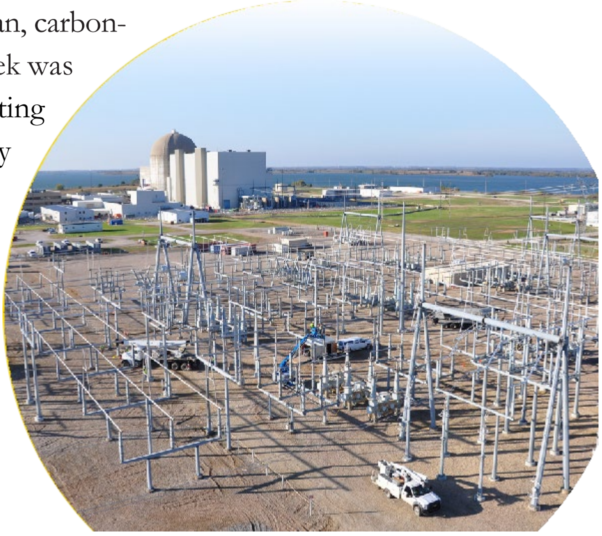
who we are



Wolf Creek Generating Station, near Burlington, Kan., is a Westinghouse four-loop pressurized water reactor producing more than 1,200,000 kilowatts of clean, carbon-free electricity. The plant employs approximately 900 people. Wolf Creek was declared officially “on-line” on Sept. 3, 1985. Wolf Creek’s initial operating license was for 40 years, through 2025. In 2008, the Nuclear Regulatory Commission approved license renewal for the plant that allows 20 additional years of operation, through 2045.

Wolf Creek Nuclear Operating Corporation (WCNOC) was organized on April 14, 1986, to operate, maintain, repair, and eventually decommission Wolf Creek Generating Station. Operation of Wolf Creek Generating Station was transferred from its owners to WCNOC, Jan. 1, 1987. WCNOC was a jointly-owned corporation owned by KCP&L and Kansas Electric Power Cooperative, Inc. (KEPCo). In 2020, WCNOC integrated into Evergy following the merger of KCP&L and Westar. The plant is owned by Evergy (94%) and KEPCo (6%).

Wolf Creek is a Standardized Nuclear Unit Power Plant System (SNUPPS) design. SNUPPS was a consortium of utilities organized to build identical nuclear facilities at different sites across the country. Wolf Creek Generating Station and Callaway Energy Center in Missouri, which is owned by Ameren UE, are the only two SNUPPS plants that were built from the original consortium. They are virtually identical.

The Wolf Creek site is about 10,500 acres. 1,500 acres of Company land are reserved and managed for wildlife. Coffey County Lake makes up 5,090 acres of the site. The Environmental Education Area opened to the public in September 1994.

The reactor containment building is nearly 208 feet high by 140 feet wide. The structure is pre-stressed, post-tensioned concrete approximately three feet thick. The interior is lined with a leak-tight carbon steel barrier. Our fuel is comprised of ceramic pellets with a maximum of 4.95 percent uranium-235, encased in zirconium rods. About 35 percent of the fuel is replaced every 18 months during planned maintenance and refueling outages. The weight of the fuel in the core (193 fuel assemblies) is about 88 tons and has the energy equivalency of approximately 19 million tons of coal.

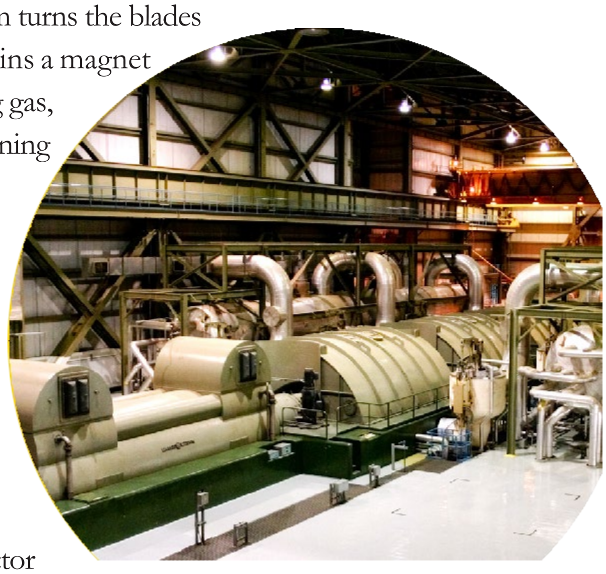
wolf creek nuclear

evergy

what we do

How Wolf Creek Works

Wolf Creek generates electricity by heating water to produce steam. Steam turns the blades inside the plant's turbines, which in turn spin the turbine shaft, which spins a magnet inside an electrical generator, thus producing electricity. Instead of burning gas, oil or coal as a heat source, Wolf Creek produces heat by splitting or fissioning atoms of uranium fuel.



