

## **MEMORANDUM**

### **Department of Natural Resources and Environmental Control Legacy under the Markell Administration**

Building a more sustainable state and enhancing the quality of life in Delaware through protecting and enhancing our environment and public health, while concurrently supporting economic growth, has been a policy cornerstone of Governor Markell's administration. With the Governor's leadership, DNREC, working with many and various partners, has made great strides in key areas.

#### **1) Conservation Economy**

- Delaware Bayshore Initiative
- Redevelopment of Strategic Sites (NVF Yorklyn, Fort DuPont)
- Land Conservation/Ecological Preservation
- Waterway Management
- Reef Program
- Delaware Wildlife Action Plan

#### **2) Cleaner, Cheaper and More Reliable Energy**

- Clean Energy
- Energy Efficiency
- Alternative Fueled Infrastructure

#### **3) Supporting Safe and Sustainable Communities**

- Universal Recycling
- Brownfields/Site Remediation
- Heating Fuel Underground Storage Tank Closure Assistance

#### **4) Supporting Healthy Families**

- First State Trails and Pathways Initiative with DelDOT
- Children in Nature
- Outdoor Recreation, Parks and Trails Program
- Recreational Assets and Amenities

#### **5) Improving Delaware's Preparedness**

- Ocean Coast Beach Protection
- River/Bay Coastal Protection
- Drainage and Flood Abatement
- Dam Safety and Rehabilitation
- Climate Vulnerability and Sea Level Rise Adaptation

#### **6) Ensuring Clean Water**

- Watershed Improvements
- Watershed Approach to Toxics Assessment & Restoration (WATAR)
- Water Infrastructure with DHSS and Finance

#### **7) Providing Core Services**

- Permitting Efficiency
- Hunter and Trapper Registration System

# 1) Our Conservation Economy

## Delaware Bayshore Initiative



*Woodland Beach Wildlife Area near Smyrna*

The designation by Governor Markell of the Delaware Bayshore as a geographically distinct and unique area of the state brought this globally significant region into the limelight and has infused the area with a new spirit of conservation and economic opportunity. New project investments have been made through state, federal, local government, nonprofit and private partnerships, including land protection, habitat restoration and public-access infrastructure improvements to enhance opportunities for ecotourism, outdoor recreation and education. Residents and visitors alike are benefiting from increased low-impact recreational access to the area, while small Bayshore communities benefit through the addition of new businesses and new jobs.

### **Improvements:**

- Since 2012, more than 1,614 acres of Bayshore lands have been protected, bringing the total protected lands to more than 120,000 acres.
  - 748 acres added to Ted Harvey Conservation Area in Kent County
  - 117 acres added to the Little Creek Wildlife Area in Kent County
    - Preservation of these lands at both wildlife areas protects high-quality coastal salt marsh habitat, beach for spawning horseshoe crabs and migratory shorebirds, and forest buffer along the St. Jones River for water quality benefits, and provides additional opportunities for adding buffers for water quality benefits and for marsh migration to occur as sea levels rise, without placing communities at risk.
    - Additional public access to lands along the central Bayshore increases opportunities for hunting and wildlife viewing, which is critical when access to private lands for these pursuits is shrinking due to development and other land uses.
  - 334 acres added to Thousand Acre Marsh at Augustine Wildlife Area in New Castle County
    - Protecting Thousand Acre Marsh preserves one of the most important and largest freshwater marsh systems in the state.
    - This acreage provides public access for activities that include waterfowl hunting and youth deer hunting.
  - 99 acres added to the Blackbird Creek Reserve, New Castle County, in the Delaware Estuarine Research Reserve for research and wildlife habitat protection.

- 265 acres added to Eagles Nest Wildlife Area near Blackbird Creek Reserve and 51 acres added to Woodland Beach Wildlife Area north of Smyrna that provide public hunting access and wildlife habitat.
- Easy access along the Bayshore Byway (Rt. 9) for adding new wildlife-viewing amenities for birding, ecotourism and raising awareness about wetland and wildlife conservation.



*Wildlife viewing platform at Thousand Acre Marsh near Delaware City*

- ADA (Americans with Disabilities Act) wildlife-viewing trail and viewing platform have been completed at Thousand Acre Marsh.
- These properties add to the regional development of trails and pathways around Delaware City, providing additional opportunities for attracting tourism to the area.
- Working in tandem with U.S. Fish and Wildlife Service's restoration projects within the former 4,000-acre freshwater impoundments of Milton's Prime Hook National Wildlife Refuge tidal marsh, DNREC secured \$6.5 million in Hurricane Sandy Coastal Resiliency funding to complement the refuge project by continuing tidal marsh and beach restoration work at Mispillion Harbor near Slaughter Beach and restoring a dike and replacing water control structures at the large coastal impoundment at the Ted Harvey Conservation and Little Creek Wildlife Areas. These major projects are restoring a significant portion of the Delaware Bayshore coastal ecosystem to improve resiliency of tidal marshes against future storms and sea level rise and to improve habitat for many migratory birds, fish and other wildlife. Restoration of these spectacularly diverse and abundant wildlife areas provides Delawareans with opportunities to hunt, fish, birdwatch, hike, canoe, kayak and photograph nature.

- DNREC's Delaware Coastal Programs has assisted with the U.S. Fish and Wildlife Service Prime Hook restoration project by leading several projects, including a comprehensive water quality and water level monitoring network, tracking the movement of fish, elevation surveys, and managing studies of sediment transport, groundwater inputs, and wetland health evaluation in the impoundments. This research and monitoring support will continue for use in modifying restoration work as needed and to evaluate the success of the project.



*Building a new beach and*

*dune at Broadkill Beach*

- As part of the U.S. Army Corps of Engineers' deepening of the main channel of the Delaware River, beach-quality sand from the dredging was pumped onto Broadkill Beach to create a new 3-mile long, 100-foot- wide public beach. DNREC will be planting dune grass, building dune crossovers and installing all fencing on the new beach and dune. More than 1.5 million cubic yards of sand was pumped onto the beach, vastly increasing the community's capacity to withstand severe coastal storms far into the future. The additional sand is already attracting visitors to enjoy this beautiful sandy Bayshore beach for swimming, sunbathing, fishing and other beach activities.



*Restoring Broadkill Beach after Hurricane Sandy in 2012*

- About 1,300 acres of coastal impoundment habitat are being restored with \$2 million of federal Hurricane Sandy resiliency funding.
- Delaware's Bayshore Byway (Rt. 9), running 52 miles along the Bayshore, was designated through a major community partnership as the route to "Delaware's quieter and wilder side," bringing significant visitor attention to communities and natural areas along the Byway.
- Delaware City boasts the national headquarters of the American Birding Association, helping bring ecotourism to Delaware City and the Bayshore with the potential for major birding tourism.
- \$3.2 million (75 percent federal funds) made possible an upgrade to the Cedar Creek boating access area in Slaughter Beach, boosting fishing and boating recreation by state residents and visitors to the Bayshore.
- Educational exhibits with partners at key facilities such as Slaughter Beach have been completed, with additional wildlife-viewing infrastructure begun in other locations.
- A new 3,242 sq. foot Aquatic Resources Education Center at Woodland Beach Wildlife Area will open in November 2016 and serves as an environmental education center, offering award-winning education programs, exhibits, field trips, resources and training for more than 6,000 students, youth groups and teachers each year. A trail connects the Bayshore Byway (Rt. 9) to the Center's outdoor patio that provides incredible views of the marsh and will serve as an orientation and education area for Bayshore visitors.

### **Personal Connections:**

Bayshore community leaders, anglers, boaters and Delaware City Mayor Stanley Green can provide information on benefits to their communities and their involvement in the Delaware Bayshore Initiative.

### **Independent Validation:**

The Delaware Bayshore Initiative received national recognition by being included in the U.S. Dept. of Interior's "America's Great Outdoors 50-State Report" highlighting some of the country's most promising ways to reconnect American to the natural world.

Delaware Bayshore Initiative Team was the recipient of the 2015 Governor's Team Excellence Award.

The upgraded Cedar Creek Boating Access Area received an award from the State Organization for Boat Access in 2013.

## **Redevelopment of Strategic Sites (Former NVF site and Fort DuPont)**

Gov. Markell has made it possible for the launch of distinctive plans for the redevelopment of two strategic and valuable sites – the former National Vulcanized Fiber (NVF) Company property in Yorklyn and Fort DuPont, dating back to the Civil War, in Delaware City. Both plans are creating jobs, improving water and soil quality by eliminating environmental contamination of Red Clay Creek, providing local recreation and tourism, spurring new business, and enhancing the value of adjacent neighborhoods.

