Chapter 6 - Sustainability

Human consumption of natural resources is depleting and degrading many resources faster than Earth's natural systems can replenish them. Sustainability is an approach that protects the natural systems of the planet while achieving economic prosperity, protecting the public health and social well-being.

By preserving and protecting ecosystems and natural systems, sustainability is the capability of equitably meeting vital needs of the present without compromising the ability of future generations to meet their needs. Sustainability requires the equitable distribution of resources and the empowerment of individuals to participate in decisions that affect their lives.

Climate Change

When energy from the sun reaches earth, roughly 30 percent of it is reflected back into space. The remaining 70 percent is absorbed by the land, air, and oceans, heating our planet's surface and atmosphere and making life on earth possible. As earth's surface warms, it emits thermal radiation, or infrared heat, much of which travels directly out to space allowing earth to cool. Heat-trapping gases such as carbon dioxide, nitrous oxide and methane, called greenhouses gases (GHGs), naturally occur in the atmosphere. Some of the outgoing thermal radiation is re-absorbed by these GHGs and is re-radiated back toward earth's surface. This is known as the Greenhouse effect. If there were not GHGs in the atmosphere, Earth's average surface temperature would be a very chilly 0° F instead of the comfortable 59° F that it averages today.

The burning of fossil fuels such as coal, oil and gas, for energy, transportation, heating and cooling of buildings, and for manufacturing, have resulted in an increase in the levels of carbon dioxide and other GHGs. In the last 100 years humans have increased CO2 levels from the pre-industrial concentrations by more than 35 percent -280 parts per million to 380 parts per million. In 2004, human activities released over 8 billion tons of carbon dioxide into the atmosphere. Millions of pounds of methane are also produced by decomposition in landfills. Use of nitrogen-based fertilizers and other soil management practices also contribute to the release of nitrous oxide into the atmosphere. (Riebeek, 2007)

Climate change is considered the most pressing environmental problem of this century. Many scientists have concluded that the earth's atmosphere is warming due to increased concentrations of GHGs. The Intergovernmental Panel on Climate Change (IPCC) states that climate change, associated with the increased levels of GHGs in the atmosphere is "unequivocal" and may bring abrupt and irreversible impacts to the earth's natural systems which support life on earth.

A recent collaborative effort between the Union of Concerned Scientists and a team of independent experts – the Northeast Climate Impacts Assessment (NECIA) team published "Confronting Climate Change in the Northeast: Science, Impacts and Solutions" (NECIA, 2007). The report looked at two emission scenarios – a high emissions scenario – where use of fossil fuels and resulting emissions continued to grow rapidly and emission reducing technologies are not introduced until late in the century and a lower emissions scenario whereby society relies less on fossil fuel and adopts more resource efficient technologies earlier in the century.

Most scientists conclude that emissions must be reduced by 75-80 percent below current levels by 2050 to reduce the substantial adverse impacts of global climate change on natural systems. To put the Northeast region on track to achieving this goal, NECIA indicated that a concerted, sustained effort to reduce emissions by just over 3 percent per year on average by 2030 is necessary.

Impacts to the Northeast

Changes consistent with climate change, such as rising temperatures, decreasing snow cover and earlier arrival of spring are already being experienced in the Northeast.

Temperature and precipitation

Since 1970 average temperatures in the Northeast have increased 1.5 degrees Fahrenheit (° F) with winter temperatures warming 4ºF from 1970-2000 (NECIA, 2007).

