

# Environmental Sustainability at Johnson Space Center

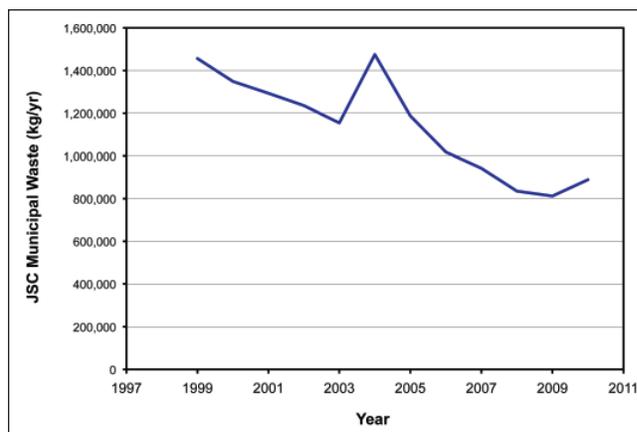
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Johnson Space Center (JSC) adopted a policy of “conducting our mission in a manner that promotes environmental stewardship, sustainability, compliance, and continual improvement.” This policy is being implemented with the help of teams such as the Sustainability Partnership Team and Green Team, and through the use of Leadership in Energy and Environmental Design (LEED) standards for construction. Center leadership, organizations within JSC, contractor partners, and grassroots employee efforts all work together to make JSC “greener.”

The Sustainability Partnership Team was formed in 2004 to improve environmental sustainability and increase JSC’s exposure to “dual use” technologies that may be beneficial in both terrestrial and space exploration environments. NASA’s work in space promotes technological advances that result in “spin-off” technologies, which are also useful on Earth. At the same time, various federal government executive orders and NASA policy directives compel the center to take action to reduce environmental impact through waste reduction, energy efficiency, and other actions. Combining these two NASA goals with JSC’s technical expertise and space hardware development mission motivates the team to take advantage of the latest state-of-the-art technologies at JSC’s facilities.

Sustainability is defined here as development that meets the needs of present generations without compromising the ability of future generations to meet their own needs. Since sustainability is an interconnected issue, the Sustainability Partnership Team uses systems analysis to guide its efforts. To measure progress, the team developed a set of 15 sustainability indicators for JSC. These sets are grouped into the categories of air pollution, waste/resource use, and energy. Figure 1 shows one example for municipal waste generated.

Examples of Sustainability Partnership Team projects include the investigation of solar air-conditioning and solar water heating for JSC buildings, and the retrofitting of several electric carts with solar panels for recharging (figure 2). In 2007, a Multi-Platform Renewable Energy System was constructed at the JSC Child Care Center.



**Fig. 1.** Example of a Johnson Space Center sustainability indicator.



**Fig. 2.** Electric cart powered by solar panel.

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(For details, see the article titled “Greening the Johnson Space Center Aaron Cohen Child Care Center.”) In 2009, technicians installed solar water heating and day-lighting systems at the JSC Gilruth Recreation Center (figure 3).

The Green Team was formed in 2010 to encourage JSC employees to adopt more environmentally friendly behaviors at work and at home. This team—with representatives from across the center—has broadcast energy- and water-saving tips, and has organized contests to determine which work groups can save the most paper and energy.

JSC is striving to go beyond NASA’s standard of new building and major renovation construction at the LEED Silver level or higher. LEED promotes a whole-building approach to sustainability by recognizing performance in these five key areas of human and environmental health: sustainable site development; water savings; energy efficiency; materials selection; and indoor environmental quality. In the past few years, JSC has been awarded LEED basic certification on one project, Silver on one project, Gold on three projects, and Platinum for a new office building, completed in 2010. (Detailed information is provided in the article titled “Leadership in Energy and Environmental Design at Johnson Space Center.”)



**Fig. 3.** Solar water heater at the Johnson Space Center Gilruth Recreation Center.