



Kennedy Space Center Energy Conservation Endeavors

At NASA's Kennedy Space Center, conservation isn't just observed on Earth Day, it's practiced year round. Throughout the last several years, the center has stepped up its efforts to conserve energy, recycle and go green.

These efforts are in line with an executive order calling for cost-effective waste prevention and recycling programs; reductions in greenhouse gas emissions; acquisition of green products and services; sustainable design and high performance buildings; and vehicle fleet management.

Kennedy increased its use of alternative fuel vehicles and alternative fuels. Currently, there are 900 alternative fuel vehicles driven around the center, resulting in the use of more than one

million gallons of alternative fuels since 2004:

- 676 flex-fuel vehicles (E85 and unleaded gasoline),
- 85 bi-fuel vehicles (CNG and unleaded gasoline),
- 107 diesel vehicles (B20),
- 33 compressed natural gas (CNG) vehicles.

Since 2007, the center has increased the number of flex-fuel and compressed natural gas vehicles, and reduced the number of diesel and bi-fuel vehicles. The use of electric vehicles increased from 11 in fiscal year 2007 to 19 in fiscal year 2009, with a projected increase to 25 by fiscal year 2010. Several lithium-battery vehicles also are used. By fiscal year 2010, the

center projects it will operate more than 1,000 alternative fuel vehicles.

Kennedy also has tested the following vehicles:

- zero emission fuel cell bus
- fuel cell powered vehicles
- BMW Hydrogen 7 (liquid hydrogen fueled vehicles)

The center's facility energy mix is 72 percent electricity, 27 percent natural gas, and the remainder is fuel oil and propane. Kennedy reduced its energy



A variety of alternative fuel vehicles are driven around NASA's Kennedy Space Center in Florida in an effort to reduce gasoline consumption and conserve energy. These include compressed natural gas, bi-fuel, diesel fuel and flex fuel vehicles such as these.

intensity in fiscal year 2008 by 10.4 percent from the fiscal year 2003 baseline, exceeding the 9 percent reduction mandated by energy laws. Electricity consumption was reduced from 266,200 megawatt-hours in 2003, to 249,400 megawatt-hours in 2008.

Natural gas consumption was reduced from 3.6 million therms to 3.3 million therms during the same period. Kennedy will monitor advances in renewable energy technologies to incorporate them into new and existing facilities, where cost effective.

Kennedy recycles about 38 million pounds of trash each year. Recycling efforts include the recent addition of new recycling bins for glass, aluminum and plastics located in most Kennedy facilities.

Other items recycled include:

- cement and concrete
- scrap metal
- yard waste
- lumber
- mixed paper and cardboard
- asphalt
- copper
- used tires and oil
- scrap property elements from electronics

A new Life Support Facility in Kennedy's Industrial Area opened in June 2008. It is the first NASA-funded building at the center to be awarded the U.S. Green



Kennedy Space Center's Life Support Facility, the first NASA-funded building that received the U.S. Green Building Council's Leadership in Energy and Environmental Design, or LEED, certification, opened in July 2008.

Building Council's Leadership in Energy and Environmental Design, or LEED, Silver certification. The facility has increased filtration and carbon monoxide monitoring for improved indoor air quality, dual-flush toilets for water conservation, high-efficiency lighting and low or no volatile organic compounds in adhesives and paints.

Other upcoming facility projects will be green and meet some level of LEED certification:

- Operations and Checkout Building remodel
- Propellants North and South facilities
- Electrical Maintenance Facility

Also in June 2008, NASA and Florida Power and Light signed an agreement that will allow FPL to build a 900-kilowatt photovoltaic solar power facility at Kennedy to support the electrical needs of the center.

The system is expected to generate about 1.7 million kilowatt-hours of electricity per year, which translates to a reduction of almost 1,300 tons of carbon dioxide, nearly four tons of sulfur dioxide and two tons of nitrogen oxide. According to the Environmental Protection Agency, that's equivalent to taking 222 cars off the road per year, or saving nearly 138,000 gallons of gasoline.

Kennedy's largest solar power system was installed in 2005 at the center's landfill. The five-kilowatt, solar photovoltaic system provides electrical power to one of two buildings previously powered by diesel generators, saving the government about \$26,000 per year, and eliminating the safety and environmental hazards associated with generators.

A solar thermal system in the Film Storage Building and a one-kilowatt array provides electrical power to a lightning detection device. Solar-powered parking lot lights are in use at the Life Support Facility.

Kennedy stepped up its water conservation program in early 2007 to meet an executive order for water reduction goals. Kennedy's baseline water consumption for fiscal year 2007 was 302,207,366 gallons. During fiscal year 2008, Kennedy's water consumption was 273,061,260 gallons, which represents a 9.64-percent decrease in consumption from the previous year.

The center is ahead of the curve in regards to meeting the requirement to reduce the agency's water consumption by 2 percent per year.

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