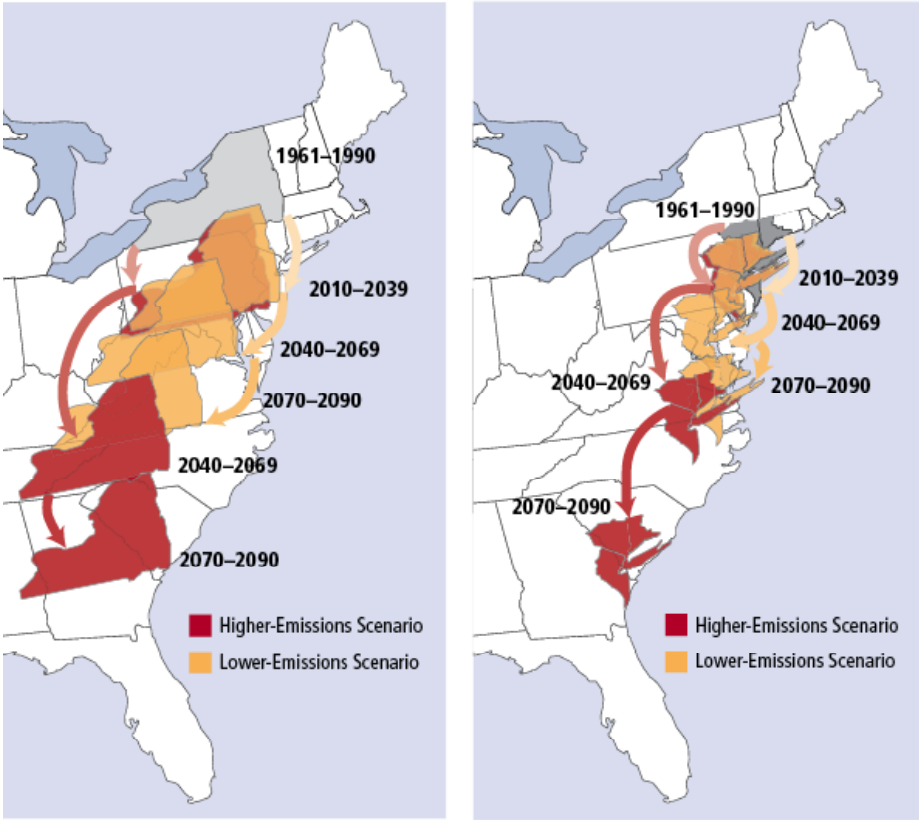
Unlike many regions of the world, winter precipitation in the Northeast is projected to increase 20 to 30 percent, but this precipitation may just be rain – not snow. If the lower emissions targets can be met the Adirondack region will be able to retain roughly three-quarters of its snow season. Under the higher emission scenario the Adirondack region snow season could be cut in half.

Due to rising summer temperatures and higher rates of evapotranspiration, the frequency of short-term droughts is

projected to increase. Historically the Catskills and Adirondack regions have such droughts every two to three years. Under the higher emissions scenario, by the end of this century these droughts are expected to occur annually.

As the current rate of warming accelerates, Albany, NY is predicted to have the climate of Washington, D.C., by 2050 and the climate of Richmond, VA or Atlanta, GA by the end of the century (Adirondack Museum, 2007).

It is not unlikely for New Yorkers to see an increasing number of extremely hot days. For example under the higher emissions s scenario, by the end of the century New York City could have approximately 25 days over 100 ° F, with only seven if emissions reduction targets can be met under the lower emissions scenario. An increase in extremely hot days is expected to worsen air quality, resulting in increases in associated respiratory diseases and conditions.



Upstate New York *NYC- Tri-State Region*

Source: "Confronting Climate Change in the US Northeast: Science, Impacts and Solutions"; Northeast Climate Impacts assessment Synthesis Team; July 2007.

