Delaware's Climate Action Plan: Focusing on Water Related Actions and Projects

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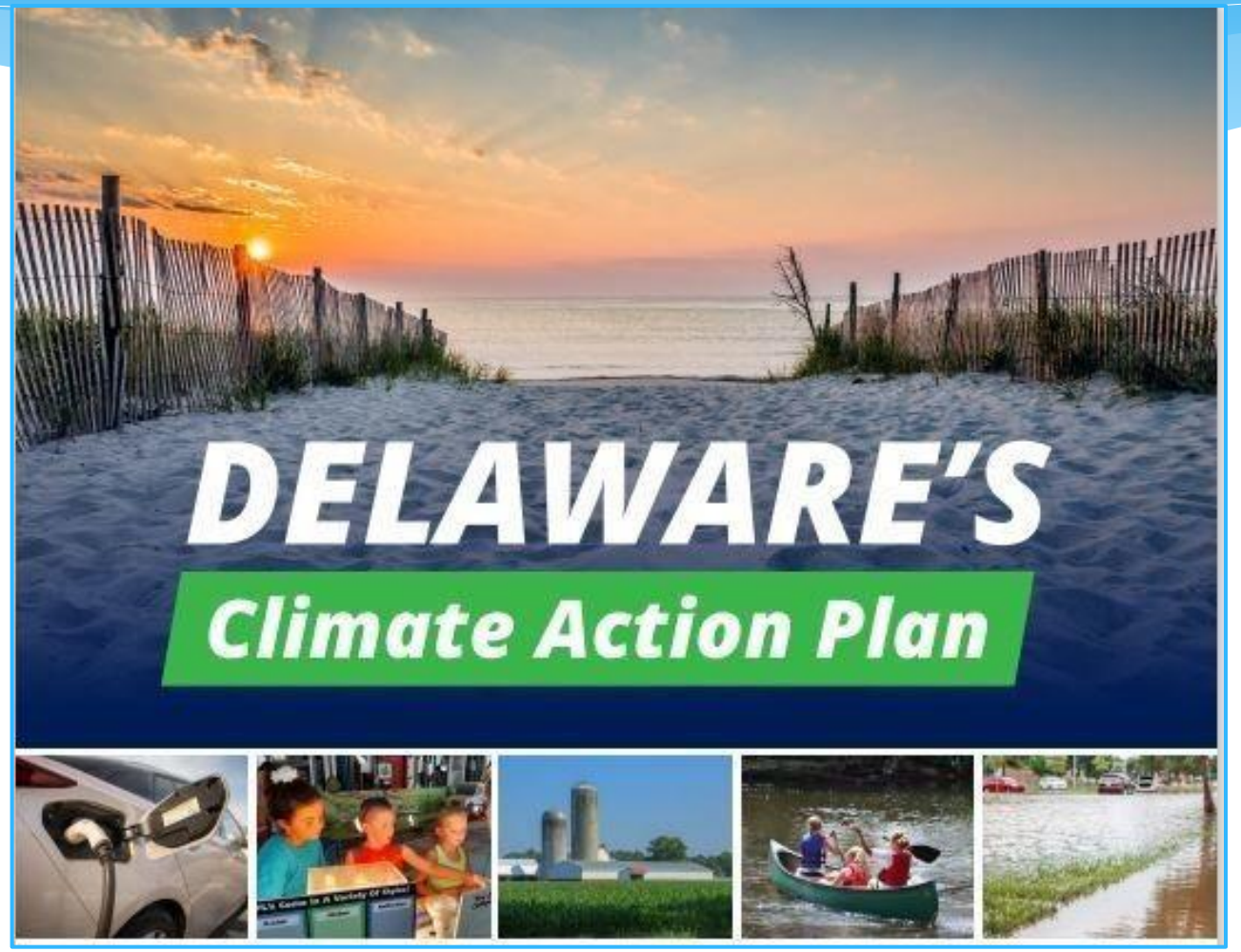
DRBC - ACCC 9/11/24

Delaware Department of Natural Resources
& Environmental Control

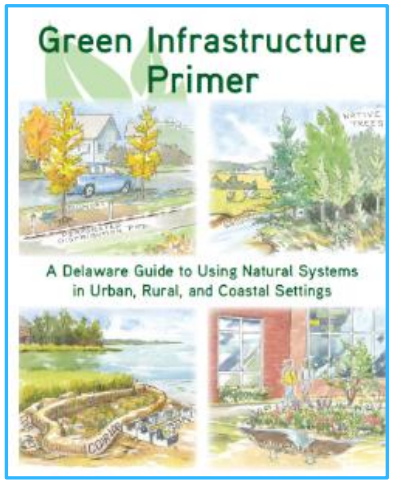
Delaware's Climate Action Plan

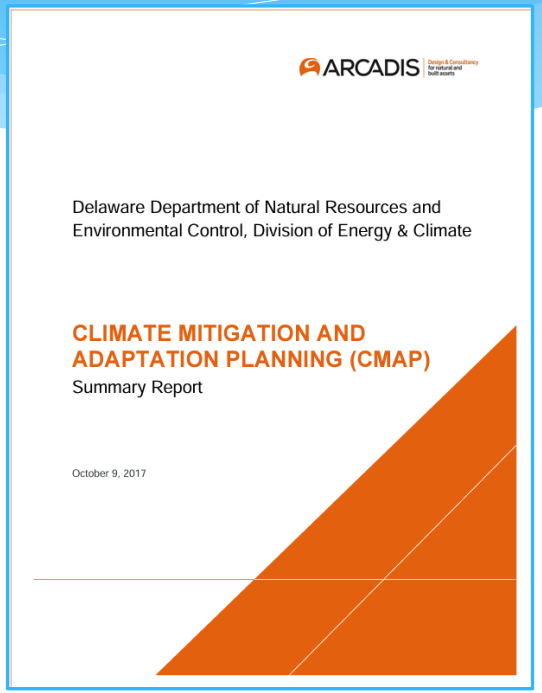
* Minimize Greenhouse Gas Emissions
* Maximize Resilience to Climate Change Impacts



