

**New York State Department of
Environmental Conservation
Headquarters**

Albany, NY

450,000 Square Feet

Energy Efficient and Environmentally
Responsible LEED™ certified administration
building

Owner/Developer: Picotte Companies

Architects, Engineers and Interior Designers:
Woodward, Conner, Gillies & Seaman,
Architects Quantum Engineering

Energy Efficiency Measures:

- Daylighting and daylighting controls
- High performance glazing
- Reduced lighting power densities
- High-efficiency chillers
- Variable speed fans and pumps
- Occupancy sensors
- Rooftop photovoltaic panels
- Energy management system
- High-efficiency (94%) condensing boiler
- High-albedo roofing materials
- High R-value building shell

Environmental Improvement Measures:

- Air quality monitoring and purge system
- Recycled and recyclable building materials
- Low- or no-VOC interior finish materials
- Centralized trash and recycling center
- Native plantings
- Raised access floor system
- Open floor plan providing greater access to
outside views and daylight

Estimated Energy Results:

Annual Energy Cost Savings: \$179,000

Annual Energy Use Savings: 1,451,247 kWh

Peak-Demand Reduction: 35%

CO₂ emissions reduction: 640 tons/year

NYSERDA Incentive: \$275,000

With NYSERDA's assistance, the project qualified
for a Leadership in Energy and Environmental
Design (LEED™) Silver Rating from the U.S.
Green Building Council, and is the first LEED™-
rated building in New York State.

*"The New York State Department of Environmental
Conservation's new "green" building provides all
the amenities of a modern, state-of-the-art office
building, while also promoting energy efficiency
and savings. Governor Pataki's commitment to the
environment is evident throughout this new
facility, that will serve as a model for future
construction. I thank NYSERDA and OGS for
helping us design a landmark building that truly
reflects our mission of environmental conservation.*

*—Erin M. Crotty, Commissioner,
Department of
Environmental Conservation*



Technical assistance under the New Construction and Green Buildings Program, in addition to providing energy efficiency measures and materials guidance, also provides assistance in seeking LEED™ certification, compliance with Executive Order No. 111 and applying for the New York State Green Building Tax Credit.

LEED™

Leadership in Energy and Environmental Design (LEED™), is a design standard and rating system for construction and renovation of commercial, institutional and high-rise residential buildings. For more information on LEED™ visit the United States Green Building Council's website, <http://www.usgbc.org>.

Executive Order No. 111

Executive Order No. 111 provides guidelines for the construction of Green Buildings within all New York State agencies and departments over which the Governor has Executive authority, and all public benefit corporations and public authorities, where the heads are appointed by the Governor. For more information visit <http://www.nyserdera.org/exorder111.html>

New York State Green Building Tax Credit

The New York State Department of Environmental Conservation (DEC) is administering the New York State Green Building Tax Credit. For more information visit <http://www.dec.state.ny.us/website/ppu/grnbldg/index.html>.



NYSERDA New York State Energy Research and Development Authority

State of New York

George E. Pataki, Governor

New York State Energy Research and Development Authority

Vincent A. Delorio, Esq., Chairman

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 *New York*
Energy SmartSM
PUBLIC SERVICE COMMISSION — **NYSERDA**
George E. Pataki, Governor