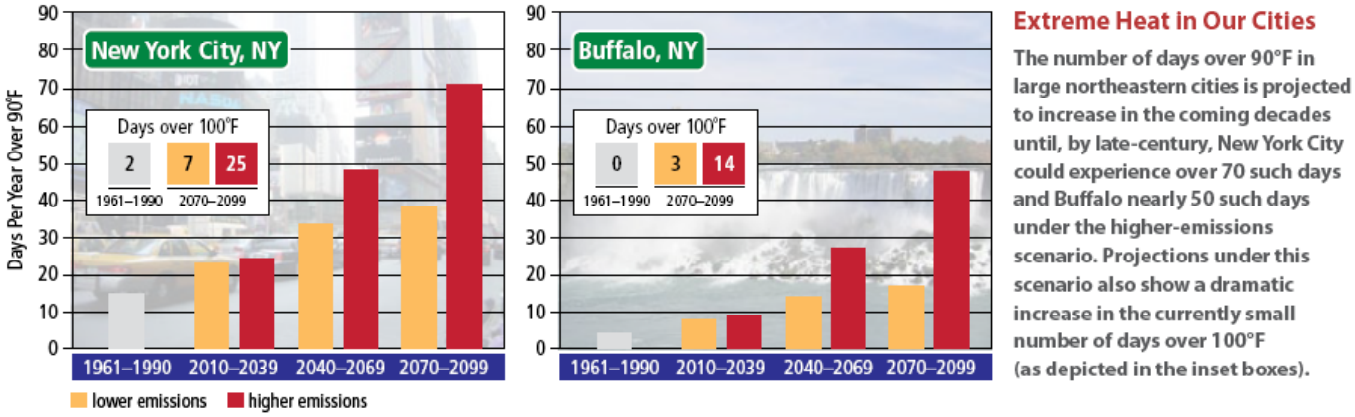
Figure 6.1 - Migrating State Climates

Sea Level Rise and Coastal Flooding

Over the last 100 years melting ice caps has caused a sea level rise of 7 inches. Under the higher emission scenario, by the end of the century global sea level is expected rise between an additional 10 inches to two feet. If recommended emission reduction targets are met sea level is still projected to rise between 7 and 14 inches (UCS, 2007).

There have been an increasing number of heavy and damaging rainfall events in recent years. The severity and frequency of heavy rainfall events is expect to increase, resulting in significant negative impacts to 1) infrastructure, such as roads, trailways and buildings, and 2) natural systems, such as stream corridors and wetlands. Under the higher emissions scenario, floods in New York City that are currently anticipated to occur every 100 years will be anticipated to occur every 10 years.

In addition to coastal homes and business being threatened, sea level



Source: "Confronting Climate change in the US Northeast: Science, Impacts and Solutions"; Northeast Climate Impacts Assessment Synthesis Team; July 2007.

Figure 6.2 - Temperature Change in our Cities

rise can adversely affect the delicate life of the ecologically rich Long Island salt marshes and Hudson River estuary which act as feeding grounds for migratory waterfowl and other birds and a nursery for many fish species.

Ecosystems and Biodiversity

All species rely on the continuation of environmental conditions to which they are adapted. Climate change will impact ecosystems- the dynamic complex of plants, animals, microbes and physical characteristics that interact with each other. Ecosystems are critical for sustaining life on earth and provide many services such as erosion control, water purification, recreation, habitat and marketable products such as seafood and forest products.

With the warming that accompanies climate change, the distribution of terrestrial ecosystems will change as plants and animals follow the shifting climate. In NY many of the deciduous tree species, such as maples, will shift northwards; this will have an effect on the maple syrup and other timber industries in the state. Other farming crops will see changes in the length of the growing season.

Biodiversity will be affected as plants and animals that can't migrate fast enough will face dwindling numbers and extinction (Riebeek, 2007). Climate change will also trigger the expansion of invasive species into wider ranges, as changes in species composition is often associated with changes in temperatures and precipitation. Shorter milder winters will fail to kill insects, increasing the risk of infestations, possibly leading to a need for additional chemical pesticide use. This, along with documentation showing that seasonal events such as egg laying and flowering of plants have been occurring 2-3 days earlier in each decade in the Northeast, shows that the climate has warmed and additional changes are expected.

Management objectives and practices for both managed and natural landscapes will have to be reevaluated. Ensuring environmental sustainability will become more urgent because the deterioration of life support systems imposes a time limit. The future depends on the ability to sustain healthy natural systems and restore those that are degraded.

Impact on Recreation and Recreation Facilities

Global climate change and the resulting effects on the environment impact recreation.

