energy demands of today's technology-driven society.

Progress Energy's 91 **combustion turbine** units have a combined generation capacity of 5,659 megawatts of power. These high-tech facilities can reach full power quickly, which enables Progress Energy to respond to peak demands and keep the cities and towns we serve running like clockwork.

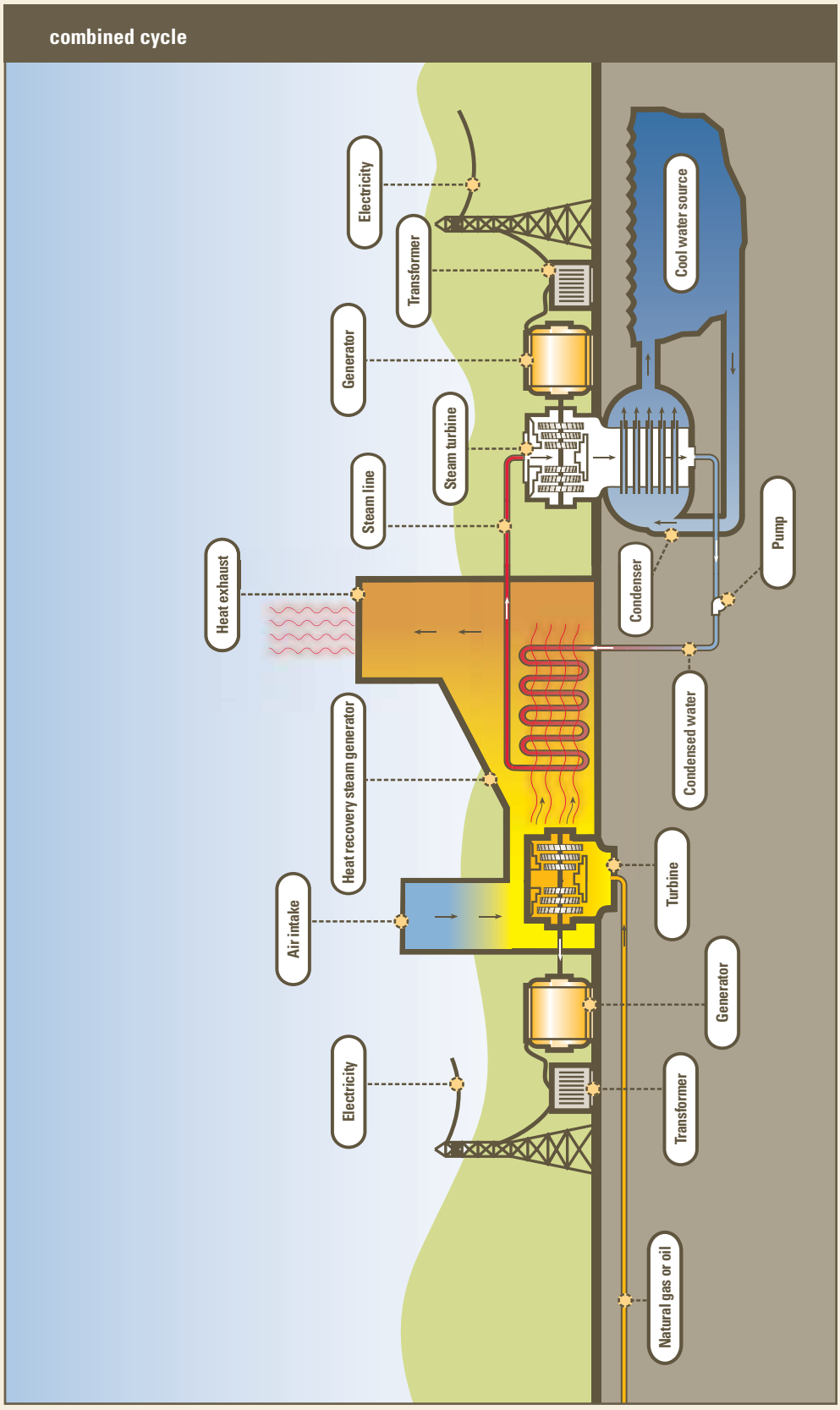
Our **coal- and oil-powered steam** plants generate 8,405 megawatts of power to meet the daily energy needs of our customers. Maintaining diversity in our fuel mix allows us to adjust quickly to ever-changing energy prices and ensures Progress Energy's customers power that's not only reliable, but also affordable.