High Performance Buildings

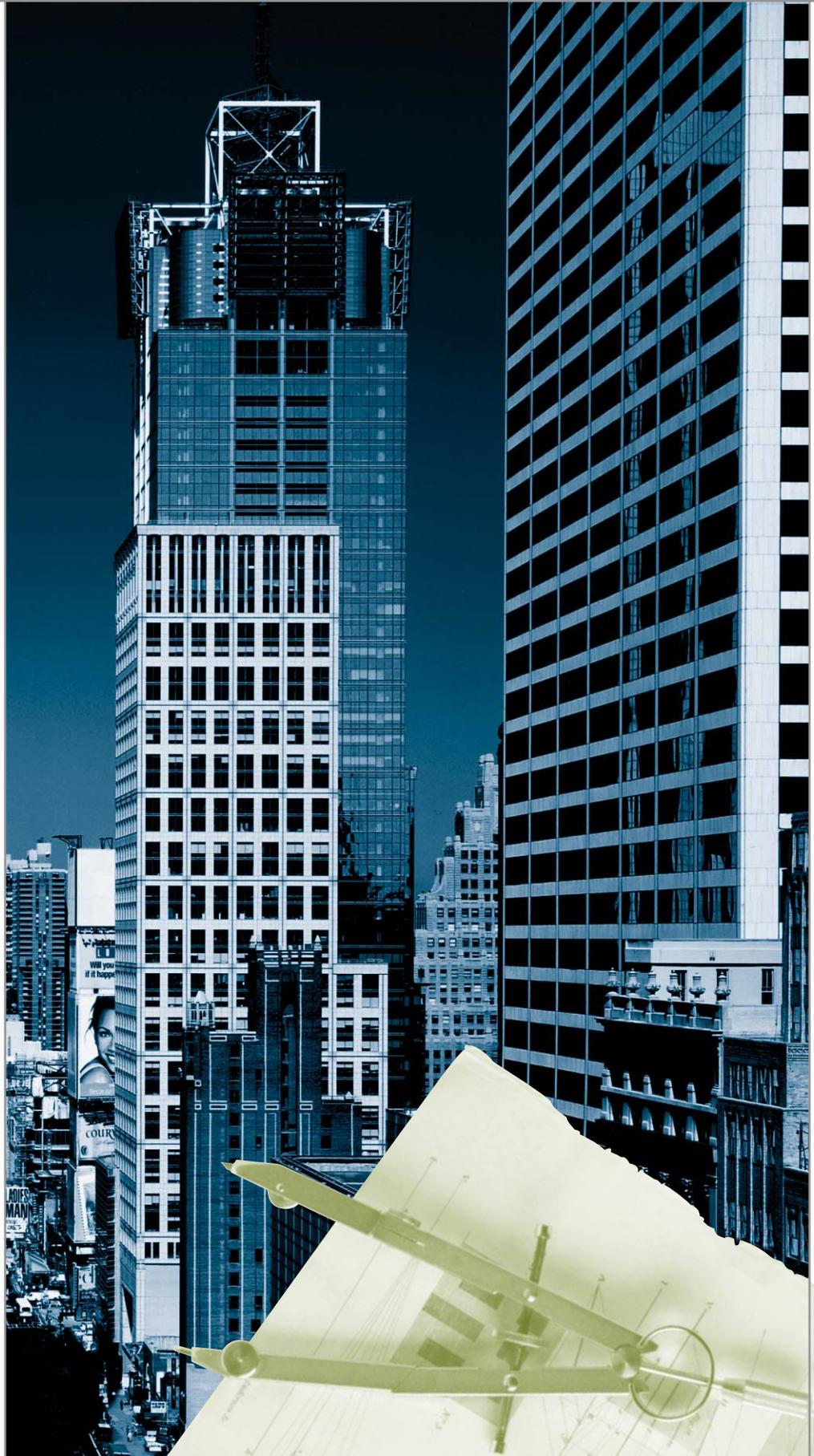
New Construction and Green Buildings Program

 **NYSERDA** New York State Energy Research and Development Authority

 New York State
New Construction and Green Buildings Program

The New York State Energy Research and Development Authority (NYSERDA) is a public benefit corporation established by the New York State Legislature in 1975. NYSERDA's mandate is to use innovation and technology to solve some of New York's most difficult energy and environmental problems in ways that improve the State's economy. NYSERDA does so through a variety of research and development programs and consumer-oriented efforts to educate the public about energy and its effects on the environment. One of the major efforts, the **New York Energy \$martSM** program, is designed to lower electricity costs by encouraging energy efficiency as the State's electric utilities move to competition.

All **New York Energy \$martSM** programs are funded by a System Benefits Charge (SBC) paid by electric distribution customers of investor owned utilities. The programs are available to all electric distribution customers (residential, commercial, institutional, and industrial) of Central Hudson, Con Edison, New York State Electric & Gas, Niagara Mohawk, Orange and Rockland, and Rochester Gas and Electric.





Battery Park City Authority

Manhattan

357,000 Square Feet

Energy-efficient and environmentally responsible multifamily high rise

Owner/Developer: Albanese Development Corp.

Architects & Interior Design: Schuman, Lichtenstein, Claman, Efron & Cesar Pelli & Assoc.

