

Helping the City of Chester Adopt Climate Adaptation Planning Elements

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Penn State University, PA Sea Grant

Schuylkill Watershed Congress, March 14, 2015





Where's the sea?

How can I get a grant?



Sea Grant

Pennsylvania



PENNSTATE



Coastal Stewardship Program with 3 Main Focus Areas:

- Applied Research
- Education (school based)
- Outreach

Coastal Stewardship Projects:

- Aquatic invasive species prevention
- Land conservation and smart growth
- Hazard & climate planning
- Safe disposal of pharmaceutical and personal care products
- Fish consumption issues
- Coastal tourism & clean marinas

Overview

- **Climate Projections**
- **Climate Adaptation**
- **Chester City Planning Elements**

Weather

**What happens
today or next
Saturday**

VS

Climate

**Long term average
weather, typically
20 years or longer**

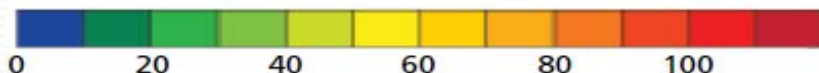
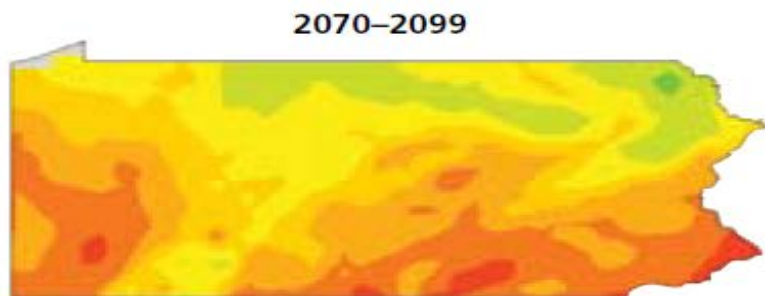
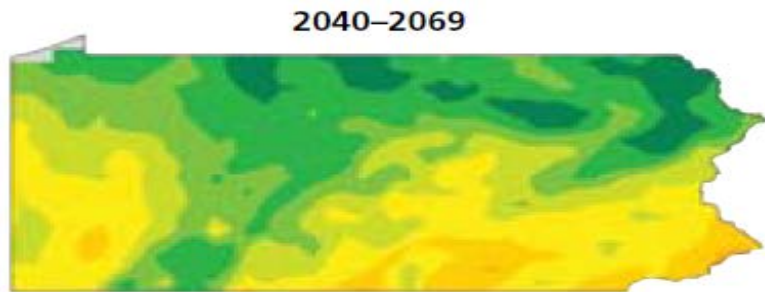
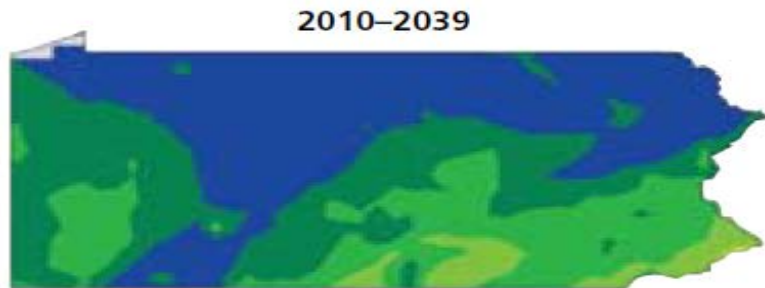
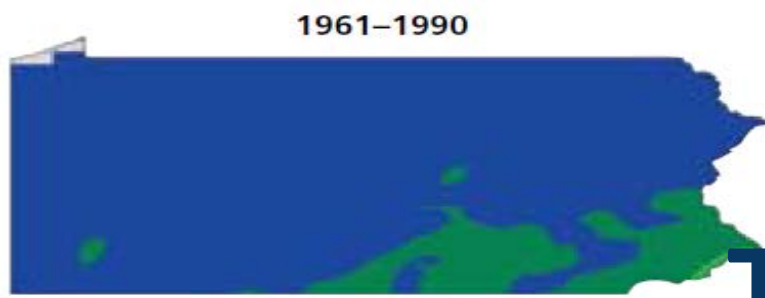
Scientists Agree:

- Climate change is occurring
- Data show:
 - Rapid warming in the past few decades
 - The last decade has been the warmest on record.
- 97% of scientists agree climate-warming trends over the past century are mainly due to green house gases emitted by human activities



Northeast

- More precipitation and more frequent heavy downpours
- More frequent heat waves – risk human health
- Farms and Fisheries will likely suffer

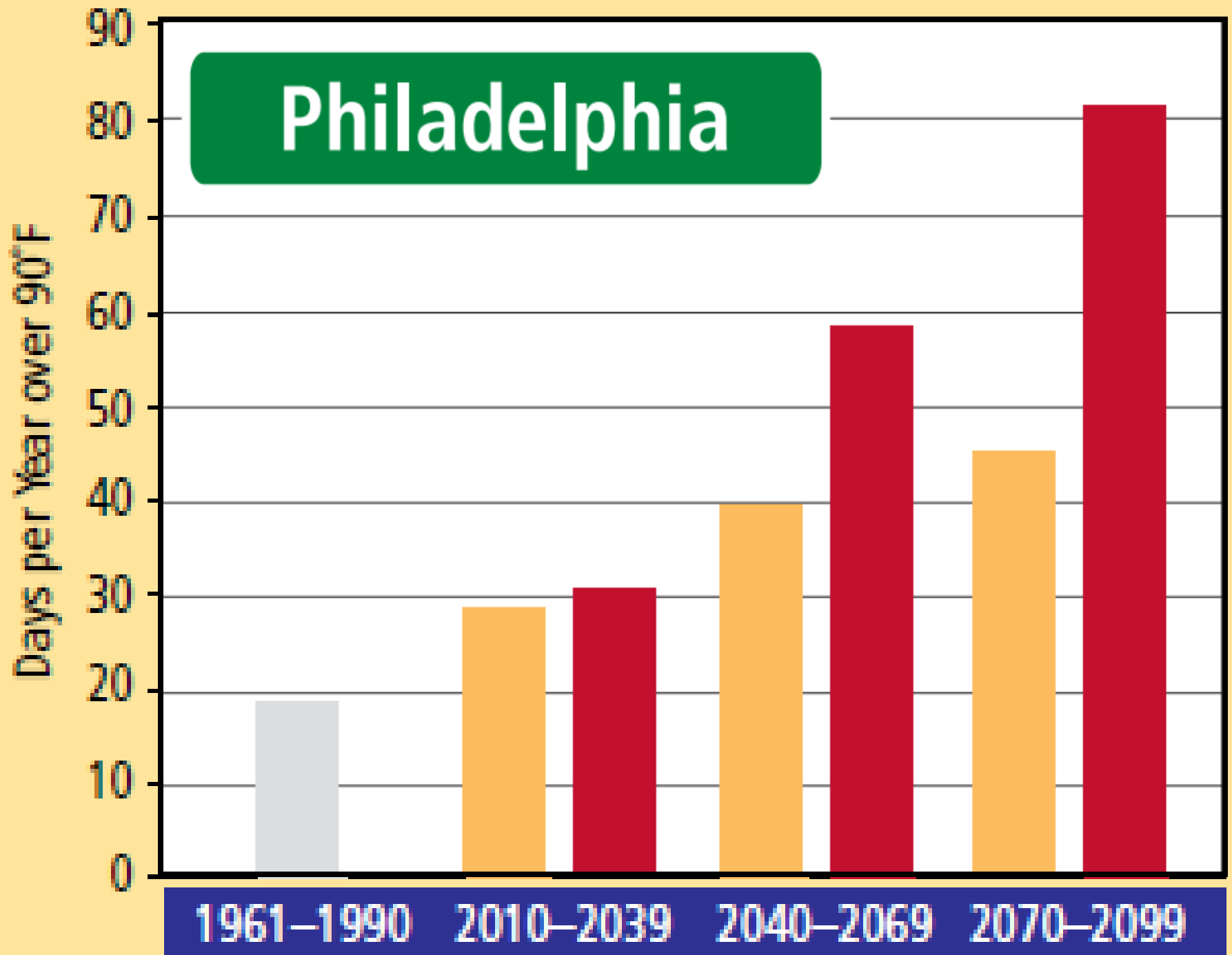


Expected Temperature Change

Days Per Year
Over 90° F

Blue = 10 or fewer

Red = up to 120 days



Northeast Climate Impacts Assessment (NECIA). 2008. *Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State*.

Solutions?