Progress Energy owns and operates four **hydroelectric** plants along rivers throughout North Carolina. These stations provide valued, emission-free generation to the region. Together, our hydroelectric plants provide 225 megawatts of reliable, environmentally friendly power generation to complement our energy portfolio.

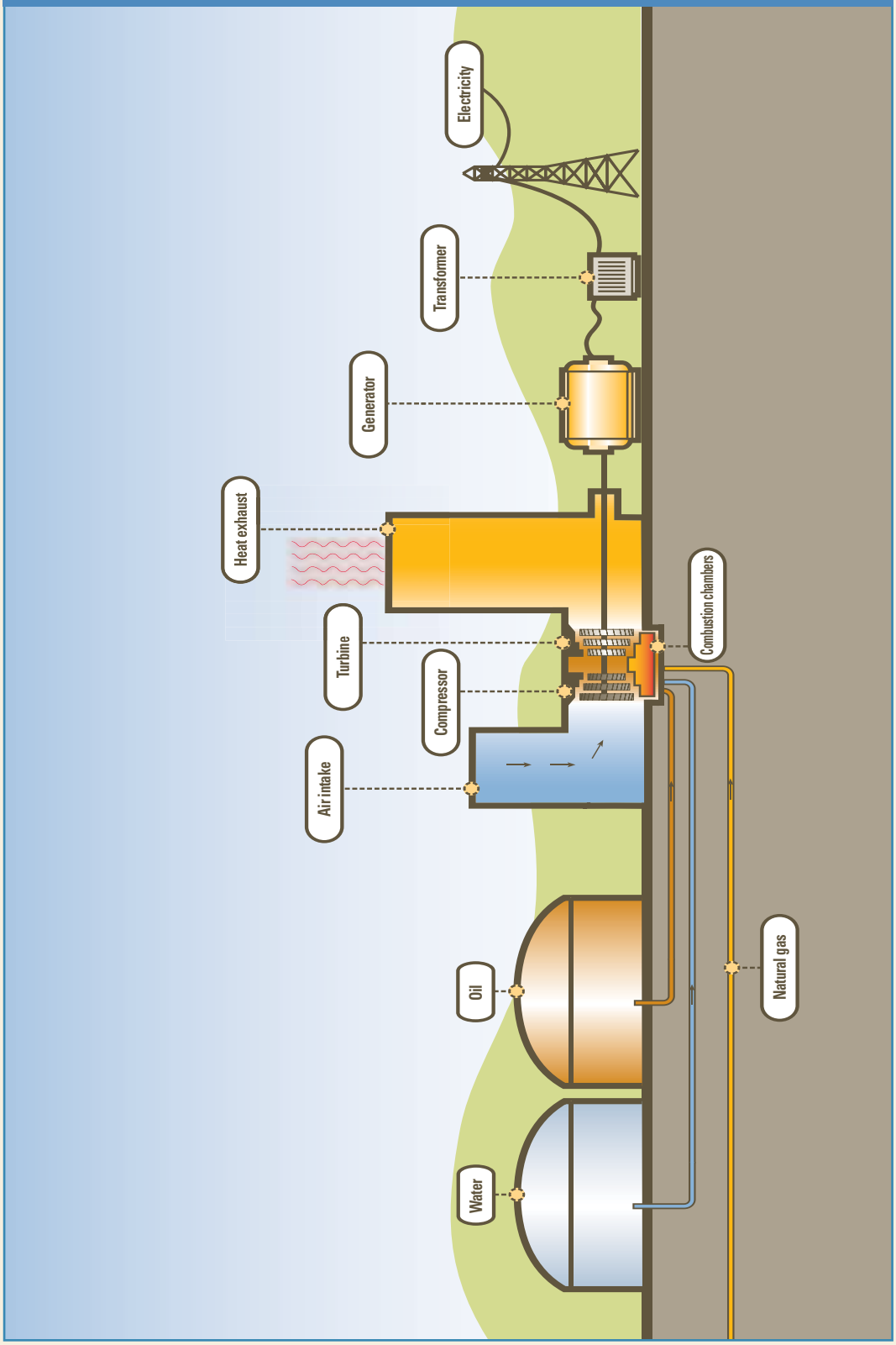

nuclear
Primary system
Secondary system
Cooling system
Containment building
Steam lines
Turbine
Transformer
Generator
Warm water inlet
Cooling tower
Water vapor
Steam generators
Control rods
Uranium fuel
Reactor vessel
Pump
Condenser
Pump
Cold water basin
Harris Lake