Builder: Turner Construction Company

Energy Efficiency Measures:

- Gas-fired absorption chiller
- High performance glazing
- Variable speed pumps, motors, and fans
- Building-integrated photovoltaics
- Commissioning

Environmental Improvement Measures:

- High-efficiency air filtration
- Humidification
- Water recycling plant
- Regionally manufactured & supplied materials
- Low or no-VOC materials
- Recycled-content materials
- Recyclable and sustainable materials

Annual Energy Cost Savings: \$210,095

Annual Energy Use Savings: 4,193,960 kWh

CO2 emissions reduction: 1849 tons per year

35% more efficient than NYS Energy Code, compliant with the requirements of the New York State Green Building Tax Credit.

NYSERDA Incentive: \$319,079

NYSERDA Technical Assistance Services: \$222,000



Four Times Square

Midtown Manhattan

1.6 million square feet

Energy-efficient, environmentally responsible skyscraper

Owner/Developer: The Durst Organization

Architects and Interior Design: Fox and Fowle Architects

Builder: Tischman Construction

Energy Efficiency Measures:

- Fuel cells, two 200-kW units
- Waste heat recovered from fuel cells for domestic hot water
- Natural gas-powered absorption chillers/heaters
- Variable speed drives on pumps, motors and fans
- Occupancy sensors
- Commissioning
- Building-integrated photovoltaic panels
- Energy-efficient lighting
- Central lighting controls in public spaces
- LED exit signs
- Occupancy sensors in unoccupied areas
- High performance window glazing

Environmental Improvement Measures:

- High-elevation outside air-intake
- Provides 50% more outside air than is required by NYC Building Code
- 100% outside air purge system
- Air is 85% filtered and monitored
- Floor-by-floor air handling equipment
- Dedicated exhaust shaft to vent smoking rooms
- Non-toxic and biodegradable materials
- Sustainably harvested wood
- Low-water-use equipment
- Existing footings at the corner of 42nd and Broadway were reused
- Recycled 65% of construction debris
- Green-tenant guidelines

Annual Energy Cost Savings: \$1,760,000

Annual Energy Use Savings: 20,841,269 kWh/year

Uses 40% less energy than the same building built to New York State Energy Code

CO2 emissions reduction: 9191 tons per year

NYSERDA Technical Assistance Services: \$18,500

NYSERDA Incentive: \$250,000

Administration for Children's Services Center

New York City
116,700 Square Feet

Energy-efficient and environmentally responsible intake center for children entering the foster care system.

Owner/Developer: NYC Administration for Children's Services
Architects & Interior Design: Richard Dattner Architects,
Lighting Designer: Ann Kale Associates
Engineers: Lakhani & Jordan

Energy Efficiency Measures:

- Modular electric chillers
- High Performance glazing
- Foamed-in-place insulation
- Energy-efficient lighting design
- Carbon dioxide sensors
- Closed-loop glycol heat recovery
- Heat recovery from condensate
- Commissioning

Environmental Improvement Measures:

- Daylighting
- Open floor plan to optimize use of daylight
- Light shelves; used on the South side of the building to bounce light from windows deep into the interior of the building.
- Borrowed lighting: interior walls that allow light distribution.
- Roof location of outdoor air intake
- Low VOC insulation, cork, rubber, linoleum flooring & adhesives
- Recycled materials-content partitions, paneling and ceiling tiles

Estimated Annual Energy Cost Savings: \$94,000

Estimated Annual Energy Use Savings: 1,548,752 kWh

Estimated Peak-Demand Reduction: 40%

Estimated CO₂ emissions reduction: 683 tons per year

NYSERDA Technical Assistance Services: \$24,000



What is Commissioning?

Commissioning is performance testing of new and existing buildings to ensure that heating, ventilating, air conditioning, lighting, and other building systems are integrated to perform optimally. Commissioning results can indicate changes that dramatically reduce operating and maintenance costs, provide better occupant conditions, and facilitate upgrades.

Rosamond Gifford Zoo

Syracuse
20,000 Square Feet

Energy-efficient and environmentally responsible zoo exhibit and visitor's center

Architects, Engineers and Interior Designers: Hillier Group, Hemmler Camayd

Energy Efficiency Measures:

- Daylighting
- Translucent glazing
- Calculated overhangs
- Conventional and cylindrical skylights
- Daylighting controls
- Variable-air-volume systems with VSDs on supply air fans
- Heat recovery ventilation unit with indirect evaporative cooler
- CO₂ sensor

Environmental Improvement Measures:

- Insulated concrete forms
- 1.6 gallon flush toilets
- Waterless urinals
- Recycled copper, locally manufactured roof
- Salvaged equipment for kitchens and baths
- Low VOC carpeting with recycle/lease program

Estimated Annual Energy Cost Savings: \$15,153

Estimated Annual Energy Use Savings: 110,222 kWh

Estimated Peak-Demand Reduction: 37%

Estimated CO₂ emissions reduction: 48.6 tons/year

NYSERDA Technical Assistance Services: \$6,488 NYSEDA Incentive: \$20,559



What is Daylighting?

