



# THE GREEN RENEWAL OF OAK HALL HIGHLIGHTS A WIDE-RANGING TREND AT NJIT

# A GREENER CAMPUS

**You might say that the ivy-covered NJIT campus buildings are turning a new shade of green this fall. Come August, NJIT students can opt to live in a residence hall that incorporates state-of-the-art technologies for efficient use of energy and sustainability.**

The Oak Hall upgrade, a key part of many green initiatives on campus, has been made possible by \$1.6 million in funding from the 2009 American Recovery and Reinvestment Act (ARRA). Scheduled for completion this year, the renewal of 25-year-old Oak Hall could reduce electrical energy use by as much as 50 percent and fossil energy consumption by as much as 40 percent. The project was approved by the New Jersey Board of Public Utilities and the U.S. Department of Energy as one of seven projects in the \$20.6 million State Energy Program funded by ARRA.

“NJIT’s facilities team has created an energy improvement plan that utilizes an innovative mix of technologies to upgrade operations and reduce the ecological footprint of this building,” says Boris Shapiro MS ’95, NJIT’s executive director of technical services and Oak Hall project manager. “We expect Oak Hall to emerge as a model building that can be used to introduce energy-efficiency concepts to the state’s higher education community.”

## ENGAGED WITH ENERGY

**Boris Shapiro PE (left), executive director of technical services, earned his master’s in industrial engineering at NJIT. His efforts with the Physical Plant Department were instrumental in NJIT receiving a 2002 Green Award for Outstanding Design and Practices for Environmental Sustainability in New Jersey Higher Education. He has also been recognized with an “Energy Manager of the Year” Award from the Association of Energy Engineers.**

*“DOING WHATEVER WE CAN TO INCREASE EFFICIENCY AND CUT ENERGY CONSUMPTION MAKES GOOD SENSE ECONOMICALLY AS WELL AS ENVIRONMENTALLY”*

*Joseph Tartaglia, Associate Vice President, Facilities Management*



ILLUSTRATION: COURTESY OF JARMEEL KIZEL ARCHITECTS

*This architectural rendering shows the solar heating panels and photovoltaic cells that will be installed on the roof of Oak Hall.*

Housing 230 students, Oak Hall will serve as a teaching tool, immersing residents in an environment built for sustainability. Technologies being applied include:

- Demand-based controls for heating, ventilation and air conditioning that conserve energy through slower fan and pump speeds when there is reduced demand on these systems.
- Solar water heating to displace gas as the primary source of hot potable water for cooking, showering and doing laundry.
- Roof-mounted photovoltaic cells that will convert solar energy into electricity for use within the building, with direct current from the cells converted into alternating current via electronic inverters. When more electricity than needed is generated – during the summer, for example – the energy can be exported for use elsewhere.
- Regenerative elevator technology that will capture energy generated when an elevator descends with a heavy load, or rises with a

light load. The energy recovered will be converted into electricity for use in the building.

- High-efficiency lighting in residence and common areas utilizing the most advanced T-5 fluorescent technology.

### THE BIGGER PICTURE

“Doing whatever we can to increase efficiency and cut energy consumption makes good sense economically as well as environmentally,” says Joseph Tartaglia, associate vice president for facilities management and program director for the Oak Hall upgrade. “This project continues a very robust campus-wide effort focused on energy efficiency, sustainability and environmental protection that has been under way for many years. It’s an effort integral to both new construction and the renovation of existing buildings, including the restoration of historic Eberhardt Hall.”

Work now in progress complements previous environmental measures ranging from photovoltaic solar panels on the roof of the Campus Center and a high-efficiency heating and cooling plant in its lowest level to the university’s recycling program.

The 160 solar panels atop the Campus Center can produce 58 megawatts of electricity and eliminate the atmospheric release of an estimated 86,832 pounds of carbon dioxide per year. NJIT collects and recycles paper, glass and aluminum cans, fluorescent lamps, electronic equipment, cooking oil, concrete and other construction waste. Last year, for example, the university recycled some 157,050 pounds of paper and over 1,300 gallons of cooking oil.

### ASK RUFUS

The application of appropriate green technologies is clearly critical to protecting and improving the environment. But of equal importance is the degree to which the NJIT community supports environmental awareness and action. Such support is abundant at NJIT – from the introduction of a minor in environmental studies and sustainability to the “Ask Rufus” column in the student newspaper, *The Vector*, that answers readers’ questions about sustainability. Rufus Recyclia is a whimsical creature created by architecture student Benjamin Griffin as the university’s environmental mascot.

The new 15-credit environmental studies minor is an interdisciplinary program with courses that span the sciences and humanities. The Student Senate’s call for such a 21st-century academic option led to its creation by the NJIT Green Academic Council.

Growing student interest is also making sustainability a part of everyday life. Donna Minnich, director of the Campus Center, reports that the NJIT chapters of Engineers Without Borders and U.S. Green Builders now offer educational events on campus in response to this interest.

“There’s also been a tremendous response to our providing collection stations in the Campus Center for recycling batteries, cell phones, printer toner cartridges and even old books,” says Minnich, who launched NJIT’s Go Green initiative in 2008. “It says a lot about the attitude of NJIT students toward the environment. The same is true



*Rufus is ready to clear the NJIT campus of recyclables.*

## ACROSS THE CAMPUS

Steps taken to reduce the university's environmental footprint and enhance the quality of life include:

- High-efficiency heating, ventilation and air conditioning (HVAC) systems with demand-based controls
- Energy-efficient lighting
- State-of-the-art campus-wide computer monitoring and management of key environmental systems in 28 buildings
- Monitoring of all atmospheric emissions
- Spill-prevention program to monitor the integrity of all oil tanks on campus
- Sustainable biodegradable oil for all hydraulic elevators
- Twenty-five percent window-wall ratio where possible, optimized exterior shading, insulated roofs and exterior walls, double-pane and low-e glazing, recycled and recyclable Energy Star compliant materials for all new construction
- Low-flow water fixtures
- Landscaping that limits impervious surfaces to decrease run-off of storm water and which includes plants requiring minimal watering and maintenance
- Artificial grass on Lubetkin Field that does not require irrigation, herbicides and pesticides, or energy for mowing



Green Team member Martin Craig ME '12 distributed compact fluorescent lamps for Project Porchlight.

of our participation in national college competitions like RecycleMania. Recently, we placed in the top 22 percent in a ten-week bottle and can collection.”

Mark Bullock, residence coordinator, points to NJIT's "Green Team," students who promote energy conservation and sustainable practices in the university's residence halls. The Green Team distributed compact fluorescent lamps provided through Project Porchlight, a national initiative supported by the non-profit, non-partisan organization OneChange.

“Young people are coming to NJIT with a strong sense of environmental awareness,” Bullock says. “They're learning about sustainability in high school, and even earlier. Recycling newspapers, cans and bottles is also a way of life at home, and energy efficiency is now a significant consideration when buying new appliances.”

Green Team Co-Chair Bobby Blasco ME '12 concurs: “I try to be 'green' in my everyday life-style, so joining the effort to make NJIT

*The green features of the Campus Center include 160 photovoltaic panels on the roof to generate electricity from solar energy. The Campus Center complex also has nine high-efficiency boilers and three high-efficiency chillers with pumps that operate based on immediate building needs.*

a greener place was a no-brainer for me. Our team's goal is to make students aware of how each of us can help the environment, reduce the waste we produce and the amount of energy we use.” ■

*For more about NJIT's Environmental Studies minor: <http://csla.njit.edu/academics/undergraduate/ess>*

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