

Climate Action in Delaware:

2016 Progress Report



About this Document

In September 2013, Governor Markell signed Executive Order 41: *Preparing Delaware for Emerging Climate Impacts and Seizing Economic Opportunities from Reducing Emissions*. The Executive Order directed Delaware state government agencies to address both the causes and consequences of climate change. A technical committee—the Mitigation Workgroup—inventoried Delaware’s greenhouse gas emissions and recommended that the state reduce its greenhouse gas emissions by 30 percent by 2030 from a 2008 baseline. Another technical team—the Flood Avoidance Workgroup—developed guidelines and maps for state agencies to use to reduce the risk of flood damage to state assets.

In addition, each state agency developed “agency-specific actionable recommendations for improving Delaware’s preparedness and resilience to climate impacts.” Through a year-long planning process, representatives of eleven state agencies worked together to identify climate risks to their departments. Each agency then proposed strategies to reduce impacts to their workers and facilities, and to maintain their ability to provide programs and services to the people of Delaware. The planning work culminated in the publication of the *Climate Framework for Delaware* in December 2014. The *Framework* contains 155 recommendations from state agencies for adaptation actions and greenhouse gas reductions.

Since 2014, state agencies have been working together to put these recommendations into action. This progress report highlights the actions and accomplishments made by Delaware’s state government to curb greenhouse gas emissions and adapt to the impacts of climate change. The report also provides an overview of local government actions and sets out a vision for future actions.

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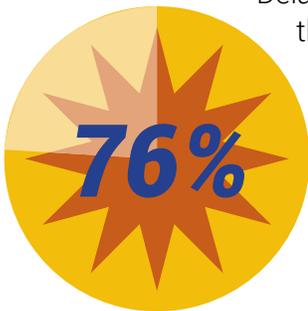


CLIMATE CHANGE IN DELAWARE

How will climate change affect Delawareans?

Climate change is more than a buzzword in Delaware—it’s a public health, safety, and economic priority. As a low-lying state with 381 miles of shoreline, Delaware is vulnerable to coastal storms, sea level rise, and flooding exacerbated by climate change. Sea levels around Delaware have already risen more than a foot in this century. In addition, rising temperatures and extreme heat events as a result of climate change threaten public health and especially Delaware’s vulnerable citizens – young children, the elderly, outdoor workers, and people with underlying health conditions. Temperature and rainfall extremes, combined with sea level rise, endanger our agriculture and tourism economies, and impose increasing costs for maintaining and repairing critical infrastructure.

Public support for climate action is strong across Delaware



76% of Delawareans think immediate action should be taken to reduce the impacts of climate change and sea level rise

Delaware residents understand the threats of climate change and are ready to act, according to a 2014 survey conducted by the Department of Natural Resources and Environmental Control and Delaware Sea Grant that garnered over 1,500 responses. The overwhelming majority of Delawareans support im-

mediate action to reduce the impacts of climate change. Furthermore, they support putting state and local government resources toward projects that prepare and protect infrastructure.

The State is taking action on climate change

The state of Delaware is meeting the challenge of climate change with the support of the public, directives from the Governor, and collaborative work across agencies and local governments. The state’s policies, programs, and tools are reducing our emissions of heat-trapping gases and preparing us for the effects of climate change. These actions can be divided into three categories:

- **Mitigation:** Reducing greenhouse gas emissions to lessen human contributions to climate change
- **Adaptation:** Protecting Delaware residents and resources from the effects of climate change
- **Flood Avoidance:** Reducing the risk of flood damage to infrastructure by building to a higher standard and avoiding areas with high flood risk

The good news is that many of the climate-ready actions the state is taking—like increasing energy efficiency, renewable energy, conservation practices, and clean transportation—yield benefits in addition to climate readiness. They present opportunities for economic growth, cost-savings for businesses, innovation, healthier communities, and overall improvements to Delawareans’ way of life.

CLIMATE MITIGATION: Reducing Greenhouse Gases in Delaware

Progress to Date

In 2014, the Mitigation Workgroup recommended to Governor Jack Markell that the state adopt a greenhouse gas reduction target of 30 percent emission reductions by 2030 from a 2008 baseline. The target was developed through an analysis of historic and forecasted greenhouse gas emissions, an evaluation of current programs and policies, and an assessment of potential strategies to reduce emissions. The Mitigation Workgroup considered a variety of emission reduction strategies to assist in achieving the mitigation target. These strategies included lower emitting vehicles and public transportation, energy efficiency improvements, land and forest preservation programs, and waste management policies and programs. The target is aggressive, yet attainable, if the policies and programs in the *Climate Framework for Delaware* can be implemented and continued.

An inventory of Delaware's greenhouse gas emissions through 2013 shows that since 2008, emissions from some economic sectors have increased, while others have decreased. (Data

David Wolanski, DNREC



Volunteers planting trees.

collected from 2013 is the most recent data available for greenhouse gas emissions.) The transportation, commercial, residential, and agriculture sectors recorded decreased emissions between 2008 and 2013. Reductions in emissions in these sectors are attributed to more fuel efficient vehicles, energy efficiency improvements, and decreases in livestock emissions. As the federal Corporate Average Fuel Economy standards are fully implemented, emissions from the transportation sector are expected to continue to decrease into

the future. Additionally, energy efficiency programs and fuel switching (from #2 heating oil to natural gas) for commercial and residential sectors have been very successful in Delaware. Using less energy to heat buildings and residential spaces is reducing emissions as well as cutting energy costs.

Greenhouse gas emissions growth in Delaware came from the electric power generation sector and the industrial sector. Both sectors' emissions increased primarily due to increased economic activity and the recovery from the 2008 recession. Between 2008 and 2013, both sectors' emissions have increased faster than modeled.

Delaware is focusing on a variety of sectors for greenhouse gas reductions, but transportation and electricity generation are two key sectors for reductions. Regional and national collaboration in the transportation sector is imperative. Delaware participates in the Transportation and Climate Initiative, a regional collaboration of 12 Northeast and Mid-Atlantic jurisdictions that seeks to develop the clean energy economy and reduce greenhouse gas emissions in the transportation sector. In addition, Delaware leads a robust partnership of stakeholders through the Clean Cities Coalition, a national effort to cut petroleum dependence throughout the United States. Delaware is also working to reduce emissions from electricity generation through a regional market-based cap and trade program called the Regional Greenhouse Gas Initiative. Large electricity generators must purchase allowances for every ton of carbon dioxide they produce. Proceeds generated from the purchase of the allowances are invested in energy efficiency, renewable energy, and weatherization programs in Delaware.

The following pages highlight progress to date and the continued efforts to reduce Delaware's greenhouse gas emissions.

CLIMATE MITIGATION: Reducing Greenhouse Gases in Delaware

Electric Vehicles in the First State

The Delaware Department of Natural Resources and Environmental Control (DNREC), the Office of Management and Budget (OMB), and the Delaware Department of Transportation (DelDOT) are working together to deploy electric vehicles and electric vehicle charging infrastructure

Jessica Quinn, DNREC



State employee plugging in a fleet electric vehicle for charging.

in the state. On average, a single electric vehicle will save 9,276 pounds of carbon dioxide emissions annually compared to a similar gasoline vehicle. In July 2016, OMB purchased two new electric Ford Focus cars for the state fleet along with charging stations to support these vehicles. OMB's Fleet Services will work to increase

the number of electric vehicles in the state fleet in the coming years.

In August 2016, DNREC installed two publicly available electric vehicle chargers at their State Street campus. These two public chargers added to the growing network of charging infrastructure throughout the state.

Propane Education Research Council



A propane powered school bus has lower emissions.

Cleaner Buses for Delaware's Children

In 2013, the **Delaware Department of Education** sponsored a statewide propane school bus pilot project to test the effectiveness and reliability of propane as a fuel for school buses. Propane school buses produce fewer greenhouse gas and particulate emissions than their diesel counterparts and also cost less to operate. In 2016, there were 48 propane-powered school buses transporting Delaware students throughout the state. An additional five propane buses have been ordered and will be on the road in 2017.

Reducing Emissions in the Agriculture Sector

Agriculture plays a critical role in the efforts to reduce greenhouse gases. Reducing fertilizer usage, using conservation tillage practices, and protecting agricultural lands all assist in reducing greenhouse gas emissions from agriculture. The **Delaware Department of Agriculture** is working with Delaware farmers to apply these types of practices in the field by promoting permanent land protection through the Delaware Agricultural Lands Preservation Program, supporting nutrient management by encouraging up-to-date nutrient management plans and programs, and supporting healthy trees and forests through the Forest Stewardship and Urban and Community Forestry Programs. Many of these programs have co-benefits that include improved water quality and soil health.

Delaware Department of Agriculture



A Felton, Delaware farm enrolled in the Delaware Ag Lands Program.

CLIMATE MITIGATION: Reducing Greenhouse Gases in Delaware

Weatherization for Delaware Homes

The **Delaware Department of Natural Resources and Environmental Control's** Weatherization Assistance Program has served more than 1,900 Delawareans over the past three years.



A weatherization professional installs insulation panels into the roof of a home.

The Weatherization Assistance Program serves low- and moderate-income Delawareans by providing weatherization services in their homes. Weatherization services include air sealing, insulation installation, furnace checks, and other services that reduce energy use and make homes more comfortable. On average, the program reduces energy consumption and helps families save up to 35%, or \$400 annually, on their energy bills. Energy efficiency is a key strategy for reducing greenhouse gas emissions.

Reducing Emissions in Paratransit Service

Each year, the **Delaware Transit Corporation (DTC)** provides nearly one million paratransit trips statewide for Delaware residents. DTC purchased five propane vehicles in 2014 as a pilot to determine the feasibility of operating the buses in paratransit service. The success of the pilot resulted in the purchase of 50 propane buses in 2016 and 55 buses in 2017. An additional 20 propane vehicles are planned for 2018,



DelDOT Secretary refuels a paratransit bus with propane.

