



100% of the wood floor and stair treads in the historic Octagon were salvaged from other buildings.

- Over 40% of the materials used in construction of The Octagon are from recycled sources, including the structural steel, acoustical tiles, and insulation.
- The entertainment center in The Octagon lounge is made from sunflower seeds, a rapidly renewable material.
- Adirondack deck chairs are made from 100% recycled plastic.
- Kitchen cabinets are made from wheat hulls, also a rapidly renewable material.



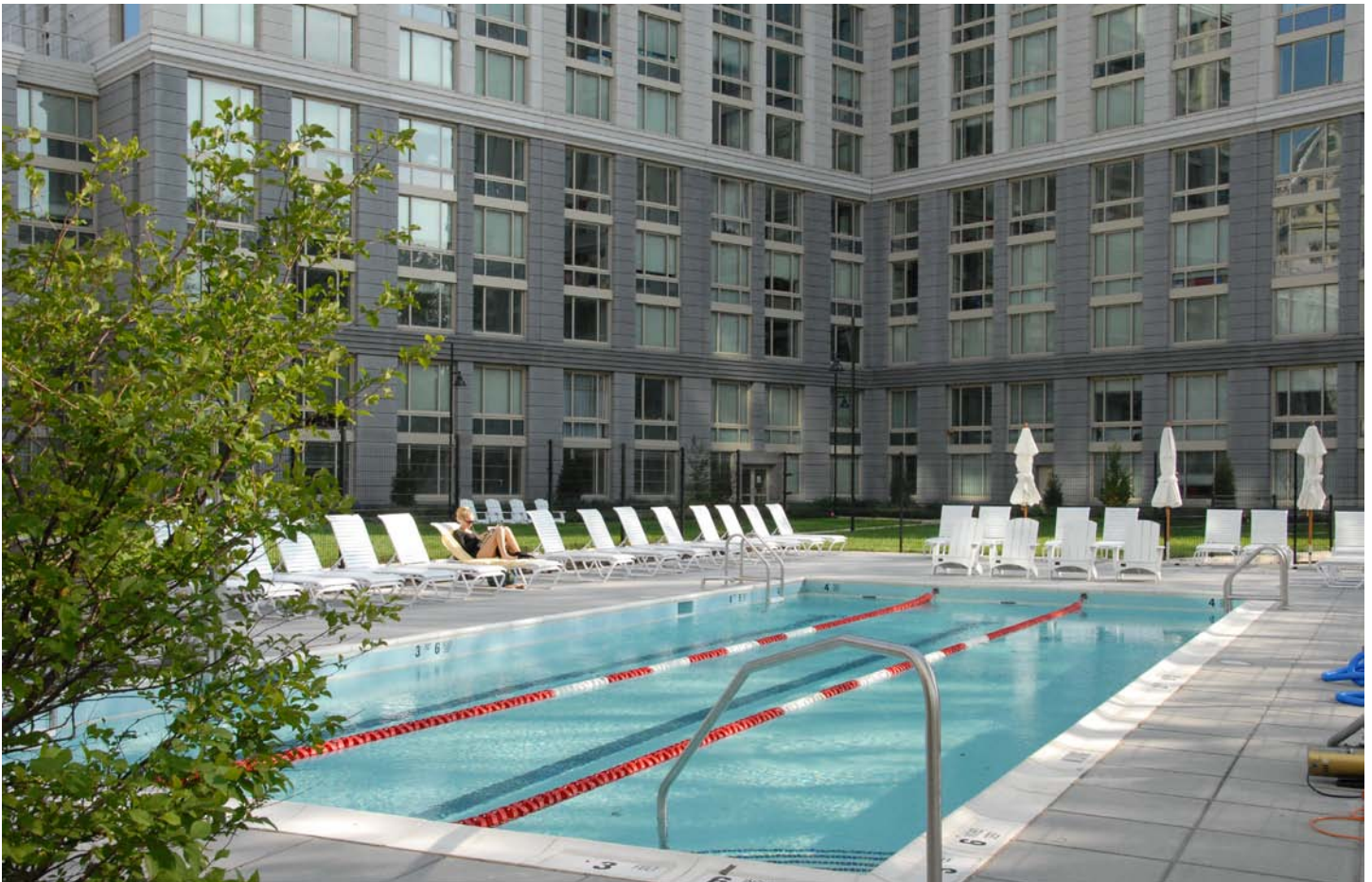
## MATERIALS

RECYCLED, RAPIDLY RENEWABLE, LOCAL

The use of construction materials with recycled content reduces the impacts associated with extracting and processing raw materials. In addition, rapidly renewable materials reduce the depletion of finite raw materials and long-cycle renewable materials.