- Reduce GHG Emissions
- Adapt to Climate Change

Climate

Mitigation

Tackles the causes
of climate change
mainly by
reducing
greenhouse gases

VS

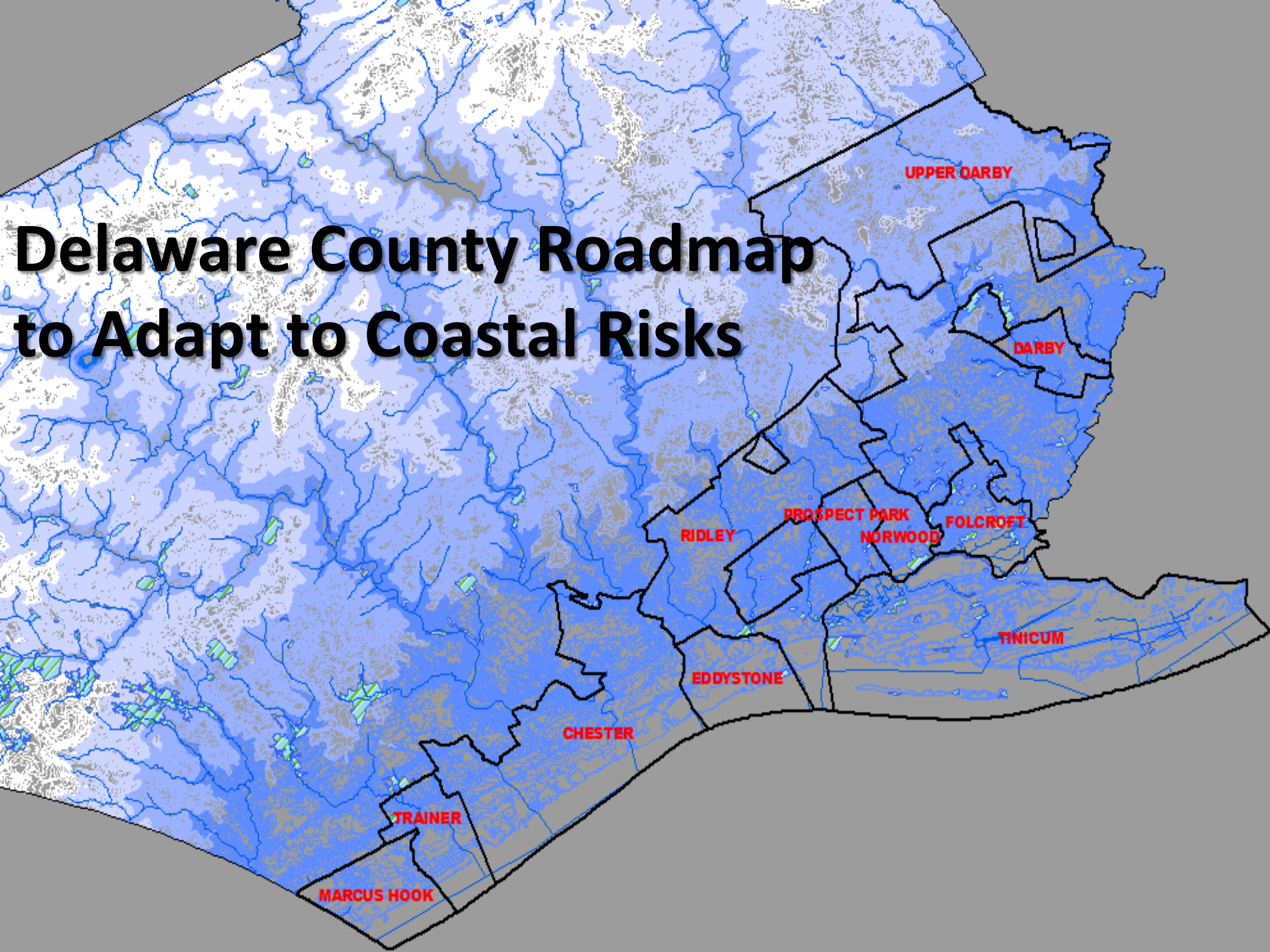
Adaptation

Adjustment in
natural or human