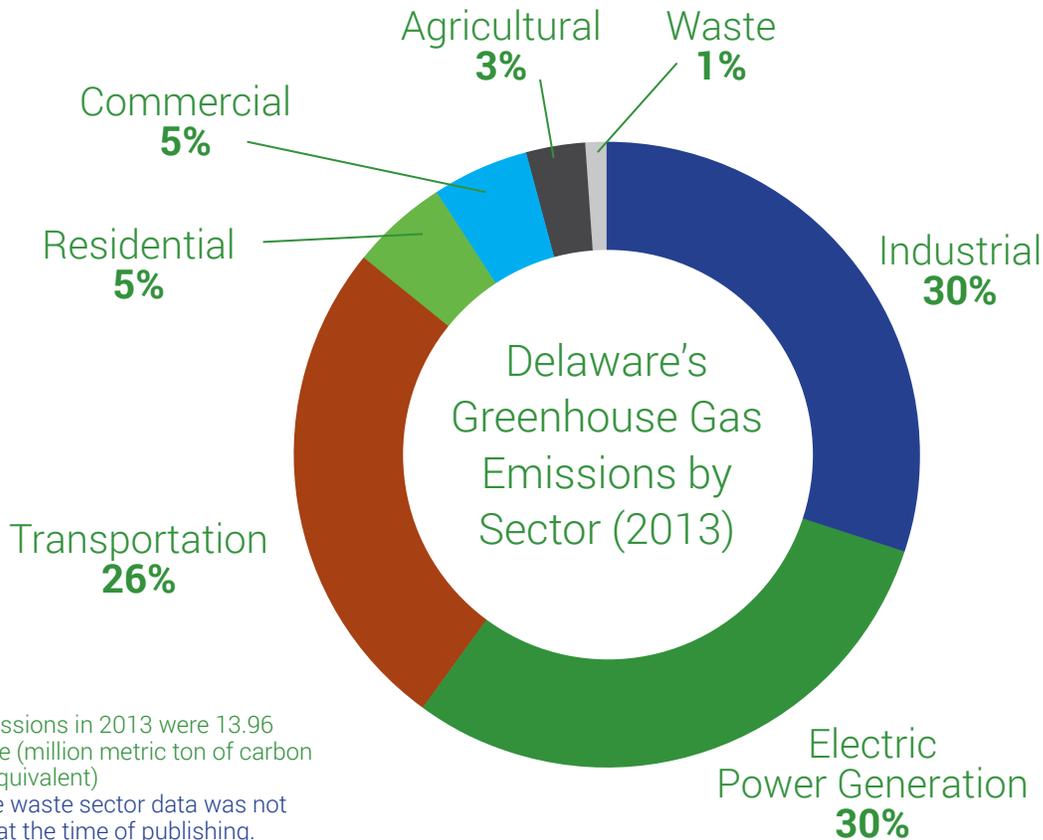
bringing the total to 130—approximately 45% of the total paratransit fleet.

Each propane vehicle will emit 91,000 fewer pounds of carbon dioxide compared to an equivalent gasoline model over the service life of five years. In addition, compared to gasoline, propane is a cleaner-burning fuel that produces 60% less carbon monoxide and fewer particulate emissions compared to gasoline. The propane-fueled buses also save money: DTC expects to operate propane buses over 1.5 million miles in 2017 at a cost savings of approximately \$1,000,000.

Cleaner Buses in Dover

The **Delaware Transit Corporation (DTC)** received a grant through the Federal Transit Authority to help fund the purchase of six fully electric transit buses that will operate in DTC's fixed route service in Dover. Fully electric buses are much quieter than diesel buses, and average 17.5 miles per gallon (MPG) equivalent vs. diesel at 4.0 MPG. Lifetime (12-year) fuel costs are \$81,000 per vehicle compared to \$378,000 for diesel. Cost savings will also be realized with the elimination of engine and exhaust-related maintenance.

CLIMATE MITIGATION: Reducing Greenhouse Gases in Delaware



Next Steps

Moving forward, new strategies need to be developed and implemented to ensure that increases in emissions from a couple of sectors do not derail previous and continued successes for reducing emissions overall. The chart above shows Delaware's emissions from the 2013 greenhouse gas inventory. (Data collected from 2013 is the most recent data available for greenhouse gas emissions.)

There are ample opportunities for reducing emissions in every sector. Special attention should be given to reductions or policies that can be deployed in the electric generation and industrial sectors. As an example, strategies to improve on-site fossil fuel efficiency for large industries would assist in lowering emissions in the industrial sector. Additionally, energy efficiency for commercial and residential and renewable energy will assist in lowering emissions from the power generation sector. Overall, steps

should be taken to solidify a long-term greenhouse gas mitigation target, seize opportunities to reduce emissions both internal and external to state government, and engage stakeholders to determine pathways forward that achieve emissions reductions that are both economically and environmentally beneficial.



Solar panels on a Delaware home.

CLIMATE ADAPTATION: Improving Delaware's Resilience

Progress to Date

Improving Delaware's resiliency to climate change encompasses a wide range of strategies

Over the past two years, significant progress has been made within state agencies to move from planning to implementation:

- 7 adaptation actions have been completed
- 103 adaptation actions are in progress

to strengthen the state's preparedness and ability to adapt to current and future climate impacts. Under Executive Order 41, eleven state agencies developed a total of 155 recommendations for climate adaptation actions. These agency-specific climate adaptation recommendations are included in

the *Climate Framework for Delaware*, released in December 2014.

State agencies have proven to be resourceful in finding ways to implement climate adaptation actions within their agencies. One of the innovative approaches to climate adaptation for state agencies is to focus on cross-cutting issues. Through the adaptation planning process, many agencies identified similar or related vulnerabil-



April Abel, DNREC

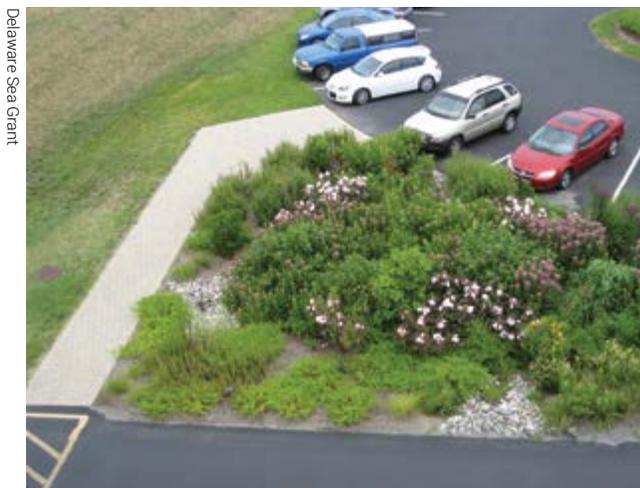
Keeping Delaware's lands healthy.

ities to impacts from increasing temperatures, more frequent extreme heat events, and increased flooding from extreme precipitation and sea level rise.

One of concerns shared by many state agencies is the impact of climate change on state assets and infrastructure. Hotter summers, sea level rise, and heavier rainfall contribute to the growing risk of damage to state assets and higher operating and maintenance costs. This is one of the issues being addressed through pilot projects that bring together teams of interagency partners to identify and share best practices and develop possible solutions.

Another innovative approach is the creation of the Strategic Opportunity Fund for Adaptation. Launched in 2016, this new grant program provides funding to help stimulate implementation of state agency climate adaptation activities related to their recommendations in the *Climate Framework for Delaware*. In its first year, ten projects from six state agencies were awarded grants for a wide range of adaptation actions.

Examples of progress are highlighted in the following pages. A detailed summary of progress toward climate adaptation recommendations is provided in the Adaptation Appendix.



Delaware Sea Grant

Green infrastructure is used to reduce flooding.

Reducing the Risks of Flooding and Sea Level Rise

Executive Order 41 directed state agencies to incorporate measures for adapting to increased flood heights and sea level rise in the siting and design of state structures and infrastructure. The order called for the state's sea level rise scenarios to be incorporated into long-range plans for infrastructure, land use, and capital spending. It also directed DNREC to periodically update sea level rise scenarios as new data emerge and to distribute guidance to state agencies.

Building on the work conducted by the Delaware Sea Level Rise Advisory Committee and the Delaware Floodplain and Drainage Advisory Committee, the Executive Order 41 Flood Avoidance Workgroup collaborated to develop a set of tools and guidelines to help state agencies comply with the flooding directives of the order. *Avoiding and Minimizing Risk of Flood Damage to State Assets* was approved by the Cabinet Committee on Climate and Resiliency and published in March 2016. This guide contains information and step-by-step instructions for state agencies undertaking projects to build or repair structures and infrastructure. To help state agencies more fully understand existing and future flood risk, a new statewide map depicting the combined impacts of storms and sea level rise was also developed as a companion to the guide (See Toolbox).

The risks of sea level rise have also been recognized in the state's long range plans. Delaware's Strategies for State Policies and Spending incorporated sea level rise as a factor in its Investment Level analysis and maps, and highlighted sea level rise as an issue. Sea level rise has also been incorporated into decision-making criteria such as the Open Space Protection Program and Clean Water Infrastructure Grants.

Toolbox

Flood Avoidance and Design Guidance for State Agencies:

This document provides a guide for state agencies to better understand long-term flood risk and take steps to reduce the likelihood that state assets will be damaged by flooding.

www.de.gov/floodavoidance

Flood Risk Adaptation Maps: As a companion to the Flood Avoidance and Design Guidance for State Agencies, this new map depicts areas that will be at risk to flooding in the future as a result of both sea level rise and storm surge combined. It is available for download as a GIS layer on Delaware's First Map website. <https://firstmap.delaware.gov/>

Sea level rise, increased precipitation, and increasing potential for flood damage to structures and infrastructure were cited in a great number of the "actionable adaptation actions" developed by state agencies. Progress is described in the following pages and in the Adaptation Appendix.

Joanna Wilson, DNREC



DNREC's DuPont Nature Center at the Mispillion Harbor Reserve.

Safeguarding Public Health & Safety

Environmental Public Health Tracking Network

Climate change poses risks to human health. Hotter summers, heavier rainfall, and more extreme weather events can affect people in many ways—from direct impacts related to heat and air quality, to indirect impacts related to food-, water-, and insect-borne diseases. To better monitor changes in public health, Delaware's **Division of Public Health** is developing an Environmental Public Health Tracking Network. The network is a tool that compiles health, exposure, and hazard information and data to improve our understanding of how environmental changes can affect the health of individuals and communities.

Climate-Ready Workforce

People who work outdoors, or in unprotected work sites, can be vulnerable to weather-related hazards, especially under conditions of extreme heat, humidity, poor air quality, flooding, and storms. The state of Delaware has initiated a pilot project that brings together several state agencies with outdoor workers, including park

staff, wildlife managers, health service workers, transportation and construction crews, and emergency personnel, to identify “best practices” to support the health and safety of these at-risk workers. The Climate-Ready Workforce is a coordinated effort to prepare state workers for changing climate conditions—and one of the first projects of its kind in the nation.

Advanced Search and Rescue Training

Storm surge and heavy precipitation cause flooding—a risk that may become more frequent and more severe as the effects of climate change intensify in Delaware. The **Delaware State Police** Aviation Section is increasing Delaware's preparedness for extreme weather events by providing advanced training for state troopers and members of the Delaware Air Rescue Team and strengthening the state's capability for emergency response.

James Pernol, DelDOT



The state's outdoor workers are vulnerable to the impacts of climate change.

Thinkstock



Advanced training prepares Delaware's emergency response team.

Delaware Sea Grant



Building Resilient Communities and Economies

Strengthening Local Comprehensive Plans

Many communities are beginning to consider the impacts of climate change in their local land use plans. Several state agencies, including the **Office of State Planning Coordination** and the **Department of Natural Resources and Environmental Control**, support Delaware communities through their planning processes. By providing information and expertise on flood management and climate impacts from heat

Karen Horton, Delaware Housing Authority



Energy efficient housing makes homes healthier and safer for residents.