Over 50% of the materials used in the construction of The Octagon were manufactured within 500 miles of the site, including all of the concrete, wood, gypsum board, ceramic tiles and kitchen cabinets.

Using local materials reduces the environmental impacts associated with transportation and supports the regional economy.



The pool waste water is used to discharge heat and cool the building in the summer.

## ENERGY EFFICIENCY

The Octagon consumes far less energy than a comparable, traditional building. In fact, an extensive review and testing process has confirmed that the building is 35% more energy efficient than what is required by the New York State building code. This has been accomplished through a wide variety of building design and equipment choices, such as highly insulated walls and roof, occupancy sensors to control hallway and stair lighting, and high-efficiency heat pumps in every apartment.

Saving energy helps reduce the greenhouse gas emissions associated with energy production, and also saves money on utility bills. Meter readings from the first several months of operation indicate that on an annual basis Octagon tenants will save on electric bills: \$90-160 in Studios, \$105-\$190 in 1-Bedrooms, \$120-\$215 in 2-Bedrooms, and \$150-\$270 in 3-Bedrooms.



- Double-pane, low-e and argon filled windows transmit significantly less thermal energy than standard windows.



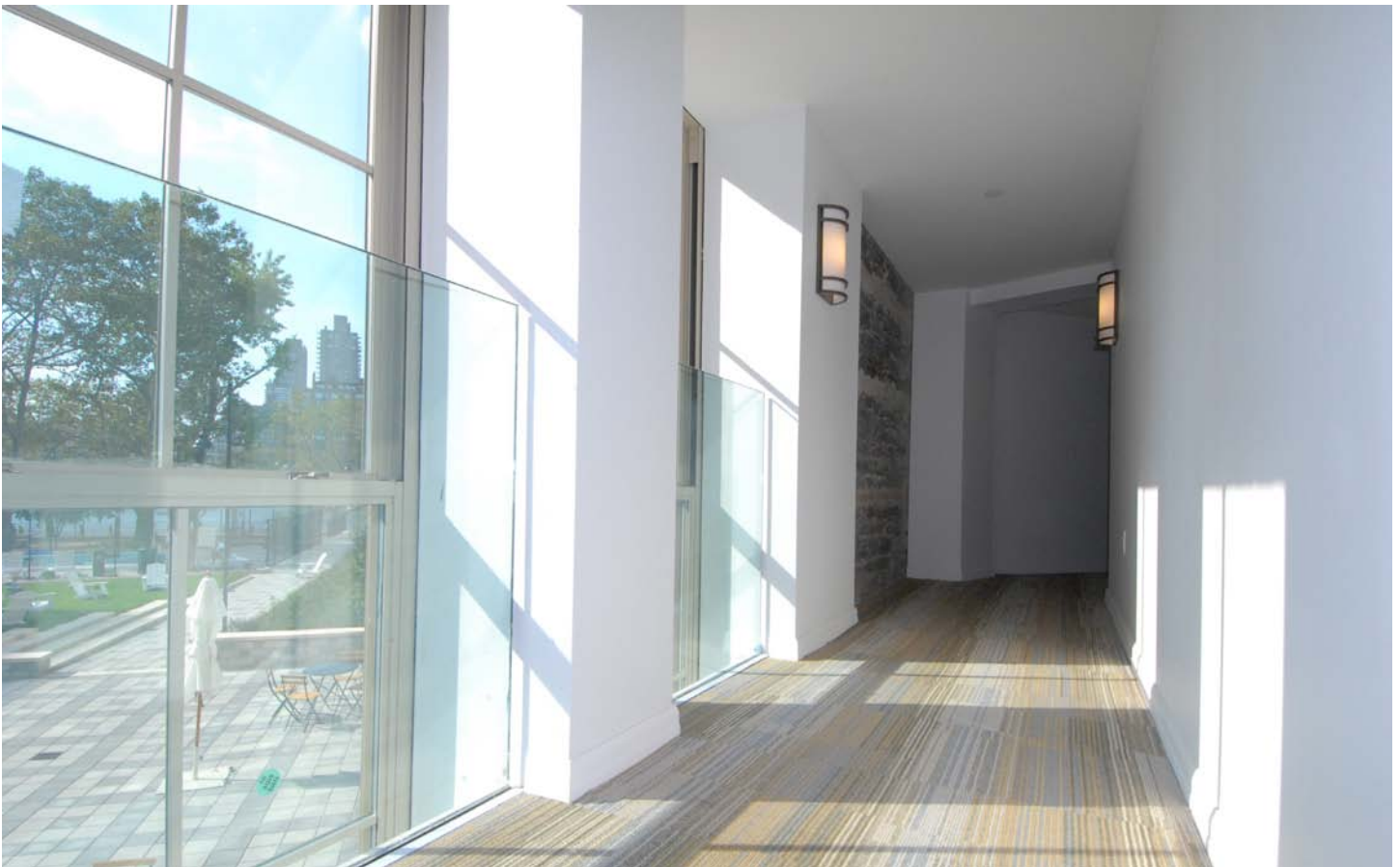
- High-efficiency, natural gas-fired condensing boilers operate at 95%+ thermal efficiency.



