PLANT VOGTLE
UNITS 3 AND 4
Nuclear energy facilities release zero greenhouse gases while producing electricity. A single uranium pellet the size of a pencil eraser produces as much electricity as 17,000 cubic feet of natural gas, 1,780 pounds of coal or 149 gallons of oil. Nuclear energy is clean, safe and proven, and provides about 20 percent of the electricity generated in Georgia. Through energy efficiency, conservation, new renewable energy sources, nuclear energy and new environmental controls, we can continue to make our energy supply cleaner and more secure.
With operations expected in 2019 and 2020, Plant Vogtle units 3 and 4 will be the first new nuclear units built in the United States in the last three decades. As construction continues, we remain focused on completing Plant Vogtle units 3 and 4 with safety and quality as top priorities. Once complete, the Vogtle site will produce enough safe, reliable, affordable electricity to power 1 million Georgia homes and businesses.

Nuclear energy is the most cost-effective, reliable and environmentally responsible fuel source available today for baseload generation of electricity. Nuclear energy fits in Georgia Power’s mix of smart energy sources. It’s a proven technology that produces no greenhouse gas emissions and can relieve cost uncertainty caused by coal and natural gas prices.

By 2025, Georgia expects to add almost 1.8 million new residents. By 2030, electrical demand is projected to increase 21 percent in the Southeast. Additionally, current and pending legislation and environmental standards are impacting electricity generation fueled by coal. We’re planning to use nuclear units to extend reliable and affordable supplies of electricity in the Southeast.
VOGTLE 3 AND 4 FACTS

OWNERS
- Georgia Power, 45.7 percent; Oglethorpe Power, 30 percent; MEAG Power, 22.7 percent; Dalton Utilities, 1.6 percent
- Licensee/operator for owners: Southern Nuclear

TECHNOLOGY
- Two Westinghouse AP1000 (Advanced Passive) nuclear units
- Approximately 1,117 megawatts each

LOCATION
- Vogtle Electric Generating Plant (with existing units 1 and 2), Waynesboro, Georgia

TIMELINE
- Georgia Power filed for an Application for Certification of Vogtle units 3 and 4 with the Georgia Public Service Commission (PSC) in August 2008.
- The Georgia PSC approved the need and cost-effectiveness, granting approval to implement the proposed Vogtle expansion in March 2009.
- In August 2009, the Nuclear Regulatory Commission (NRC) issued an Early Site Permit and Limited Work Authorization.
- The NRC issued the Construction and Operating Licenses (COLs) for Vogtle units 3 and 4 in February 2012.
- The Institute of Nuclear Power Operations granted initial accreditation of the Vogtle 3 and 4 operations training programs in March 2012, enabling reactor operator candidates to apply for NRC licenses to operate the new AP1000 units.
- The U.S. Department of Energy and Georgia Power closed on loan guarantees for the construction of Vogtle units 3 and 4, providing customers approximately $250 million of present value benefit in February 2014.
- Vogtle units 3 and 4 are expected to be placed in service in 2019 and 2020, respectively.
HOW IT WORKS

Nuclear energy facilities generate electricity using the same engineering technology as conventional steam plants that burn fossil fuels like coal, oil or natural gas. The difference is the heat source used to make steam.

Fuel rods in the reactor core contain uranium pellets. The uranium atoms undergo a chain reaction where they split, or fission, creating heat. When water is pumped around the hot fuel rods, it absorbs this heat.

In a pressurized reactor, like Plant Vogtle units 1 and 2, this water is kept under high pressure, like a pressure cooker. This superheated water is sent through tubes in a steam generator where cooler water surrounds it and boils to steam. The two water sources remain separated from each other; only the heat is transferred.

The steam turns blades on a turbine generator, causing it to spin a magnet inside a coil of wire. The motion causes electrons to move along the wire in a constant flow called an electric current. Water from the circulating water system condenses the remaining steam and it flows back to the cooling tower, where excess heat is given off as a mist above the tower.
Vogtle units 3 and 4 will use Westinghouse Advanced Passive (AP1000) technology. These units build on proven nuclear technology, while also incorporating improvements in that technology.