Toolbox

Green Infrastructure Primer. Green infrastructure is a nature-based approach to addressing environmental challenges, including adapting to the impacts of climate change. The Green Infrastructure Primer developed by the DNREC Division of Energy and Climate provides an introduction to green infrastructure projects and their benefits, as well as information on selecting, building, and maintaining them. This document provides an overview of the benefits of green infrastructure, an introduction to site-scale and landscape-scale projects, and a complete list of resources. www.de.gov/greeninfrastructure

and sea level rise, state agencies and other partners can help local planners and citizen groups strengthen their goals to build resilient and thriving communities and economies. When focused planning efforts are needed, **Delaware Coastal Programs** and the **Division of Energy and Climate** can provide grants and technical assistance.

Improving Energy Efficiency in Housing and Downtown Districts

Building heating and cooling costs have a significant impact on low-income residents, homeowners, and businesses. The **Delaware State Housing Authority** is providing incentives to help improve energy efficiency in qualified rental housing projects. These improvements will save money on energy bills while also reducing energy use and lowering greenhouse gas emissions. Energy improvements make homes healthier and safer for vulnerable residents, including children, elderly citizens, and people with health conditions. In addition, the authority is making improvements to its Downtown Development District Grant Program by adding incentives for projects that achieve the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) certification. Promoting sustainable building practices improves community resilience to climate change impacts while also providing economic benefits.

Improving Resilience in State Assets and Infrastructure

Preparing for Sea Level Rise on our State Highways

State Route 9 is a critical transportation corridor providing access to the state's natural areas and linking communities along the Delaware Bayshore. Due to its proximity to the bay and surrounding wetlands and waterways, SR9 is vulnerable to tidal flooding, coastal storms, and sea level rise. **The Delaware Department of Transportation** has begun a comprehensive corridor evaluation to develop strategies for long-term use and maintenance of the roadway. In a related project, DeIDOT is working to identify nature-based approaches to increasing the resilience of State Route 1 along the state's Atlantic coast. The goal is to compare options for green infrastructure, as well as "green and gray" designs and nonstructural solutions.

Greening Coastal Access

Providing public access for fishing and boating is an important asset in a coastal community. But paved parking areas can intensify summer heat and add to problems with local flooding and stormwater runoff during rainy weather. In Bowers Beach, the **Department of Natural Resources and Environmental Control** is using state and federal grant funds to renovate a



April Abel, DNREC

Maintaining access and infrastructure in Delaware's state parks.

state-owned parking lot by converting two acres into public green space, adding shade trees and a vegetated buffer. The project will reduce tidal flooding, lessen heat impacts, and add an amenity for the local community. The project also demonstrates green infrastructure techniques that can provide nature-based solutions for other public facilities.

DNREC



Installing a living shoreline along Lewes Canal.



DNREC

Vegetated swales are a nature-based technique to manage stormwater runoff.

Protecting and Monitoring Natural Resources

Identifying Ecosystem Indicators

Delaware's shorelines and wetlands provide critical habitat for migratory waterfowl and shorebirds and also support the state's recreation and tourism economy. Changes in temperature,

sea level, and other climate conditions will affect these important natural resources. The

Delaware National Estuarine Research Reserve

is developing a selection of biological "indicators" to track changes in natural ecosystems and wildlife species. The project will include a citizen science component to engage volunteers, visitors, and school children in helping to monitor environmental



Kerri Vardich, DNREC

Protecting Delaware's natural areas includes planning for a changing climate.

changes. Tracking environmental changes over time will help inform management decisions to support protection of these vital habitats.

Planning for Climate Change

The **Department of Natural Resources and Environmental Control** is responsible for the protection and management of the state's wildlife and natural resources. Maintaining healthy habitats is challenged by current and future impacts of climate change. Resource managers are updating management planning efforts to consider changes in temperature, precipitation, and sea level rise that can affect Delaware's natural heritage. The state's Wetlands Management Plan and Wildlife Action Plan have both been revised to prepare for changing management needs. Delaware Coastal Programs has also



DNREC

Identifying the biodiversity of Delaware's lands.

produced site-specific adaptation plans for the Delaware National Estuarine Research Reserve sites at St. Jones and Blackbird Creek Reserves.

Designing Climate-Smart Restoration Projects

Coastal storms and rising seas are changing shorelines and coastal habitats throughout Delaware. The **Division of Fish and Wildlife** is preparing for these changes by developing new ways to design and manage coastal impoundments. Coastal impoundments serve a number of purposes by providing habitat for migratory waterfowl and shorebirds, as well as recreation opportunities and even mosquito control. By creating an 86-acre wetland complex at the Ted Harvey Wildlife Area, the "climate-smart" coastal impoundments will provide critical habitat and

allow freshwater species to migrate inland over time. Other adaptation efforts include the installation of a living shoreline project on Blackbird Creek and restoration designs for Mispillion Harbor, Milford Neck marsh, and Port Mahon shoreline.



Chris Bennett, DNREC

The Delaware Bay is vital to horseshoe crabs.

SUPPORTING LOCAL COMMUNITIES

Local governments play an important role in preparing and responding to climate change because they have responsibility for land use decisions, building codes, and infrastructure such as water and wastewater systems. To help meet this challenge, Executive Order 41 specifically called upon state agencies to assist municipal and county governments in taking climate action.

The towns of **Lewes, Delaware City, Bowers Beach, Fenwick Island, Milton, and South Bethany** have assessed their vulnerability to sea level rise, coastal flooding, and/or climate change and developed actions that can be taken

These plans were made possible through a variety of grant funding, technical assistance, and partnerships from state agencies, including DNREC's Delaware Coastal Programs, DNREC's Environment Finance Branch, and the University of Delaware Sea Grant College.

to increase their resiliency to these threats. The town of **Slaughter Beach** is conducting an assessment now.

The towns of **Frederica** and **Little Creek** used their comprehensive plans as an opportunity to assess and plan for sea level rise. Their updated comprehensive plans highlight flooding issues their towns face today and how climate change may exacerbate flood risk in the future.

They also developed future goals with an eye to minimizing flood risks to infrastructure and homes in the future. These plans can serve as a model for other communities.

Other towns are taking more specific actions to protect infrastructure against climate impacts. The town of **Bethany Beach** obtained grant funding to help it better monitor its drinking water system for saltwater intrusion, and the city of

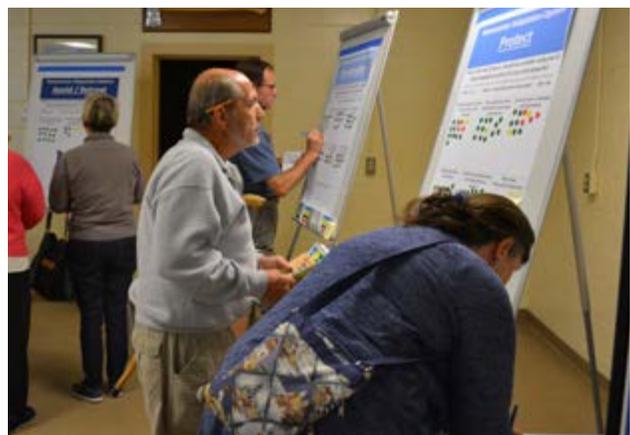


Joanna Wilson, DNREC

Delaware City has incorporated climate change into their hazard mitigation plan.

Seaford conducted a sea level rise vulnerability study for its wastewater treatment facility. The town of **Slaughter Beach** conducted a wastewater management feasibility study—a proactive effort to ensure continued wastewater service as sea levels rise and cause septic systems to no longer function properly.

Delaware's towns and cities are also increasingly incorporating green infrastructure into their plans for flood abatement, water quality improvements, and climate resiliency. For example, the city of **New Castle** is investigating the feasibility of installing a living shoreline along the Delaware River, and the town of **Laurel** is using green infrastructure along Broad Creek as part of a comprehensive plan to drive economic investment and reduce flood risk.



Kelly Valenok, DNREC

A public workshop in Slaughter Beach.

MOVING FORWARD

Preparing and responding to the threats of climate change requires decades, not months. While Delaware state agencies have made significant progress, much remains to be accomplished to ensure that Delaware is resilient to the impacts of climate change and does its part to reduce greenhouse gases in the atmosphere. Building upon efforts already underway in state agencies, the state should consider these actions to continue moving forward:

- Engage citizens and businesses in climate planning and strategy.
 - Strengthen the state's commitment to a statewide greenhouse gas reduction target.
 - Ensure tracking and reporting of progress toward the current greenhouse gas reduction goal of 30 percent reduction by 2030 from a 2008 baseline.
 - Develop a long-term reduction target to bring Delaware's mitigation goal in line with national and international climate commitments.
 - Develop strategies and a plan for meeting the target.
 - Develop a climate action governance structure that provides opportunity and accountability.
- Expand the Cabinet Committee on Climate and Resiliency to include community, business, and academic representatives to ensure strong citizen and stakeholder engagement.
 - Identify roles and responsibilities for developing goals, action plans, and tracking and reporting mechanisms.
- Continue to develop and improve tools and resources for strengthening the state's resiliency to climate change.
 - Continue efforts to provide training, technical assistance, and funding opportunities to communities and businesses.
 - Share best practices within Delaware and with other state, regional, and national partners.

Delaware's progress on climate change action is a reflection of the commitment of state government leaders and agency staff working with local communities and partner organizations to make Delaware a more resilient and prosperous state for the citizens we serve.

The state's ongoing efforts will continue to build on these accomplishments, as we reach out and engage stakeholders to help meet the challenges of climate change.



DNR/EC

Acknowledgments

Cabinet Committee on Climate and Resiliency

Department of Agriculture



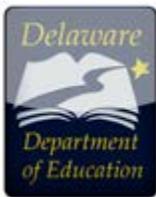
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Adaptation Appendix

Produced by DNREC Division of Energy and Climate

**Approved by the Cabinet Committee on Climate
and Resiliency on 12/12/16**

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Since 2014, Delaware state agencies have been working together to put these recommendations into action. “Climate Action in Delaware: 2016 Progress Report” highlights the actions and accomplishments made by Delaware’s state government to curb greenhouse gas emissions and adapt to the impacts of climate change.

This **Adaptation Appendix**, a companion document to the Progress Report, provides a summary of progress for each climate adaptation recommendation developed by the eleven Delaware state agencies. It can be utilized to gauge progress and to determine where resources may be needed in the future to stimulate progress toward a more resilient Delaware. The information in this appendix will help inform the State’s actions to continue progress.