### **NVF Improvements:**

- Redevelopment of the NVF site creates a unique model whereby the state and private sector are co-developing under a single master plan, resulting in a residential and destination community where the state retains ownership of a portion of the site for recreational uses.
  - With the acquisition of 119 acres, major steps have been taken toward transforming the area into a residential, commercial, conservation and recreational area while cleaning the site of contaminants, reducing flooding and preserving and restoring historic aspects.
  - 77 additional acres adjacent to the property were acquired after an initial investment consisting of mostly conservation easements that will further protect the spectacular open view of the valley.



- Dilapidated buildings have been removed and, as part of the commercial development of the plan, construction will begin soon on townhouses and businesses that will serve new residents, attract visitors to the area and create local jobs.
- A key partnership with the Delaware Symphony Orchestra has been established that will bring a new amphitheater to the site, providing a new destination for the Wilmington and Western Railroad.



*Artist rendition of the future NVF site*

- With over 233 tons of contaminants removed from the NVF property, water quality and aquatic life of Red Clay Creek are benefiting from the project.
- 1.5 miles of trails have been constructed for use by hikers, bicyclists, equestrians and steam car enthusiasts with 5.5 more miles either under construction or planned for 2017.
- Arrangements have been finalized for relocating three historic bridges from around the country for use on the property. Installation should begin in late 2016..
- More than 12 acres of flood mitigation space and wetland habitat will be created in 2017.

### **Fort DuPont Improvements:**

- The 403-acre historic Fort DuPont complex is under redevelopment as a mixed-use community that includes housing, recreation, health care and institutional spaces, fully integrated with Delaware City. The Governor's vision for this currently underutilized riverfront property is development that will produce revenue and jobs through new business and tourism, at the same time providing conveniences and recreation for local residents.



- 
- 
- 
- 
- 
- 
- 
- 
- 

*Buildings at Fort DuPont planned for renovation*

- A former Army landfill containing hazardous waste along the Delaware River and bordering existing trails on the site has been cleaned up with shoreline stabilization and an innovative barrier of fish bones in the ground to capture residual contamination that could flow into the river.
- In March 2016 the property was transferred to the Fort DuPont Redevelopment and Preservation Corporation, which is executing the master plan for the site. In May the property was annexed by Delaware City.
- Development has focused on the overall site design and infrastructure engineering. Accomplishments include:
  - Demolition of 12 dilapidated buildings to prepare for the first phase of development.
  - Grading is underway, which prepares the site for new roads and infrastructure in 2017.
  - Subdivision approval of lots by Delaware City, for the first phase of development consisting of 49 carriage homes and 42 single-family, detached homes.
  - Design and permitting of a 150-slip marina
  - Restoration of four existing residential buildings consisting of six duplex units and one single family home, is scheduled to be completed in summer of 2017.
  - Design and engineering is continuing for additional housing, a performing arts center and retail village.

### **Personal Connections:**

Huge supporters of NVF redevelopment include: local Councilwoman Janet Kilpatrick; Tom Marshall, former owner of Auburn Heights; and Carla Pastore, Executive Director for the Center for the Creative Arts. Delaware City Mayor Stanley Green strongly supports the redevelopment.

### **Land Conservation/ Ecological Preservation**

In recognition of the value of open spaces and preservation of valuable historic and ecological sites, during Gov. Markell's administration, significant parcels of land have been protected and opened for public use while others are now afforded DNREC support in order to increase the public use and enjoyment of these special areas.

### **Improvements:**

- Open Space funded projects: January 2009 - 2016  
 Through 104 projects 7,721 acres have been protected through the Open Space Program. (Projects include: 84 fee ownership and 20 conservation easements which include 20 donations and 31 projects leveraging non-open space funds)
  - Open space lands contribute to Delaware's economy each year through recreational use for hunting, fishing, wildlife watching, and ecotourism. These lands preserve wildlife habitat, historic sites and features such as forests and wetlands which help clean and filter our air and water.
  - Outdoor recreation is a major driver for the state's conservation economy, generating \$4 billion annually, \$1.1 billion in salaries and wages and \$304 million in local and state tax revenue.
  - More than 60 percent of Delawareans participate in outdoor recreation.
- Construction of a new 2,400 square-foot Conservation & Recreation Center at Norman G. Wilder Wildlife Area in Central Kent County continues Delaware's great outdoors tradition of sporting



dogs and field trials on the site of the original center and surrounding fields, which dates back 60 years to when Ralph Keller, for whom the center is named, led the charge for a sporting center.

- Since the building's dedication in 2014, almost 500 people have been involved in 15 sporting dog field trial events.
- Purchase of the privately-owned 104-acre shooting sports range and conservation education center near Greenwood as the Owens Station Shooting Sports & Hunter Education Center resulted in downstate Delaware's first and only state-owned public shooting sports range. By opening up the center to the public, downstate residents have easy access to sporting services. In the first 27 months of state ownership, use is estimated at 7,500 trap shooters; 150 sporting dogs trained; and 600 participants in Delaware hunter education classes. *Owens Station Shooting Sports & Hunter Education Center*
- A Conservation Access Pass for state wildlife areas will be required for all users beginning July 1, 2017. The pass increases funding for the management and improvement of the state's premiere wildlife habitats. Historically, the majority of the funding to manage state wildlife areas was derived from hunter fees and associated excise taxes on firearms. The Conservation Access Pass broadens DNREC's funding base whereby all users will contribute to the improvement of habitat and viewing facilities on wildlife areas.
- The First State National Historical Park: Delaware's first national park was declared in 2014 as the First State National Historical Park with the intent to preserve, protect and interpret the early American Dutch, Swedish and English settlements located throughout Delaware, as well as Delaware's role in the birth of the United States and as the first state to ratify the Constitution. The park includes seven sites in Delaware's three counties:
  - In New Castle County, the Park includes the Beaver Valley unit along the Brandywine Creek, Old Swedes Church National Historic Landmark, Fort Christina, and the New Castle Court House Museum (including the surrounding Green and the Sheriff's House).
  - In Kent County, sites include the John Dickinson Plantation and the Green in Dover.
  - In Sussex County, the site is the Ryves Holt House.
  - The State is the key partner for a national park at five of the seven sites. The Division of Historical and Cultural Affairs works closely with the National Park Service in interpreting and operating four sites, while Delaware State Parks helps the National Park Service manage Beaver Valley through collaboration on volunteer efforts and facilities management support.



### **Independent Validation:**

The quality of projects protected through the Open Space Program is evidenced by receiving numerous competitive federal grants (13 projects), private foundation support (six projects) and conservation partner collaboration (nine projects).

## **Waterway Management –Dredging**

To ensure safe navigation for the boating public since 1971, DNREC performs waterway management operations that support commercial and recreational fishing, the economy and tourism.

### **Improvements:**

- Key dredging projects completed since 2009 include the Assawoman Canal and maintenance projects in the federal navigation channels in Pepper Creek, the Murderkill River entrance channel and Little River.
- Due to substantial reductions in federal funding and assistance, DNREC is responsible for the dredging and maintenance of all but three of the 20 federal channels in the state. New legislation, signed into law by Gov. Markell in July 2016, allocates increased revenue from the state's boat registration program, estimated at approximately \$1.3 million annually, to a newly-created Waterway Management Fund for the exclusive support of state operations to keep channels open and safe for boaters.

## **Reef Program**

The Delaware Reef Program has been developing eight permitted sites in Delaware Bay and four ocean sites since 1995. Retired seagoing vessels, subway cars and select repurposed man-made structures, such as concrete culvert, provide hard substrate for the attachment of a unique invertebrate community, which supports reef fish like tautog, black sea bass, summer flounder and triggerfish.

### **Improvements:**

- During Governor Markell's administration, about 11,000 tons of concrete have been added to the reef sites, an increase above previous efforts of 14 percent.
- A total of nearly 300 New York City subway cars have been sunk on two ocean sites, an increase of 28 percent over the number previously sunk.
- The Gov. Markell years have been a banner time for acquiring and sinking derelict vessels – 12 vessels have been sunk, about 60 percent of the number sunk in the history of the reef program.
  - A highlight is the August 10, 2011 sinking of the retired Navy destroyer, Arthur W. Radford. At 565' in length, it became the longest vessel reefed along the Atlantic coast.