Fission begins when a tiny particle called a neutron strikes a uranium atom causing the atom to split. Energy is released in the form of heat, radiation and more neutrons. This process is called a nuclear chain reaction. This reaction is controlled by the use of control rods (inserted into the fuel assemblies) which absorb neutrons. There are 53 control rods held out of the reactor by an electromagnet. Boron can also be added to the system to absorb neutrons, thus slowing the fissioning.

This reaction takes place inside the reactor vessel. Nuclear fuel in the reactor is in the form of ceramic pellets about the size of a pencil eraser. These pellets are the energy equivalent of about one ton of coal; about 150 gallons of oil; or 160 gallons of gasoline. Energy from four uranium pellets can provide an average American home with energy for one year.

Fuel pellets are stacked into 12-foot long metal alloy fuel rods: 266 fuel pellets inside each fuel rod; 264 fuel rods bundled together to form one fuel assembly; 193 fuel assemblies in the Wolf Creek reactor.

Water surrounding these fuel assemblies inside the reactor is heated to more than 600 degrees Fahrenheit by fissioning uranium. This water is kept under high pressure (about 2,235 pounds per square inch) to keep the water from boiling.

As the heated water circulates in pipes through four steam generators, heat is transferred to a second water system separate from the first. (like the burner on your stove.) Water in the second system is heated, then turns to steam, which is used to spin the blades inside the turbine.

Once the steam has done its work, it enters the plant's condenser where water from the cooling lake circulates through large pipes. Steam passing over the cool piping is condensed back into liquid form and is returned to the steam generators to repeat the cycle.

Lake water does not physically mix with the second (steam) water system. It absorbs heat from the steam. After completing its flow through the condenser, lake water is returned to the lake at 30-40 degrees warmer than when it was drawn into the plant. From intake to discharge takes about 20 minutes.

Using two baffle dikes (Baffle Dike A is two miles long; Baffle Dike B is one mile long), lake water is returned to a median temperature before being used again. This takes about 30 days.

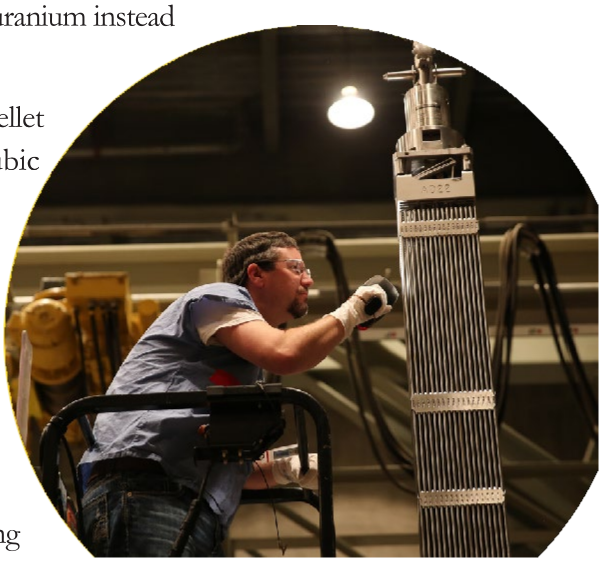
wolf creek nuclear

evergy

what we do

Why Nuclear Fuel?

Nuclear generates more than half of the country's clean energy by using uranium instead of burning fossil fuels.



Uranium is an abundant metal and is full of energy: One uranium fuel pellet creates as much energy as one ton of coal, 149 gallons of oil or 17,000 cubic feet of natural gas. It does not come out of the ground ready to go into a reactor, though. It is mined and processed to create nuclear fuel.

Before uranium goes into a reactor, it must undergo four major processing steps to take it from its raw state to usable nuclear fuel: mining and milling, conversion, enrichment and fuel fabrication.

First, uranium is mined with conventional methods or by in-situ leach mining, where carbonated water is shot into underground deposits and piped up to the surface. The worldwide supply of uranium is diverse, coming primarily from Kazakhstan, Canada and Australia. In the United States, uranium is mined in several western states.

To sustain the chain reaction necessary to run a reactor, the uranium will need a high enough concentration of a specific isotope, uranium-235. Natural uranium is converted into several different forms to prepare it for enrichment. Special facilities enrich the uranium so that it can be used in a nuclear reactor. The major commercial fuel enrichment facilities are in the United States, France, Germany, the Netherlands, the United Kingdom and Russia.

The enriched uranium is converted again into a powder and then pressed into fuel pellets. The fuel fabricator loads these pellets into sets of closed metal tubes called fuel assemblies, which are used in nuclear reactors.

A single fuel assembly spends about five years in a reactor on average, powering the system that generates electricity.

Every 18 months, Wolf Creek stops generating electricity to replace a third of its fuel assemblies. The removed assemblies are placed in a spent fuel pool where they cool over time. The radioactive byproducts remain contained in the used fuel assemblies.