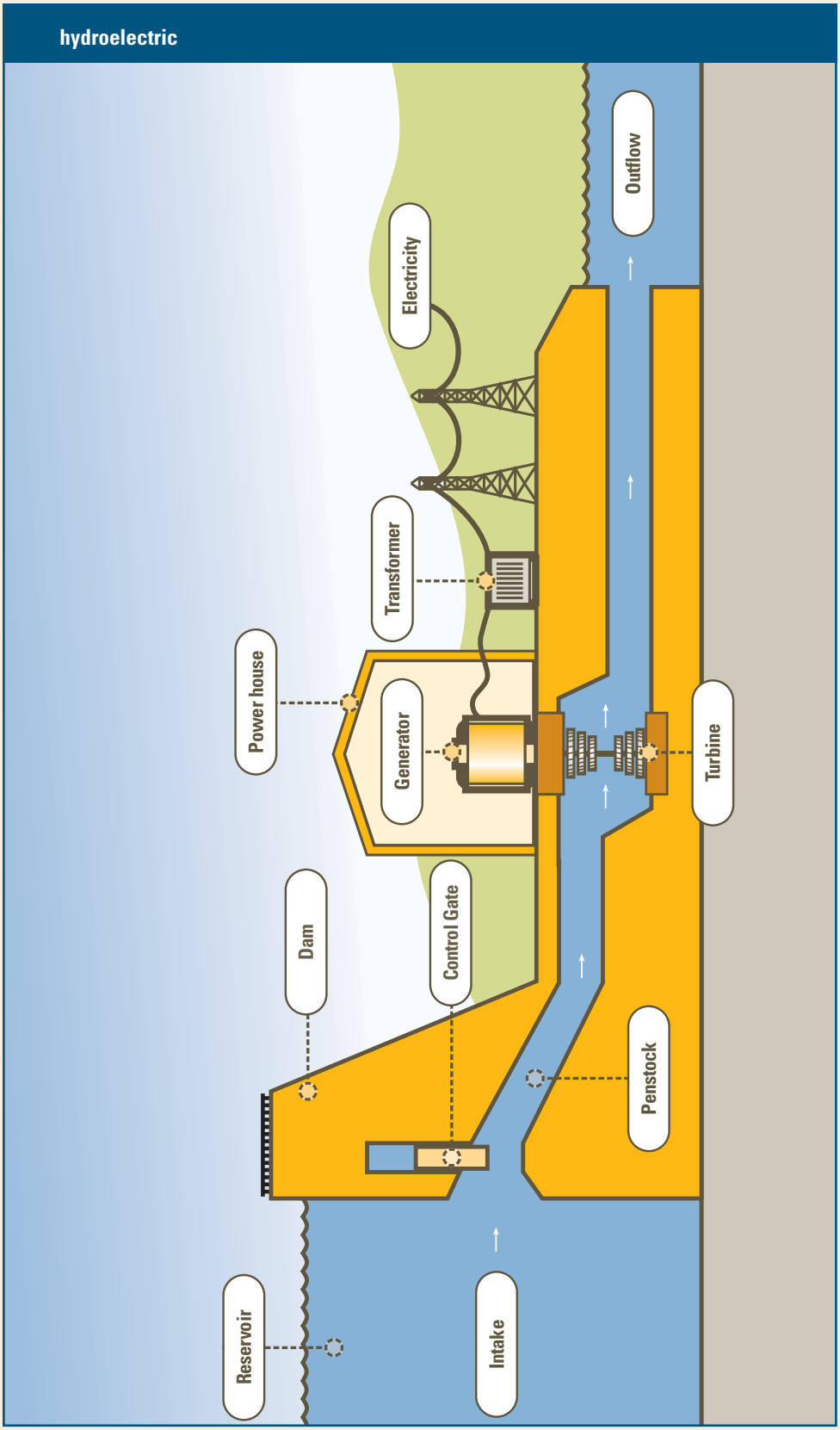


Note: Not all coal plants have SCRs and scrubbers.


combined cycle
Electricity
Transformer
Generator
Steam turbine
Steam line
Heat exhaust
Heat recovery steam generator
Air intake
Electricity
Cool water source
Pump
Condenser
Condensed water
Turbine
Generator
Transformer
Natural gas or oil

combustion turbine




hydroelectric
Outflow
Electricity
Transformer
Powver house
Generator
Turbine
Dam
Control Gate
Penstock
Reservoir
Intake

Baseload plant A generating plant that typically runs 90 to 100 percent of the time to meet basic, constant electricity demand.