The anticipated sea level rise, increased coastal flooding, loss of wetlands, erosion and shoreline change will require adaptations by waterfront park managers and users. A rise in sea levels, will impact beach related activities and support facilities.

New facilities being considered will need to take into account these changing situations within their design and location. Recreational activities associated with natural resources such as fishing, bird watching and the study of nature will be affected as the habitat that supports these activities changes. Warmer winters with less snow will impact winter activities such a skiing, snowmobiling, sledding and ice fishing. Managers of historic sites will also need to evaluate the impacts that climate change and associated impacts may have on the environmental setting, especially historic landscapes.

Climatic changes will also impact how people recreate and their frequency of participation. Summer recreational activities will have a longer season as the climate warms, while shorter winters will curtail opportunities for winter recreational activities. These changes will impact operations of park and recreational facilities. Planning by facilities will need to take place to prepare for changes that may occur to participation in recreational activities.

Strategies for Enhancing Sustainability

The growing concern about climate change has resulted in a new movement towards the adoption of policies, practices and procedures that reduce the use of fossil fuels thus reducing GHG emissions. This effort must comprehensively promote the use of renewable and energy efficient technologies, environmental and energy efficient building design, waste reduction and recycling, fuel efficient vehicles, water conservation and chemical use reduction. It must also address the procurement of environmentally preferable products as well as undertaking carbon sequestration strategies, like tree planting and forest conservation, to off-set our remaining carbon emissions. The extent of the change and thus the choices made today will determine the climate our children and grandchildren inherit, and shape the consequences for their economy, environment, and quality of life (Riebeek, 2007; UCS, 2007).

The sustainability movement has become somewhat synonymous with the desire to be "green." In today's market one will find the ability to purchase "green" power, "green" furniture, "green" flooring "green" vehicles and design, renovate and build "green". The growing awareness of society's consumption of fossil fuels and the continued escalation of energy prices is expanding the use and development of "green" technology and creating a "green" market. The "green" movement will ensure environmental sustainability or the long term maintenance of valued environmental resources that support life systems. This transition to sustainable practices is urgent because

the deterioration of global life support systems is already occurring.

As a major emitter of GHGs, and as a global leader in technology, innovation and finance, NECIA indicates that the Northeast is well positioned to drive national and international progress in reducing emissions and ensuring the environmental sustainability of the region's recreation, manufacturing, transportation and natural systems.

Executive Order 111 (EO. 111), issued in 2001, "Green and Clean" State Buildings and Vehicles is the most aggressive and comprehensive directive issued in NYS to address energy use and environmental issues through state government procurement standards and design practices. EO.111 mandated that all state agencies reduce energy usage, follow green building standards during new construction or substantial renovation projects, procure energy-efficient products, purchase power from renewable sources, and procure clean-fuel vehicles. The Executive Order includes specific target quantities and dates for each item. To assist State agencies in developing detailed implementation plans and to help direct future projects, guidelines were developed in 2004 by the New York State Energy, Research and Development Authority (NYSERDA).

Other State policies and Executive Orders promote energy conservation, the use of renewable energy, recycling and the use of green cleaning products. The overarching goals of the Agency's sustainability initiative are to reduce greenhouse gas emissions by reducing the use of fossil fuels, reducing our energy demand, increase the use of clean renewable energy sources, while reducing waste, water use and the use of toxic chemicals.

Green Technology

"Green technology" is the application of science to conserve natural resources and the environment, including mitigation of the amount of GHGs and the effects of global climate change. Through policy, research, education, incentives, and innovative relationships with industry, government can play a central role in building a green future.

Green Energy-

(Renewable and Energy efficient technologies)

Energy is one of the most urgent technological subject areas, one that includes the development of alternative fuels and renewable methods of generating energy as well as methods of reducing energy use and increasing energy efficiency. For its energy needs, the United States currently relies heavily on fossil fuels (petroleum, coal, and natural gas), which are nonrenewable, environmentally damaging and draw on dwindling resources.