Climate Action in Delaware:

Adaptation Appendix

Appendix to the Climate Action in Delaware: 2016 Progress Report

The **Adaptation Appendix** provides a report on the progress of the 155 adaptation recommendations made by state agencies through Executive Order 41. The Appendix presents progress in two separate sections for ease of use:

- Recommendation Progress by Agency:
 - Includes current status and progress notes
 - Identifies a topic area for each recommendation
- Recommendation Progress by Topic:
 - Public Health and Safety
 - Natural Resources
 - State Assets and Infrastructure
 - Resilient Communities and Economies

In both sections, each recommendation is categorized as completed, in progress, not begun, or not reported. “Completed” indicates that the recommendation has been implemented. “In progress” indicates recommendations that are currently underway and/or are on-going. This includes many recommendations that by their very nature will be continuous efforts. “Not begun” indicates that the recommendation has not undergone any implementation to date. “Not reported” indicates those recommendations where status and/or progress were not available by the time of publication. Many recommendations also contain a brief description of the progress to date. Note that some agency recommendations refer to specific divisions (shown in brackets) for implementation of those adaptation strategies.

Acknowledgements

This document was prepared by the Delaware Department of Natural Resources and Environmental Control, Division of Energy and Climate. We would like to acknowledge all agencies that have contributed to this effort. The agency's acronyms appear next to their name; agency acronyms will be used throughout the rest of the document.

Delaware Department of Agriculture (DDA)

Delaware Department of Education (DOE)

Delaware Department of Health and Social Services (DHSS)

Delaware Department of Natural Resources and Environmental Control (DNREC)

Delaware Department of Safety and Homeland Security (DSHS)

Delaware Department of State (DOS)

Delaware Department of Transportation (DelDOT)

Delaware Economic Development Office (DEDO)

Delaware State Housing Authority (DSHA)

Office of Management and Budget (OMB)

Office of State Planning Coordination (OSPC)

Recommendation Actions By Agency

Agency	Executive Order 41 Adaptation Recommendations	Topic Area	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
Department of Agriculture (DDA)				
DDA	Evaluate response to increased susceptibility to forest wildfires by evaluating policies related to risk management, fire prevention, and fire management	Natural Resources		Providing programs, training and grants aimed at fire prevention. Educated over 21,000 people in fiscal year 2015. Provided wildland fire training in cooperation with Delaware State Fire School
DDA	Evaluate policies related to nutrient management, pesticide application, risk assessment, and cropping practices that may be affected by potential increases in the number of hot, dry days per year	Natural Resources		Providing education, training and technical assistance through nutrient management, pesticide certification, and other programs. Operates Delaware Rural Drip Irrigation Program in cooperation with Delaware Economic Development Office
DDA	Educate landowners and agricultural operators to address and mitigate loss of land due to sea level rise	Natural Resources		On-going work with Delaware Cooperative Extension, including education sessions during Delaware Ag Week and support of the LEADelaware leadership program
DDA	Educate landowners and agricultural operators on the effects of saltwater intrusion resulting from sea level rise	Natural Resources		On-going work with Delaware Cooperative Extension, may include new partnership opportunities with the US Department of Agriculture Climate Hub, a regional network for outreach and education
Department of Education (DOE)				
DOE	Improve guidelines for siting of school facilities	State Assets & Infrastructure		Collaborating with the Office of State Planning Office Coordination and school district facility staff
DOE	Promote the incorporation of cleaner school buses	State Assets & Infrastructure		48 propane buses currently transport students throughout the state and 5 more will be on the road in 2017
DOE	Promote Leadership in Energy and Environmental Design (LEED) or Green Ribbon school designs	State Assets & Infrastructure		No progress to date
Department of Health and Social Services (DHSS)				
DHSS	Develop health impact assessment tools [Public Health]	Public Health & Safety		Tools are currently available for assessment of health impacts. The Centers for Disease Control (CDC) and World Health Organization (WHO) have assessment tools that can be used
DHSS	Establish communication link to the Division of Developmental Disability clients who live on their own	Public Health & Safety		Established a Facebook page for the Disaster Coordinator to share information, resources, and current emergency/disaster information
DHSS	Advocate for an expansion of vector surveillance programs [Public Health]	Public Health & Safety		Collaborating with the Department of Natural Resources and Environmental Control mosquito control branch
DHSS	Monitor new and emerging diseases related to climate change [Public Health]	Public Health & Safety		Developed plans to respond to Ebola and Zika viral diseases
DHSS	Evaluate benefits and costs of developing environmental public health tracking system [Public Health]	Public Health & Safety		Strategic Opportunity Fund for Adaptation grant will initiate planning for Environmental Public Health Tracking System
DHSS	Incorporate climate change impacts information in Division of Public Health outreach materials [Public Health]	Public Health & Safety		Information sheets are on the Division's website

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DHSS	Develop outreach materials on climate change and health [Public Health]	Public Health & Safety		Information sheets are on the Division's website
DHSS	Provide training for Division of Public Health staff on climate change impacts and risks to health [Public Health]	Public Health & Safety		Participating in the Climate-Ready Workforce Pilot Project
DHSS	Advocate for an expansion of air quality monitoring [Public Health]	Public Health & Safety		The Division of Public Health has and will continue to support efforts for cleaner air
DHSS	Identify funding opportunities for climate change and public health [Public Health]	Public Health & Safety		The Division of Public Health received a fellowship to support the Environmental Public Health Tracking Network
DHSS	Expand medicine refill window	Public Health & Safety		Current process allows for early refill requests prior to forecasted storm events
DHSS	Implement a statewide Smart-911 system	Public Health & Safety		Progress is on-going to transition county and municipal systems to access Smart-911
DHSS	Remove potential hazards from low-lying areas prior to a major event	State Assets & Infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DHSS	Designate State Service Centers as critical facilities	State Assets & Infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DHSS	Provide training and education on climate preparedness and adaptation	Resilient Communities & Economies		Participating in the Climate-Ready Workforce Pilot Project
DHSS	Evaluate feasibility of monitoring private coastal drinking water wells for salt water intrusion [Public Health]	Natural Resources		No progress to date
DHSS	Examine ways to track new and emerging diseases [Public Health]	Public Health & Safety		No progress to date
DHSS	Evaluate public health infrastructure and resources for data collection and analysis [Public Health]	State Assets & Infrastructure		No progress to date
DHSS	Evaluate Geographic Information System (GIS) mapping of vulnerable populations and disease patterns [Public Health]	Public Health & Safety		No progress to date
DHSS	Evaluate integration of Division of Public Health data sources [Public Health]	Public Health & Safety		No progress to date
DHSS	Review and update Division of Public Health programs for climate change impacts [Public Health]	Public Health & Safety		No progress to date
DHSS	Advocate integrating climate change with local activities [Public Health]	Public Health & Safety		No progress to date
DHSS	Discuss feasibility of requiring contingency plans from managed care organizations	Public Health & Safety		No progress to date
DHSS	Advocate for additional resources for the Low-Income Home Energy Assistance Program (LIHEAP)	Resilient Communities & Economies		No progress to date

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DHSS	Create a statewide climate resiliency educational campaign	Resilient Communities & Economies		No progress to date
DHSS	Consider creating mobile State Service Centers	Public Health & Safety		No progress to date
DHSS	Identify sites to be used as designated cooling and heating centers	State Assets & Infrastructure		No progress to date
Department of Natural Resources and Environmental Control (DNREC)				
DNREC	Develop model ordinance to secure home heating oil and propane tanks [Waste and Hazardous Substances]	State Assets & Infrastructure		Identified several authoritative sources for model ordinances
DNREC	Coordinate on the use of updated floodplain maps to assist with flood mitigation activities [Watershed Stewardship]	Resilient Communities & Economies		Floodplain maps for all three counties have been completed
DNREC	Evaluate voluntary and regulatory strategies to ensure that Delaware emission sources are well controlled [Air Quality]	Public Health & Safety		On-going efforts to evaluate emission control strategies
DNREC	Incorporate climate change into land stewardship decisions at the Delaware National Estuarine Research Reserve (DNERR) [Coastal Programs]	Natural Resources		On-going efforts to implement an Adaptation Plan for Delaware National Estuarine Research Reserve (DNERR) properties. Completed Living Shoreline demonstration site at Blackbird Creek Reserve
DNREC	Increase climate change-focused research and monitoring on Delaware National Estuarine Research Reserve (DNERR) land [Coastal Programs]	Natural Resources		On-going research and monitoring projects include carbon storage and tidal marsh resilience. Received a Strategic Opportunity Fund for Adaptation grant to develop ecosystem indicators to monitor climate change
DNREC	Develop a climate change adaptation plan for the Delaware National Estuarine Research Reserve (DNERR) [Coastal Programs]	Natural Resources		Evaluating recommendations in the completed Delaware National Estuarine Research Reserve (DNERR) adaptation plan. Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DNREC	Provide technical assistance to Delaware communities for climate change adaptation projects [Coastal Programs]	Resilient Communities & Economies		Awarded coastal resiliency planning grants to seven communities in 2015 and re-launched the grants program as the Resilient Community Partnership in 2016
DNREC	Incorporate Executive Order 41 in the Federal Consistency Program's enforceable coastal management policies [Coastal Programs]	Natural Resources		Policies are currently in draft form and will be finalized and incorporated into the program's policy update
DNREC	Increase educational awareness of climate change in Delaware [Coastal Programs]	Resilient Communities & Economies		On-going efforts to provide education and public outreach through presentations, programs and trainings, including science conferences, teacher professional development workshops, and interpretive exhibits at the Delaware National Estuarine Research Reserve (DNERR) locations
DNREC	Aid local governments in planning for climate change [Energy and Climate]	Resilient Communities & Economies		Provided technical support to local communities to integrate climate change into local Comprehensive Land Use plans. On-going participation in the Preliminary Land Use Service and training for local government and community groups