Boiler A vessel, usually consisting of metal sheets and tubes, in which water is boiled to produce steam.

Boiling water reactor (BWR) A type of nuclear reactor which boils water directly in the core to be sent to a turbine to generate electricity.

Coal A black or brownish solid combustible substance formed by the partial decomposition of vegetable matter without free access of air and under the influence of moisture, and often intense pressure and temperature. The rank of coal (anthracite, bituminous, subbituminous and lignite) is determined by its heating value.

Condenser A large heat exchanger designed to cool exhaust steam so that it can be returned to the heat source as water.

Containment building A gastight shell or other enclosure around a nuclear reactor that confines fission products.

Control gate Gates that open on a dam and allow gravity to pull water into the intake structure.

Control rod A rod, plate or tube containing a material that readily absorbs neutrons, slowing the fission process.

Cooling tower A heat exchanger designed to aid in the cooling of water used to cool exhaust steam exiting the turbines of a power plant. Cooling towers transfer exhaust heat into the air instead of into a body of water.

Dam A barrier built across a waterway to control the flow of water.

Generator A machine that transforms mechanical energy into electric energy.

Heat recovery generator A heat exchanger that uses the heat rejected from a gas turbine. The waste heat is captured and is then used as input heat to a steam turbine to more efficiently create electricity.

Intake Gates on a dam that open and allow gravity to pull the water through the penstock.

Intermediate plant A generating plant that typically runs about 50 to 60 percent of the time to meet electricity demand that exceeds the basic, continuous level.

Natural gas Naturally occurring mixtures of hydrocarbon gases and vapors, the more important of which are methane, ethane, propane, butane, pentane and hexane.

Peaking plant A generating plant that typically runs less than 10 percent of the time to meet relatively short periods of heightened electricity demand on the hottest and coldest days.

Penstock A pipeline that leads from a reservoir to a turbine allowing water to build pressure as it flows through this pipe.

Powerhouse A hydroelectric plant structure housing a transformer.

Precipitator Air pollution control device that collects particles from gaseous emissions by mechanical or electrical means.

Pressurized water reactor (PWR) A type of power producing reactor which keeps the water surrounding the core under pressure. When the pressurized water is heated by the reactor, it is sent to a heat exchanger and it boils water that is kept at a lower pressure. This steam is then sent to a turbine to generate electricity**.**

Pulverizer A machine that reduces coal to a powder.

Reactor vessel An apparatus in which the nuclear fission chain reaction may be initiated, maintained and controlled, so that the accompanying energy is released at a specified rate. It includes fuel (uranium), a moderating material, control elements and instrumentation.

Reservoir Any holding area, natural or artificial, used to store, regulate or control water.

Scrubber A device that uses a liquid spray or solid sorbent to remove aerosol and gaseous pollutants from an air stream. The gases are removed either by absorption or by chemical reaction.

Selective catalytic reduction A method to reduce nitrogen oxide in which exhaust gases produced by a coal-fired electric generating unit pass though the SCR, where an ammonia or a urea solution reacts with the nitrogen oxide in the exhaust and converts it to nitrogen and water, prior to the exhaust going up the smokestack.

Stack A chimney or smokestack, a vertical pipe or flue, that exhausts gases and particulate matter to the atmosphere.

Steam generator A vessel containing water that uses a heat source to change water into steam.

Transformer An electromagnetic device for changing the voltage level of alternating-current electricity.

Turbine A part in some electric plants that is spun by a force of energy (e.g., air, water, steam or a combustion engine) in order to turn the generator. It generally consists of a series of curved vanes or blades emanating from an axis that is turned by forcing air, steam or water past the vanes or blades.

Uranium The heaviest element normally found in nature. The fissile isotope uranium-235 is the principal nuclear fuel material used in today's nuclear power reactors. Uranium is a hard, shiny, metallic radioactive element. Its atomic number is 92, its atomic weight is 238, and its symbol is U.

Primary source of definitions: Edison Electric Institute Glossary of Electric Industry Terms, EEI (2005).