*U.S.S. Arthur W. Radford sinking as part of the Del-Jersey-Land reef*

- The F/V Shearwater, a 180-ft. long World War II-era former U.S. military vessel, was sunk on December 11, 2015 at the same reef site as the Radford and is the third largest vessel to be reefed off the Delaware coast.
- The U.S. Coast Guard Cutter Tamaroa, a 205-ft. long World War II-era former U.S. Navy ocean tug and the last of the 800 U.S. Navy vessels in the Battle of Iwo Jima, will be sunk in late 2016 at the same reef site as the Radford and will be the second largest vessel to be reefed off the Delaware Coast.
- On July 9, 2015, Special Management Zone provisions were approved by National Oceanic and Atmospheric Administration for four ocean reef sites, limiting harvest on the sites to hook and line, spear or hand methods of take to eliminate conflicting commercial fish pots.
  - Delaware was the first state in the mid-Atlantic region to successfully address this issue.
- The Delaware Reef Program is one of the most active and popular along the Atlantic coast and development is expected to continue in the future.

### **Personal Connections:**

Head boat and charter boat captains will attest to the improved fish habitat and the tremendous opportunity for fishing where there were no natural structures. Also, bait and tackle dealers will testify to the economic benefits.

### **Delaware Wildlife Action Plan**

DNREC, along with conservation partners, state and regional wildlife experts, key stakeholders and with public input, developed the 2015 Delaware Wildlife Action Plan that assessed wildlife and habitats, identified the challenges they face, and outlined actions needed for conserving them over the long term. The Plan presents a ten year strategy for keeping today's wildlife from becoming tomorrow's memory. By itself, the Plan cannot guarantee the future of wildlife in Delaware, however, it can guide legislators, local officials, park and refuge managers, business leaders, educators and concerned individuals to take actions that will conserve and protect wildlife. The Plan is required for federal funding for many conservation efforts in the state.

### **Improvements:**

- The Plan identified threats and actions for species and habitats most likely to be affected by rapidly changing climatic conditions and provides strategies for protecting Delaware's wildlife populations and habitats for future generations.
- The Plan helps ensure the goal of "keeping common species common and healthy ecosystems healthy" through utilizing conservation efforts to prevent these species and ecosystems from becoming threatened or endangered.

### **Independent Validation:**

DNREC's database used to develop the Delaware Wildlife Action Plan serves as a model for the database for the Northeast Regional State Wildlife Action Plan.

## 2) Cleaner, Cheaper and More Reliable Energy



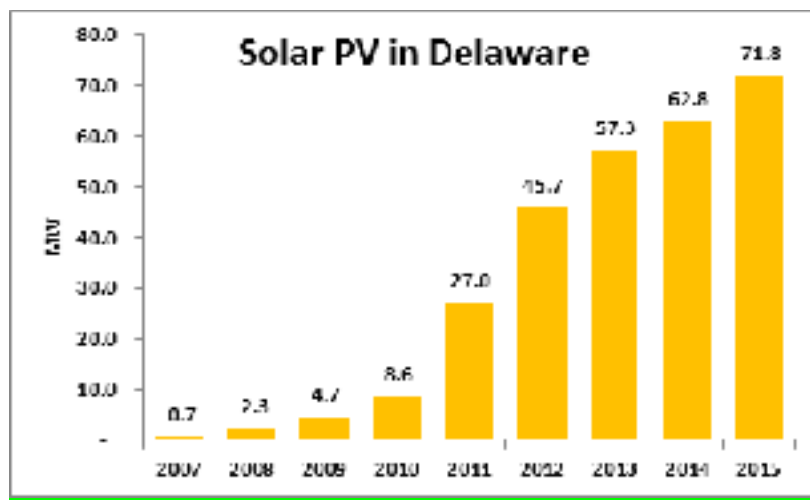
Gov. Markell's administration marked a turning point for Delaware in power generation, energy efficiency, renewable energy and the clean energy economy. Through a focus on legislative action, administrative improvements, regional collaboration and hard work, this administration has changed the energy landscape in Delaware, resulting in improved air quality, better public health, new jobs, capital investment and a cleaner energy future.

*Solar panels at the Kent County Wastewater Treatment Facility*

### Clean Energy

#### Improvements:

- The Delaware Renewable Portfolio Standard (RPS) has increased every year since 2007 and now is one of the most progressive RPS statutes in the country. Currently 14.5 percent of Delmarva Power's retail load is supplied with renewable sources of energy and a 25 percent benchmark will be achieved by 2025. Other energy providers are making similar contributions. Renewable energy investments result in cleaner air for Delaware residents, a more diverse and sustainable energy grid, and jobs for local electricians and solar contractors.
- As part of the drive to more renewable energy, Delaware has expanded the state's solar capacity from 2.3 megawatts in 2008 to 71.8 megawatts in 2015, enough energy to supply over 8,600 homes in the state. During that time, 2,500 solar energy systems have been installed on government buildings, businesses, schools and homes in Delaware.



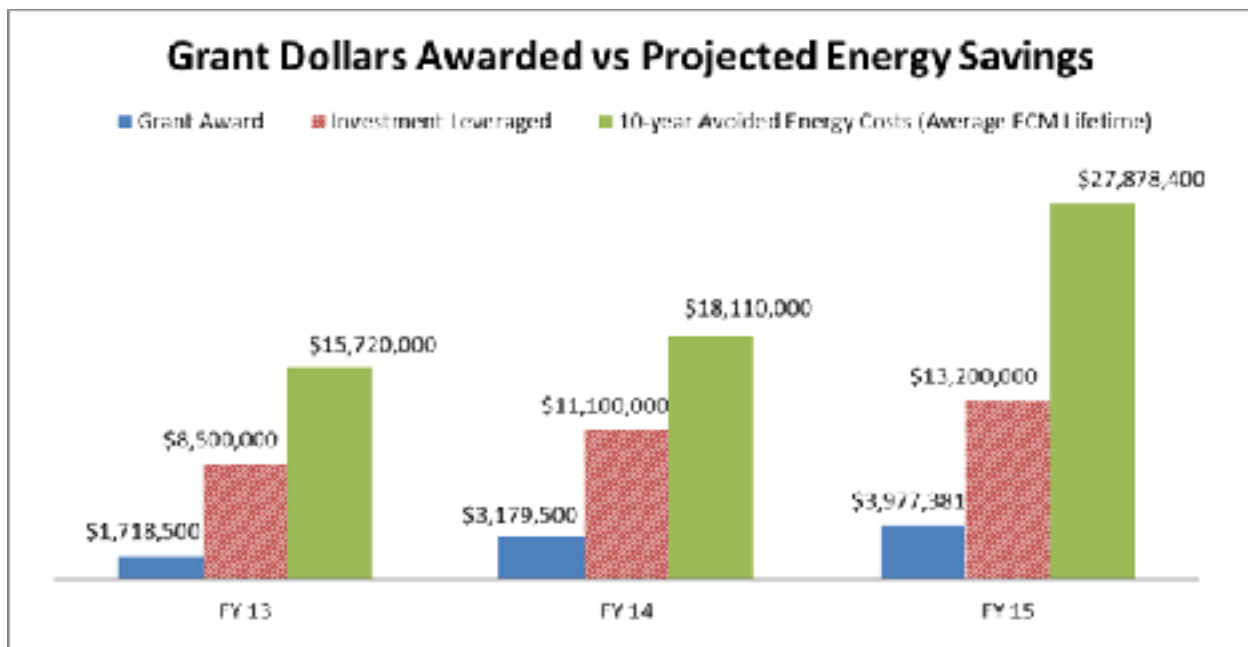
- Part of the success with solar can be credited to the state's Green Energy Fund. Since 2008, Delaware has invested approximately \$43 million in ratepayer funds in alternative energy technologies, including solar, geothermal and wind systems on 2,200 projects statewide.
- Delaware's power sector has been completely transformed under the Markell administration. Nine of the state's 10 "dirtiest" power plants have been shut down or switched fuel to cleaner energy sources, while the one remaining coal-fired unit installed \$300 million in pollution controls. This transformation has resulted in reducing annual emissions of sulfur dioxide, oxides of nitrogen, and mercury by more than 90 percent and significantly reducing in-state particulates air pollution. Delawareans are breathing cleaner air as a result of this transformation, and will for generations to come. Per capita, Delaware's energy-related and greenhouse gas emissions have fallen nearly 20 percent since 2009 (source: U.S. Dept. of Energy, Energy Information Administration). Through Delaware's leadership and participation in the Regional Greenhouse Gas Initiative (RGGI) and during the period 2009 - 2014, the RGGI region achieved nearly a 30 percent overall reduction in emissions from affected power plants.
- The Regional Greenhouse Gas Initiative (RGGI) was started in 2008 and is the nation's first regional program for the reduction of greenhouse gas emissions from the power sector. Delaware is a founding member of RGGI. It serves as an incentive for cleaner, less carbon-intensive power supplies; while the reinvestment of RGGI proceeds into energy efficiency and other greenhouse gas reduction programs spurs the economy, creating capital investment and jobs. A recent report by an independent third party reports a total of \$46 million since the inception of the program and indicates an overall net economic value of \$107 million and 952 job-years of employment for Delaware alone as a result of RGGI.