Daylighting is the use of natural daylight in place of or in combination with artificial light.

The benefits of daylighting include:

- reduce lighting cost during the day,
- help in color rendering applications,
- increased alertness, and facilitation of learning in school children,
- increased retail sales where daylight is used in displays, and
- improved employee morale by providing a connection with the outdoors.
- energy reduction, with associated emission reductions

NYSERDA's New Construction and Green Buildings Program

offers developers, architects, engineers, and other design team members cost-shared technical assistance and financial incentives to optimize performance of new buildings and buildings undergoing major renovations.



New York State
New Construction and
Green Buildings Program

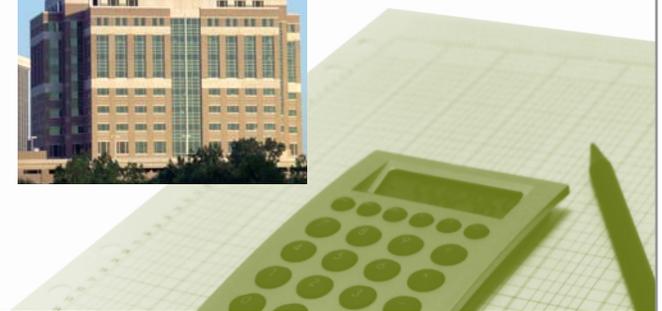
Technical Assistance

Technical Assistance includes computer modeling; materials analysis; equipment and building commissioning; identifying durable, cost-effective, energy-efficient products, equipment, and systems that have reduced life-cycle costs and reduced environmental impacts. Technical assistance is offered by NYSERDA on a 50/50 cost-shared basis.



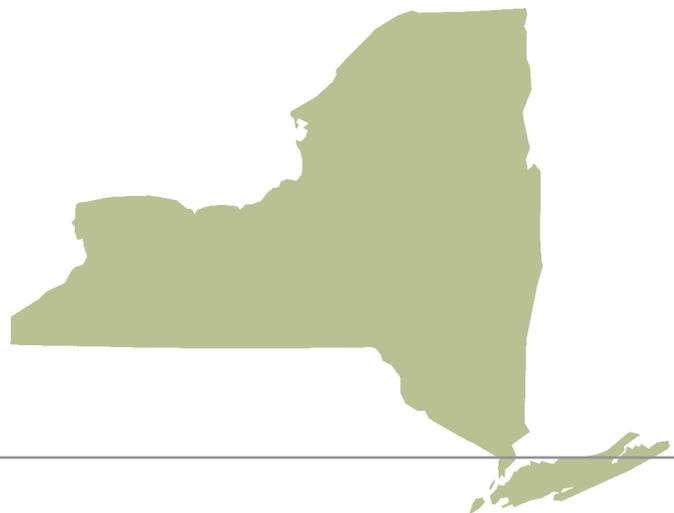
Incentives

Incentives under New Construction and Green Buildings are offered for electricity-saving energy efficiency measures. Geothermal systems, Building Integrated Photovoltaic and Advanced Solar and Daylighting strategies are also eligible for incentives.



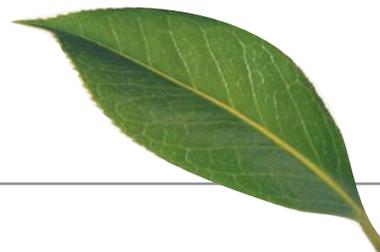
Who is Eligible?

Businesses, State and local governments, not-for-profit and private institutions, public and private schools, colleges and universities, multi-family buildings and health-care facilities located in the utility territories of Central Hudson, Con Edison, New York State Electric & Gas, Niagara Mohawk, Orange and Rockland and Rochester Gas and Electric.



Summary: NYSERDA's New Construction and Green Buildings Activity Through 2003

- 902 active projects
- 87.9 million square feet of building floor space
- More than \$13.5 billion in construction activity across New York State
- 105,961,551 kWh in energy savings
- 46,700 tons of CO₂ reductions
- 31% estimated electrical energy savings over base case
- 32 Green Buildings projects, over 9 million square feet



Technical Assistance Incentives

Cost-shared technical assistance studies can determine which improvements are most applicable for each building. The studies also calculate payback on investment for each energy-efficient improvement, as well as the NYSERDA incentives payable for them. NYSERDA covers a portion of the initial cost of the study, and cost-shares 50/50 up to a maximum payout of \$100,000.