Previous Efforts Supporting Mitigation

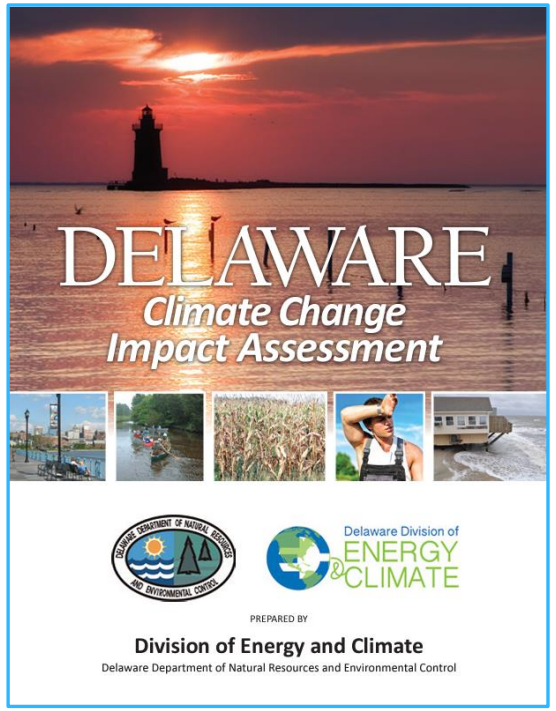
* Regional Greenhouse Gas Initiative
* Renewable Energy Portfolio Standards Act
* Code for Energy Conservation
* Clean Transportation Incentive Program
* Low Impact Refrigerant Program

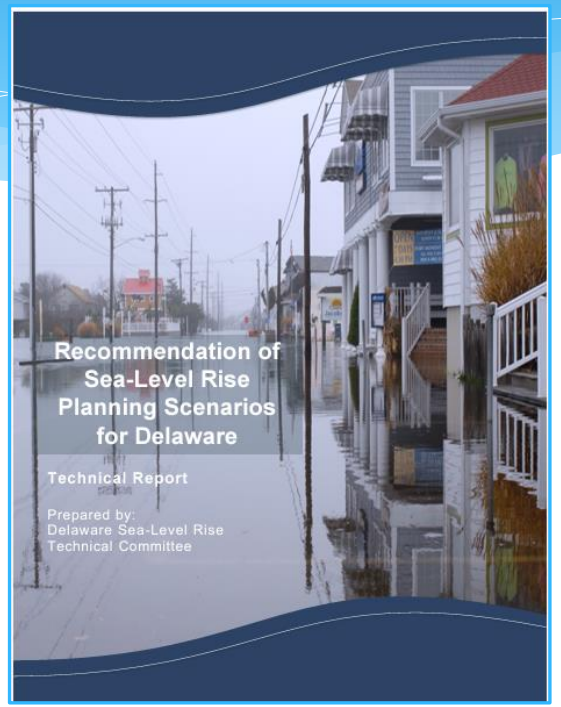




Previous Efforts Supporting Resilience

* Sea Level Rise Planning
* Climate Framework for Delaware
* Technical Assistance and Funding
* Climate Change Impact Assessment
* Coastal Inundation Maps





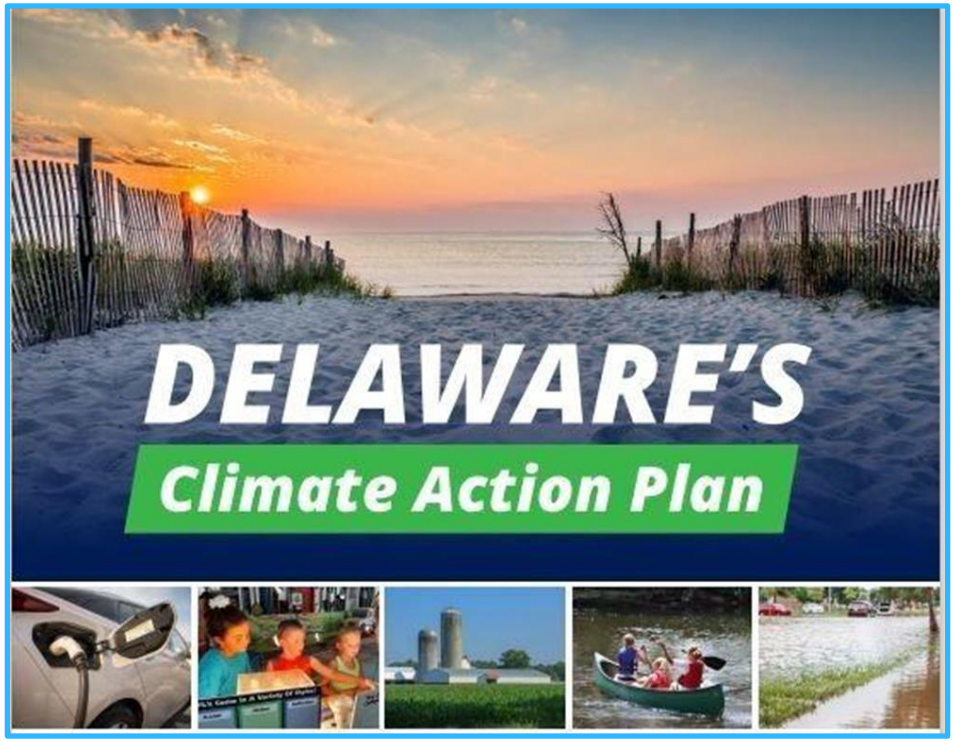
Plan Development

* Governor request of DNREC
* Secretary appoints DCCE to lead project
* Coastal responsible Resiliency Plans
* Climate/Energy responsible for Mitigation Plans
* Focus on State Executive Branch Agencies
* Technical Advisory Workgroup
* Public Workshops - In Person
* Meetings with all agencies/sections
* Public Workshops - Virtual
* Release November 2021

Technical experts provide input on actions that could be implemented to reduce greenhouse gas emissions at a Technical Advisory Workshop. Photo credit: DNREC

Public participation and stakeholder engagement are key to implementing climate action. Photo credit: DNREC

The Plan



* Mitigation
* Resiliency

Mitigation Categories

* Clean and Renewable Energy
* Energy Efficiency
* Transportation
* Reduce GHG Emissions
  * 27 Strategies
  * 92 Action

A fully electric DART bus passes a fully electric passenger vehicle parked near a solar canopy at the Delaware Technical Community College Terry Campus in Dover. Photo credit: DNREC


Ensuring homes are well-insulated makes homes more comfortable while also reducing energy use. Photo credit: Adobe Stock


Delaware Electric Cooperative solar farm near Georgetown, Del. *Delaware Electric Cooperative*

Resiliency Categories

* Update or New State Regulations
* Support for Communities and Stakeholders
* Management Plans
* Facility Design and Operation
* Research and Monitoring
* Outreach and Education
* Agency Support
    * 19 Strategies
    * 86 Actions

Forests, croplands and wetlands can absorb carbon dioxide from the atmosphere and act as a carbon sink. Photo credit: DNREC

Emergency response plans will require updates to consider the impacts and incorporate actions to deal with climate change impacts, like flooding from extreme weather events. Photo credit: Army National Guard

Route 1 at the Indian River Inlet was impassable after Superstorm Sandy due to major dune erosion. Extreme weather events, along with more costly storm damage, are projected to become more frequent as a result of climate change.