This heavy reliance on nonrenewable energy is not sustainable because fossil fuel use affects the ability of future generations to use those resources. Their use also results in the emissions of GHGs which are affecting earth's climate and resulting in negative impacts on natural systems which support life on earth. In contrast, renewable energy resources are constantly replenished. The use of renewable forms of energy helps to reduce concentrations of GHGs in the atmosphere and contributes to more stable local economies by reducing dependence on energy sources with an uncertain future.

EO. No. 111 mandated that State entities purchase a significant portion of their electric power from clean, renewable generating sources. By 2005 10 percent of the overall annual electric energy requirements of buildings owned, leased or operated by State agencies must be met by clean, renewable generating sources, increasing to 20 percent by 2010.

The mandate to purchase renewable power can be meet in the following ways:

- on-site generation of all renewable power requirements;
- a mix of on-site generation and open-market electricity procurement to meet the renewable power requirements; or
- the purchase of all renewable-power requirements from the open market.

Renewable energy sources can include:

- Solar: Solar energy comes either directly or indirectly from the sun. Sunlight, or solar energy, can be used directly for heating and lighting buildings, generating electricity, heating water, solar cooling, and a variety of other uses. Also referred to as photovoltaic.
- Wind: Energy from wind is captured using wind turbines.
- Biomass: The organic matter that makes up plants is known as biomass. Biomass can be used to produce electricity. The use of biomass for any of these purposes is called biomass energy.
- Hydrogen: Hydrogen is the most abundant element on the earth. But it doesn't occur naturally as a gas; it is always combined with other elements, such as with oxygen to make water. Once separated from another element, hydrogen can be burned as a fuel or converted into electricity.
- Geothermal: Energy stored within the earth has a variety of uses, including electric power production and the heating and cooling of buildings.
- Ocean: earth's oceans can produce thermal energy from the sun's heat and mechanical energy from the tides and waves.
- Hydropower: Flowing water creates energy that can be captured and turned into electricity. This is called hydroelectric power or hydropower.

Alternative-Fueled Vehicles & Energy Star Equipment

With the transportation sector accounting for more than a third of New York's energy usage it is essential that the state continue its efforts to obtain vehicles and equipment that are energy efficient, use clean renewable fuels and are practical for operations.

EO. 111 mandated that by 2005 at least 50 percent of new light-duty vehicles acquired by state agencies be alternative-fueled vehicles, and by 2010, 100 percent of all new light-duty vehicles shall be alternative-fueled vehicles.

Also under EO 111 State agencies are mandated to select ENERGY STAR® energy-efficient products when acquiring new energy-using products or replacing existing equipment.

Buildings -

(Environmental and energy efficient building design)

Buildings consume more energy than any other sector of our economy – including transportation and industry. More efficient use of energy, environmental, and human resources in design and construction of buildings make sense. Building "green", in either new construction or when renovating, can be cost effective. NYSERDA indicates that a one-time investment premium of less than 1% of first costs can increase energy efficiency over standard building code practices by 20-30%.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of green buildings, giving building owners and operators the tools they needed to improve a buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water conservation, energy efficiency, materials selection, and indoor environmental quality. To achieve LEED certification, a building project must meet certain prerequisites and earn credits within each category. Depending on the number of credits earned a building can be classified as Certified, Silver, Gold, or Platinum, This comprehensive approach is the reason LEED certified buildings have reduced operating costs, provided for healthier and more productive occupants, and conserved natural resources. (USGBC, 2007)

Zero-energy buildings, buildings that produce as much energy as they consume, represent the cutting edge of environmentally responsible construction. These buildings, which require state-of-the-art energy efficient construction and renewable energy systems such as solar and wind, are challenging to design and build but can offer comfort and amenities while reducing the building's impact on the environment. (NESEA, 2007)

Landscaping

Landscaping is the alteration of the natural landscape for the benefit of people by changing the physical and biological composition and character of the land and by building structures and amenities. Architects, landscape architects, designers and facility managers must eliminate or minimize impacts of landscaping on soil, water, vegetation and human health. "Green landscaping" minimizes the impacts to the natural landscape by eliminating or reducing the use of fossil fuels and chemical inputs and maximizes the use of natural features. Water conservation measures should keep water on-site through use of green roofs, rain gardens and rainwater for on-site irrigation. Planting should reflect and preserve native species.