systems to reduce
future climate
impact

Chester Climate Adaptation Planning, Outreach & Research



Delaware County Roadmap to Adapt to Coastal Risks



Partners

Pennsylvania Sea Grant



NOAA Coastal Services Center

Delaware County Planning
Department



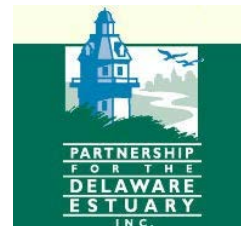
Delaware River Basin
Commission

Delaware Valley Regional
Planning Commission



EPA Region III

City of Chester

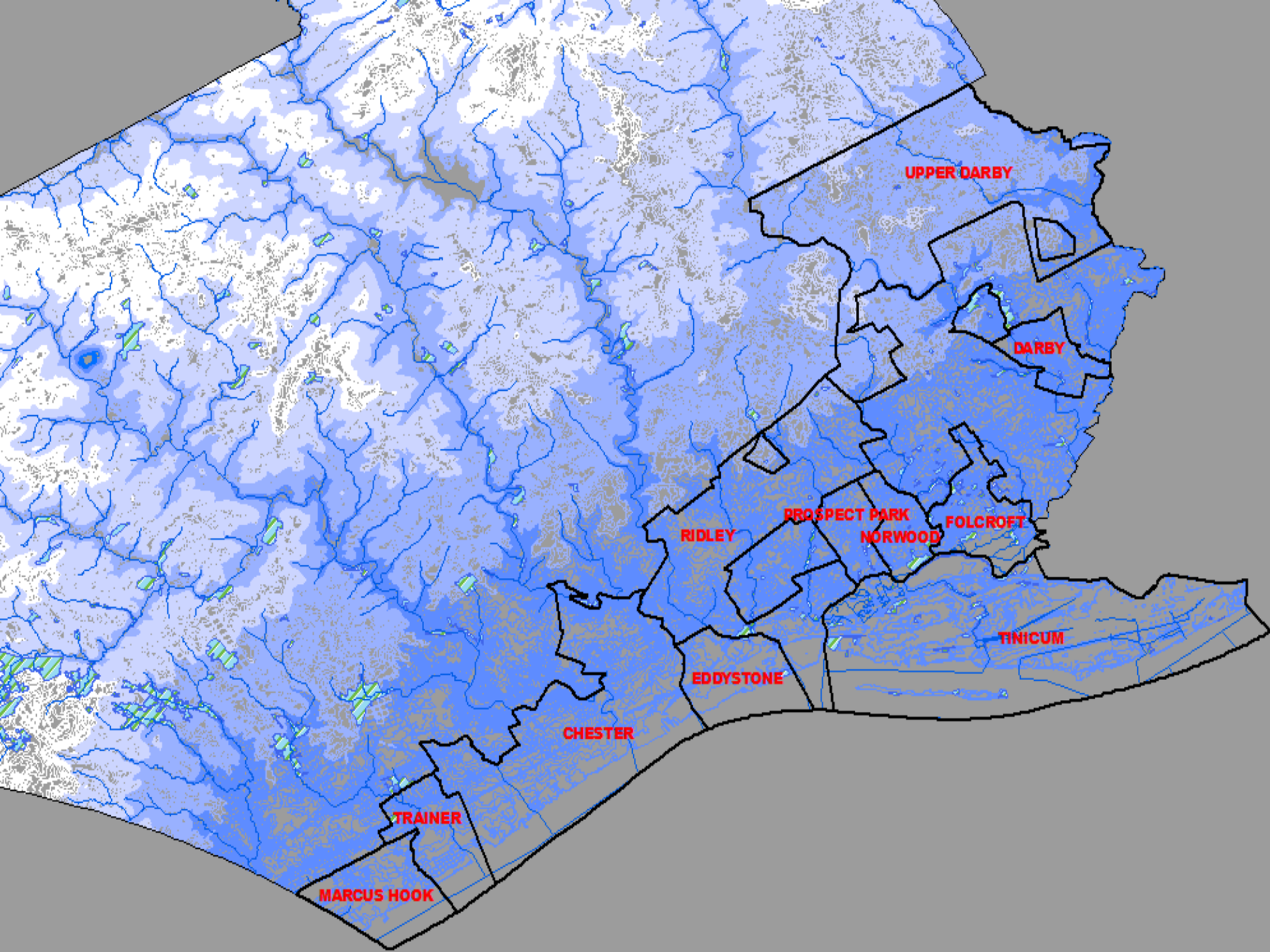