## **Energy Efficiency**

### **Improvements:**

- Energy efficiency has been an integral and highly valuable element of the state's energy plan. Under Gov. Markell Delaware has reduced energy use and associated greenhouse gases and other harmful emissions, lowered energy bills, improved the value and comfort of our homes and businesses, creating jobs and growing the economy. Through legislation championed by the Markell administration in 2009, energy efficiency was officially designated as the state's "first fuel," setting in place an Energy Efficiency Resource Standard targeting reductions in energy demand. Energy efficiency efforts are the most cost-effective means of reducing energy usage and its associated environmental emissions, in addition to saving ratepayers money for electricity.
- With the help of Delaware's Sustainable Energy Utility (SEU), Delaware has implemented more than \$100 million in energy efficiency projects throughout the state that reduce energy consumption in state and university buildings and schools. Using performance contracts, the SEU expects to save the state \$1.3 million every year for the next 20 years and reduce greenhouse gas emissions by 442,000 tons over that same time period.
- The State's Weatherization Assistance Program has undergone major restructuring during the Markell administration and has increased aid to low income homeowners by 400 percent. Since 2010, more than 2,000 low income Delaware households have saved an average of \$400 per year on energy costs. By weatherizing these homes, residents' comfort and safety has increased and they are able to use limited financial resources on other important living expenses.

- In February 2010, Gov. Markell signed Executive Order #18, setting Delaware on a leadership path toward a national model clean energy economy, built on economic growth, environmental protection, energy conservation and efficiency, renewable energy, cleaner transportation options, and sustainable buildings and operations. Since Executive Order 18 was signed, State government has reduced energy consumption by 23 percent across its reported portfolio, obtained 40 percent of its electricity needs from renewable sources, increased recycling by 32 percent and lowered vehicle miles traveled by the State's fleet by 24.5 percent.
- In 2014, Delaware was one of the first states in the nation to adopt the 2012 International Energy Conservation Code. By so doing, we have made our buildings more efficient and saved the average Delaware homeowner over \$600 in average energy costs.
- Our Energy Efficiency Investment fund (EEIF) was created by an act of the General Assembly in 2011 and has already resulted in considerable energy savings and leveraged economic investment. Since 2012, the EEIF has helped fund over 380 projects, leveraging more than \$33 million in private investments and saving over 62 million kW per year, as noted in the following chart. The energy savings translate into a combined savings of more than \$6.2 million each and every year – often projected for 10 years or more.



- In 2016, DNREC began the process of establishing new regulations designed to aid utilities and others providing energy efficiency services that quantify the actual energy savings realized through efficiency investments. New Evaluation, Measurement and Verification (EM&V) regulations have been the subject of multiple public workshops and are currently being considered for promulgation. These regulations will standardize the methodology for calculating expected energy savings from various efficiency measures (appliance replacement, insulation additions, lighting upgrades, etc.) and will put Delaware at the forefront of states' efforts to prove the cost effectiveness of energy efficiency investments.

### **Independent Validation:**

Delaware meets EPA National Ambient Air Quality Standards for Fine Particulate Matter in 2014.

Delaware currently ranks 22<sup>nd</sup> in the nation on energy efficiency programs and is expected to rise in the ranking in the 2016 annual report from the American Council for an Energy Efficient Economy.

### **Alternative-Fueled Transportation**



Deployment of alternative-fueled vehicles (electric, natural gas and propane) is critical to meeting greenhouse gas reduction targets and improving air quality.

### Improvements:

- In July 2015, to incentivize the use of alternative fueled vehicles, Governor Markell announced the “Clean Transportation Incentive Program,” which provides rebates and grants to Delaware businesses and residents for the purchase of alternative fueled vehicles (i.e. propane, natural gas, and electric vehicles) and alternative fueling infrastructure. The program is funded through Delaware’s participation in the Regional Greenhouse Gas Initiative cap-and-trade program.
- In the first 14 months of the Clean Transportation Incentive Program, more than 215 rebates for electric vehicles were distributed to Delaware residents and businesses. The addition of these electric vehicles to Delaware’s roads will result in reducing over 1.8 million pounds of carbon dioxide per year from entering the atmosphere.



*Public charging station at DNREC’s State Street Commons building in Dover*

- Totalling more than \$1 million, seven grants ranging from \$8,000 to \$500,000 for Delaware-based businesses were announced by Governor Markell at the “Fueling the Future” clean transportation event. Grants were awarded for projects throughout the state for the construction of natural gas, propane, and electric fueling stations that will provide increased fueling options for motorists and businesses, making alternative-fueled vehicles a viable choice and contributing to reductions in greenhouse gas emissions

### 3) Supporting Safe and Sustainable Communities

#### Universal Recycling

Landmark recycling legislation in 2010 – known as the Universal Recycling Law – set in motion the first statewide comprehensive recycling program in Delaware. Universal recycling has provided residents, commercial and institutional entities and non-profits with effective and convenient access to single stream recycling. The program has created jobs and new industry as well as recycling nearly half of the trash that formerly went to landfills, slowing the need to expand Delaware’s landfills or start new ones. By reducing landfill waste, the state also conserves natural resources and reduces emissions of greenhouse gases which saves Delawareans money and improves the health of residents.



of residents.

*ReCommunity Materials  
Recovery Facility with baled  
recyclables*

#### **Improvements:**

- While market value of recyclables may vary, the average long-term cost of recycling a ton of material is about one-third the cost of disposal. Recycling always has the advantage of conserving landfill space and natural resources, saving energy, reducing greenhouse gas emissions, creating local jobs and promoting a conservation ethic.
- With the current diversion rate of nearly 43 percent, every 2.5 years of recycling buys Delaware another year’s use of the state’s existing landfills.
- The short-term bottle fee has provided \$7.8 million to fund the recycling grants program. Specifically, 76 grants helped waste haulers and municipalities with the start-up of curbside recycling; funded recycling equipment at businesses and institutions; helped establish recycling companies in the state to collect and process materials; created yard waste drop-off sites; and funded recycling outreach and education. Grant funds from the bottle fee are expected to be exhausted in 2017. From the year prior to the enactment of the Universal Recycling Law (2009) to 2014, an additional 150,000 tons of recyclables have been diverted from disposal.
- Several recycling businesses have opened or expanded in Delaware since 2010 as a result of Universal Recycling, including two material recovery facilities to process single stream recyclables, a construction and demolition debris recycler, and others supporting hundreds of local jobs.

**Personal Connections:**

The City of Rehoboth Beach can attest to the success of their multi-family home recycling program that uses the city refuse service – totaling 1,600 customers. The trend from the beginning of the recycling program has been a steady increase in recyclable tonnage collected and a decrease in refuse tonnage collected, with recyclables totaling 357 tons in 2014.

The Delmar School District can also speak about the success of their recycling program, which has obtained a recycling diversion rate of 35 - 40 percent and cost savings on their total waste disposal expenses.

**Independent Validation:**

Delaware's recycling diversion rate is nearly 43 percent – notably higher than the national rate of 34.3 percent, as reported by EPA.

**Brownfields/Site Remediation**

A program for cleaning up and redeveloping contaminated sites, the Brownfields program, has grown substantially with a record number of facilities entering into the program within the past year. Funding has substantially increased to help attract developers to bring these properties back into productive use and increase the tax base for the State.



*Fire at the former Speakman factory in Wilmington*



*After entering into the Brownfield Program, the site was redeveloped into townhomes*

## **Improvements:**

- There have been 138 Brownfield sites throughout the state certified during the Markell administration, with 41 having been redeveloped into commercial properties; two redeveloped as residential; and nine redeveloped into parks and community areas. The remaining 81 are in the investigative and remedial phase.
- Since 2009, more than \$35 million has been invested to bring properties back into productive use and increase the Delaware tax base. These sites include the Wilmington Riverfront area, key redevelopment sites in northeast Wilmington and the former Berry Plastics Site in Harrington.
- Additionally, the former Chrysler plant in Newark is now the University of Delaware's STAR Campus and a derelict empty lot on U.S. Route 13 in Dover as become the VEI Dover Crossroads site.

## **Independent Validation:**

A 2015 University of Delaware Economic Study indicated:

"For every \$1 invested by the State, a \$16.48 return of investment is achieved, resulting in a return of \$577 million in the last 8 years."

"From 2000 – 2014, the assessed values of the state's 76 brownfield sites increased by approximately \$113.65 million, including about \$112 million at 61 New Castle County sites, about \$675,000 at seven Kent County sites, and about \$974,00 at eight Sussex County sites."