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DNREC	Ensure effective energy code compliance [Energy and Climate]	State Assets & Infrastructure		Staff hired to meet on-going compliance goals; anticipated updated codes in summer 2017. Also developing training for Home Energy Rating System (HERS) to launch in 2017
DNREC	Improve energy reliability and response to emergency events [Energy and Climate]	Resilient Communities & Economies		Inter-agency meetings are underway; the Energy Assurance Plan is expected to be updated by summer 2017
DNREC	Design and implement restoration activities to slow loss of coastal habitats [Fish and Wildlife]	Natural Resources		Restoration project design, permitting, and contracting process is underway for projects in Mispillion Harbor, Milford Neck, and Port Mahon
DNREC	Discuss expansion of invasive species control [Fish and Wildlife]	Natural Resources		Controlling some invasive species on state wildlife areas. Controlling phragmites on private and public lands
DNREC	Prepare to manage different fish and wildlife species and habitat [Fish and Wildlife]	Natural Resources		Continually monitoring new species arrivals and declining current species
DNREC	Evaluate strategies for increasing native pollinator habitat on public and private lands [Fish and Wildlife]	Natural Resources		Pollinator habitats are being taken into consideration in all restoration activities on public wildlife areas and through consultation with private landowners
DNREC	Consider relocating Division of Fish and Wildlife facilities [Fish and Wildlife]	State Assets & Infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project. Relocated Aquatic Education Center based on Sea Level Rise models
DNREC	Adapt coastal impoundments and ponds [Fish and Wildlife]	Natural Resources		Restoration efforts initiated at Ted Harvey Conservation Area and Little Creek Wildlife Area impoundments. Design and engineering initiated at Augustine Wildlife Area
DNREC	Prepare for expanded mosquito production season [Fish and Wildlife]	Public Health & Safety		Zika transmissions in Delaware recognized as a possibility
DNREC	Prepare for increased nuisance wildlife complaints [Fish and Wildlife]	Natural Resources		Continually preparing for more complaints about the increase in human population and development
DNREC	Prepare for increased number of fish kills and harmful algal blooms [Fish and Wildlife]	Natural Resources		Continually preparing for more complaints about the increase in human population and development
DNREC	Adapt building processes [Parks and Recreation]	State Assets & Infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DNREC	Educate staff and the public [Parks and Recreation]	Resilient Communities & Economies		Participating in the Climate-Ready Workforce Pilot Project
DNREC	Evaluate need for improving spill containment requirements for aboveground storage tanks and hazardous waste storage areas [Waste and Hazardous Substances]	State Assets & Infrastructure		One identified problem facility has been remediated. The Hazardous Waste Program is continually re-evaluating its requirements for technological changes
DNREC	Update and implement Debris Management Section of the State Emergency Operations Plan [Waste and Hazardous Substances]	Public Health & Safety		Plan update process is underway

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DNREC	Assist suppliers of potable water (from surface water intakes) in developing strategies to protect water intakes from flooding and salt water [Water]	State Assets & Infrastructure		The Water Supply Coordinating Council is routinely tracking water use and threats to water shortages
DNREC	Assist suppliers and users of potable water (from wells) to develop strategies for protection of wells from flooding and salt water [Water]	State Assets & Infrastructure		On-going consideration of long-term risk
DNREC	Issue emergency waivers for repairs to infrastructure, environmental resources, and property resulting from storms and flooding events in regulated wetlands and subaqueous lands [Water]	Resilient Communities & Economies		Waiver procedures currently exist
DNREC	Evaluate need for revisions to technical specifications for vegetative practices [Watershed Stewardship]	Natural Resources		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications
DNREC	Evaluate need for revisions to technical standards and specifications for stormwater management [Watershed Stewardship]	State Assets & Infrastructure		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications.
DNREC	Evaluate need for revisions to stormwater regulation [Watershed Stewardship]	State Assets & Infrastructure		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications
DNREC	Evaluate changes to wetland and water quality monitoring [Watershed Stewardship]	Natural Resources		Completed field assessments in Smyrna and Appoquinimink watersheds. Monitoring coastal wetland changes and quantifying groundwater storage capacity
DNREC	Evaluate design specifications and maintenance practices for rain gardens and other small-scale stormwater systems [Watershed Stewardship]	State Assets & Infrastructure		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications
DNREC	Discuss additional support for living shorelines to support shoreline management and protection [Watershed Stewardship]	Natural Resources		DNREC co-chairs the Delaware Living Shoreline Committee
DNREC	Plan for increasing demands for shoreline management and beach preservation [Watershed Stewardship]	Natural Resources		Preliminary efforts to identify additional funding sources. Efforts to identify additional sand supplies underway
DNREC	Evaluate needs for channel maintenance [Watershed Stewardship]	Natural Resources		Delaware Waterways Management and Financing Advisory Committee's recommendations for sustainable and dedicated funding for waterway management operations are being considered
DNREC	Consider incorporating equipment siting requirements into air permitting process [Air Quality]	State Assets & Infrastructure		No progress to date
DNREC	Build capacity to conduct climate change-focused air quality modeling [Air Quality]	Public Health & Safety		No progress to date but will hire a modeling expert
DNREC	Increase climate change-focused research and modeling [Air Quality]	Resilient Communities & Economies		The Division of Air Quality is developing a work plan for proposed ozone research

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DNREC	Develop model building code [Energy and Climate]	State Assets & Infrastructure		No progress to date
DNREC	Prepare to restore riparian buffers [Fish and Wildlife]	Natural Resources		Conducting a detailed analysis to determine the priority sites for restoration on state wildlife areas
DNREC	Prepare to restore ecological integrity of unique ephemeral wetlands [Fish and Wildlife]	Natural Resources		No progress to date
DNREC	Develop plan for access [Parks and Recreation]	State Assets & Infrastructure		No progress to date
DNREC	Assist local governments in developing strategies to protect wastewater treatment facilities from flooding [Water]	State Assets & Infrastructure		No progress to date
DNREC	Update mapping of tidal wetland jurisdictional boundaries [Water]	Natural Resources		No progress to date
DNREC	Study how to prioritize funding options to give preference to areas with effective practices for drainage and floodplain management [Watershed Stewardship]	Resilient Communities & Economies		No progress to date
DNREC	Evaluate the adequacy of drainage infrastructure [Watershed Stewardship]	State Assets & Infrastructure		No progress to date due to lack of funding
DNREC	Update floodplain maps with consideration of climate change dynamics [Watershed Stewardship]	Resilient Communities & Economies		No progress to date
Department of Safety and Homeland Security (DSHS)				
DSHS	Develop operational plans to adapt to sea level rise	Resilient Communities & Economies		Awarded Strategic Opportunity Fund for Adaptation grant to support advanced search and rescue training. Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DSHS	Consider alterations to policies regarding worker safety in an increased temperature environment	Public Health & Safety		Reviewed policies related to worker safety and made alterations that limit how long employees are allowed to work in extreme temperatures including review of K9 policies. Participating in the Climate-Ready Workforce Pilot Project
DSHS	Conduct research on the potential effects of climate change on structures and vehicles	State Assets & Infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DSHS	Make programmatic adjustments to adapt to increasing levels of precipitation, flooding, and sea level rise	Resilient Communities & Economies		Transitioning Delaware State Police's and Capitol Police's patrol vehicles to SUVs with higher clearance to address sea level rise and additional snowfall. Participating in the Climate Mitigation and Adaptation Planning Pilot Project
Department of State (DOS)				
DOS	Evaluate and promote workplace options for employees	State Assets & Infrastructure		Staff have the option to utilize flexible or compressed schedules

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DOS	Complete mapping of cultural resources into Geographic Information System (GIS)-based system [Historical and Cultural Affairs]	State Assets & Infrastructure		Strategic Opportunity Fund for Adaptation grant received to implement this project
DOS	Ensure preparedness for threatened sites [Historical and Cultural Affairs]	State Assets & Infrastructure		Employing a readiness system for weather-related events which includes preparedness measures for specific sites
DOS	Assess financial impact of any new rates [Public Advocate]	Resilient Communities & Economies		Continually analyzing the financial impact for all newly established rates
DOS	Review Commission options to help reduce greenhouse gases and mitigate climate change [Public Service Commission]	Resilient Communities & Economies		Currently reviewing options to address climate change mitigation within the organization and outside of the agency. Have formed recommendations
DOS	Review potential for infrastructure enhancements that can help mitigate climate change exposure [Public Service Commission]	State Assets & Infrastructure		Utilities have made assessments of infrastructure enhancements and modifications in regards to reliability and storm response
DOS	Evaluate alternate utility rate structures [Public Service Commission]	Resilient Communities & Economies		Researching alternative rate designs for electric utilities to equitably incorporate distributed energy resources
DOS	Establish protocols to protect outdoor workers	Public Health & Safety		Reviewing current procedures in place and determining if any modifications are necessary
DOS	Conduct vulnerability assessments [Historical and Cultural Affairs]	Resilient Communities & Economies		No progress to date
DOS	Evaluate costs and benefits of creating historic preservation tax credit for adaptation and resiliency [Historical and Cultural Affairs]	State Assets & Infrastructure		No progress to date but are scheduled to conduct a comprehensive review of the Historic Preservation Tax Credit program in January 2018
DOS	Publish cultural resource management plans [Historical and Cultural Affairs]	State Assets & Infrastructure		No progress to date but aim to address the federally-mandated statewide historic preservation plan in January 2017
DOS	Broaden utility review of climate change initiatives to include non-regulated entities [Public Service Commission]	State Assets & Infrastructure		The Energy Efficiency Advisory Council will only deliberate on plans brought forth by the regulated utilities
DOS	Review utility tariff approaches to minimizing greenhouse gases [Public Service Commission]	Resilient Communities & Economies		Researching rate designs to equitably incorporate distributed energy resources for electric utilities
DOS	Coordinate review of storm response procedures with all regulated utilities [Public Service Commission]	State Assets & Infrastructure		No progress to date
DOS	Create energy baseline for leased sites	State Assets & Infrastructure		Compiling energy consumption information
DOS	Create energy baseline for office equipment	State Assets & Infrastructure		Compiling energy consumption information
DOS	Ensure new building compliance	State Assets & Infrastructure		No progress to date
DOS	Ensure financed building compliance	State Assets & Infrastructure		No progress to date

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DOS	Promote personal energy use awareness	Resilient Communities & Economies		No progress to date but there are plans to enact this in conjunction with the energy baseline implementation
DOS	Include protected classes and undocumented communities in outreach efforts [Human Relations Commission]	Resilient Communities & Economies		
DOS	Increase amount of technical staff [Public Advocate]	State Assets & Infrastructure		
DOS	Enhance outreach to utility consumers [Public Advocate]	Resilient Communities & Economies		
DOS	Mitigate below-grade facilities	State Assets & Infrastructure		

Delaware Department of Transportation (DeIDOT)

DeIDOT	Continue development of geospatial data sets that can help identify vulnerable areas and help estimate the impact of reasonably anticipated events	Resilient Communities & Economies		The vulnerability assessment and scenario base analysis are underway. Completed data collection for Hazus tool for conducting cost and impact assessments. Continually making improvements and overcoming barriers
DeIDOT	Conduct comprehensive assessment of state roadway risks and assets	State Assets & Infrastructure		Received a Strategic Opportunity Fund for Adaptation grant to support a comprehensive corridor evaluation of State Route 9
DeIDOT	Integrate climate resiliency into project development, traffic, bridge, and highway design	State Assets & Infrastructure		The Bridge Design Manual has added wording associated with climate change and sea level rise in consideration when scoping a project
DeIDOT	Build transportation enhancements (pathways, trails, roadscapes, etc.) to accommodate impacts of climate change	State Assets & Infrastructure		Received a Strategic Opportunity Fund for Adaptation grant to develop approaches to increasing resilience on State Route 1, including use of green infrastructure techniques. Current work for trails and pathways utilizing flooding and sea level rise tools. Strategic Implementation Plan for Climate Change, Resilience and Sustainability to be completed in 2016
DeIDOT	Identify and assess existing chronic flooding and erosion problems caused by sea level rise, frequent storms, tidal forces, subsidence, and aging infrastructure	Resilient Communities & Economies		On-going review of infrastructure inventory, improving databases to monitor condition of roadways and bridges. Added flood monitoring capabilities for roadways for ten sites. The Weather and Flooding Strategic Plan has been completed and was approved. An Implementation Plan based on the Strategic Plan findings and recommendations is starting
DeIDOT	Reevaluate stormwater management approaches	State Assets & Infrastructure		Engaging with research on the cost of climate change
DeIDOT	Incorporate climate impacts into cost-effective investment in infrastructure	State Assets & Infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DeIDOT	Evaluate obtaining insurance to assist in recovery from catastrophic events	State Assets & Infrastructure		Considering the development of a Transportation Risk Map and strategies for disaster risk
DeIDOT	Evaluate and adjust worker safety guidelines	Public Health & Safety		Participating in the Climate-Ready Workforce Pilot Project
DeIDOT	Provide training to improve worker knowledge	Public Health & Safety		Participating in the Climate-Ready Workforce Pilot Project