Photo credit: DNREC

Possible DRBC Mitigation Actions

* Fleet EVs
* Solar/Renewable Energy
* Energy Efficiency
* Offset GHG emissions by promoting proper management of Natural Lands
* Support Mitigation Efforts of Others

Delaware Water Related Actions

- **Updated or New State Regulations**
  - Incorporate SLR and Precipitation Changes:
    - Beach Preservation Act
    - Dam Safety Program
    - Comprehensive Plans
    - Coastal Zone Act
    - Delaware Federal Consistency
    - Risk Management Plans
    - Delaware Wetland Act

WILMINGTON, Del. – Governor Carney joined Senator Stephanie Hansen, other members of the General Assembly and advocates on Thursday, September 5, to sign a package of bills that further Delaware's efforts to protect the environment and support clean energy.

Delaware Water Related Actions

* **Support for Communities and Stakeholders**
  * Prioritize hazardous waste investigation and remediation
  * Grant/Assistance programs for water/wastewater infrastructure updates*
  * Assistance to industry and port facilities to incorporate CC in investment and continuity business plans
  * Update Delaware Flood Mapping Tool*
  * Continue to improve/expand real-time data collection of coastal flooding*
  * Create sediment management and channel maintenance plans for beneficial reuse to offset climate impacts*
  * Irrigation management program to manage water sources*

Delaware Water Related Actions

* **Research and Monitoring**
  * Monitor groundwater for saltwater intrusion*
  * Identify transportation infrastructure at risk from flash flooding
  * Remove blockages on rivers to support upriver fish migration to compensate for salinity changes.*
  * Living shoreline BMPs*

* **Outreach and Education**
  * Climate Change Economic Impact Study*

Delaware Water Related Actions

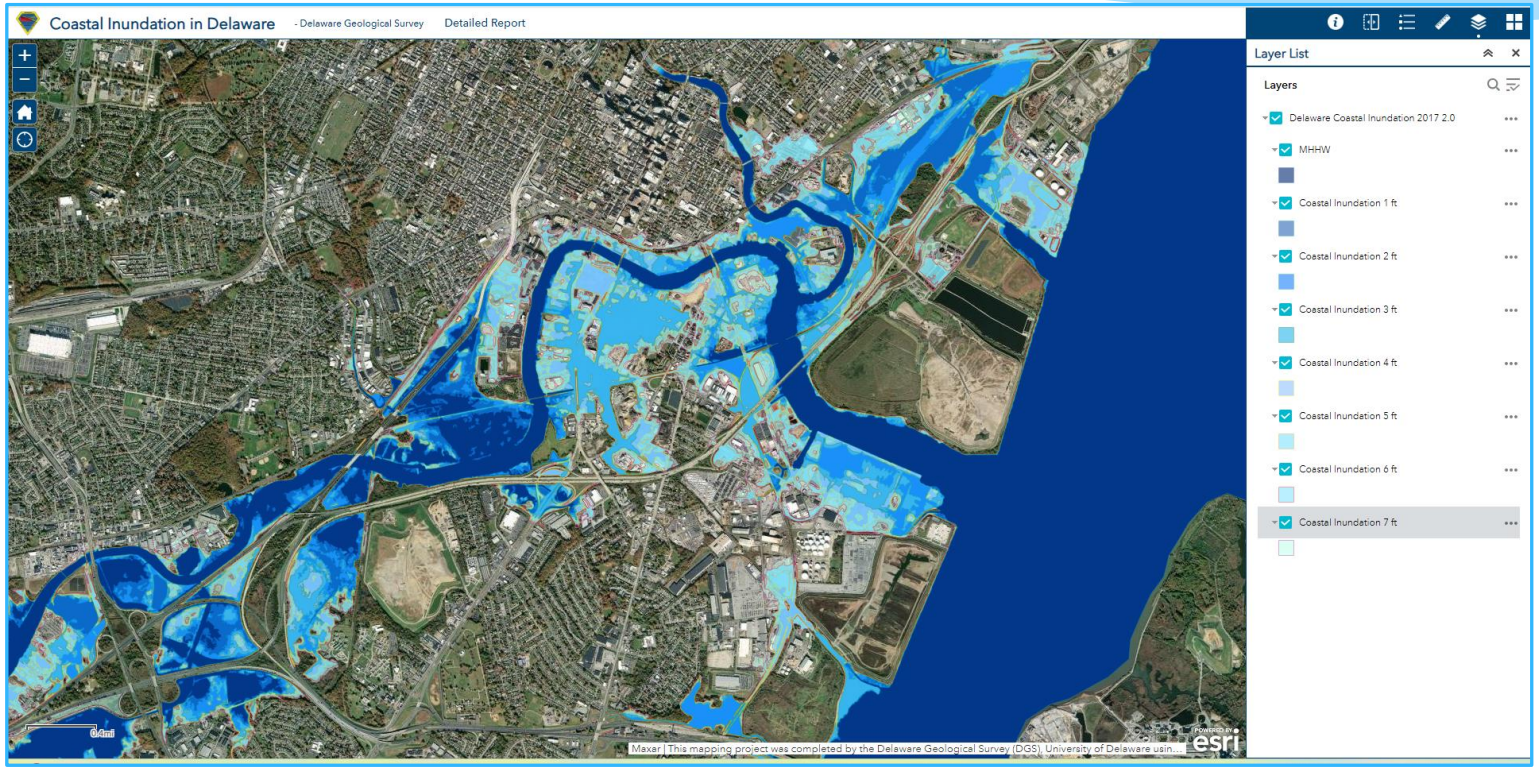
* **Agency Support**
  * Provide training on CC to agencies
  * Improve interactions with federal, state and local emergency service planners to promote regional and statewide response and recovery
  * Enhance laboratory electronic reporting to identify health impacts from CC
  * Standardized data collection tracking and storage methodology to make data-based decisions related to CC*
  * Participate in national/regional committees to transfer knowledge of CC

Projects

Delaware's Coastal Training Program hosts events to help communities prepare for flooding. Photo credit: DNREC