The American Society of Landscape Architects recently released "The Preliminary Report on the Standards and Guidelines for Sustainable Sites", highlighting the many ways to enhance how sites can be designed to protect and enhance the ability of landscapes to provide services such as climate regulation, clean air and water, and improved quality of life (ASLA, 2007).

Purchasing -

(The procurement of environmentally preferable products)

Green purchasing involves the search for and procurement of products whose manufacturing, contents and disposal have the smallest possible impact on the environment. Such products can be made from recycled instead of virgin resources and eliminate or reduce the use of toxic materials. Environmentally Preferable Purchasing (EPP) is a federal program that encourages and assists agencies in the purchase of products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. Purchasing products with recycled content is crucial to sustaining recycling markets and aids in the development of technology that conserves resources and prevents waste.

Chemical Use Reduction

Green chemistry involves the invention, design, and application of chemical products and processes to reduce or to eliminate the use and generation of toxic substances. Chemicals and synthetic substances that do not easily break down are increasing in society, producing increased toxicity in ecosystems, water supplies, soil, food, the built environment, and human health. Pesticides, herbicides, insecticides and synthetic fertilizers accumulate in natural systems and in humans. The use of toxic chemicals and synthetic compounds should

be reduced or eliminated in construction and building materials, operations, products, and services.

Reduce, Reuse, Recycle, Rebuy

Reducing the production, amount, and toxicity of waste is the first and most important step toward efficient materials use. Reuse of products prolongs the useful life of materials, delaying final disposal or recycling. Recycling is the segregation, collection, storage, and removal of recyclable or compostable materials from the waste stream. Recycling minimizes waste generation by recovering and reprocessing usable products that might otherwise be disposed of. Creating products from recycled materials saves energy and resources, and can often generate revenue. Buying products with recycled content completes the recycling loop, sustaining recycling markets and conserves valuable natural resources.

Carbon Sequestration

Carbon is captured, or sequestered, when carbon dioxide in the atmosphere is converted into carbon compounds that are held in pools, stores or reservoirs on land or in water. These pools can be in the form of living plants (such as trees, which are roughly 50% carbon), products (such as lumber), or other living organisms on land or in water (such as soil and water microorganisms). A carbon sink occurs when more carbon dioxide is held in pools than is released into the atmosphere. The ocean is the world's largest carbon sink.

When forests accumulate and hold carbon, they act as carbon sinks. When forests are disturbed through harvest or conversion to other land uses, they are a source of carbon emissions. Forests account for the second largest source of carbon dioxide emissions globally but are also the most promising carbon sink. Forests store carbon in virtually all their components: soils, litter (forest floor), and understory growth, as well as trees. Forest soil carbon is a large, stable pool, accounting for about half of total forest carbon

Scientists are investigating trying to artificially sequester carbon by injecting carbon dioxide deep below the earth's surface. While extracting CO2 and storing it underground has been suggested as one potential long-term measure for addressing climate change, it has not yet been proven or shown to work on a large scale.

There are many options to offset GHG emissions, and carbon sequestration is just one potential tool.

Sustainability at OPRHP

As climate change and global warming continues to emerge as the central environmental issue of our time OPRHP must be a leader in demonstrating "green technologies." Parks are ideally poised to showcase how sustainability can be taught, planned for, implemented, and demonstrated. Parks are places of natural beauty and environmental integrity that have been afforded protection for generations to come. By planning for sustainability, parks can fulfill that vision as well as provide a medium for educating the public about ways that everyone can participate in sustainable practices. When everyone does their part to protect earth's natural systems from continuing degradation, then parks truly will be places of beauty and integrity for many generations.