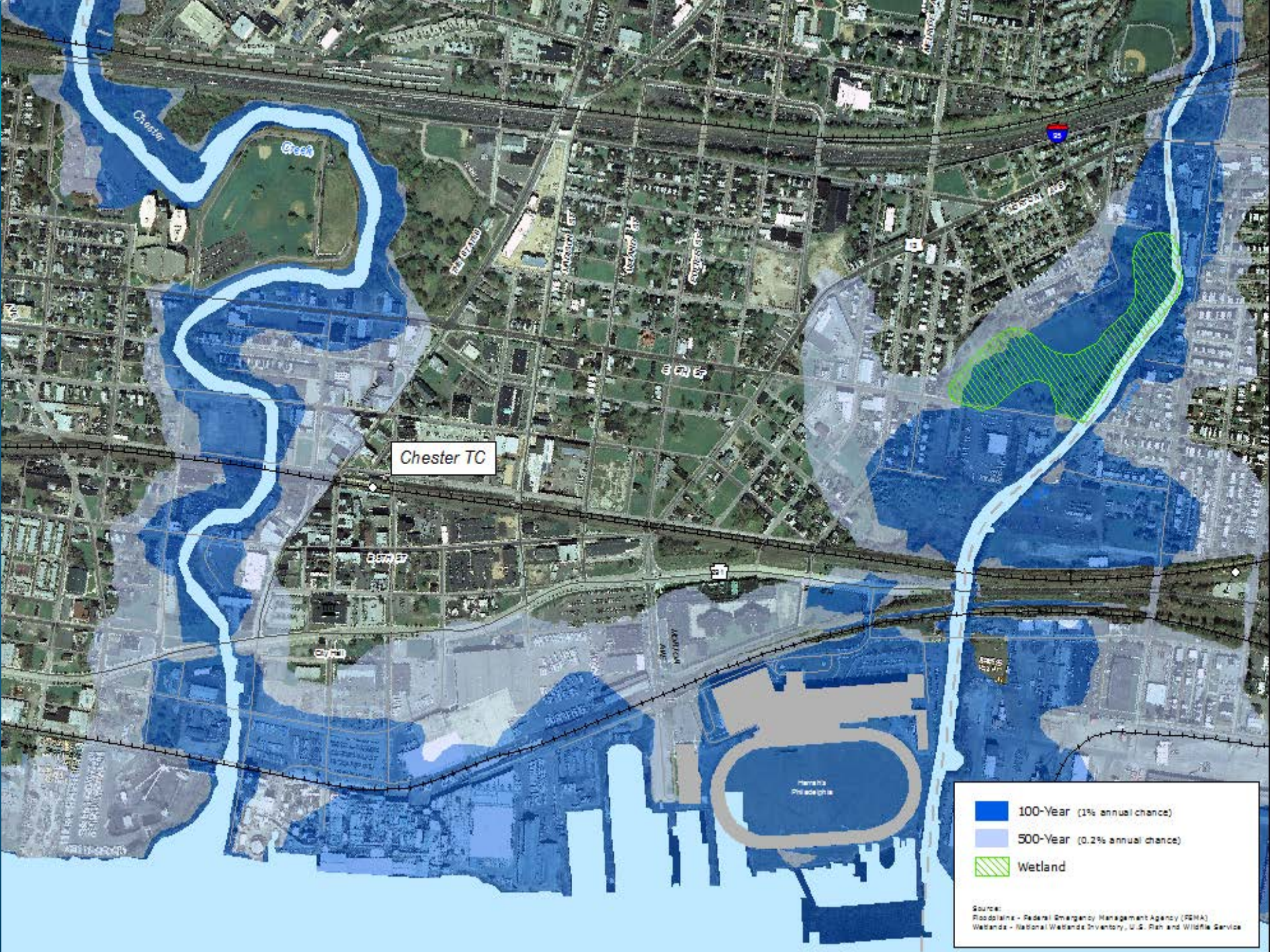
Partnership for the Delaware
Estuary





<http://seagrant.psu.edu/extension/roadmap.pdf>





Chester TC

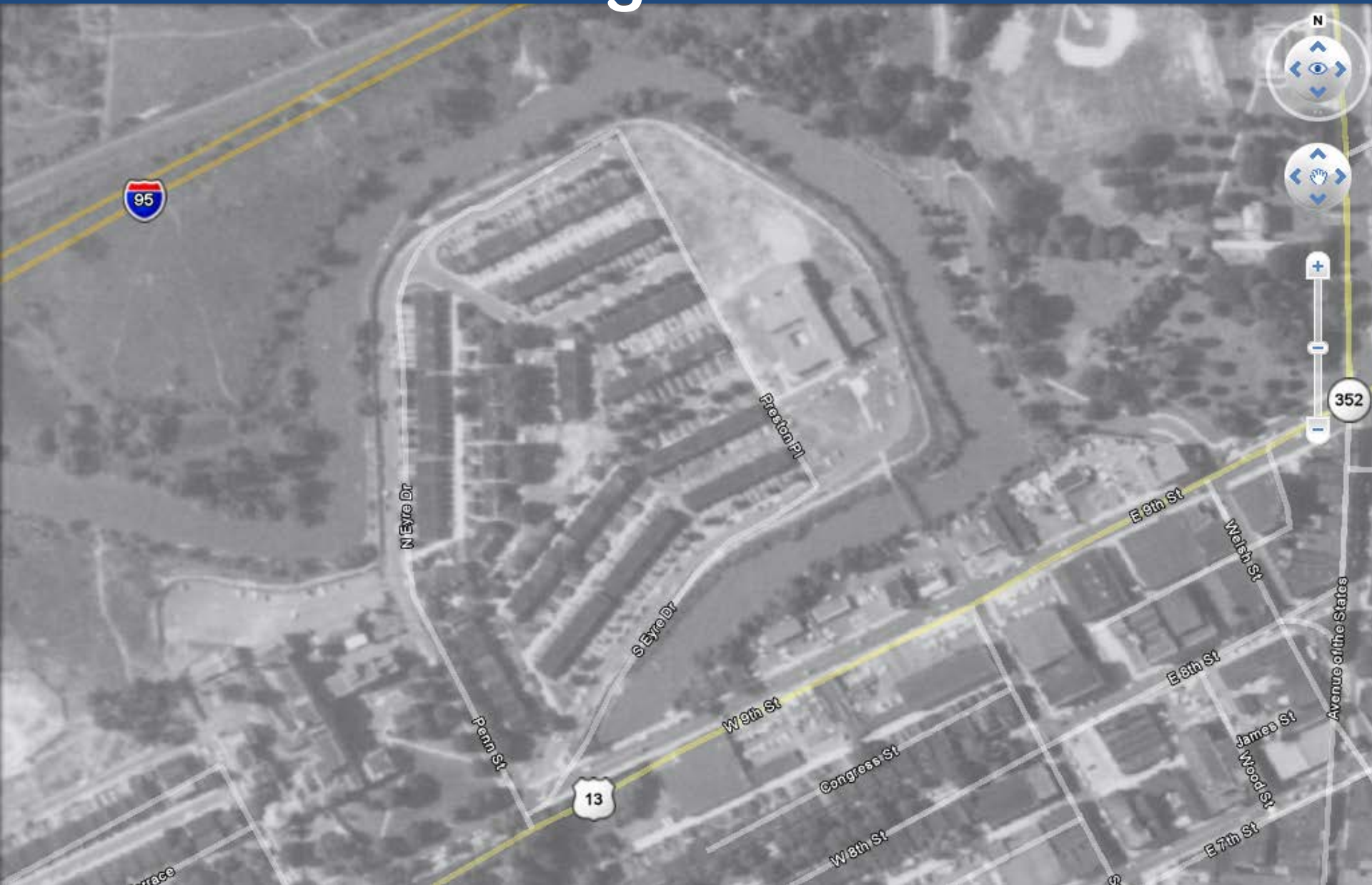
100-Year (1% annual chance)