- The GFX heat recovery system captures heat from shower and dishwasher water.



- Rooftop heat recovery units have aluminum coils that allow incoming fresh air to be pre-heated in the winter and pre-cooled in the summer.



A first-class ventilation system coupled with big windows and natural light makes for cleaner, fresher air at The Octagon.

## INDOOR ENVIRONMENTAL AIR QUALITY

The Octagon provides for the comfort and well-being of its occupants by providing excellent indoor air quality. This has been accomplished by installing a first-class ventilation system, operable windows in every apartment, windows with extensive natural light and views, as well as through the use of low-emitting materials (including wood floors, carpets, paint, and adhesives). Air quality has been maintained through the implementation of an indoor air quality management plan during construction and building operations.

As a result of these efforts, The Octagon successfully met the rigorous NYS Green Building Indoor Air Quality standards, which included testing for formaldehyde, total volatile organic compounds, carbon dioxide, carbon monoxide, airborne particulates and radon. Air quality testing will continue for the first 5 years of operation.



- The Octagon's main entry includes a vestibule which helps prevent dirt and particulates from entering the building.



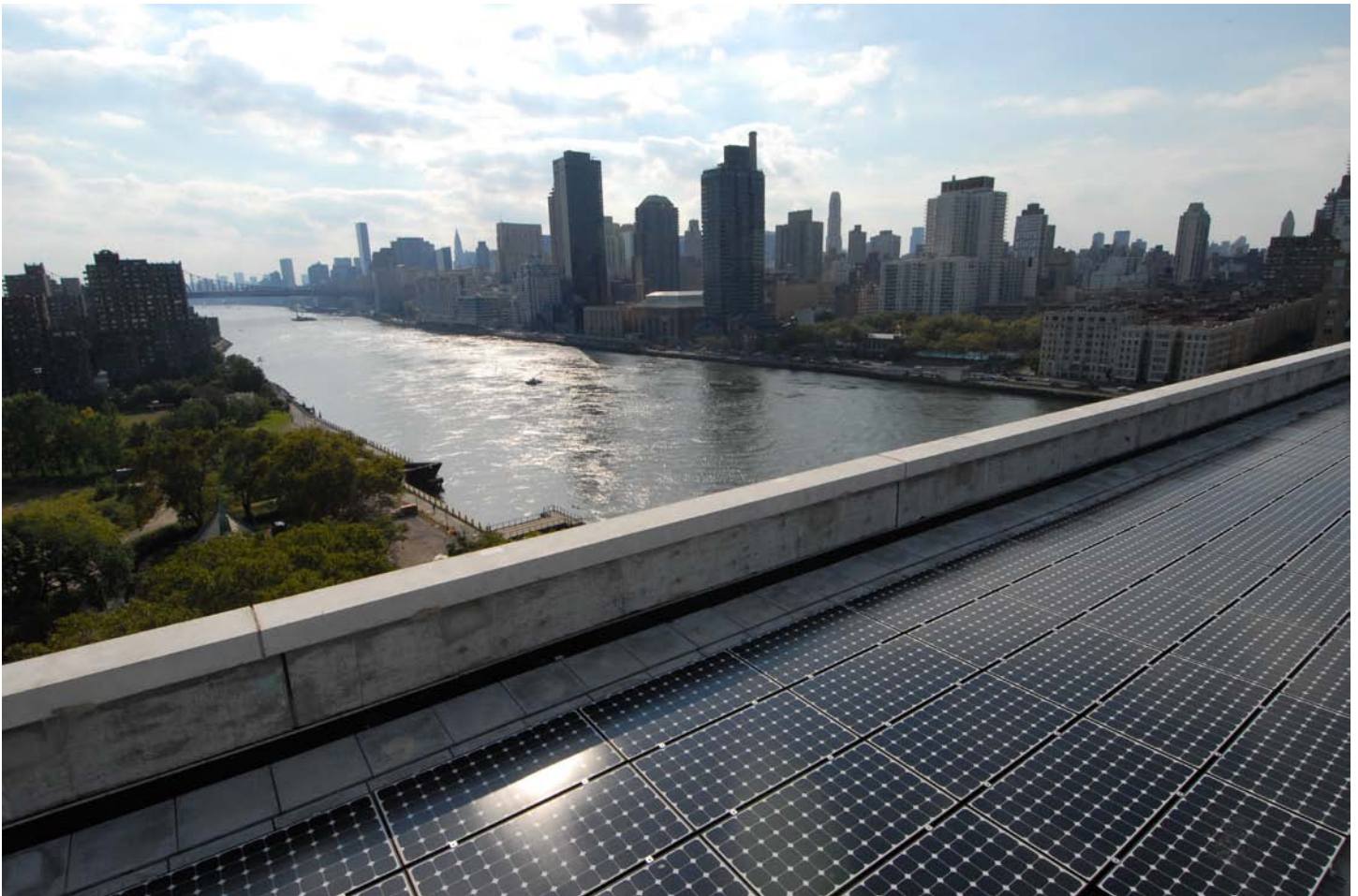
- The Octagon uses environmentally friendly cleaning products such as Simple Green, which is non-toxic and biodegradable.



