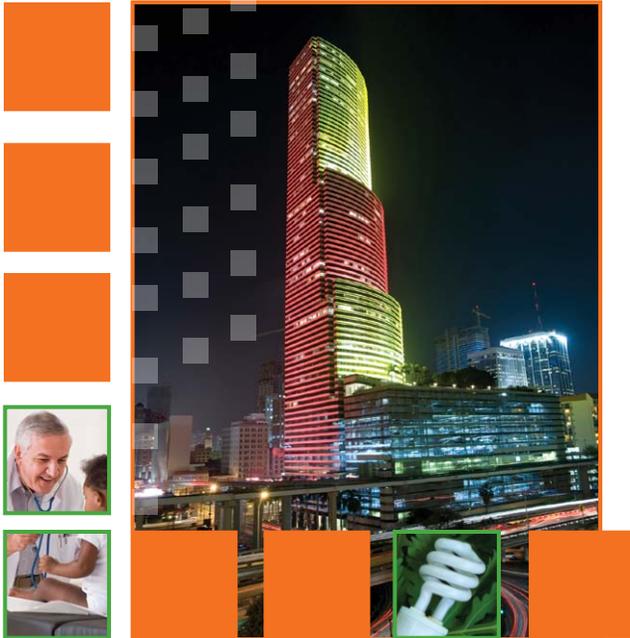


Powering Our Lives ...

More than 100 nuclear reactors currently produce approximately 20 percent of our electricity in the United States, making nuclear energy our Nation's second-largest source of electricity. Nuclear plants are also our largest source of low-carbon energy, which is increasingly beneficial as we consider the challenge of global climate change.

That's not all. Nuclear energy's contributions to medicine, space exploration, agriculture, and criminal investigation provide crucial benefits to both our economy and our quality of life. Since radioisotopes were first discovered more than 100 years ago, they have transformed these and other fields, and scientists realize they have only just begun to tap into the power of radioactive isotopes for the benefit of society.



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U.S. DEPARTMENT OF
ENERGY | Nuclear
Energy

print brochure 

October 2010

Harnessing the Atom

Putting Nuclear Energy to Work in the U.S. Economy





Economic Prosperity . . .

Nuclear power plants provide especially significant benefits, as the United States relies on energy (especially electricity) for economic growth and prosperity. Operation of a single nuclear power plant generates 400 to 700 permanent jobs. These jobs pay 36 percent more than average salaries in the local area. In addition, the permanent jobs at a nuclear plant create an equivalent number of additional jobs in the local area to provide the goods and services necessary to support the nuclear plant work force (e.g., grocery stores, dry cleaners, and car dealers). Building a new nuclear plant also results in the creation of 1,400 to 1,800 jobs during construction, with peak employment as high as 2,400 jobs at certain times.

Beyond jobs, the average nuclear plant generates approximately \$430 million in sales of goods and services in the local community each year. Further benefiting the local economy, the average nuclear plant generates total state and local tax revenue of almost \$20 million each year. These tax dollars benefit schools, roads, and other state and local infrastructure in these communities.

Medical Diagnosis & Treatment . . .

Approximately one-third of all patients admitted to U.S. hospitals today are diagnosed or treated using radiation or radioactive materials. Nuclear medical imaging, which combines the safe administration of radioisotopes with camera imaging, helps physicians locate tumors, size anomalies, or other problems. Doctors also use radioisotopes therapeutically, most often in killing cancerous tissue, reducing the size of tumors, and alleviating pain.

Space Exploration . . .

A great deal of what we know about deep space has been made possible by Radioisotope Power Systems (RPSs), small nuclear power sources used to power spaceships in the extreme environments of deep space. RPSs have proven safe, reliable, and maintenance-free during four decades of space exploration, including missions to study Jupiter, Saturn, Mars, and Pluto.

Safe & Healthy Food . . .

The use of radioisotopes to control insects that destroy crops offers farmers an alternative to chemical pesticides. In this procedure, male insect pests are rendered infertile. Pest populations are then drastically reduced and, in some cases, eliminated.

Nuclear energy is also harnessed to preserve our food. When food is irradiated harmful organisms are destroyed without cooking or altering the nutritional properties of the food. Irradiation makes chemical additives and refrigeration unnecessary, and requires less energy than other food preservation methods.

Criminal Investigation . . .

Criminal investigators use radioisotopes to identify certain chemicals through a technique called "activation analysis." It is especially useful in identifying trace qualities of materials such as paint, glass, tape, gunpowder, lead, and poisons. Criminal investigators frequently rely on activation analysis to obtain physical evidence linking a suspect with a specific crime.

Radioactive isotopes, or radioisotopes, are atoms that emit radiation. Radiation is simply a wave of energy created when an atom changes from a state of higher energy to lower energy and releases subatomic particles. Since radioisotopes were first discovered more than 100 years ago, they have transformed the fields of medicine, criminal investigation, space exploration, agriculture, and power generation.