Capital Cost Incentives

Pre-Qualified Measures and Pre-Set Incentives

Simple projects are eligible for set incentives from a list of qualified measures, including improvements such as high-efficiency lighting, motors, variable speed drives, etc.

Whole Building Projects

Comprehensive renovations, and new buildings may be eligible for NYSERDA reimbursement of up to \$800,000 per project, or for up to 70% of incremental costs on qualified high-efficiency equipment and design improvements. Exact incentives are determined by the technical assistance study.

Green Building Incentives

Green Building projects are eligible for up to \$50,000 additional cost-shared technical assistance services tailored to the needs of green buildings such as meeting the requirements of Leadership in Energy and Environmental Design (LEED™), a building rating system from the US Green Building Council, Executive Order No.111, Green and Clean State Buildings and Vehicles and the New York State Green Building Tax Credit. Green Building projects are also eligible for increased energy efficiency incentives under Whole Building Projects.

Commissioning Incentives

Commissioning is a systematic quality-assurance process to verify that building systems perform according to building requirements. Projects receiving incentives of more than \$100,000 require commissioning. NYSERDA will cost share this effort up to a maximum contribution of \$50,000 towards commissioning systems and equipment.





Whitehall Ferry Terminal

New York City
 180,000 Square Feet
 Energy-efficient ferry terminal
 Owner/Developer: Department of Transportation, City of New York
 Architects and Interior Design: Schwartz Architects, Flack and Kurtz project engineers

Energy Efficiency Measures:

- High performance glazing
- High-efficiency fluorescent and metal halide lighting
- Daylight dimming
- Photovoltaic panels
- CO2-controlled demand based ventilation
- Variable speed fans and pumps
- Displacement ventilation
- Radiant floor heating
- Energy-efficient chillers
- Heat recovery systems on large AHUs

Estimated Energy Results:

Annual Energy Cost Savings: \$108,906
 Annual Energy Use Savings: 1,106,781 kWh
 Peak-Demand Reduction: 56%
 CO₂ emissions reduction: 633 tons/year
 NYSERDA Technical Assistance Services: \$14,890



New York University

Manhattan
 High Performance Chiller Plant
 Owner/Developer: New York University
 Architects, Engineers and Interior Designers: NYU Department of Planning and Construction

Energy Efficiency Measures:

- Two 325-ton centrifugal chillers
- Combined chillers from three buildings into one central plant

Estimated Energy Results:

Annual Energy Cost Savings: \$23,100
 Annual Energy Use Savings: 256,000kWh
 Peak-Demand Reduction: 56 kW
 CO₂ emissions reduction: 112.9 tons per year
 NYSERDA Incentive \$71,758

Capital District Transportation Authority Rail Station

Rensselaer

67,000 Square Feet

Energy-efficient passenger rail station

Owner/Developer: Capital District Transportation Authority

Architects, Engineers and Interior Designers: Stracher, Roth, Gilmore, Erdman Anthony Consulting Engineers, Sage Engineering

Energy Efficiency Measures:

- High-intensity discharge lamps
- Daylight-dimming controls
- Direct digital controls for heating, ventilating, and air conditioning
- Premium-efficiency motors
- Variable speed drives on pumps and fans
- Reflective glazing

Estimated Energy Results:

Annual Energy Cost Savings: \$23,700

Annual Energy Use Savings: 350,000 kWh

Peak-Demand Reduction: 65 kW

CO₂ emissions reduction:

154 tons per year

20% more energy-efficient than if built to State building code.

NYSERDA incentive: \$115,000



Bard College Dorm Complex

Energy-efficient student dorms

Owner/Developer: Bard College

Architects, Engineers, and Interior Designers: Reynolds Design Associates, Novus Engineering

Energy Efficiency Measures:

- Geothermal Heating and Cooling
- Variable Speed Drives for the geothermal loop
- High-efficiency lighting
- Air-to-air heat exchangers
- Improved building envelope
- Horizontal-axis washing machines
- Commissioning

Estimated Energy Results:

Annual Energy Cost Savings: \$36,830

Annual Energy Use Savings: 387,180 kWh

Peak-Demand Reduction: 242 kW

CO₂ emissions reduction 171 tons per year

NYSERDA incentive: \$234,655



Why Build Green?