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DeIDOT	Evaluate driving restrictions for air quality events	Public Health & Safety		The Division of Maintenance & Operations currently refrains from mowing operations on Red Ozone Alert Days
DeIDOT	Develop revised maintenance schedules in response to air quality	Public Health & Safety		Participating in the Climate-Ready Workforce Pilot Project
DeIDOT	Adjust transit service in emergencies	State Assets & Infrastructure		The Delaware Transit Corporation Division adjusts service levels when required during weather events. Adjustments include reducing, modifying and/or suspending service depending on the severity and timing of the event
DeIDOT	Reevaluate emergency response protocols	Resilient Communities & Economies		Participating in the Climate-Ready Workforce Pilot Project. Provided awareness training to the Department's Strategic Leadership Team. Security projects at maintenance yards are underway.
DeIDOT	Support local governments with land use assessment tools	Resilient Communities & Economies		Received a Strategic Opportunity Fund for Adaptation grant to improve the Traffic Impact Study process. Supported the development of a toolkit for community resilience produced by the University of Delaware's Institute for Public Administration. Strategic Implementation Plan for Climate Change, Resilience and Sustainability to be completed in 2016
DeIDOT	Evaluate low-emission vehicle deployment	State Assets & Infrastructure		Participating in Delaware Clean Cities. Piloted propane-fueled F250 trucks in the fall of 2015
DeIDOT	Evaluate alternative energy technology in facilities	State Assets & Infrastructure		Attempting to meet Leadership in Energy and Environmental Design (LEED) Silver Certification requirements for new facilities. Utilizing waste oil heaters in some locations
DeIDOT	Evaluate materials used to reduce the impacts of stormwater runoff	State Assets & Infrastructure		No progress to date. Research lab and modelling capabilities needed
DeIDOT	Explore new pavement technology	State Assets & Infrastructure		No progress to date. Impacts to traffic and revenues needed
Delaware Economic Development Office (DEDO)				
DEDO	Advocate for adoption of state recommendations for climate change adaptation	Resilient Communities & Economies		Created new web page to highlight programs related to Executive Order 41
DEDO	Provide and market public transportation to attractions throughout the state	State Assets & Infrastructure		Promotes public transportation and ride sharing to state-sponsored events
DEDO	Alter the standard for weekly rentals	State Assets & Infrastructure		
DEDO	Promote economic growth and development in climate-resilient locations	Resilient Communities & Economies		The "Sites & Buildings" page on the Delaware Economic Development Office website allows visitors to search for available brownfield sites
DEDO	Assist in bolstering resilience in the agriculture sector	Natural Resources		In conjunction with the Department of Agriculture, the Delaware Economic Development Office actively promotes the Delaware Rural Irrigation Program

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DEDO	Educate and assist businesses and industry in adapting to climate change	Resilient Communities & Economies		Actively markets educational events such as the Department of Natural Resources and Environmental Control's Division of Energy & Climate's 'Fueling the Future' ride-and-drive clean transportation conference
DEDO	Advocate for the reuse of existing industrial brownfield sites	State Assets & Infrastructure		The "Sites & Buildings" page on the Delaware Economic Development Office website allows visitors to search for available brownfield sites
Delaware State Housing Authority (DSHA)				
DSHA	Evaluate energy-efficiency standards of the Low Income Housing Tax Credit (LIHTC) program	Resilient Communities & Economies		Received a Strategic Opportunity Fund for Adaptation grant to support technical assistance to Low-Income Housing Tax Credit (LIHTC) awardees. Project will also evaluate energy certification programs suitable for Delaware programs
DSHA	Explore partnering on grants that address resiliency, such as the upcoming Housing and Urban Development (HUD) National Disaster Resilience Competition	Resilient Communities & Economies		Received two grants through Strategic Opportunity Fund for Adaptation competitive grant program. Pursued Housing and Urban Development (HUD) National Disaster Resilience Competition grant, but projects not eligible for funding
DSHA	Consider sea level rise in Delaware State Housing Authority programs	Resilient Communities & Economies		The Delaware State Housing Authority uses the State Strategies map, which considers sea level rise and flood risk, as a criteria for participation in the Low-Income Housing Tax Credit (LIHTC) program
DSHA	Promote sustainable building practices into the Downtown Development District (DDD) grant program	Resilient Communities & Economies		Received a Strategic Opportunity Fund for Adaptation grant to provide incentives for project achieving Leadership in Energy and Environmental Design (LEED) Silver certification through the U.S. Green Building Council
DSHA	Incorporate information on sea level rise in homeownership counseling	State Assets & Infrastructure		No progress to date
Office of Management and Budget (OMB)				
OMB	Advocate for changes to state building design practices and policies	State Assets & Infrastructure		Continually seeking to improve building efficiency and comfort
OMB	Improve resilience of state facilities and equipment	State Assets & Infrastructure		Participating in the Climate and Energy Assessment of State Facilities Pilot Project
OMB	Incorporate flooding considerations into siting of state facilities	State Assets & Infrastructure		Served on flood avoidance workgroup and helped to develop a guide for state agencies. Included Executive Order 41 on review checklist
OMB	Increase maintenance of state facilities as a result of climate impacts	State Assets & Infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
OMB	Investigate alternate work schedules for outdoor workers	Public Health & Safety		Participating in the Climate-Ready Workforce Pilot Project
OMB	Incorporate resilience into Messenger Services	Resilient Communities & Economies		Participating in the Climate-Ready Workforce Pilot Project
OMB	Offer training opportunities for employees on impacts of climate change	Resilient Communities & Economies		Participating in the Climate-Ready Workforce Pilot Project
OMB	Revise Life Cycle Costing Analysis to account for climate change impacts	Resilient Communities & Economies		No progress to date

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OMB	Incorporate resilience in Government Support Services contracting	Resilient Communities & Economies		No progress to date
Office of State Planning Coordination (OSPC)				
OSPC	Revise the Preliminary Land Use Service checklist for Comprehensive Plans	Resilient Communities & Economies		This recommendation has been implemented
OSPC	Examine ways to incorporate climate change and sea level rise as factors in the next update to State Strategies for Policies and Spending	Resilient Communities & Economies		This recommendation has been implemented
OSPC	Examine ways to incorporate climate change and sea level rise impacts into the Preliminary Land Use Service application	Resilient Communities & Economies		Being reviewed by the Office of State Planning Coordination staff
OSPC	Provide technical support to local governments for Comprehensive Plans and local ordinances	Resilient Communities & Economies		On-going technical support to local communities (in coordination with the Department of Natural Resources and Environmental Control) and will continue to conduct regularly scheduled updates to their comprehensive plans
OSPC	Provide technical assistance to support integration of climate impacts and to reduce greenhouse gas emissions through adaptation and mitigation at the local level	Resilient Communities & Economies		On-going technical support to local communities (in coordination with the Department of Natural Resources and Environmental Control) and will continue to conduct regularly scheduled updates to their comprehensive plans
OSPC	Establish and maintain Geographic Information System (GIS) layers related to climate change and sea level rise impacts in FirstMap	Resilient Communities & Economies		Geographic Information System (GIS) layers have been incorporated into FirstMap. Maintaining useful data will be an ongoing effort

Recommendation Actions By Sector

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Public Health & Safety Sector			
DHSS	Develop health impact assessment tools [Public Health]		Tools are currently available for assessment of health impacts. The Centers for Disease Control (CDC) and World Health Organization (WHO) have assessment tools that can be used
DHSS	Establish communication link to the Division of Developmental Disability clients who live on their own		Established a Facebook page for the Disaster Coordinator to share information, resources, and current emergency/disaster information
DHSS	Advocate for an expansion of vector surveillance programs [Public Health]		Collaborating with the Department of Natural Resources and Environmental Control mosquito control branch
DHSS	Monitor new and emerging diseases related to climate change [Public Health]		Developed plans to respond to Ebola and Zika viral diseases
DHSS	Evaluate benefits and costs of developing environmental public health tracking system [Public Health]		Strategic Opportunity Fund for Adaptation grant will initiate planning for Environmental Public Health Tracking System
DHSS	Incorporate climate change impacts information in Division of Public Health outreach materials [Public Health]		Information sheets are on the Division's website
DHSS	Develop outreach materials on climate change and health [Public Health]		Information sheets are on the Division's website
DHSS	Provide training for Division of Public Health staff on climate change impacts and risks to health [Public Health]		Participating in the Climate-Ready Workforce Pilot Project
DHSS	Advocate for an expansion of air quality monitoring [Public Health]		The Division of Public Health has and will continue to support efforts for cleaner air
DHSS	Identify funding opportunities for climate change and public health [Public Health]		The Division of Public Health received a fellowship to support the Environmental Public Health Tracking Network
DHSS	Expand medicine refill window		Current process allows for early refill requests prior to forecasted storm events
DHSS	Implement a statewide Smart-911 system		Progress is on-going to transition county and municipal systems to access Smart-911
DNREC	Evaluate voluntary and regulatory strategies to ensure that Delaware emission sources are well controlled [Air Quality]		On-going efforts to evaluate emission control strategies
DNREC	Prepare for expanded mosquito production season [Fish and Wildlife]		Zika transmissions in Delaware recognized as a possibility
DNREC	Update and implement Debris Management Section of the State Emergency Operations Plan [Waste and Hazardous Substances]		Plan update process is underway