"The 76 brownfields throughout the period showed growth - adding 255 jobs between 2009 and 2014. Job wages related to the development of the sites increased from an annual wage of about \$65,000 to \$81,000."

A 2013 University of Delaware Social Impact Study of North East Wilmington indicated:

"Brownfield regeneration not only serves to reduce environmental risk and produce economic benefits, but also holds the potential to enhance the social well-being of residents in environmental justice communities."

"The most significant change in Northeast Wilmington that all participants had observed was the increase in safe and affordable housing. Increased home ownership and a decline in absentee landlord-owned rental properties were considered the key to community stabilization and revitalization."

## **Heating Fuel Underground Storage Tank Closure Assistance**

DNREC initiated a new Heating Fuel Underground Storage Tank Closure Assistance Program in 2015 to help property owners with the removal or closure-in-place of their old or disused fuel tanks. Many residential and business properties in Delaware still use oil heat and have a fuel tank buried underground which may be abandoned and/or leaking. This new program helps eliminate the possibility of leaking oil which can contaminate the soil, groundwater and even surface waters affecting the health of residents and the environment.





*An old underground fuel tank being removed from a home in Wilmington*

### **Improvements:**

- DNREC has spent about \$1.15 million on the removal or proper closure in place of 363 underground storage tanks (as of Sept. 2016). Another 69 UST closure projects are pending.

### **Personal Connections:**

Homeowners who will provide program testimonials include: Bill Nicholson, Wilmington; Steven Zabowski, Newark; Patricia and John Burns, Hockessin; and Jim McGiffin, Dover.

### **Independent Validation:**

The program was discussed at the National Tanks Conference in September 2015 as a model for addressing the national problem of abandoned storage tanks.

## **4) Supporting Healthy Families**

### **First State Trails and Pathways Initiative with DelDOT**

Creation of a world-class statewide network of new pathways and trails for Delaware's citizens and visitors for biking, hiking, walking and active living while connecting communities was initiated by the Markell administration and since inception has made considerable progress. This initiative has created jobs, both in construction and recreation-related businesses, and has steered Delawareans toward healthy activity.

*Bikers enjoying  
Gordons Pond Trail*



## **Improvements:**

- 42.5 miles of trails have been built through the initiative with another 22 miles pending construction by DNREC, DelDOT and local communities. (County maps highlighting trails projects, pages 31-33)
- Since 2010, DelDOT has added 15 miles of bike lanes annually to the network, resulting in a total of 75 new bike lane miles.
- An investment of \$29.16 million has been made on connecting communities through the Trails and Pathways Initiative.
- 21 percent of Delaware's population of nearly 900,000 people live within a 10-minute bike ride of the trail network built or improved under the Governor's Trails and Pathways Initiative.
- The first year after the opening of the Gordons Pond Trail approximately 113,000 users took to the trail. DNREC expects a similar number of users in 2016.
  - Following the trail's opening, Delaware River and Bay Authority saw a 30-percent increase in riders with bikes on the Cape May-Lewes Ferry.
  - Several Chambers of Commerce and Southern Delaware Tourism observed an increase in fundraising events on trails. Event participants are booking hotels and making local purchases.
- Since opening in 2013 the Michael Castle Trail along the C&D Canal has been used by more than 100,000 people from at least 10 different states. This number is expected to increase significantly once the last section of trail is completed, finalizing the connection between Delaware City and Chesapeake City, Maryland.
  - Trail users have directly benefited the business and restaurants in Delaware City and St. Georges.

## **Personal Connections:**

Gary Kirk, avid hiker and bike rider, often visits the Castle Trail noting that on weekends, the Biddle Point and St. Georges' trailheads are always full of Delaware and out-of-state cars. Mr. Kirk engages trail users who say the Castle Trail is a well-liked destination.

## **Independent Validation:**

Since the Governor took office, Delaware's Bike Friendly ranking has risen from 31st nationally to 3rd in 2015 (ranked 1<sup>st</sup> in states located east of the Mississippi River). The ranking was compiled by the League of American Bicyclists.

## **Children in Nature**

Thousands of children across Delaware have benefited from the Governor's Children in Nature Initiative which is increasing opportunities for youth to take part in outdoor activities both in school and when school is out. Driving the initiative to reconnect kids with nature, the Delaware Children in Nature Coalition helps schools





and communities provide outdoor experiences, promote healthy lifestyles, increase environmental literacy, and provide access for youth to green spaces while also nurturing an environmental ethic that can last a lifetime.

*Children birdwatching at Lums Pond State Park*

### **Improvements:**

- Fulfilled the Children in Nature Task Force recommendations and launched a Youth Conservation Corps for teenagers. In 2016 the Corps expanded statewide with more than 40 members.
- The new focus on reconnecting children with nature included the first two years for Children in Nature Month, declared by Gov. Markell in 2014, with more than 219,000 students taking part in programs at 16 sites across the state in Oct. 2014 and more than 240,000 taking part in programs at 31 sites in Oct. 2015.
  - Field trips to Delaware State Parks were provided for 4,700 students from high-poverty areas.
  - Since 2009, 17,126 students and 714 teachers participated in 340 field trips to Fish & Wildlife areas.
  - Since the beginning of the initiative, 12,244 students in Seaford and Caesar Rodney School Districts have been able to enjoy and learn from the creation of schoolyard habitats.
  - More than 23 new vegetable gardens at schools have been created benefitting students by providing education and healthy food.
  - Delaware is one of a handful of states nationally to hold the Governor's Capital Campout, part of a national effort to get young people and their families, who may not usually get to experience Delaware's state parks, outside and enjoying the activities that parks have to offer.
  - With recognition of a need to improve environmental literacy, organizations like the Delaware National Estuarine Research Reserve increased environmental-based programs, working with 9,206 children since 2010.
- DNREC introduced a state-of-the-art mobile science trailer, *Science at Your Door*, which visits elementary schools in Delmar, Laurel, Seaford and Woodbridge (as well as other schools in the Chesapeake Bay Watershed) and provides hands-on science laboratory experience focused on coastal ecosystems and watershed health. The curriculum aligns with the Children in Nature Initiative and employs new generation science standards, with the primary goal of improving environmental literacy among disadvantaged students.



### **Personal Connections:**

Teachers and participants in partner programs will attest to the importance and benefits of the Children in Nature Initiative.

### **Independent Validation:**

Delaware Schools won National Green Ribbon Recognition in 2013, 2014 and 2015. Grants of over \$15,000 are available to schools through Delaware's Sustainable Energy Utility.

## **Outdoor Recreation, Parks & Trails Program**

### **Improvements:**

- Formally known as the Delaware Land & Water Conservation Trust Fund, the Outdoor Recreation, Parks & Trails Program has provided nearly \$5.5 million in matching assistance to 24 municipal and county agencies in the state.
- Since January 2009, 61 grants were awarded, leveraging \$8.3 million from local and other sources for parkland acquisition, planning and outdoor recreation facility projects, including playgrounds, ballfields, trails, picnic pavilions and other outdoor recreation facilities and supporting amenities.
- Changes made in the management of ORPT Trust Fund are anticipated to result in higher earnings and grant funding for local communities.



*Helen Chambers Park playground in Wilmington*

## **Recreational Assets and Amenities**

### **Improvements:**

- By leveraging federal grants and private funding, Delaware State Parks has invested more than \$35 million in park infrastructure, resulting in a 19 percent increase in campground occupancy between 2014 and 2015.
- Several key assets and amenities have been added to State Parks that provide recreational opportunities and promote tourism.
  - **Holts Landing State Park's** state-of-the-art dual boat ramp with ADA-accessible floating dock provides 24-hour access for watercraft enthusiasts and boosts recreational opportunities and tourism at the park. (reopened May 2016).
  - A newly-repaired 1,300-foot **Cape Henlopen State Park Fishing Pier** was restored for use by anglers, bird watchers and other nature lovers (opened May 2016).

- Officially opened on Sept. 2, 2106, the **Fort Miles Artillery Park at Cape Henlopen State Park** showcases World War II artillery that represents the armaments that were stationed at Fort Miles for coastal defense during the war. The centerpiece of the park is one of the U.S.S. Missouri's 16-inch guns, which was mounted on "Mighty Mo" when the Japanese surrendered on Sept. 2, 1945. The Artillery Park preserves an important piece of Delaware's wartime history, attracts visitors to the beautiful shores of Cape Henlopen State Park and boosts the local economy.