OPRHP is advancing a new agency-wide sustainability initiative to complement the State Parks' existing "Green Program". OPRHP is working with over 20 agencies, organizations and businesses as partners in green solutions. Some partners include: U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), New York State Energy Research and Development Authority (NYSERDA), NYS Department of Environmental Conservation (DEC), NYS Office of General Services (OGS), the Dormitory Authority of NYS (DASNY), New York Power Authority (NYPA), Long Island Power Authority (LIPA), Niagara Frontier Transit Authority and Western New York Clean Cities, Office of the State Comptroller, Empire State Development Corporation, NYS Department of Transportation and NY Environmental Facilities Corporation. Other partners in green technology include companies such as American Honda, Daimler Chrysler, Ford Motor Company, Homeland Energy, Hydrogenics, John Deere, Jacobsen, Praxair, Toro and Toyota.

Accomplishments

Clean Fuels

- Compressed natural gas (CNG) trolleys and vans
- Bi-fuel CNG trucks
- Electric vehicles in the Thousand Islands Region
- Two compressed natural gas fueling stations
- 650 electric, zero emission vehicles
- Increased fleet of electric utility vehicles from 3 to 35
- Ordered over 160,000 gallons of biodiesel
- Will operate a fleet of Biodiesel 100 (B100) heavy mowing equipment during the summer of 2008
- Integration of a hydrogen fuel cell system into a Toro Workman utility vehicle, used for turf care and facility maintenance
- 7 gas-electric hybrid vehicles
- 65% of the light-duty fleet is alternate fuel.

OPRHP has in use over 1000 clean fuel vehicles statewide. Many of the clean fuel vehicles have replaced gasoline and diesel vehicles allowing OPRHP to make significant reductions in emissions.

Energy Efficient Equipment

Over 500 old appliances, including refrigerators, freezers, ovens, microwaves, and heaters, have been replaced with new Energy Star rated appliances that are more efficient and use less electricity. It is the policy of Parks to purchase only Energy Star rated electrical appliances.

Niagara Falls State Park has become a "green" showcase to improve air quality, and a center for alternate fuel technology. With a diverse fleet of more than 90 alternate fuel vehicles, including CNG trolleys that transport more than a quarter-million patrons annually and electric, hybrid, and biodiesel vehicles, the Park has reduced its gasoline and diesel use by over 35,000 gallons annually. This results in a reduction in nitrogen oxide of over 800 lbs, a reduction in carbon monoxide of over 11,700 lbs, and a reduction of over 195,000 lbs of carbon dioxide. The CNG fueling station at Niagara Falls State Park is one of the largest on the East Coast.

The proposed Niagara Falls State Park Hydro to Hydrogen Project, which will be one of the largest hydrogen demonstration projects in the world, is being developed by OPRHP in partnership with NYPA, NYSERDA, the Niagara Frontier Transit Authority, Western New York Clean Cities and others. This unique project will use the Niagara River to supply both the hydroelectric power and water necessary to create hydrogen to power vehicles and equipment in the Park. In essence, the Park will use its own resources to power the equipment necessary to maintain it. The hydrogen created will be the "greenest" form of hydrogen in the world.

In addition, OPRHP worked with NYPA to install new energy efficient and higher quality rapids lighting at Niagara Falls State Park. The $250,000 project will produce savings in excess of $60,000 per year in electricity, bulb replacement, and maintenance costs. Lower wattage lamps were used to decrease energy and maintenance costs while providing a higher level of controlled lighting. Precision parabolic reflectors allow the light to be directed with greater accuracy reducing light pollution due to extraneous glare.

Other 'Green' Initiatives

In addition to addressing emissions and energy issues, OPRHP has also used green technology in park buildings.