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DSHS	Consider alterations to policies regarding worker safety in an increased temperature environment		Reviewed policies related to worker safety and made alterations that limit how long employees are allowed to work in extreme temperatures including review of K9 policies. Participating in the Climate-Ready Workforce Pilot Project
DOS	Establish protocols to protect outdoor workers		Reviewing current procedures in place and determining if any modifications are necessary
DeIDOT	Evaluate and adjust worker safety guidelines		Participating in the Climate-Ready Workforce Pilot Project
DeIDOT	Provide training to improve worker knowledge		Participating in the Climate-Ready Workforce Pilot Project
DeIDOT	Evaluate driving restrictions for air quality events		The Division of Maintenance & Operations currently refrains from mowing operations on Red Ozone Alert Days
DeIDOT	Develop revised maintenance schedules in response to air quality		Participating in the Climate-Ready Workforce Pilot Project
OMB	Investigate alternate work schedules for outdoor workers		Participating in the Climate-Ready Workforce Pilot Project
DHSS	Examine ways to track new and emerging diseases [Public Health]		No progress to date
DHSS	Evaluate Geographic Information System (GIS) mapping of vulnerable populations and disease patterns [Public Health]		No progress to date
DHSS	Evaluate integration of Division of Public Health data sources [Public Health]		No progress to date
DHSS	Review and update Division of Public Health programs for climate change impacts [Public Health]		No progress to date
DHSS	Advocate integrating climate change with local activities [Public Health]		No progress to date
DHSS	Discuss feasibility of requiring contingency plans from managed care organizations		No progress to date
DHSS	Consider creating mobile State Service Centers		No progress to date
DNREC	Build capacity to conduct climate change-focused air quality modeling [Air Quality]		No progress to date but will hire a modeling expert

Total # of Recommendations = 30

Completed = 2
 In Progress = 20
 Not Begun = 8
 Not Reported = 0

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
Natural Resources Sector			
DDA	Evaluate response to increased susceptibility to forest wildfires by evaluating policies related to risk management, fire prevention, and fire management		Providing programs, training and grants aimed at fire prevention. Educated over 21,000 people in fiscal year 2015. Provided wildland fire training in cooperation with Delaware State Fire School
DDA	Evaluate policies related to nutrient management, pesticide application, risk assessment, and cropping practices that may be affected by potential increases in the number of hot, dry days per year		Providing education, training and technical assistance through nutrient management, pesticide certification, and other programs. Operates Delaware Rural Drip Irrigation Program in cooperation with Delaware Economic Development Office
DDA	Educate landowners and agricultural operators to address and mitigate loss of land due to sea level rise		On-going work with Delaware Cooperative Extension, including education sessions during Delaware Ag Week and support of the LEADelaware leadership program
DDA	Educate landowners and agricultural operators on the effects of saltwater intrusion resulting from sea level rise		On-going work with Delaware Cooperative Extension, may include new partnership opportunities with the US Department of Agriculture Climate Hub, a regional network for outreach and education
DNREC	Incorporate climate change into land stewardship decisions at the Delaware National Estuarine Research Reserve (DNERR) [Coastal Programs]		On-going efforts to implement an Adaptation Plan for Delaware National Estuarine Research Reserve (DNERR) properties. Completed Living Shoreline demonstration site at Blackbird Creek Reserve
DNREC	Increase climate change-focused research and monitoring on Delaware National Estuarine Research Reserve (DNERR) land [Coastal Programs]		On-going research and monitoring projects include carbon storage and tidal marsh resilience. Received a Strategic Opportunity Fund for Adaptation grant to develop ecosystem indicators to monitor climate change
DNREC	Develop a climate change adaptation plan for the Delaware National Estuarine Research Reserve (DNERR) [Coastal Programs]		Evaluating recommendations in the completed Delaware National Estuarine Research Reserve (DNERR) adaptation plan. Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DNREC	Incorporate Executive Order 41 in the Federal Consistency Program's enforceable coastal management policies [Coastal Programs]		Policies are currently in draft form and will be finalized and incorporated into the program's policy update
DNREC	Design and implement restoration activities to slow loss of coastal habitats [Fish and Wildlife]		Restoration project design, permitting, and contracting process is underway for projects in Mispillion Harbor, Milford Neck, and Port Mahon
DNREC	Discuss expansion of invasive species control [Fish and Wildlife]		Controlling some invasive species on state wildlife areas. Controlling phragmites on private and public lands
DNREC	Prepare to manage different fish and wildlife species and habitat [Fish and Wildlife]		Continually monitoring new species arrivals and declining current species
DNREC	Evaluate strategies for increasing native pollinator habitat on public and private lands [Fish and Wildlife]		Pollinator habitats are being taken into consideration in all restoration activities on public wildlife areas and through consultation with private landowners

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
DNREC	Adapt coastal impoundments and ponds [Fish and Wildlife]		Restoration efforts initiated at Ted Harvey Conservation Area and Little Creek Wildlife Area impoundments. Design and engineering initiated at Augustine Wildlife Area
DNREC	Prepare for increased nuisance wildlife complaints [Fish and Wildlife]		Continually preparing for more complaints about the increase in human population and development
DNREC	Prepare for increased number of fish kills and harmful algal blooms [Fish and Wildlife]		Continually preparing for more complaints about the increase in human population and development
DNREC	Evaluate need for revisions to technical specifications for vegetative practices [Watershed Stewardship]		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications
DNREC	Evaluate changes to wetland and water quality monitoring [Watershed Stewardship]		Completed field assessments in Smyrna and Appoquinimink watersheds. Monitoring coastal wetland changes and quantifying groundwater storage capacity
DNREC	Discuss additional support for living shorelines to support shoreline management and protection [Watershed Stewardship]		DNREC co-chairs the Delaware Living Shoreline Committee
DNREC	Plan for increasing demands for shoreline management and beach preservation [Watershed Stewardship]		Preliminary efforts to identify additional funding sources. Efforts to identify additional sand supplies underway
DNREC	Evaluate needs for channel maintenance [Watershed Stewardship]		Delaware Waterways Management and Financing Advisory Committee's recommendations for sustainable and dedicated funding for waterway management operations are being considered
DEDO	Assist in bolstering resilience in the agriculture sector		In conjunction with the Department of Agriculture, the Delaware Economic Development Office actively promotes the Delaware Rural Irrigation Program
DHSS	Evaluate feasibility of monitoring private coastal drinking water wells for salt water intrusion [Public Health]		No progress to date
DNREC	Prepare to restore riparian buffers [Fish and Wildlife]		Conducting a detailed analysis to determine the priority sites for restoration on state wildlife areas
DNREC	Prepare to restore ecological integrity of unique ephemeral wetlands [Fish and Wildlife]		No progress to date
DNREC	Update mapping of tidal wetland jurisdictional boundaries [Water]		No progress to date

Total # of Recommendations = 25

Completed = 0

In Progress = 21

Not Begun = 4

Not Reported = 0

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
State Assets & Infrastructure Sector			
DNREC	Develop model ordinance to secure home heating oil and propane tanks [Waste and Hazardous Substances]		Identified several authoritative sources for model ordinances
DOS	Evaluate and promote workplace options for employees		Staff have the option to utilize flexible or compressed schedules
DOE	Improve guidelines for siting of school facilities		Collaborating with the Office of State Planning Office Coordination and school district facility staff
DOE	Promote the incorporation of cleaner school buses		48 propane buses currently transport students throughout the state and 5 more will be on the road in 2017
DHSS	Remove potential hazards from low-lying areas prior to a major event		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DHSS	Designate State Service Centers as critical facilities		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DNREC	Ensure effective energy code compliance [Energy and Climate]		Staff hired to meet on-going compliance goals; anticipated updated codes in summer 2017. Also developing training for Home Energy Rating System (HERS) to launch in 2017
DNREC	Consider relocating Division of Fish and Wildlife facilities [Fish and Wildlife]		Participating in the Climate Mitigation and Adaptation Planning Pilot Project. Relocated Aquatic Education Center based on Sea Level Rise models
DNREC	Adapt building processes [Parks and Recreation]		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DNREC	Evaluate need for improving spill containment requirements for aboveground storage tanks and hazardous waste storage areas [Waste and Hazardous Substances]		One identified problem facility has been remediated. The Hazardous Waste Program is continually re-evaluating its requirements for technological changes
DNREC	Assist suppliers of potable water (from surface water intakes) in developing strategies to protect water intakes from flooding and salt water [Water]		The Water Supply Coordinating Council is routinely tracking water use and threats to water shortages
DNREC	Assist suppliers and users of potable water (from wells) to develop strategies for protection of wells from flooding and salt water [Water]		On-going consideration of long-term risk
DNREC	Evaluate need for revisions to technical standards and specifications for stormwater management [Watershed Stewardship]		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications.
DNREC	Evaluate need for revisions to stormwater regulation [Watershed Stewardship]		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
DNREC	Evaluate design specifications and maintenance practices for rain gardens and other small-scale stormwater systems [Watershed Stewardship]		Convened a Regulatory Advisory Committee to address revisions to the Sediment and Stormwater Regulations and Technical Standards and Specifications
DSHS	Conduct research on the potential effects of climate change on structures and vehicles		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DOS	Complete mapping of cultural resources into Geographic Information System (GIS)-based system [Historical and Cultural Affairs]		Strategic Opportunity Fund for Adaptation grant received to implement this project
DOS	Ensure preparedness for threatened sites [Historical and Cultural Affairs]		Employing a readiness system for weather-related events which includes preparedness measures for specific sites
DOS	Review potential for infrastructure enhancements that can help mitigate climate change exposure [Public Service Commission]		Utilities have made assessments of infrastructure enhancements and modifications in regards to reliability and storm response
DeIDOT	Conduct comprehensive assessment of state roadway risks and assets		Received a Strategic Opportunity Fund for Adaptation grant to support a comprehensive corridor evaluation of State Route 9
DeIDOT	Integrate climate resiliency into project development, traffic, bridge, and highway design		The Bridge Design Manual has added wording associated with climate change and sea level rise in consideration when scoping a project
DeIDOT	Build transportation enhancements (pathways, trails, roadscapes, etc.) to accommodate impacts of climate change		Received a Strategic Opportunity Fund for Adaptation grant to develop approaches to increasing resilience on State Route 1, including use of green infrastructure techniques. Current work for trails and pathways utilizing flooding and sea level rise tools. Strategic Implementation Plan for Climate Change, Resilience and Sustainability to be completed in 2016
DeIDOT	Reevaluate stormwater management approaches		Engaging with research on the cost of climate change
DeIDOT	Incorporate climate impacts into cost-effective investment in infrastructure		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DeIDOT	Evaluate obtaining insurance to assist in recovery from catastrophic events		Considering the development of a Transportation Risk Map and strategies for disaster risk
DeIDOT	Adjust transit service in emergencies		The Delaware Transit Corporation Division adjusts service levels when required during weather events. Adjustments include reducing, modifying and/or suspending service depending on the severity and timing of the event
DeIDOT	Evaluate low-emission vehicle deployment		Participating in Delaware Clean Cities. Piloted propane-fueled F250 trucks in the fall of 2015