The AP1000 pressurized water reactor works on the simple concept that, in the event of a design-basis accident – such as a coolant pipe break – the plant is designed to achieve and maintain safe shutdown condition without any operator action and without the need for AC power or pumps. Instead of relying on active components such as diesel generators and pumps, the AP1000 relies on the natural forces of gravity, natural circulation and compressed gases to keep the core containment from overheating.

The AP1000 requires less equipment and infrastructure to operate and maintain the plant. Lower operating and maintenance requirements also save money in the form of smaller maintenance staffs. The selection of proven components ensures a high degree of reliability to reduce maintenance costs. Standardization of components reduces spare parts inventories and streamlines training requirements, resulting in shorter maintenance times. Additionally, built-in and online testing is provided for critical components.
BENEFITS

ENVIRONMENTAL
- Because they generate heat from fission rather than burning fuel, nuclear energy facilities produce no greenhouse gases.
- Numerous studies demonstrate that nuclear energy life-cycle emissions are comparable to renewable forms of generation, such as wind and hydropower, and far less than those of coal or natural gas-fueled power plants.
- One nuclear energy facility provides enough electricity every day for more than a half-million homes while emitting less carbon than a hybrid automobile.
- For a 2,200 megawatt facility, nuclear uses about a 2,000-acre footprint compared with 11,000 acres for solar energy and 110,000 acres for a similar-sized wind farm.

ECONOMIC
- $10 billion capital investment in Georgia
- More than 5,000 on-site construction jobs
- 800 permanent jobs
- Plant Vogtle owners Georgia Power, Oglethorpe Power, Municipal Electric Authority of Georgia and Dalton Utilities paid more than $45 million in 2014 property taxes to Burke County.

CUSTOMERS
- The Vogtle 3 and 4 project is projected to have less of an impact on customer rates than originally anticipated. Originally certified assuming a 12 percent increase in customer rates, the overall impact on customer rates is currently projected to be 6 to 8 percent at peak due to financing and other benefits of the project that Georgia Power has proactively pursued, along with the fuel savings of nuclear.
- We estimate that the incremental cost to complete the facility presents more than $3 billion in savings for customers compared to natural gas combined-cycle generation.
- Additionally, we estimate that $2.3 billion in customer benefits will reduce the overall cost to customers in building the country’s first new nuclear facility in more than 30 years.
Georgia Power is the largest subsidiary of Southern Company, one of the nation’s largest generators of electricity. The company is an investor-owned, tax-paying utility with rates below the national average. Georgia Power serves 2.4 million customers in all but four of Georgia’s 159 counties.

Oglethorpe Power Corporation is one of the nation’s largest power supply cooperatives, serving 38 Electric Membership Corporations which, collectively, provide electricity to more than 4.1 million Georgians across the state. Oglethorpe Power has more than $9 billion in assets and approximately 7,800 megawatts of generating capacity.

The Municipal Electric Authority of Georgia (MEAG Power) generates and transmits wholesale electric power to 49 Georgia communities. MEAG Power provides electric power through its co-ownership of two nuclear and two coal-fired generating plants, sole ownership of a natural gas combined cycle facility, as well as ownership of more than 1,300 miles of high-voltage transmission lines and nearly 200 substations.

Dalton Utilities provides potable water, electrical, natural gas, wastewater treatment services and telecommunications services to the City of Dalton, Ga., and portions of Georgia’s Whitfield, Murray, Gordon, Catoosa and Floyd counties. With more than $800 million in assets, Dalton Utilities currently serves approximately 73,000 customers.

Southern Nuclear, a subsidiary of Georgia Power parent Southern Company, is overseeing construction and will operate the two new 1,117-megawatt AP1000 units for Georgia Power and the co-owners. Southern Nuclear operates a total of six units for Alabama Power and Georgia Power at the Joseph M. Farley Nuclear Plant near Dothan, Ala.; the Edwin I. Hatch Nuclear Plant near Baxley, Ga.; and the Alvin W. Vogtle Electric Generating Plant near Waynesboro, Ga.