- The **Go Ape Treetop Adventure**, the first zip line treetop adventure course in a state park on the East Coast, opened at Lums Pond State Park in 2013, under a public/private partnership with DNREC's Division of Parks and Recreation. Go Ape offers visitors with two to three hours of outdoor fun and exercise while they navigate more than 40 obstacles situated in the treetops of the park. A Go Ape youth course opened in Sept. 2016.
- In 2016 the campground at **Lums Pond State Park** was transformed with new infrastructure improvements and amenities that include tree-point hookups, providing water, sewer, and electrical service to campsites, a new bathhouse and five new walk-in tent sites, all of which are designed to draw new campers to the only campground in New Castle County.
- At **Killens Pond State Park**, four new, state-of-the-art water slides mounted on a 54-foot-high platform, along with a new bathhouse, concession, lifeguard station, play features, shade structures and accessibility improvements, were unveiled in July 2016.

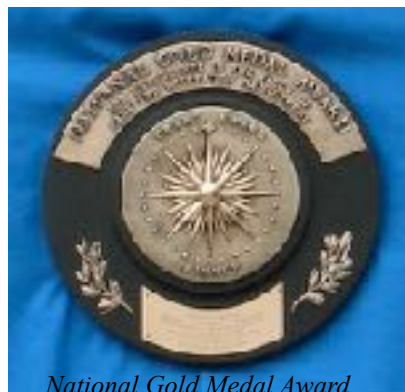
*New slides a Killens Pond waterpark*

- Campground improvements and amenities **at Cape Henlopen State Park** have included new bathrooms and additional cabins (2014 -2016). The campground is undergoing improvements in autumn 2016 that include new electric hookups, a central path for pedestrian access, new walk-in sites, improved roadways and a new camp store, projects most requested by campers in recent surveys.

#### **Independent Validation:**

In 2015 Delaware State Parks received the National Gold Medal Award for Excellence in Park and Recreation Management from the National Recreation and Parks Association. Delaware is only the eight state park system to win this prestigious award since its inception in 1997.

Cape Henlopen State Park named one of the most scenic state parks in the country by *USA Today* in 2015.



*National Gold Medal Award*

## **5) Improving Delaware's Preparedness**

### **Ocean Coast Beach Protection**

Sustaining and improving our valuable beaches in Delaware – which ranked as cleanest in the nation four of the last six years and hold a very high ranking the other two years – has been a priority of the Markell Administration. Providing shoreline resiliency through beach nourishment to protect lives and infrastructure at the same time bolstering the status of recreational beaches in the towns of Lewes, Rehoboth, Dewey, Bethany, and South Bethany Beaches, and Fenwick Island have paid dividends in not only tourism dollars, but protection from storms that have devastated less-prepared Atlantic Coast states.

#### **Improvements:**

- Between 2009 and 2015, almost 4.66 million cubic yards of sand have been pumped onto the beaches at Rehoboth, Dewey, Bethany, South Bethany and Fenwick Island (6.6 total miles of coastline). Our ocean coast is now stable and in many locations significantly wider and therefore better protected against storms than it was 10 years ago.
- Delaware's beaches are, by far, the single biggest attraction in the \$6.9 billion Sussex County coast-related economy.
- Between 2009 and 2015 the Army Corps of Engineers has spent almost \$69.2 million on nourishing the ocean-fronting beaches while the State has contributed \$11.69 million. The total federal/state investment during the Markell Administration has been \$80.8 million.



**Personal Connections:**

Town officials from Rehoboth Beach and other ocean towns will attest to beach nourishment and its importance for oceanfront protection, tourism and the local economy.

**River/Bay Coast Protection**

Five historic levees that provide the first line of defense for much of the City of New Castle and its associated unincorporated area against Delaware Bay storm surges were repaired and upgraded. Recent storms demonstrated the critical need for repairs in order to protect life, property, infrastructure, wildlife habitat and recreational amenities, including protection from movement of contaminated material during flood events. The road/pathway atop the levees has also been reconstructed for recreational use by the public.



*Gambacorta Marsh levee just south of Battery Park in the City of New Castle with a recreation trail.*

**Improvements:**

- This effort, funded by the State, Federal Emergency Management Agency and National Oceanic and Atmospheric Administration, repaired a total length of approximately 2 miles of levees at an increased height from the original structures for added protection.
- They provide direct protection to 420 homes and commercial structures and public safety for the lives of more than 1,700 area residents and workers. This figure does not include commuting traffic which also benefits from the protection of the repaired levees.

**Personal Connections:**

State Senator Nicole Poore, State Representative Michael Mulrooney, along with City of New Castle Administrator Bill Barthel can address the impact that this added protection has on area residents and businesses.

**Independent Validation:**

DNREC and New Castle Conservation District received the Water Resources Association of the Delaware River Basin's 2015 Government Award.

Upon completion of the levees, they were inspected and accepted into the U.S. Army Corps of Engineers Rehabilitation and Inspection Program. Participation in the program makes the structures eligible for funding to repair future damage that may result from storms or other incidents.

## **Drainage and Flood Abatement**

Approximately 600 drainage and flood reduction projects throughout the state during the Governor's Administration have helped remove risks to public health and safety of residents and are protecting properties.

*Construction of the Hudson Road tax ditch near Milton*

### **Improvements:**

- Expended \$11.8 million in 21<sup>st</sup> Century drainage funds and leveraged several million more in matching funds.

### **Examples of projects:**

- In New Castle County: Little Mill Creek Flood Risk Management Project – flood mitigation for 30 small businesses off Maryland Avenue between Newport and Wilmington
  - Partnership between DNREC, New Castle Conservation District, New Castle County, and U.S. Corps of Engineers
  - 65 percent federal / 35 percent local funding split
  - Estimated cost: \$4.2 million
- In Kent County: Woodside/Burke Drainage Improvements
  - Storm drain project providing outfall for the southeast corner of the Walnut Shade Rd / Rt. 13 Intersection: provides drainage to approximately 75 properties including homes, a shopping center and drainage for three state roads (Rt. 13, Walnut Shade Rd. and Barney Jenkins Road).
  - Estimated cost: \$380,000
- In Sussex County: Hudson Road Tax Ditch
  - Provides drainage to approximately 450 properties: homes, a Christmas tree farm, appliance business, agricultural lands, part of Eagles Landing Airfield and two state roads.



- \$650,000 construction cost for the entire system funded through RC&D 21<sup>st</sup> Century Fund, Community Transportation Funds, and DNREC non-point source funds for plantings.

### **Personal Connections:**

Representatives from the Conservation Districts value the benefits provided by these drainage projects. The cooperators they work with are appreciative of the effort along with the many landowners and small businesses that benefit from these projects.

## **Dam Safety and Rehabilitation**

### **Improvements:**

- Delaware's first total dam rehabilitation project by DNREC and DelDOT began in July 2016 at Hearn Pond Dam near Bridgeville and is anticipated to be completed by June 2017.
- The project is the culmination of 10 years of work by DNREC and DelDOT on a comprehensive dam safety program that provides long range plans establishing priorities and focusing state resources to address the aging infrastructure of many of the state-owned dams.
- The DNREC-DelDOT Dam Preservation Program partnership is important for the safety and protection of the public and will reduce the risk of property damage in the event of a dam emergency. The Hearn Pond Dam rehabilitation is the first of many dam safety projects that will be completed by the partnership, with one project scheduled to be completed every 2-3 years, as funding is available.

## **Climate Vulnerability & Sea Level Rise Adaptation**

Delaware is a recognized leader in climate change planning. The state has made significant strides in addressing both the causes and consequences of climate change by developing the state's first plans and tools for making important strategic decisions for the future. Through thorough and science-based research, comprehensive assessments of impacts from climate change have been completed and are serving both state and local governments and the public by preparation that protects lives, health and investments.

### **Improvements:**

- The state of Delaware conducted comprehensive assessments, using the best available science, to understand the current and future impacts of climate change and sea level rise. *Preparing for Tomorrow's High Tide: Sea Level Rise Vulnerability Assessment for the State of Delaware* was released in May 2012. The *Delaware Climate Change Impact Assessment* was released in February 2014.
- Through DNREC's work with a diverse stakeholder group, the Sea Level Rise Advisory Committee, 55 recommendations were developed in *Preparing for Tomorrow's High Tide: Recommendations for Adapting to Sea Level Rise in Delaware*. To date, 22 of these recommendations are complete or are in progress with a focus on developing and sharing information for citizens, businesses, and local governments to help make decisions in addressing potential impacts.
- The *Climate Framework for Delaware*, summarizing more than 150 recommendations developed by state agencies under Executive Order 41, was released in March 2015. Progress since its release includes: a public stakeholder workshop held in April 2015; completion of *Strategies to Continue Reducing Greenhouse Gas Emissions in Delaware: A Report from the EO 41 Mitigation Workgroup*; and *Avoiding and Minimizing Flood Damage to State Assets in the 21<sup>st</sup> Century: A Guide for Delaware State Agencies*.