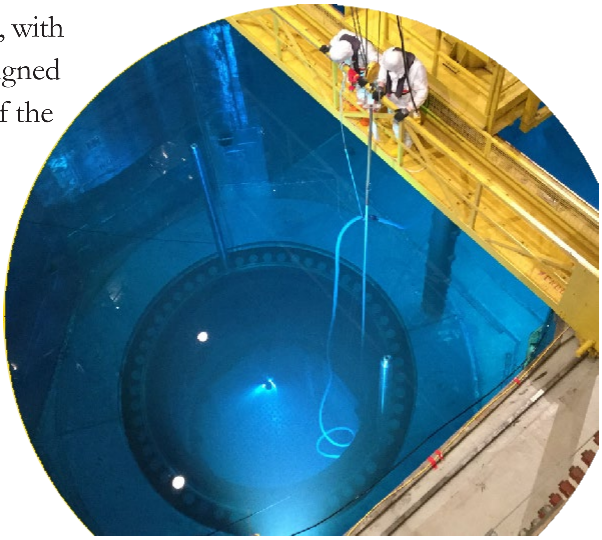
After the used fuel assemblies have cooled to the point that they no longer need to be stored underwater, they are removed from the pools and safely stored at the plant in large containers made of steel-reinforced concrete.

Every nuclear plant stores used fuel as the industry awaits the completion of either a consolidated interim storage site or permanent disposal repository by the federal government.

wolf creek nuclear | evergy

safety

Safety is a core value at Wolf Creek



On a day-to-day basis, crews of highly-trained operators run Wolf Creek, with a full maintenance and engineering staff on site. The plant is robustly designed with multiple redundant safety features to protect the health and safety of the public.

The nuclear fuel is contained in specialized rods inside of the reactor, housed in a containment building — a seismically hardened, watertight structure made of four-foot thick reinforced concrete lined with steel.

Wolf Creek has two independent safety systems for the single unit. These safety systems are housed separately from each other in watertight, reinforced concrete structures. Only one of the systems is required to safely shut down and cool down the operating reactor.

Each safety system includes the essential safety equipment — a diesel generator, multiple pumps, valves, and various instrumentation. This equipment is designed to maintain the plant in a safe condition in the event of an emergency.

The primary onsite diesel generators provide electricity to important plant systems in emergency scenarios, and they are designed to start within 12 seconds of losing offsite power. Additionally, Wolf Creek has three station blackout diesel generators designed to back up the primary diesel generators. They also have the ability to provide the necessary power to our safety systems to shut down the plant.

This diverse system provides multiple layers of redundancy to supply cooling and electricity to critical plant systems and components during a plant emergency.

Wolf Creek has an integrated emergency response plan that is closely coordinated with local, state, and federal officials. Routine tests and drills are performed with potential emergency scenarios to ensure that the site's response is coordinated.

In addition, in response to the 2011 nuclear disaster at the Fukushima Daiichi Nuclear Power Plant in Japan, Wolf Creek has an emergency response program, "FLEX", for extremely unlikely events beyond what plants were designed to withstand. The program has strategies and equipment consisting of the necessary generators, pumps, hoses, and personnel survival supplies to be used in the case of an emergency. The equipment is stored in two robust, disaster-resistant structures and in various locations on site. This equipment is an additional preventative measure designed to protection the public in the event of a severe disaster.

wolf creek nuclear | evergy

environmental stewardship

Wolf Creek is an Environmental Steward

At Wolf Creek, we care about our environment.

The site is 10,500 acres, part of which provides a rich, protected habitat for native wildlife, including bald eagles. The lake makes up 5,090 of these acres and is used as cooling water for the plant. It is among the top lakes in Kansas to fish for smallmouth bass and blue catfish.

An employee-led group, the Green Team, promotes environmental stewardship and outdoor education opportunities. The team also promotes reduce-reuse-recycle programs, encouraging fellow employees to adopt good environmental habits at work and at home.

Wolf Creek also helped fund the Wilson Cadman Environmental Education Area, located approximately three miles from the plant. The area provides five nature trails that guide visitors through a variety of Kansas habitats. The Wilson Cadman Environmental Education Area is open from dawn to dusk 365 days a year and has picnic tables, restrooms, and trash receptacles for visitors

Nuclear energy is the only large scale source of carbon-free electric generation. Wolf Creek generates 20.7 percent of Kansas' electricity, and 36 percent of its emission-free electricity.

Wolf Creek generates 1,268 megawatts of clean, carbon-free electricity, avoiding emissions of more than six million tons of carbon dioxide, 4,000 tons of nitrogen oxide, and 7,000 tons of sulfur dioxide from polluting the air.

wolf creek nuclear | evergy