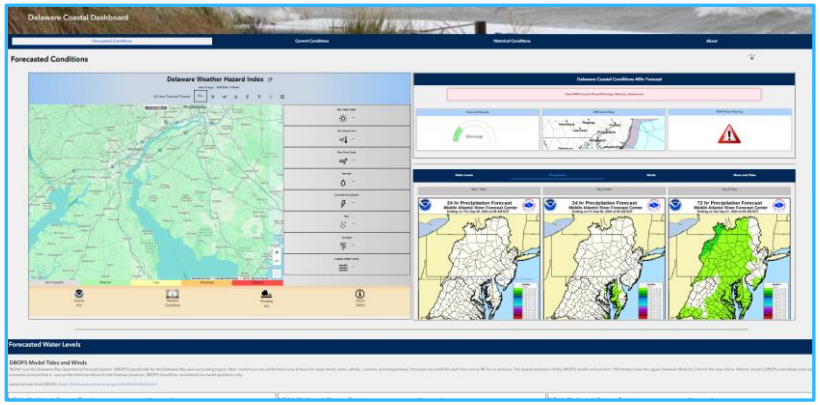
Delaware Inundation Maps

* MHHW to MHHW + 7 ft



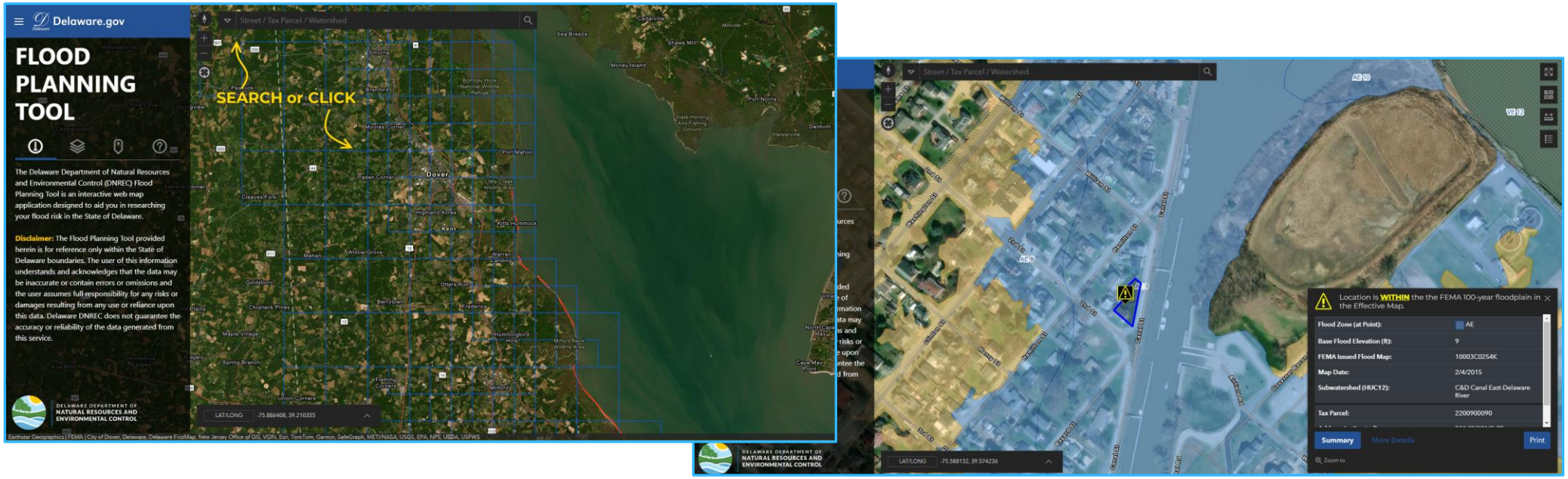
Delaware Coastal Dashboard

* **Numerous applications and support systems that aid both emergency managers and state practitioners to make informed decisions before, during, and after coastal storm events**
  * Delaware Coastal Flood Monitoring System
  * Delaware Weather Hazard Index
  * Delaware High Water Mark Database
  * Coastal Storm Climatology
  * Predictive models produced by NOAA
  * Delaware Environmental Observing System



Delaware Flood Planning Tool

* Interactive web map application designed to aid in researching flood risk in the State of Delaware.



Water Availability Tracker

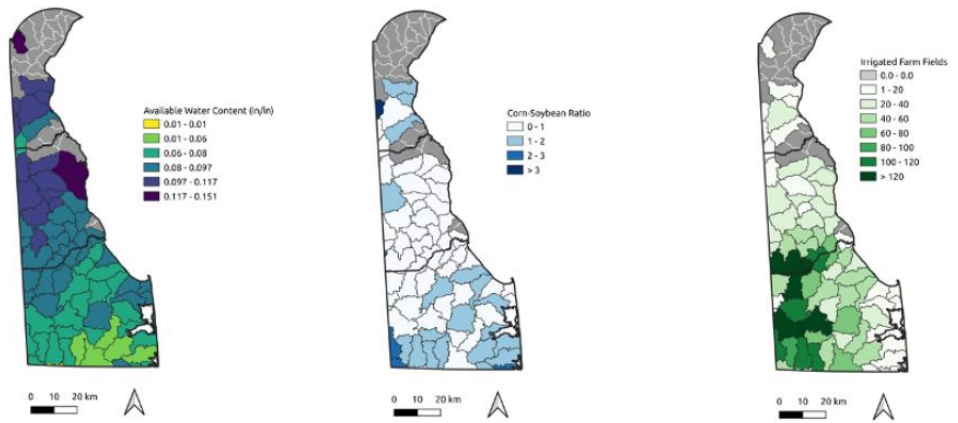


Figure 11. *Maps showing available soil water holding capacity (left), the corn to soybean crop ratio (center), and the number of irrigated fields for each HUC-12 watershed in the state (right). Dark gray watersheds have no irrigated fields.*

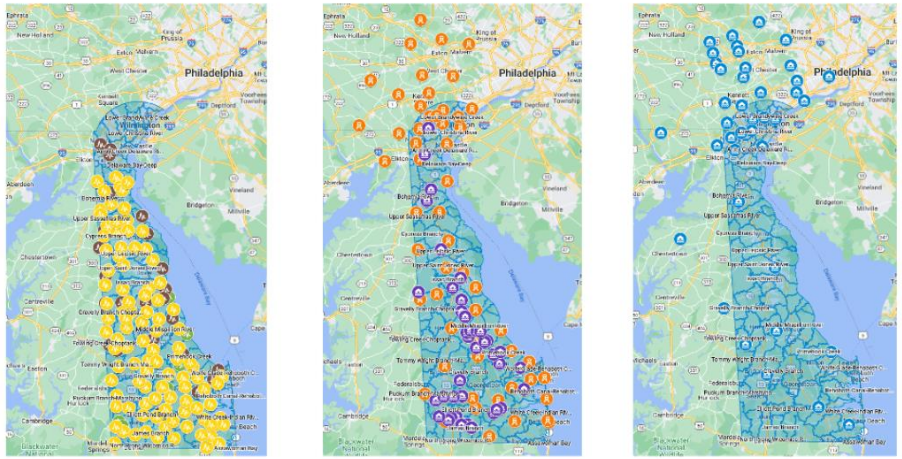


Figure 12. *Maps showing distribution of hydrologic variables across the region. DGS, DDA, and DNREC wells (left); DEOS meteorological and hydrological stations (center); and USGS stream gauges (right).*