- DNREC’s Division of Energy and Climate is coordinating an interagency effort in response to Executive Order 41: *Preparing Delaware for Emerging Climate Impacts and Seizing Economic Opportunities from Reducing Emissions*. The Executive Order called for the creation of a cabinet-level committee to oversee the development and implementation of recommendations under the order. The Cabinet Committee on Climate and Resilience, and their agency representatives have produced a robust set of recommendations to address greenhouse gas reductions, increase resilience to climate impacts, and avoid and minimize flood risks due to sea level rise and changing rainfall.
- Using tools, data and funding made available through DNREC, local governments are also preparing for the impacts of climate change. Little Creek, Frederica, Slaughter Beach, Fenwick Island, Seaford, Laurel, Bowers Beach, South Bethany, Bethany Beach, Wilmington, New Castle, New Castle County and others have all taken steps to plan for their increasing vulnerability to climate change.

### **Independent Validation:**

The state of Delaware received a B+ from the “States at Risk – America’s Preparedness Report Card.” This project, an initiative of Climate Central, comprehensively reviewed state plans for climate adaptation. Only California, Pennsylvania, New York, Connecticut and Massachusetts received higher scores ([www.statesatrisk.org](http://www.statesatrisk.org)).

The Town of Frederica offered a special thanks to DNREC’s Delaware Coastal Programs and the Division of Energy and Climate for their extensive knowledge shared and technical assistance on addressing sea level rise and coastal storm issues related to climate change, and integrating adaptation strategies into the plan. (Town of Frederica Comprehensive Plan Update 2015-Draft)

76 percent of Delawareans want immediate action on climate change; 70 percent support spending more on infrastructure projects if it means they are built to withstand climate impacts. 85 percent of Delawareans support changing building codes and regulations to reduce risk in flood prone areas; 72 percent support increasing funding for research to respond to and prepare for sea level rise. (Delaware Sea Level Rise and Climate Survey, 2015).

## **6) Ensuring Clean Water**

Much progress has been made during the Markell Administration on many fronts in the challenge to improve the quality of the state’s ground and surface waters.

### **Watershed Improvements**

- Through partnerships within the state’s major watersheds, focus has shifted to better controlling stormwater and runoff through restoration and green technologies such as living shorelines, rather than hardened structures such as those built with riprap.

- In June 2016, DNREC and the Department of Health & Social Services (DHSS) announced the most significant improvements in fish tissue contaminant concentrations since the state began assessing contaminants in fish in 1986. The improvements are primarily the result of declining PCB concentrations, however other pollutants, such as dioxins and furans, chlorinated pesticides and mercury, have also declined in fish during the last eight years. As a result, DNREC and DHSS have issued less restrictive fish consumption advisories for waterways throughout Delaware. The public has less exposure to harmful chemicals in fish caught from many local waters. The improvements are the result of significant investments in wastewater and stormwater infrastructure, clean up technologies, innovative toxics assessment and restoration projects, and collaborative efforts among state, federal, local and industry partners to address contaminants.
- Stricter regulations and inspections of septic systems; upgrades required when replacing septic systems; thousands of conversions of septic systems to centralized sewer; upgrades to major sewage treatment plants; and scheduled elimination of the last two of the original 13 point-source discharges to the Inland Bays all reduce nitrogen, phosphorous, and bacteria that degrade ground and surface water and threaten public health.
- In the Chesapeake Bay Watershed, Delaware achieved its 2015 milestone targets for phosphorus and sediment load reductions. Nitrogen totals indicate a reduction of nearly 440,000 pounds over the 2009 baseline. Delaware's new milestone goals for 2016 - 2017 are on track to meet all statewide EPA targets for 2017.

### **Personal Connections:**

In response to the installation of a water control structure at the Redden State Forest, Erich Burkentine, Delaware Forest Service regional forester in Sussex County, said the effort is showing signs of success: "It's definitely working the way it is supposed to. Now that we've had a bit more rainfall this year than recent years, we can see how the water has been diverted into the woodlands in places where the reconnects have been installed. In addition to improved water quality, reconnecting the channels can help reduce flooding downstream and also provide habitat for key species that thrive in forest wetland ecosystems."

### **Independent Validation:**

Delaware earned distinction as "cleanest beach water quality" in the nation for four of the last six years, with high rankings in the other two years from the National Resources Defense Council based on coastal states' monitoring of ocean beaches for bacteria during swimming season.

## **Watershed Approach to Toxics Assessment & Restoration (WATAR)**

- Governor Markell's Clean Water for Delaware's Future initiative has accelerated the cleanup of toxics in Delaware's surface waters, sediments and fish by encouraging innovative assessment methods and clean up technologies. Watershed Approach to Toxics Assessment and Restoration (WATAR) has been the cornerstone in the Governor's initiative and has resulted in innovative assessments and clean up (complete and ongoing) at high priority projects (e.g., Mirror Lake Dover; Little Mill Creek/Meco Ditch; the former NVF property at Yorklyn; City of Wilmington/ New Castle County PCB Trackback Study; Fort DuPont; Amtrak Maintenance Yard; South Wilmington Wetlands Area; former EVRAZ /Claymont Steel; and Tar Ditch/Dover Gas Light/St. Jones River).

### **Independent Validation:**

DNREC's Mirror Lake project represents the first full scale application of the SediMite™ carbon product in the United States, and was a finalist for the 2014 Governor's Team Excellence Award.

The National Academy of Environmental Engineers & Scientists awarded DNREC's Mirror Lake team 2nd place nationally in the small project (less than \$5M) category for innovation.

The Mirror Lake project has also been referenced in national guidance documents. Multiple presentations have been made on Delaware's WATAR program at national and international conferences.

### **Water Infrastructure (collaboration w/DHSS & Finance)**

With the combined funding of DNREC and Department of Health & Social Services in the Clean Water State Revolving Fund and the Drinking Water State Revolving Fund, and the 21st Century Fund, critical projects to help farmers, homeowners, municipalities and counties were built or designed. Besides septic system replacements, farming best management practices, and repaired and expanded wastewater facilities, projects included flooding and stormwater and erosion control projects; drinking water well protection; water quality protection of bays, rivers and streams; and energy efficiency improvements at wastewater facilities. These projects saved taxpayers money and improved water quality.

#### **Data: (since 2009)**

Clean Water Loans	43 Loans	\$162 million
Drinking Water Loans	45 Loans	\$103 million
Non-Point Source Septic, dairy, poultry	170 Loans	\$2.92 million
SEFO (septic; no payback after 20 years)	151 Loans	\$2.21 million
Grant no match (city)	1 Grant	\$50,000
21 Century Grant (city)	2 Grants	\$1,968,000

- A \$36 million upgrade to City of Wilmington's Wastewater Treatment Plant, a renewable energy biosolids facility, will help the city to avoid \$6.46 million annually in biosolids disposal and electric costs, with a guaranteed net annual savings of \$285,000.
- City of Harrington: The CWSRF and DWSRF programs have refinanced the city's existing drinking water and wastewater loans, allowing the city to borrow additional funds for infrastructure projects at no additional annual costs to residents.



*Renewable Energy Biosolids Facility under construction  
at the City of Wilmington's Wastewater Treatment Plant*

**Personal Connections:**

Harrington Town Manager Terry Tieman praised the clean water and drinking water programs. “The CWSRF and DWSRF programs have refinanced the City's existing drinking water and wastewater loans that will allow the City to borrow funds for infrastructure projects at no additional annual costs to residents.”

**Independent Validation:**

EPA annual program audits for the DWSRF and CWSRF programs document the outstanding accomplishments for the program.

## **7) Providing Core Services**

### **Permitting Efficiency**

As of fall 2014, DNREC had met or exceeded Gov. Markell’s permitting turnaround time targets providing predictable 15-day preliminary review and 60-day technical review for most applications. Homeowners and businesses such as realty companies and contractors have benefited from the improved efficiencies by time and money saved. Farmers benefited from the permitting reviews through a new program that allows them to receive treated wastewater for crop irrigation with only a permit modification.

**Improvements:**

- Turnaround times for septic system permits less than 500 gallons per day are averaging less than five days for gravity permits and less than 10 days for engineered permits and site evaluations. This benefits the real estate community, contractors and homeowners by not delaying real estate transfers and construction of new homes.
- Turnaround times for wetland and subaqueous land permits in 2013 averaged 41 days – a reduction of 14 days from the average measured in 2011.

**Independent Validation:**

In a letter to DNREC, Evelyn Maurmeyer, contractor for Coastal and Estuarine Research, Inc., commended the agency on the “streamlined and efficient” permitting process, while “applications still receive rigorous evaluation.”