Green Buildings incorporate practices that significantly reduce or eliminate adverse environmental impacts. Green Buildings increase the efficient use of energy, environmental, and human resources. Improvements in efficiency directly translate into economic benefits. Making improvements to building design when renovating, or building new, is most cost effective. Investing as little as a one-time, 1% premium of construction costs can increase energy efficiency by 15-20% over New York State's new energy code requirements.

Energy Efficiency

Using energy more efficiently:

- saves utility-based operating costs over the life of the building
- reduces the cost-per-unit on manufactured goods and services
- enhances resale and lease value of real estate
- extends useful life of equipment

Environmental Efficiency

Reducing environmental impact:

- reduces waste materials and disposal costs
- reduces waste water and water usage costs
- reduces chemical use and disposal costs
- encourages recycling and reuse of materials
- develops markets for locally produced materials
- saves on transportation costs
- reduces emissions

Human Efficiency

Improving indoor environment, producing healthier places to work:

- increases productivity
- reduces absenteeism
- boosts morale and corporate loyalty
- reduces employee turnover

Innovative in energy and environmental performance, Green Buildings can benefit from public recognition and United States Green Building Council (USGBC) certification; their developers demonstrate goodwill toward employees and the environment.



Indoor Air Quality

Studies indicate that Americans spend up to 90% of their day indoors.

According to the U.S. Environmental Protection Agency, air quality inside buildings is sometimes two to five times worse than outside air. Health problems caused by poor indoor air quality (IAQ) are estimated to result in as much as 150 million lost workdays, and about \$15 billion in lost productivity last year.

Green Buildings emphasize improved indoor air quality by reducing pollutant sources, ensuring proper ventilation, and employing an IAQ management plan to identify and correct IAQ problems before they cause damage to buildings and their occupants.

Mansion on Delaware

Buffalo
30,000 sq. ft.
Energy-efficient hotel
Architects, Engineers, and Interior Designers: Peyton Barlow

Energy Efficiency Measures:

- High-efficiency lighting
- Increased roof insulation
- Increased wall insulation
- Low-e windows

Estimated Energy Results:

Annual Energy Cost Savings: \$24,327
Annual Energy Use Savings: 243,265 kWh
Peak-Demand Reduction: 86 kW
CO₂ emissions reduction: 107 tons per year
NYSERDA incentive: \$90,312



Presbyterian Home and Services

New Hartford
145,000 Square Feet
Energy-efficient Home for Senior Citizens
Architects and Engineers: Beardsley Design Associates
Interior Designers: Peyton Barlow

Energy Efficiency Measures:

- Variable speed drive on air-handling unit
- Variable speed drive on heating loop pump
- Direct digital controls on air-handling system
- High-efficiency electrical transformers

Estimated Energy Results:

Annual Energy Cost Savings: \$12,333
Annual Energy Use Savings: 167,087 kWh
Peak-Demand Reduction: 15.91kW
CO₂ emissions reduction: 73 tons per year
NYSERDA incentive: \$35,342





Village Park Associates, LLC

Williamsville
 110,000 square feet
 Energy-efficient office space
 Owner/Developer:
 Ciminelli Development Company

Energy Efficiency Measures:

- Water-source heat pump system with variable-volume cooling tower fan controls
- Enhanced direct digital control energy management system
- Heat recovery wheels for the office space
- Energy-efficient distribution transformers

Estimated Energy Results:

Annual Energy Cost Savings: \$44,287
 Annual Energy Use Savings:
 295,250kWh
 Peak Demand Reduction: 92 kW
 CO₂ emissions reduction:
 130 tons per year
 NYSERDA incentive: \$135,593



West Valley Central School

West Valley
 Energy-efficient classrooms
 Owner/Developer:
 West Valley School District
 Architects, Engineers, and Interior
 Designers
 Builder: Thomas Associates

Energy Efficiency Measures:

- High-Efficiency lighting fixtures and occupancy sensors
- Direct digital-control energy management system including an electrical demand-limiting feature

Estimated Energy Results:

Annual Energy Cost Savings: \$2,350
 Annual Energy Use Savings: 20,277 kWh
 Peak-Demand Reduction: 12 kW
 CO₂ emissions reduction:
 8.95 tons per year
 NYSERDA incentive: \$15,298