

# South Texas Project

✦ Nuclear energy is America's largest source of clean-air, carbon-free electricity, producing no greenhouse gases or air pollutants. Presently, nuclear energy produces electricity for one in five homes and businesses across the U.S. and nearly three quarters of all the country's clean-air electricity.



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## Project Overview

Located near Bay City, Texas in Matagorda County, the South Texas Project (STP) is one of the newest and most productive nuclear power plants nationwide. The twin-reactor facility currently produces 2,700 megawatts of electricity, enough to serve more than two million homes in Texas.

STP is located on a 12,220-acre site in Matagorda County. The facility began commercial operations in 1988, operates 365 days a year and is the largest employer in Matagorda County. STP is owned by NRG Texas (44%), San Antonio's CPS Energy (40%) and Austin Energy (16%). The plant is managed by the STP Nuclear Operating Company and employs approximately 1,300 full-time personnel, including contractors.

STP has won numerous awards including six Top Industry Practice awards, the American Nuclear Society's Utility Achievement Award and two Best of the Best awards, the industry's highest honor. STP's top performance has enabled it to generate more electricity since 2004 than any other two-unit plant in the nation.

## Fuel and Operations

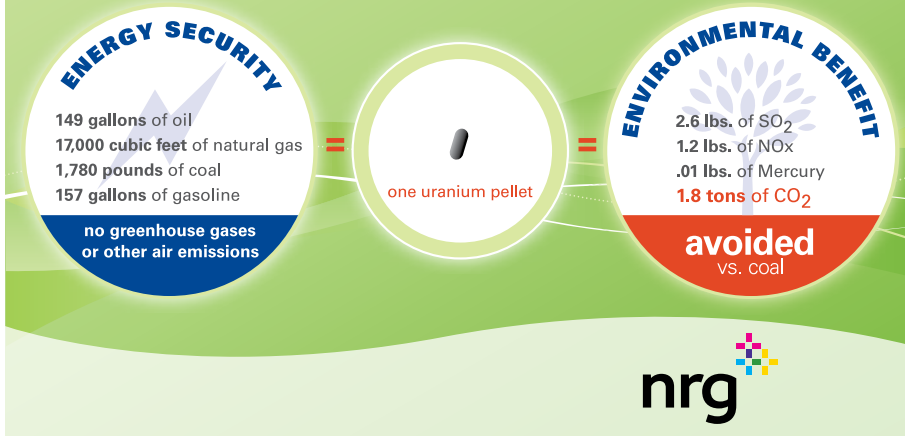
STP's reactors use uranium oxide in the form of pellets smaller than a thimble, but each one has the energy of nearly a ton of coal. More than 400 pellets are loaded into a fuel rod, and 264 rods are bundled together to form a fuel assembly. Each reactor core contains 193 fuel assemblies and is surprisingly small, just 10.5 feet across and 14 feet high.

A controlled reaction in the core heats water circulating through sealed, stainless steel piping. The heated water passes through huge vessels, called steam generators, and heats a separate water supply into steam. The steam spins turbine blades to turn generators to create electricity before being returned to the steam generators to start the cycle again.

About one-third of the fuel assemblies are replaced every 18 months. STP has enough underwater storage capacity on site to safely store spent fuel for the licensed life of the plant and can store the spent fuel safely and securely on site until the federal government takes custody of it.



# NUCLEAR CLEAN BASELOAD POWER



## Safety Features

STP has three independent and redundant safety systems that can quickly and automatically shut down the plant, as well as numerous barriers to prevent the release of radiation. The barriers include the steel-reinforced, four-foot-thick concrete outer walls of each reactor containment building; the domed structure's steel liner; an additional eight feet of reinforced concrete interior walls; and the six-inch-thick, carbon steel walls of the reactor vessel. The Nuclear Regulatory Commission has praised STP as a state-of-the-art facility and a model for the nuclear power industry.

## Environmental Benefits

As nuclear power does not emit carbon dioxide, STP will prevent 18.4 million tons of this greenhouse gas from being emitted into the atmosphere. STP will also prevent approximately 41 thousand tons of sulfur dioxide and 11 thousand tons of nitrogen oxide from entering the atmosphere each year when compared with traditional fossil-fueled plants.<sup>1</sup>

STP's large plant site encompasses an unusually wide range of habitats for birds, animals and plants. More than 225 bird species, including bald eagles, peregrine falcons, white-tailed hawks and white-faced ibis visit or nest here. In cooperation with conservation groups, STP created a 110-acre wetlands habitat for migratory waterfowl and a large tract of native prairie grass as a source of seed to recreate the nearly extinct vegetation. The U.S. Department of Agriculture formally commended these programs with a Conservation Award in 1999.

## Energy Security

Nuclear power helps ease America's dependence on foreign fuels and helps preserve our nation's natural resources. Using uranium pellets instead of traditional fuel to generate electricity for our homes, business and industries, the two units at STP annually save the nation from using 33.6 million barrels of oil, 9.8 million tons of coal (which would fill 98,000 railroad cars), or 215.6 billion cubic feet of natural gas (that would fill approximately 3,000 domed stadiums) a year.

As technological advances make electric cars and plug-in hybrids increasingly attractive as transportation alternatives, zero-carbon nuclear power is one of the more obvious sources of around-the-clock baseload generation to produce the large amounts of electricity that will be needed to help displace oil as a transportation fuel without contributing to global climate change.

## Site Security

Nuclear power plants are the most secure industrial facilities in the United States. In addition to their extraordinary structural strength and multiple safety systems, they are protected by numerous barrier and intrusion detection/prevention systems. The plants also are constantly patrolled by highly trained, heavily armed officers with SWAT-level skills and capabilities.

STP's emergency response team practices and fine-tunes its procedures, which comply with strict federal regulations, during regular drills with federal, state and local officials. A network of warning sirens, specialized radios and a computerized telephone calling system can alert residents within ten miles of the plant if an emergency occurs. While a plant emergency has never occurred, the notification system has been activated several times to warn STP's neighbors about approaching tropical storms and other severe weather.

<sup>1</sup> Based on 21 million megawatt hours generated annually.



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REV.08.2011