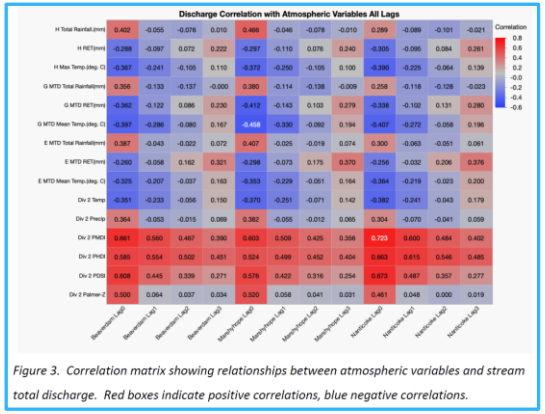
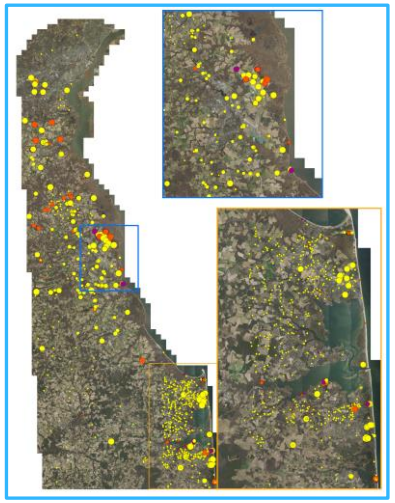
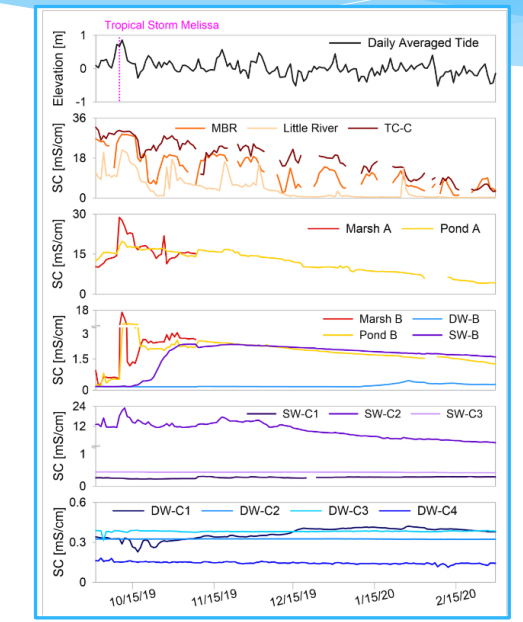
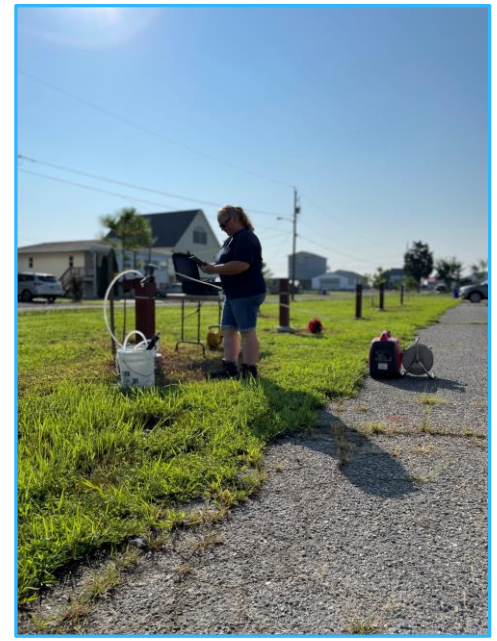


Figure 3. Correlation matrix showing relationships between atmospheric variables and stream total discharge. Red boxes indicate positive correlations, blue negative correlations.

Saltwater Intrusion Network



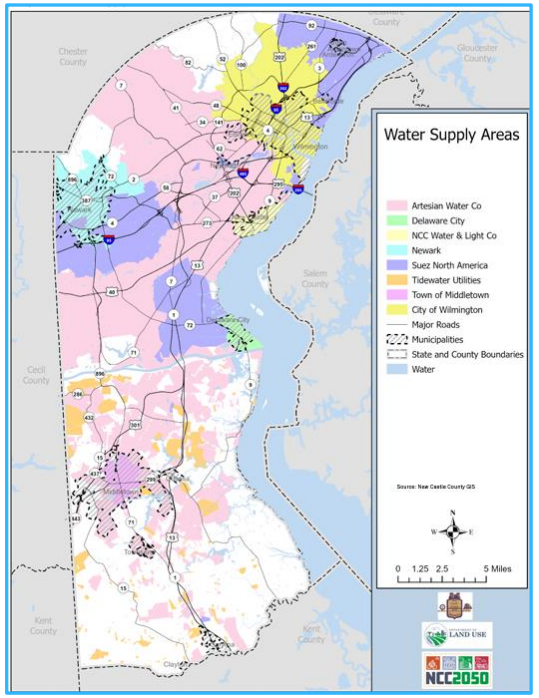




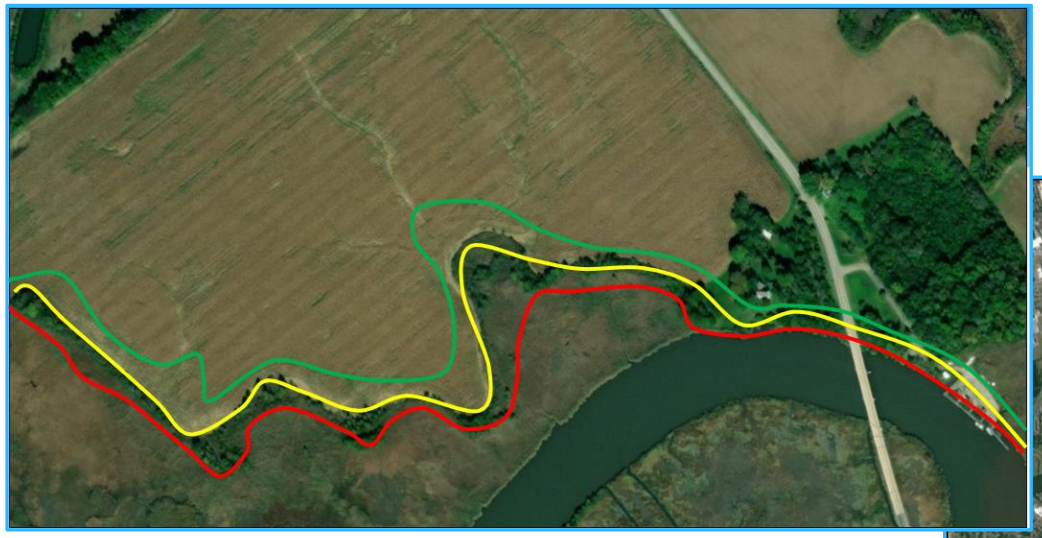
Drinking Water, Wastewater Infrastructure Mapping and Source Tracking