Green Energy

- Geothermal heating and cooling system using Hessian Lake at the Bear Mountain Inn at Bear Mountain State Park
- Geothermal heating and cooling system at Jones Beach Nature Center
- Photovoltaic roof slate system to provide solar-generated electricity to Jones Beach Nature Center
- Solar lighting at the Rockefeller Sate Park Preserve parking area
- Two remote solar lighting systems in the Allegany Region
- photovoltaic system used at Bennington Battlefield State Historic Site to run the well field

Buildings-

(Leadership in Energy and Environmental Design (LEED) Projects)

- Mills-Norrie State Park, Staatsburg School Renovation
  The old school building is being renovated to provide new administration offices for the Taconic Region. This is the first building renovation that OPRHP will be renovating as part of the U.S. Green Building Council's LEED program. Elements of green design can include:
  - energy-efficient geothermal heating and cooling
  - paints and carpets that emit fewer unhealthy fumes
  - low-flow toilets/waterless urinals
  - ozone-friendly refrigerants in the kitchen
  - native greenery that needs less watering
  - a cistern to collect rainwater from the roof
  - construction materials of at least 20 percent recycled materials.
  - a roof coated in white reflective materials to reduce cooling needs
  - a waste recycling program
- Creation of a Green Design Committee to develop green standards for small buildings

Water Conservation

- Waterless urinals are used throughout the State Parks system- with 20-25 in the Taconic Region
- Composting Toilets are being widely used throughout the State Parks system – some with solar powered fans
- Permeable paving (Eco-stone paver) used at Annsville Creek Paddlesport Center parking area in Hudson Highlands State Park.

Recycled/Re-used building materials

- Sterling Forest State Park - Recycled lumber - milled timber at local sawmill
- Fort Montgomery State Historic Site – two sets of counter tops made from recycled paper.
- Saratoga Spa State Park - material used for new Saratoga Performing Arts Center (SPAC) exterior includes recycled paper as a substrate.

Moving Forward

To more broadly and effectively address climate change, energy issues and resulting impacts on natural systems, OPRHP has identified sustainability as one of the Agency's Priorities and Initiatives for FY2007-08. OPRHP has hired a 'Sustainability Coordinator to

lead this effort and is one of the first State agencies to do so. The initiative will reach out and involve the programs and operations of the Albany Office, eleven regional offices, and 211 State Parks and Historic Sites.

OPRHP will develop a comprehensive Sustainability Plan that will identify specific sustainability goals to help reduce OPRHP reliance on fossil fuels and reduce GHG emissions that at a minimum meet state mandates and ensure the sustainability of natural systems. The plan will identify the specific strategies and actions necessary for achieving those goals.

Strategies may include, but are not limited to:

- energy efficiency retrofits at existing facilities (i.e. re-lamping with compact fluorescents)
- use of small scale on-site renewable energy systems such as wind, solar and geothermal
- purchase of additional renewable energy credits
- continued expansion of the clean fuel vehicle fleet
- LEED certification for any new construction of a building over a certain size
- green building design standards for small park buildings (.i.e. bathhouses)
- energy saving through waste reduction
- enhanced recycling efforts
- a comprehensive effort to reduce the amount of lawn maintained
- Energy Star rated equipment upgrades
- green product procurement policy
- water conservation efforts
- chemical use reduction minimizing the use of pesticides, herbicides, and other chemical applications in State Parks facilities
- carbon sequestration strategies such as forest conservation and tree planting
- energy efficiency and sustainability public outreach and education to Parks millions of visitors

Working with Executive and Regional management staff, Albany-based Bureau Directors, park and historic site managers OPRHP is currently undertaking an agency-wide assessment of agency activities that support sustainability. This includes a survey of OPRHP facilities that will provide a comprehensive assessment of all sustainable activities that are currently occurring at parks. With a designated Sustainability Coordinator, OPRHP has stepped up its efforts in working with other state agencies, the vendor community, elected and other public officials, federal agency representatives, leaders of non-profit and advocacy organization and the general public on increasing sustainability of the Agency.