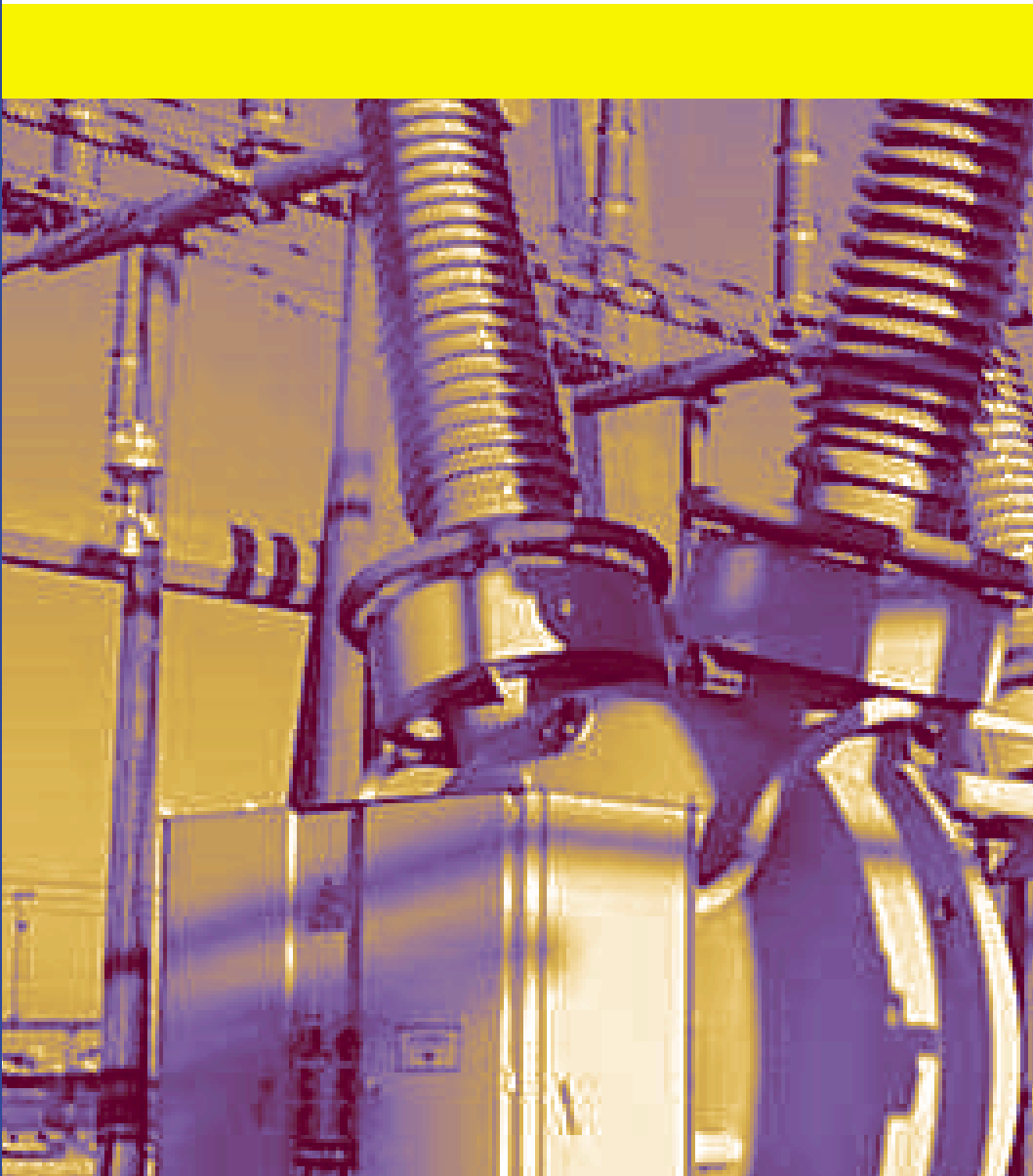




SF₆ Emissions Reduction Partnership for Electric Power Systems:

An Opportunity for Industry



What is SF₆?

Sulfur hexafluoride (SF₆) is a synthetic gas used as an insulating medium in the electric power industry. SF₆ is also used as a cover gas in the magnesium industry, for plasma etching in semiconductor manufacturing, as a reactive gas in aluminum recycling to reduce porosity, as thermal and sound insulation, and in atmospheric tracer studies and medical applications.



Southern Company is happy to be working with EPA in this voluntary partnership to track our SF₆ usage and doing our part to reduce greenhouse gas emissions. This is an excellent example of how industry and government can work together to address an issue in a way that's in the best interest of society. Southern Company has been reducing SF₆ emissions for several years, and the opportunity to take part in this joint effort reaffirmed our belief that we were headed in the right direction and identified various ways in which we could improve upon our management of SF₆.

Charles Goodman
Senior Vice President, Research
and Environmental Affairs
Southern Company

An Effective Insulator

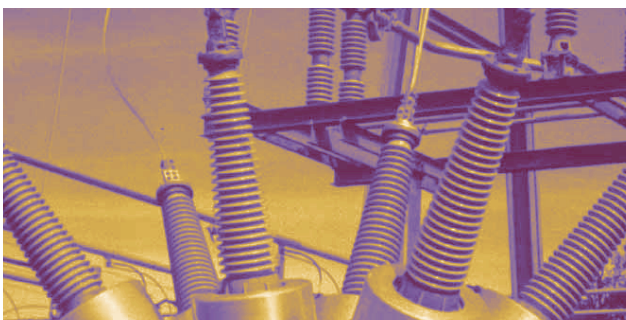
The most common use for SF₆, both domestically and internationally, is as an electrical insulator in equipment that transmits and distributes electricity. Since the 1950s, the U.S. electric power industry has used SF₆ because of its dielectric strength and arc-quenching characteristics. SF₆ is used widely in gas-insulated substations, circuit breakers, and other switchgear.