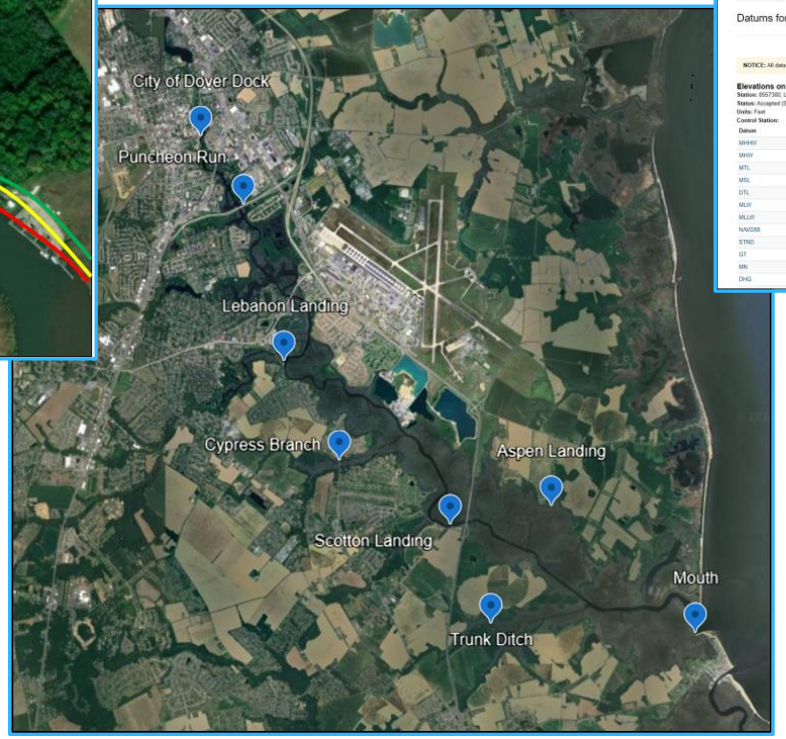
The Lewes wastewater treatment facility is located in a flood plain near a marsh and not far from the Delaware Bay coastline. Future plans could include relocation of the plant to higher ground to avoid sea-level rise. NICK ROTH PHOTO

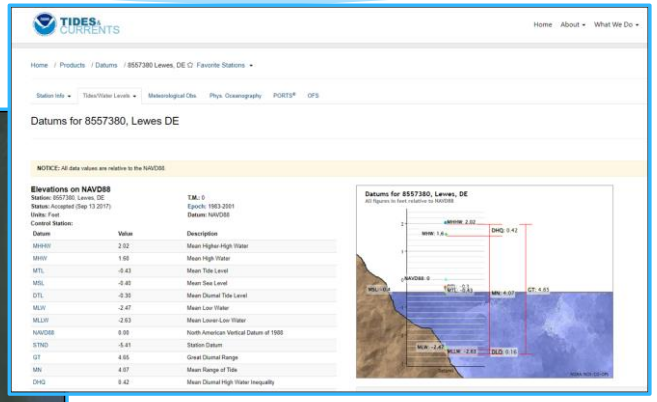
All six pumps housed in Pump Station #7 in Dover were submerged during a sewage leak and rendered inoperable. *Jerry Smith/The News Journal*



Wetland Delineation Maps





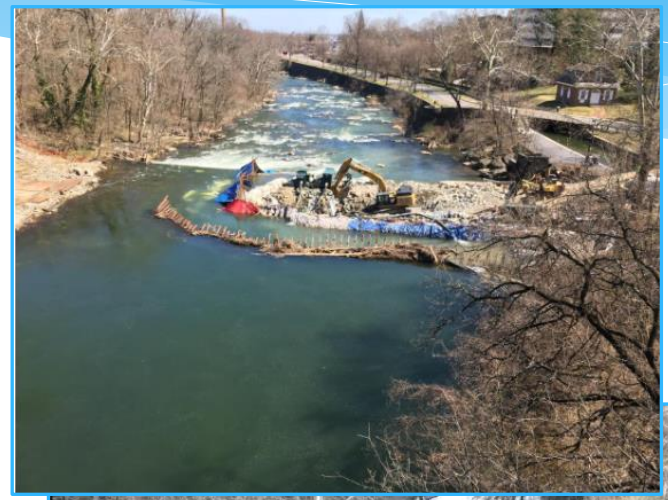


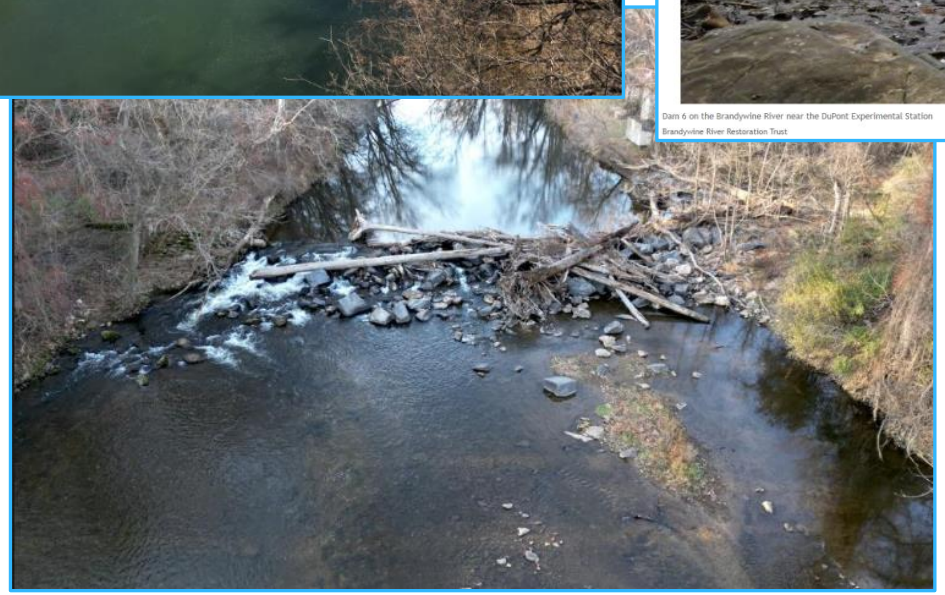
Wetland Restoration / Green Bulkhead / Living Shorelines

Living shorelines, like this one at the Blackbird Creek Reserve in Townsend, can increase resiliency to sea level rise caused by climate change. Photo credit: DNREC

Dam Removal

* Brandywine River
  * Dam 1 – 2019
  * Dam 6 – City Approval 2024
* White Clay Creek
  * Dam 7 - Fall 2024