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
DeIDOT	Evaluate alternative energy technology in facilities		Attempting to meet Leadership in Energy and Environmental Design (LEED) Silver Certification requirements for new facilities. Utilizing waste oil heaters in some locations
DEDO	Provide and market public transportation to attractions throughout the state		Promotes public transportation and ride sharing to state-sponsored events
DEDO	Alter the standard for weekly rentals		
DEDO	Advocate for the reuse of existing industrial brownfield sites		The "Sites & Buildings" page on the Delaware Economic Development Office website allows visitors to search for available brownfield sites
OMB	Advocate for changes to state building design practices and policies		Continually seeking to improve building efficiency and comfort
OMB	Improve resilience of state facilities and equipment		Participating in the Climate and Energy Assessment of State Facilities Pilot Project
OMB	Incorporate flooding considerations into siting of state facilities		Served on flood avoidance workgroup and helped to develop a guide for state agencies. Included Executive Order 41 on review checklist
OMB	Increase maintenance of state facilities as a result of climate impacts		Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DOE	Promote Leadership in Energy and Environmental Design (LEED) or Green Ribbon school designs		No progress to date
DHSS	Evaluate public health infrastructure and resources for data collection and analysis [Public Health]		No progress to date
DHSS	Identify sites to be used as designated cooling and heating centers		No progress to date
DNREC	Consider incorporating equipment siting requirements into air permitting process [Air Quality]		No progress to date
DNREC	Develop model building code [Energy and Climate]		No progress to date
DNREC	Develop plan for access [Parks and Recreation]		No progress to date
DNREC	Assist local governments in developing strategies to protect wastewater treatment facilities from flooding [Water]		No progress to date
DNREC	Evaluate the adequacy of drainage infrastructure [Watershed Stewardship]		No progress to date due to lack of funding

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
DOS	Evaluate costs and benefits of creating historic preservation tax credit for adaptation and resiliency [Historical and Cultural Affairs]		No progress to date but are scheduled to conduct a comprehensive review of the Historic Preservation Tax Credit program in January 2018
DOS	Publish cultural resource management plans [Historical and Cultural Affairs]		No progress to date but aim to address the federally-mandated statewide historic preservation plan in January 2017
DOS	Broaden utility review of climate change initiatives to include non-regulated entities [Public Service Commission]		The Energy Efficiency Advisory Council will only deliberate on plans brought forth by the regulated utilities
DOS	Coordinate review of storm response procedures with all regulated utilities [Public Service Commission]		No progress to date
DOS	Create energy baseline for leased sites		Compiling energy consumption information
DOS	Create energy baseline for office equipment		Compiling energy consumption information
DOS	Ensure new building compliance		No progress to date
DOS	Ensure financed building compliance		No progress to date
DeIDOT	Evaluate materials used to reduce the impacts of stormwater runoff		No progress to date. Research lab and modelling capabilities needed
DeIDOT	Explore new pavement technology		No progress to date. Impacts to traffic and revenues needed
DSHA	Incorporate information on sea level rise in homeownership counseling		No progress to date
DOS	Increase amount of technical staff [Public Advocate]		
DOS	Mitigate below-grade facilities		

Total # of Recommendations = 56

Completed = 2
 In Progress = 33
 Not Begun = 19
 Not Reported = 2

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
Resilient Communities & Economies Sector			
DNREC	Coordinate on the use of updated floodplain maps to assist with flood mitigation activities [Watershed Stewardship]		Floodplain maps for all three counties have been completed
OSPC	Revise the Preliminary Land Use Service checklist for Comprehensive Plans		This recommendation has been implemented
OSPC	Examine ways to incorporate climate change and sea level rise as factors in the next update to State Strategies for Policies and Spending		This recommendation has been implemented
DHSS	Provide training and education on climate preparedness and adaptation		Participating in the Climate-Ready Workforce Pilot Project
DNREC	Provide technical assistance to Delaware communities for climate change adaptation projects [Coastal Programs]		Awarded coastal resiliency planning grants to seven communities in 2015 and re-launched the grants program as the Resilient Community Partnership in 2016
DNREC	Increase educational awareness of climate change in Delaware [Coastal Programs]		On-going efforts to provide education and public outreach through presentations, programs and trainings, including science conferences, teacher professional development workshops, and interpretive exhibits at the Delaware National Estuarine Research Reserve (DNERR) locations
DNREC	Aid local governments in planning for climate change [Energy and Climate]		Provided technical support to local communities to integrate climate change into local Comprehensive Land Use plans. On-going participation in the Preliminary Land Use Service and training for local government and community groups
DNREC	Improve energy reliability and response to emergency events [Energy and Climate]		Inter-agency meetings are underway; the Energy Assurance Plan is expected to be updated by summer 2017
DNREC	Educate staff and the public [Parks and Recreation]		Participating in the Climate-Ready Workforce Pilot Project
DNREC	Issue emergency waivers for repairs to infrastructure, environmental resources, and property resulting from storms and flooding events in regulated wetlands and subaqueous lands [Water]		Waiver procedures currently exist
DSHS	Develop operational plans to adapt to sea level rise		Awarded Strategic Opportunity Fund for Adaptation grant to support advanced search and rescue training. Participating in the Climate Mitigation and Adaptation Planning Pilot Project

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
DSHS	Make programmatic adjustments to adapt to increasing levels of precipitation, flooding, and sea level rise		Transitioning Delaware State Police's and Capitol Police's patrol vehicles to SUVs with higher clearance to address sea level rise and additional snowfall. Participating in the Climate Mitigation and Adaptation Planning Pilot Project
DOS	Assess financial impact of any new rates [Public Advocate]		Continually analyzing the financial impact for all newly established rates
DOS	Review Commission options to help reduce greenhouse gases and mitigate climate change [Public Service Commission]		Currently reviewing options to address climate change mitigation within the organization and outside of the agency. Have formed recommendations
DOS	Evaluate alternate utility rate structures [Public Service Commission]		Researching alternative rate designs for electric utilities to equitably incorporate distributed energy resources
DeIDOT	Continue development of geospatial data sets that can help identify vulnerable areas and help estimate the impact of reasonably anticipated events		The vulnerability assessment and scenario base analysis are underway. Completed data collection for Hazus tool for conducting cost and impact assessments. Continually making improvements and overcoming barriers
DeIDOT	Identify and assess existing chronic flooding and erosion problems caused by sea level rise, frequent storms, tidal forces, subsidence, and aging infrastructure		On-going review of infrastructure inventory, improving databases to monitor condition of roadways and bridges. Added flood monitoring capabilities for roadways for ten sites. The Weather and Flooding Strategic Plan has been completed and was approved. An Implementation Plan based on the Strategic Plan findings and recommendations is starting
DeIDOT	Reevaluate emergency response protocols		Participating in the Climate-Ready Workforce Pilot Project. Provided awareness training to the Department's Strategic Leadership Team. Security projects at maintenance yards are underway.
DeIDOT	Support local governments with land use assessment tools		Received a Strategic Opportunity Fund for Adaptation grant to improve the Traffic Impact Study process. Supported the development of a toolkit for community resilience produced by the University of Delaware's Institute for Public Administration. Strategic Implementation Plan for Climate Change, Resilience and Sustainability to be completed in 2016
DED0	Advocate for adoption of state recommendations for climate change adaptation		Created new web page to highlight programs related to Executive Order 41
DED0	Promote economic growth and development in climate-resilient locations		The "Sites & Buildings" page on the Delaware Economic Development Office website allows visitors to search for available brownfield sites
DED0	Educate and assist businesses and industry in adapting to climate change		Actively markets educational events such as the Department of Natural Resources and Environmental Control's Division of Energy & Climate's 'Fueling the Future' ride-and-drive clean transportation conference
DSHA	Evaluate energy-efficiency standards of the Low Income Housing Tax Credit (LIHTC) program		Received a Strategic Opportunity Fund for Adaptation grant to support technical assistance to Low-Income Housing Tax Credit (LIHTC) awardees. Project will also evaluate energy certification programs suitable for Delaware programs

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
DSHA	Explore partnering on grants that address resiliency, such as the upcoming Housing and Urban Development (HUD) National Disaster Resilience Competition		Received two grants through Strategic Opportunity Fund for Adaptation competitive grant program. Pursued Housing and Urban Development (HUD) National Disaster Resilience Competition grant, but projects not eligible for funding
DSHA	Consider sea level rise in Delaware State Housing Authority programs		The Delaware State Housing Authority uses the State Strategies map, which considers sea level rise and flood risk, as a criteria for participation in the Low-Income Housing Tax Credit (LIHTC) program
DSHA	Promote sustainable building practices into the Downtown Development District (DDD) grant program		Received a Strategic Opportunity Fund for Adaptation grant to provide incentives for project achieving Leadership in Energy and Environmental Design (LEED) Silver certification through the U.S. Green Building Council
OMB	Incorporate resilience into Messenger Services		Participating in the Climate-Ready Workforce Pilot Project
OMB	Offer training opportunities for employees on impacts of climate change		Participating in the Climate-Ready Workforce Pilot Project
OSPC	Examine ways to incorporate climate change and sea level rise impacts into the Preliminary Land Use Service application		Being reviewed by the Office of State Planning Coordination staff
OSPC	Provide technical support to local governments for Comprehensive Plans and local ordinances		On-going technical support to local communities (in coordination with the Department of Natural Resources and Environmental Control) and will continue to conduct regularly scheduled updates to their comprehensive plans
OSPC	Provide technical assistance to support integration of climate impacts and to reduce greenhouse gas emissions through adaptation and mitigation at the local level		On-going technical support to local communities (in coordination with the Department of Natural Resources and Environmental Control) and will continue to conduct regularly scheduled updates to their comprehensive plans
OSPC	Establish and maintain Geographic Information System (GIS) layers related to climate change and sea level rise impacts in FirstMap		Geographic Information System (GIS) layers have been incorporated into FirstMap. Maintaining useful data will be an ongoing effort
DHSS	Advocate for additional resources for the Low-Income Home Energy Assistance Program (LIHEAP)		No progress to date
DHSS	Create a statewide climate resiliency educational campaign		No progress to date
DNREC	Increase climate change–focused research and modeling [Air Quality]		The Division of Air Quality is developing a work plan for proposed ozone research
DNREC	Study how to prioritize funding options to give preference to areas with effective practices for drainage and floodplain management [Watershed Stewardship]		No progress to date

Agency	Executive Order 41 Adaptation Recommendations	STATUS KEY: Completed =  In Progress =  Not Begun = 	Progress Summary
DNREC	Update floodplain maps with consideration of climate change dynamics [Watershed Stewardship]		No progress to date
DOS	Conduct vulnerability assessments [Historical and Cultural Affairs]		No progress to date
DOS	Review utility tariff approaches to minimizing greenhouse gases [Public Service Commission]		Researching rate designs to equitably incorporate distributed energy resources for electric utilities
DOS	Promote personal energy use awareness		No progress to date but there are plans to enact this in conjunction with the energy baseline implementation
OMB	Revise Life Cycle Costing Analysis to account for climate change impacts		No progress to date
OMB	Incorporate resilience in Government Support Services contracting		No progress to date
DOS	Include protected classes and undocumented communities in outreach efforts [Human Relations Commission]		
DOS	Enhance outreach to utility consumers [Public Advocate]		

Total # of Recommendations = 44

Completed = 3

In Progress = 29

Not Begun = 10

Not Recorded = 2