Suwannee
University of Florida Cogeneration
DeBary
Turner
Rio Pinar
Intercession City
Tiger Bay
Avon Park
Crystal River
Anclote
Higgins
Bartow
Bayboro
Hines
Steam (coal, oil)
Combustion Turbine
Combined Cycle
Nuclear
Progress Energy Regulated Service Areas

Florida

Anclote

Avon Park

Bartow

Bayboro

Crystal River

DeBary

Higgins

Hines

Intercession City

Rio Pinar

Suwannee

Tiger Bay

Turner

University of Florida Cogeneration

Anclote

Details The Anclote Plant is a two-unit oil-fired steam plant located at the mouth of the Anclote River, one mile west of Tarpon Springs, Fla. Anclote's first unit began commercial service in 1974, and its second unit followed in 1978. The two existing units will be converted from using both oil and natural gas to 100 percent natural gas, and they are anticipated to be in service by the end of 2013.

Location Holiday, Fla.

Capacity 1,011 MW steam

Avon Park

Details The Avon Park Plant, located near Avon Park, Fla., contains two combustion turbine units and is used during times of peak demand. The plant began operation in 1968.

Location Avon Park, Fla.

Capacity 48 MW combustion turbine

Bartow

Details Located on the west shore of Tampa Bay, Fla., the Bartow Plant is comprised of a four-on-one combined-cycle unit, with four gas turbines and one steam turbine, which began operation in 2009, and four combustion turbine units, which began operation in 1972.

Location St. Petersburg, Fla.

Capacity 1,133 MW combined cycle

177 MW combustion turbine

Bayboro

Details Located near St. Petersburg, Fla., the Bayboro Plant began operation in 1973 and has four combustion turbine units used during times of peak demand.

Location St. Petersburg, Fla.

Capacity 174 MW combustion turbine

Crystal River

Details The Crystal River Complex consists of one PWR nuclear unit and four coal-fired generating units. These units came online in 1966, 1969, 1977, 1982 and 1984. Located about eight miles north of the town of Crystal River, Fla., the Crystal River Energy Complex is the largest generating plant on the Progress Energy system and one of the largest generating plants in the nation, with a total capacity of approximately 3,155 MW.

Location Crystal River, Fla.

Capacity 2,295 MW steam

860 MW nuclear

DeBary

Details The DeBary Plant, located near the town of DeBary, Fla., contains 10 combustion turbine units used primarily during times of peak demand. The plant began operation in 1975 with two units and additional units were added in 1976 and 1992.

Location DeBary, Fla.

Capacity 638 MW combustion turbine

Higgins

Details The Higgins Plant, located near Oldsmar, Fla., has four combustion turbine units. Two units began commercial operation in 1969, and two additional units were added in 1970 and 1971.

Location Oldsmar, Fla.

Capacity 105 MW combustion turbine

Hines

Details The Hines Plant, located near the town of Bartow, Fla., has four combined-cycle units. The first unit began commercial operation in 1999 and subsequent units began operation in 2003, 2005 and 2007.

Location Bartow, Fla.

Capacity 1,912 MW combined cycle

Intercession City

Details The Intercession City Plant contains 14 combustion turbine units used during times of peak demand. The plant is located near Intercession City, Fla. The first six units began operation in 1974, with additional units added in 1993, 1997 and 2000.

Location Intercession City, Fla.

Capacity 982 MW combustion turbine

Rio Pinar

Details Progress Energy's Rio Pinar Plant, located near Rio Pinar, Fla., has a single combustion turbine unit, which began operation in 1970.

Location Rio Pinar, Fla.

Capacity 12 MW combustion turbine

Suwannee

Details The Suwannee Plant, located on the banks of the Suwannee River near Live Oak, Fla., contains three oil-fired steam units that began operation in 1953, 1954 and 1956, and three combustion turbine units that went into service in 1980.

Location Live Oak, Fla.

Capacity 155 MW combustion turbine

129 MW steam

Tiger Bay

Details Located near Fort Meade, Fla., the Tiger Bay Plant contains one combined-cycle unit. The site is just six miles from the Hines Plant and began commercial operation in 1994. The plant was purchased from Destec in 1997.

Location Ft. Meade, Fla.

Capacity 205 MW combined cycle

Turner

Details The Turner Plant is located near Enterprise, Fla., and consists of four combustion turbine units used during times of peak demand. The first two units began operation in 1970, with additional units added in 1974.

Location Enterprise, Fla.