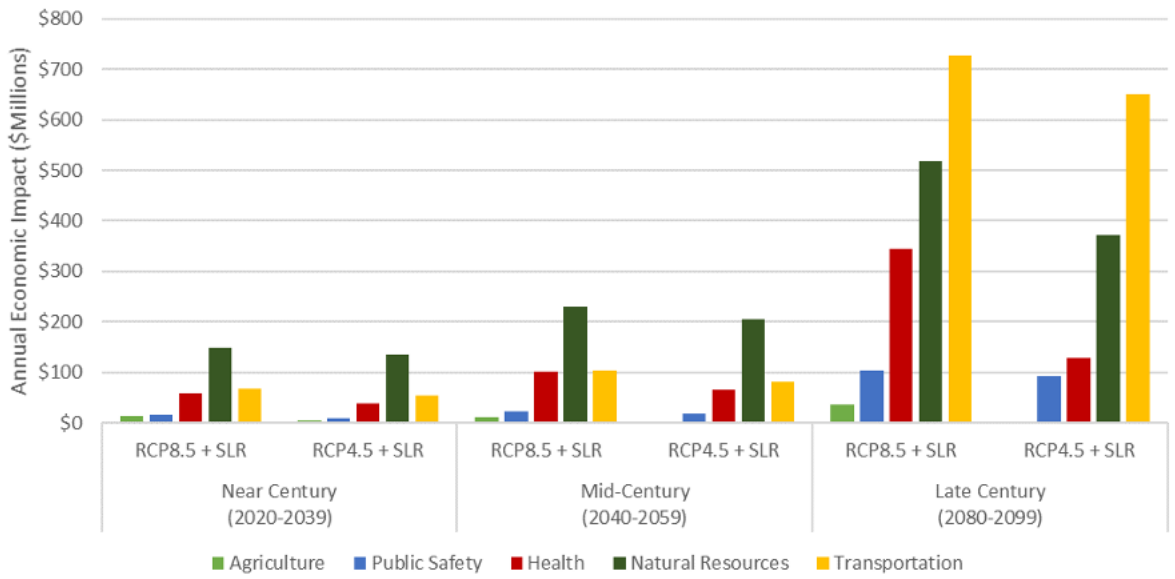


The Southbridge Wilmington Wetlands Park

Climate Change Economic Impact Study

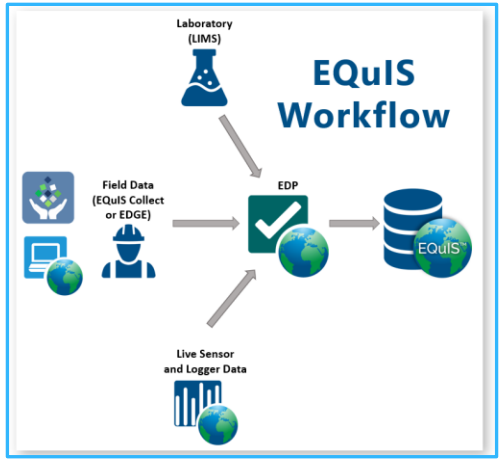
FIGURE 1-1. ANNUAL ECONOMIC IMPACTS OF CLIMATE CHANGE BY SECTOR

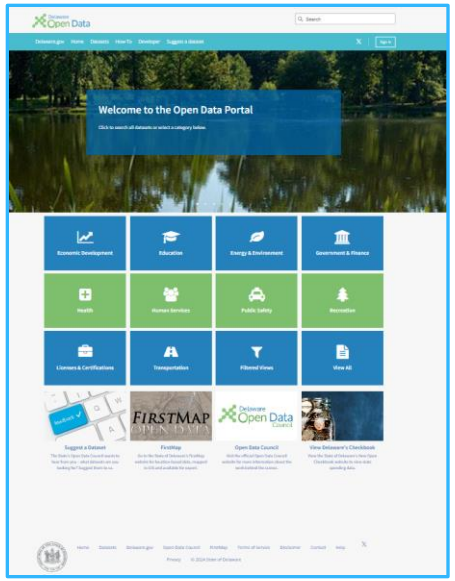
Statewide economic impacts of climate change, including the effects of projected SLR, across the five sectors, for RCP4.5 and RCP8.5. SLR impacts are era-specific and are assumed constant across RCPs. Totals do not include the impacts of storm surge. Values are reported in 2019 dollars.