- Programmable thermostats help maintain the comfort level of apartments and reduce energy use and energy bills.



- Expansive views connect indoor and outdoor spaces, while wood flooring in every apartment contains no added urea-formaldehyde resins, which are odorous and potentially harmful.



The Octagon's solar panels, located on top of the 14-story building, are subject to strong winds and dramatic weather conditions. As a result, a heavy-duty system involving concrete pavers and a steel frame secures the panels to the roof.



## PHOTOVOLTAIC SYSTEM

The Octagon includes a 50kW photovoltaic system located on the roof of the north and south towers. This system, sized to light the Octagon's hallways, operates in parallel with the local utility provider and is the largest array of solar panels on a residential building in New York City. Photovoltaic systems, along with fuel cells, wind, solar thermal, biomass, tidal, geothermal, and methane waste, are examples of renewable energy sources.

The Octagon's solar panel array includes a data acquisition system with weather monitoring equipment and a web-based interface demonstrating the system's realtime energy production in relation to various environmental characteristics, including temperature, wind speed and irradiance (the intensity of the sun).



Free Flow System turbine installation in the East River, 2008.

Photo: Christopher R. Gray / Verdant Power, Inc.

# TIDAL ENERGY

## ROOSEVELT ISLAND TIDAL ENERGY PROJECT

The Roosevelt Island Tidal Energy Project (RITE) is an initiative that will bring underwater turbine fields to the East River and clean, sustainable energy to Roosevelt Island. Verdant Power, a Virginia-based company that has received more than \$2 million in funding from the New York State Energy Research & Development Authority (NYSERDA), received approval to put two turbines in the channel between Roosevelt Island and Queens (just north of the Roosevelt Island Bridge) to examine if energy can be generated efficiently without disturbing the natural environment. One of the turbines will send energy to Gristedes and Motorgate, while the other will be connected to monitoring equipment that will evaluate its performance. If this initial test is a success, four more turbines could be installed for an 18-month period. Eventually, Verdant Power hopes to install an underwater field of 200-300 turbines with a capacity of up to 10 MW.

Each turbine has a three-bladed rotor that can turn at up to 32 revolutions per minute, depending on the flow of water, and produce 16-32 kilowatts of electricity. New York University has identified nearly 600 MW of potential kinetic hydropower in the State of New York, while NYSERDA has identified a potential of more than 1,000 MW of capacity.

But what about the fish? The blades turn relatively slowly and the turbines are spaced out (40 to 100 feet apart). As a result, the underwater turbines are not expected to harm marine life. Just to be sure, eighteen hydroacoustic transducers will be deployed with the test turbines to monitor fish behavior and impact.



Photo: Verdant Power, Inc.