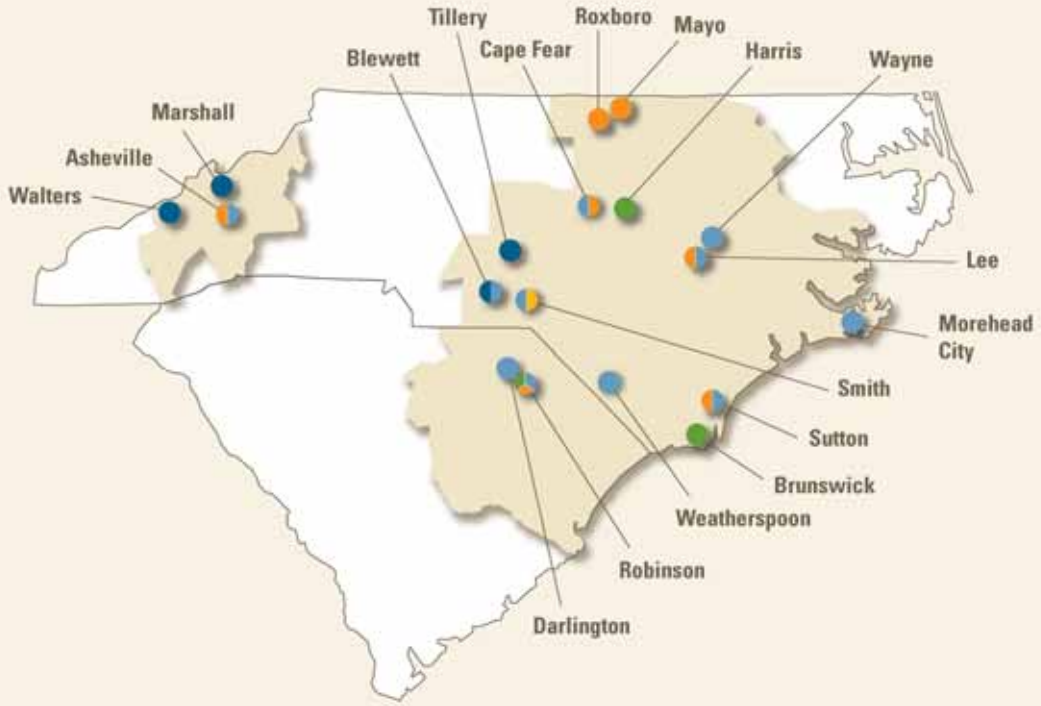
Capacity 137 MW combustion turbine

University of Florida Cogeneration

Details Located on the University of Florida at Gainesville campus, the University of Florida Cogeneration Plant houses one combustion turbine unit. The plant began commercial operation in 1994.

Location Gainesville, Fla.

Capacity 46 MW combustion turbine



- Hydroelectric
- Steam (coal, oil)
- Combustion Turbine
- Combined Cycle
- Nuclear

Progress Energy Regulated Service Areas

North Carolina
South Carolina

Asheville

Blewett

Brunswick

Cape Fear

Darlington (S.C.)

Harris

Lee

Marshall

Mayo

Morehead City

Robinson (S.C.)

Roxboro

Smith

Sutton

Tillery

Walters

Wayne

Weatherspoon

Asheville

Details The Asheville Plant is the largest electric generating facility in Western North Carolina. Located near Skyland, N.C., the plant consists of two coal-fired units and two combustion turbine units. The Asheville Plant began commercial operation in 1964, with additions in 1971, 1999 and 2000.

Location Arden, N.C.

Capacity 376 MW steam

324 MW combustion turbine

Blewett

Details The Blewett Plant consists of four combustion turbine units as well as six hydroelectric generating units. The plant began commercial operation in 1912, with additions in 1971.

Location Lilesville, N.C.

Capacity 52 MW combustion turbine

22 MW hydroelectric

Brunswick

Details The Brunswick Plant houses two boiling water nuclear reactors. It was the first nuclear power plant built in North Carolina, beginning operation in 1975, with an additional unit in 1977. The plant and its nearby visitors center are located approximately two miles north of Southport, N.C.

Location Southport, N.C.

Capacity 1,870 MW nuclear

Cape Fear

Details The Cape Fear Plant is located near Moncure, N.C., and began commercial operation in 1923 as the company's first coal-fired facility. Additional units came into service in 1924, 1956, 1958 and 1969. Today, the plant consists of two coal-fired units and two combustion turbine generating units.