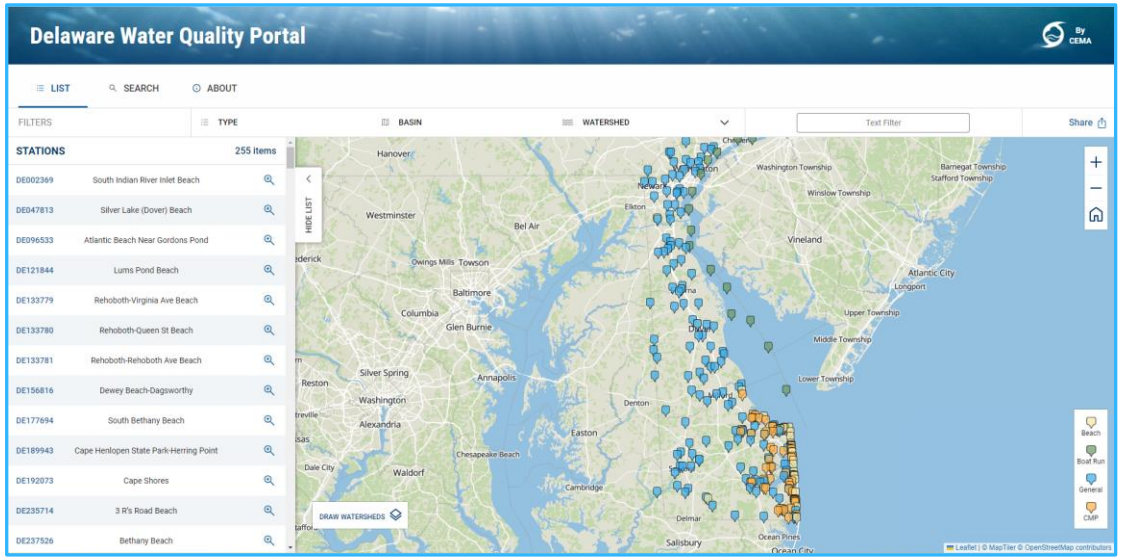


Data Availability

* Delaware Open Data Portal
* Delaware Water Quality Portal
* DEOS





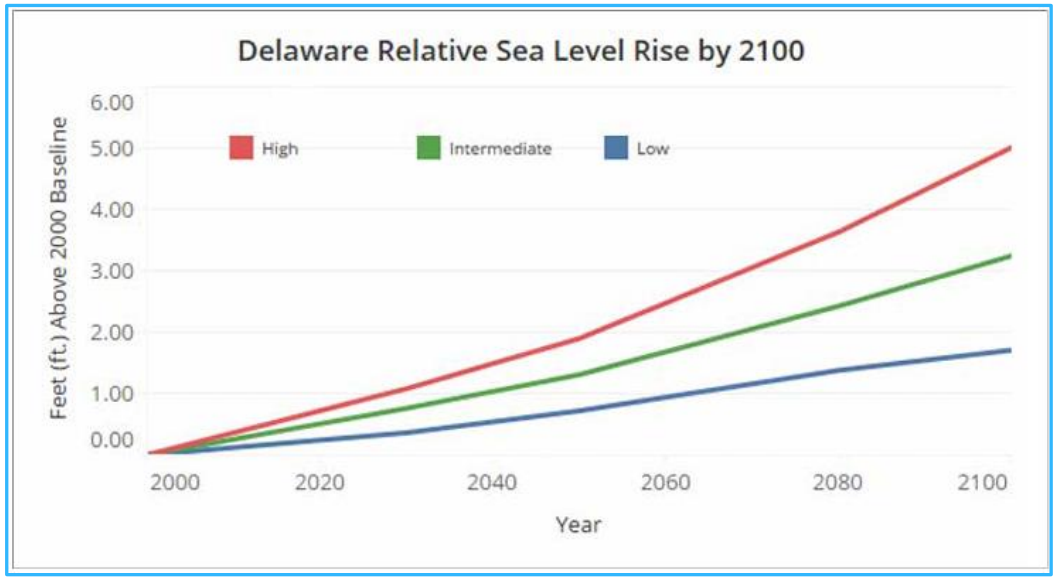


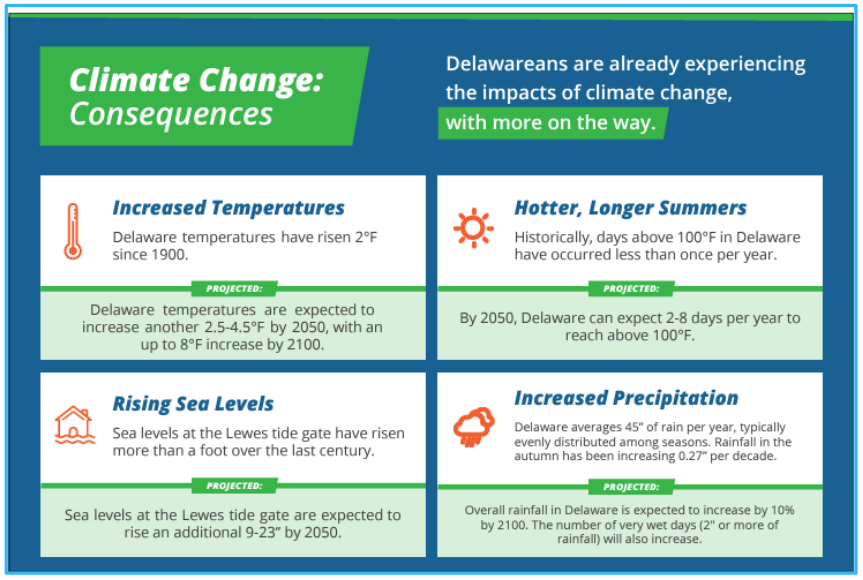
Delaware Climate Change Solutions Act of 2023

* Establishes a statutory target of greenhouse gas emissions reductions.
* Establishes a process of regular updates to the Climate Action Plan
* Creates Climate Change Officers in certain Key Cabinet-Level Departments
* Requires State agencies to consider climate change in decision-making, rulemaking, and procurement
* Report every 2 years on the progress of the State towards meeting the statutory targets

Update Climate Change Scenarios and Sea Level Rise Predictions

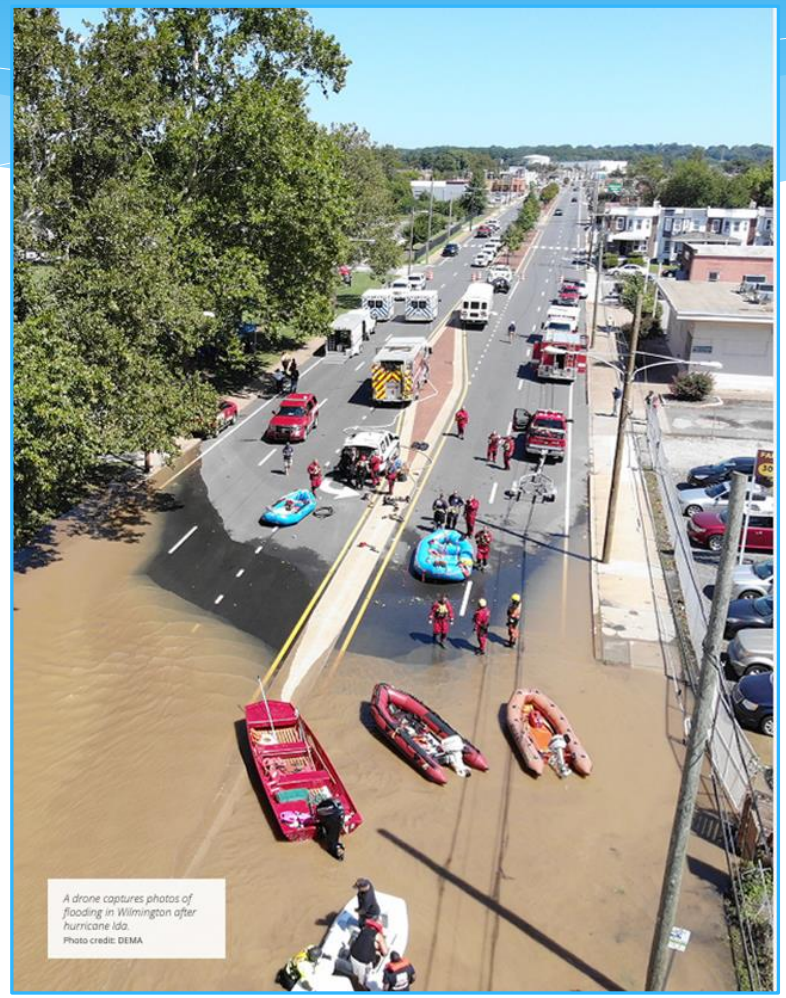
* Report due by end of 2024
* Lead by UD CEMA with DNREC funding/support





Take-aways

* Stakeholder Education, Cooperation and Buy-in
* Realistic Targets and Actions
* True Living Document
* Reports on Actions
* Leverage Climate Plan to Support Collaborative Projects



Links

* Climate Action Plan: dnrec.delaware.gov/climate-plan/Delaware
* Delaware Climate Office: climate.udel.edu
* Climate Leadership Academy: dnrec.delaware.gov/climate-plan/academy/
* Sea Level Rise Scenarios: www.dgs.udel.edu/slr
* Delaware Coastal Dashboard: cema.udel.edu/applications/dashboard
* Delaware Environmental Observing System: www.deos.udel.edu
* Delaware Flood Planning Tool: floodplanning.dnrec.delaware.gov
* Delaware Open Data Portal: data.delaware.gov

Thank You & Questions

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