### **Hunter and Trapper Registration System (HTR)**

DNREC’s updated Hunter and Trapper Registration System provides hunters and trappers with a mobile-friendly website that makes registering a harvested deer or obtaining hunting-related registration numbers easier and more efficient. The web-based HTR conveniently allows hunters to use their smartphones while in the field, or other electronic device 24 hours a day, 7 days a week.

**Improvements:**

- The new system uses a mobile-first approach that enables Delawareans to conveniently interact with DNREC in a timely and efficient manner and provides a cost-effective alternative to traditional phone registration.

**Independent Validation:**

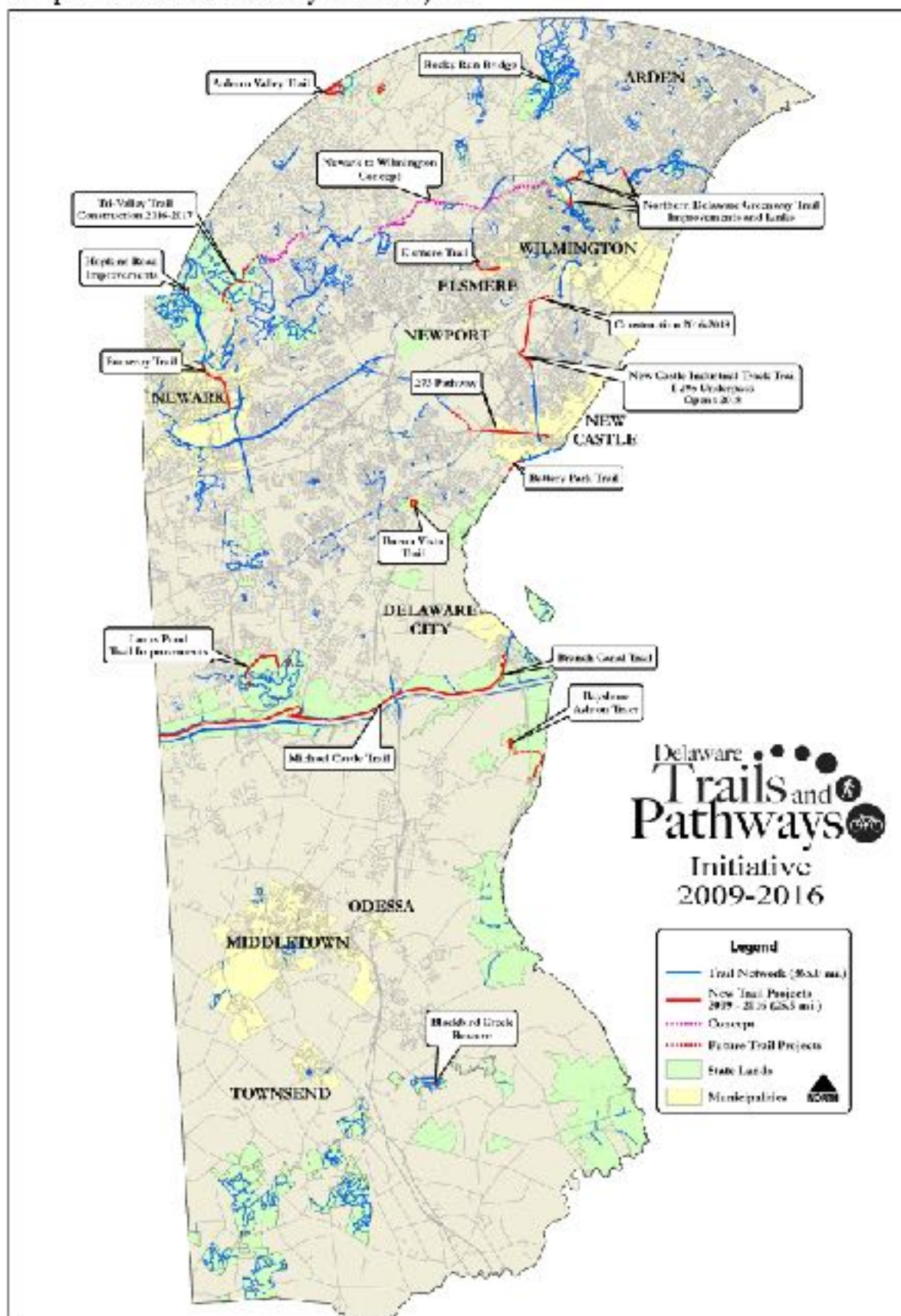
The HTR, developed with Delaware Interactive, won three national awards for excellence – an Outstanding Achievement Award from the Interactive Media Council, Inc., the Web 2.0 State and Local Government Award from the Public Technology Institute, and the W3 Silver Award from the Academy of Interactive and Visual Arts.





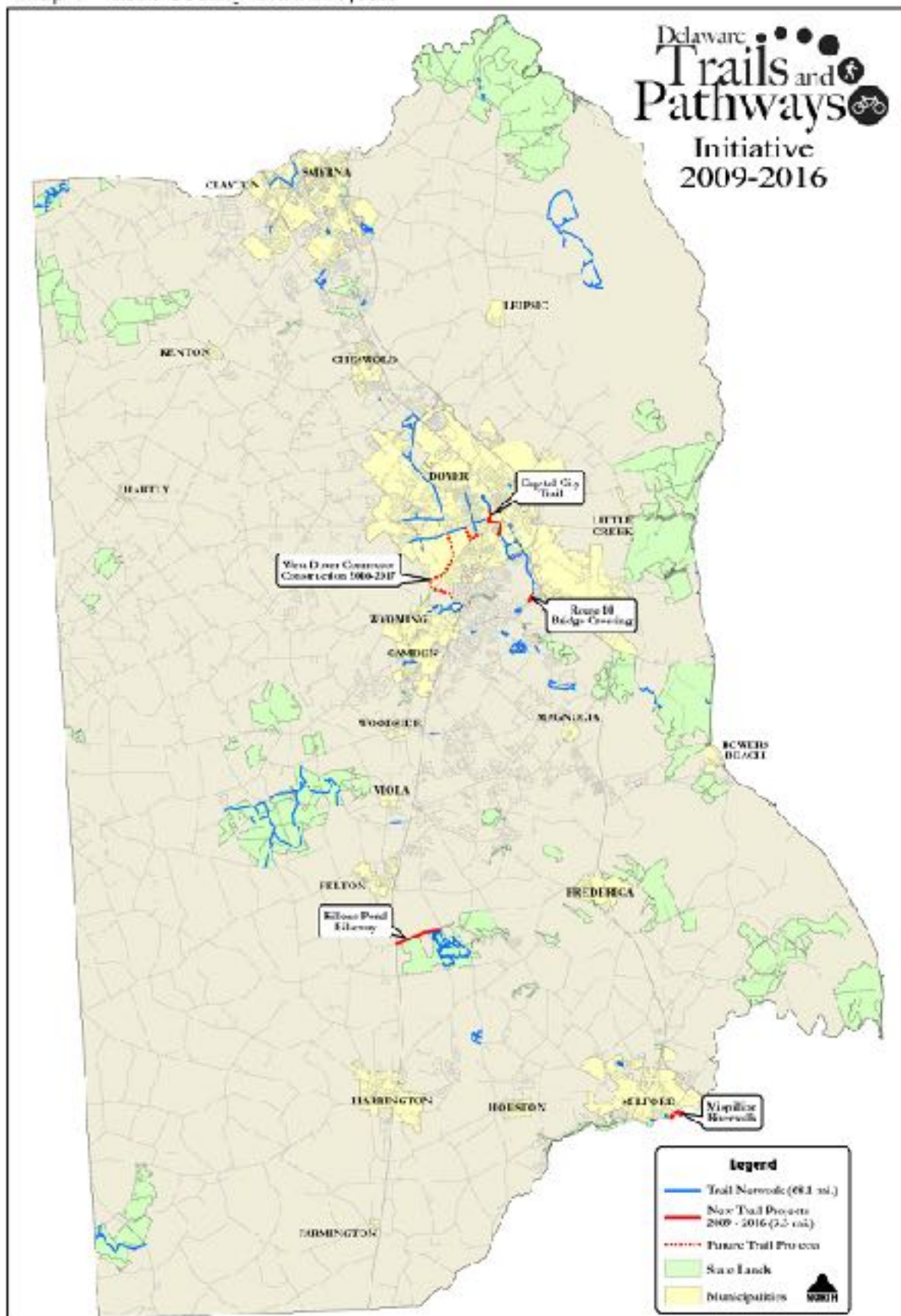


Map 1 - New Castle County Trail Projects





Map 2 - Kent County Trail Projects





Map 3 - Sussex County Trail Projects