A Potent Greenhouse Gas

SF₆ is also a highly potent greenhouse gas. Over a 100-year period, SF₆ is 23,900 times more effective at trapping infrared radiation than an equivalent amount of carbon dioxide. With an atmospheric lifetime of 3,200 years, SF₆ is also a very stable chemical. Because of its long lifespan and high potency, even a relatively small amount of SF₆ can have a significant impact on global climate change.

Challenge

The electric power industry uses a significant percentage of the SF₆ produced worldwide each year. Under ideal operating conditions, SF₆ would remain entirely contained within the transmission and distribution equipment. However, during real-world equipment operation, maintenance, and SF₆ recycling activities, gas is emitted into the atmosphere. Fugitive emissions of SF₆ can escape from gas-insulated substations and switchgear through seals, especially from older equipment. It can also be released during equipment installation and when equipment is opened for servicing. In 1998, U.S. emissions of SF₆ were estimated at 10 million metric tons of carbon equivalent (MMTCE). A significant percentage of these emissions are attributable to the electric power industry.



Recognizing our environmental and natural resource stewardship responsibility, we are pleased to be among the first electric utilities to join EPA's SF₆ Emissions Reduction Partnership for Electric Power Systems. Being a publicly owned utility, we feel especially responsible to set a leadership example through active corporate citizenship.

Thomas W. Richards, P.E.
Director of Electric System
Fort Pierce Utilities Authority

Opportunity



The SF₆ Emissions Reduction Partnership for Electric Power Systems is a voluntary, non-regulatory partnership between the U.S. Environmental Protection Agency and the electric power industry aimed at reducing SF₆ emissions. The partnership provides a forum for EPA and the electric power industry to work together to reduce SF₆ emissions to technically and economically feasible levels—thereby helping to avoid global climate change. The electric power industry has an enormous opportunity to help reduce the nation's SF₆ emissions through cost-effective operational improvements and equipment upgrades.

The SF₆ Emissions Reduction Partnership for Electric Power Systems is one of a suite of voluntary EPA programs working with industries that emit the most potent of greenhouse gases. EPA has also developed partnerships with the aluminum industry (perfluorocarbons (PFCs)), semiconductor manufacturers (PFCs, SF₆, and hydrofluorocarbons (HFCs)), and magnesium producers and casters (SF₆).

Participants in these programs value the flexibility and benefits voluntary programs offer: cost-effective pollution prevention, protection of the environment, information sharing, and positive company recognition.

Partnership Benefits

Protect the environment

The partnership provides an exciting opportunity for the electric power industry and EPA to work together to reduce SF₆ emissions and prevent global warming.

Save money

The SF₆ Emissions Reduction Partnership for Electric Power Systems can help you improve your bottom line. SF₆ is a relatively expensive gas, so reducing emissions saves money. Through improvements in the leak rate of new electrical equipment, refurbishing of older equipment, and the use of efficient operation and maintenance techniques, utilities often find technologically and economically feasible ways to reduce SF₆ emissions.

The SF₆ Emissions Reduction Partnership for Electric Power Systems is a win-win-win. The environment wins from the reduction of greenhouse gas emissions. Cinergy wins by reducing the emission of an expensive gas and improving equipment operations. EPA and Cinergy win by forging a better relationship of mutual cooperation working towards the same goal.

The SF₆ Emissions Reduction Partnership for Electric Power Systems has solidified Cinergy's efforts for reducing SF₆ emissions. Cinergy was already interested in SF₆ emissions reduction, but the voluntary program has given Cinergy a coherent approach to implementing the reductions.

Tammy L. Jett
Senior Environmental Specialist
Cinergy



Learn from others

EPA will work with its partners to share information on best management practices and other issues that can help achieve the goals of the partnership. EPA will also sponsor periodic SF₆ conferences where partners and others from the industry can keep up-to-date on the latest developments in this area and learn from others.

Enhance your public image

EPA will provide opportunities for recognition of your organization's participation and efforts to reduce SF₆ emissions at industry events, in trade publications, and on EPA's Web site.

Since signing the MOU with the EPA, AEP has:

- *Reviewed its maintenance policy regarding SF₆-containing equipment*
- *Implemented preventative maintenance programs to start reducing gas leakage rates*
- *Enhanced its training program on proper handling of SF₆ gas*
- *Utilized laser imaging leak detection technology*

These efforts to reduce SF₆ emissions have paid for themselves through avoided gas purchases. Future savings from equipment tested to date, estimated at \$20,000, will be realized by not having to purchase replacement gas. Subsequent leak detection and equipment repair/replacement will increase savings even more. Replacing older, high-volume equipment with new low-volume equipment will reduce the amount of SF₆ gas purchased. Annual savings of \$50,000 are projected.

Dale E. Heydlauff
Senior Vice President
Environmental Affairs
American Electric Power

Joining the Partnership

To become a partner you need to sign a Memorandum of Understanding (MOU). The MOU is an agreement between the partner and EPA that details the roles and responsibilities of both EPA and the partner. EPA developed the MOU with significant industry input in order to make it flexible and user-friendly. It is up to the partner to determine what emission reduction actions are technically and economically feasible for its operation.

Through participation in EPA's SF₆ partnership, we have found that tracking our SF₆ leak rate and reclaiming processes is easier than we had imagined. By working with EPA on a voluntary basis, we have cut our gas emissions to an all-time minimum. Management has been working with us to replace the older leaking equipment that we have on our system.

**Michael Mahurin,
General Foreman
Bill Icke, Assistant
General Foreman
San Antonio City
Public Service**