Location Moncure, N.C.

Capacity 316 MW steam

46 MW combustion turbine

Darlington

Details Located in South Carolina near Progress Energy's Robinson Plant, the Darlington Plant consists of 13 combustion turbine units. The plant began operation in 1974, with additions in 1975 and 1997.

Location Hartsville, S.C.

Capacity 790 MW combustion turbine

Harris

Details The Harris Nuclear Plant is a single-unit pressurized water reactor. The plant began commercial operation May 1987. The Harris Nuclear Plant and its nearby energy and environmental center are located approximately 25 miles southwest of Raleigh, N.C.

Location New Hill, N.C.

Capacity 900 MW nuclear

Lee

Details The Lee Plant, part of the H.F. Lee Energy Complex, is located on the Neuse River near Goldsboro, N.C., and contains three coal-fired steam units and four combustion turbine units. The plant began operation in 1951, with additions in 1952, 1962, 1968 and 1971.

Location Goldsboro, N.C.

Capacity 382 MW steam

75 MW combustion turbine

Marshall

Details The Marshall Plant is located on the French Broad River, northwest of Asheville. Its two hydroelectric generating units produce approximately 4 megawatts, using a concrete masonry gravity dam standing 36 feet high. The Marshall Plant began commercial operation in 1910.

Location Marshall, N.C.

Capacity 4 MW hydroelectric

Mayo

Details Located near Roxboro, N.C., the Mayo Plant began commercial operation in 1983 and is a dual-boiler unit and coal-fired facility.

Location Roxboro, N.C.

Capacity 727 MW steam

Morehead City

Details The Morehead City Plant is located near Morehead City, N.C. It has one combustion turbine unit used during times of peak demand. Plant operation began in 1968.

Location Morehead City, N.C.

Capacity 12 MW combustion turbine

Robinson

Details The Robinson Plant houses one coal-fired steam unit, one combustion turbine unit and one pressurized water nuclear unit in its location near Hartsville, S.C. The coal-fired unit began commercial operation in 1960, the combustion turbine unit began operation in 1968, while the nuclear unit began operation in 1971.

Location Hartsville, S.C.

Capacity 724 MW nuclear

177 MW steam

11 MW combustion turbine

Roxboro

Details The Roxboro Plant is one of Progress Energy's largest plants and ranks as one of the largest power plants in the United States. The plant contains four coal-fired steam units. Operation began in 1966 with additions in 1973 and 1980.

Location Semora, N.C.

Capacity 2,417 MW steam

Smith

Details The Smith Energy Complex houses five combustion turbine units and two combined-cycle units. The plant is located just south of Hamlet, N.C., and began commercial operation in 2001, with additions in 2002 and 2011.

Location Hamlet, N.C.

Capacity 820 MW combustion turbine

1,084 MW combined cycle

Sutton

Details Located near Wilmington, N.C., the Sutton Plant consists of three coal-fired steam units. The first unit began commercial operation in 1954, with additions in 1955 and 1972. The plant also contains three combustion turbine units that began operation in 1968 and 1969.

Location Wilmington, N.C.

Capacity 575 MW steam

61 MW combustion turbine

Tillery

Details The Tillery Plant is located on the Pee Dee River near Mt. Gilead, N.C. The plant features an impressive dam, 2,800 feet long and 86 feet high, as well as flood-control gates. The Tillery Plant began commercial operation in 1928, with additions in 1960.

Location Mt. Gilead, N.C.

Capacity 87 MW hydroelectric

Walters

Details The Walters Plant is located on the Pigeon River near the North Carolina-Tennessee border. Twelve miles upstream from the hydroelectric plant is the arch-shaped Walters Dam, which is 185 feet high. The plant began commercial operation in 1930.

Location Waterville, N.C.

Capacity 112 MW hydroelectric

Wayne

Details The Wayne County Plant, part of the H.F. Lee Energy Complex, consists of five combustion turbine units. The plant began operation in 2000 with an addition in 2009.

Location Goldsboro, N.C.

Capacity 863 MW combustion turbine

Weatherspoon

Details The Weatherspoon Plant, located near Lumberton, N.C., consists of four combustion turbine units that began commercial operation in 1970 and 1971.

Location Lumberton, N.C.

Capacity 131 MW combustion turbine

Updated April 2012. Ratings reflect compliance with NERC Reliability Standards (2011) and include Progress Energy's co-ownership interests.