500-Year (0.2% annual chance)

Wetland

Source:
Floodplain - Federal Emergency Management Agency (FEMA)
Wetlands - National Wetlands Inventory, U.S. Fish and Wildlife Service

Chester Neighborhood 1958



An aerial photograph of a baseball field, likely taken from Google Maps. The field is green with a visible infield and pitcher's mound. It is surrounded by a river or creek. To the left, a multi-lane highway (Interstate 95) runs parallel to the field. Several streets are labeled: N Eyre Dr, Preston Pl, Penn St, W 9th St, Congress St, W 8th St, E 9th St, E 8th St, E 7th St, James St, and Wood St. A road sign for Highway 13 is visible near the bottom center. The surrounding area includes dense trees and some residential or commercial buildings. The image is framed by a map interface with navigation controls and a scale bar.

After September 1971 Flood

OCTOBER 10, 2012

VISION 2020

THE CITY OF CHESTER



A CITY
BEAUTIFUL
MOVEMENT



2012 National Sea Grant Climate Adaptation Competition

1. Understand how the City is vulnerable to extreme heat, severe storms, flooding, and sea-level rise
2. Prioritize and plan actions to increase community resiliency to climate-related hazards
3. Engage city leaders, staff and the public in a dialogue on the value and outcomes of investing in resiliency.







☒ Critical Facilities

Flood Maps

- ☒ Chester City
- ☐ 100 Year Flood
- ☐ 500 Year Flood

Storm Surge Projections

- ☐ Category 1 Hurricane
- ☒ Category 2 Hurricane
- ☐ Category 3 Hurricane
- ☐ Category 4 Hurricane

- School 
- Evacuation Center 
- University 
- City Hall 
- Fire Station 
- Police 
- Hospital 

The City of Chester Vision 2020 Climate Adaptation Planning Elements

APPROVED BY CHESTER CITY COUNCIL

June 25, 2014

Authored by: The Chester Hazards and Climate Project Team

Chester council adds climate adaptation to city's comprehensive plan



Times file photo The area around the Kerlin Street bridge was among the places in the city damaged by Hurricane Sandy in 2012 .

By [Vince Sullivan](#), *Delaware County Daily Times*

POSTED: 07/01/14, 11:59 PM EDT |

CHESTER — City council adopted a ground-breaking addendum to its comprehensive plan at last Wednesday's council meeting aimed at reducing the effects of extreme weather. The Climate Adaptation Plan will add initiatives to Chester's Vision 2020 Comprehensive Plan with a goal of better handling flooding and extreme heat. Developed by a task force comprised of representatives from Pennsylvania Sea Grant, the Delaware Valley Regional Planning Commission, Chester's city government and the city and Delaware County planning departments, the plan outlines several strategies for achieving its goals.

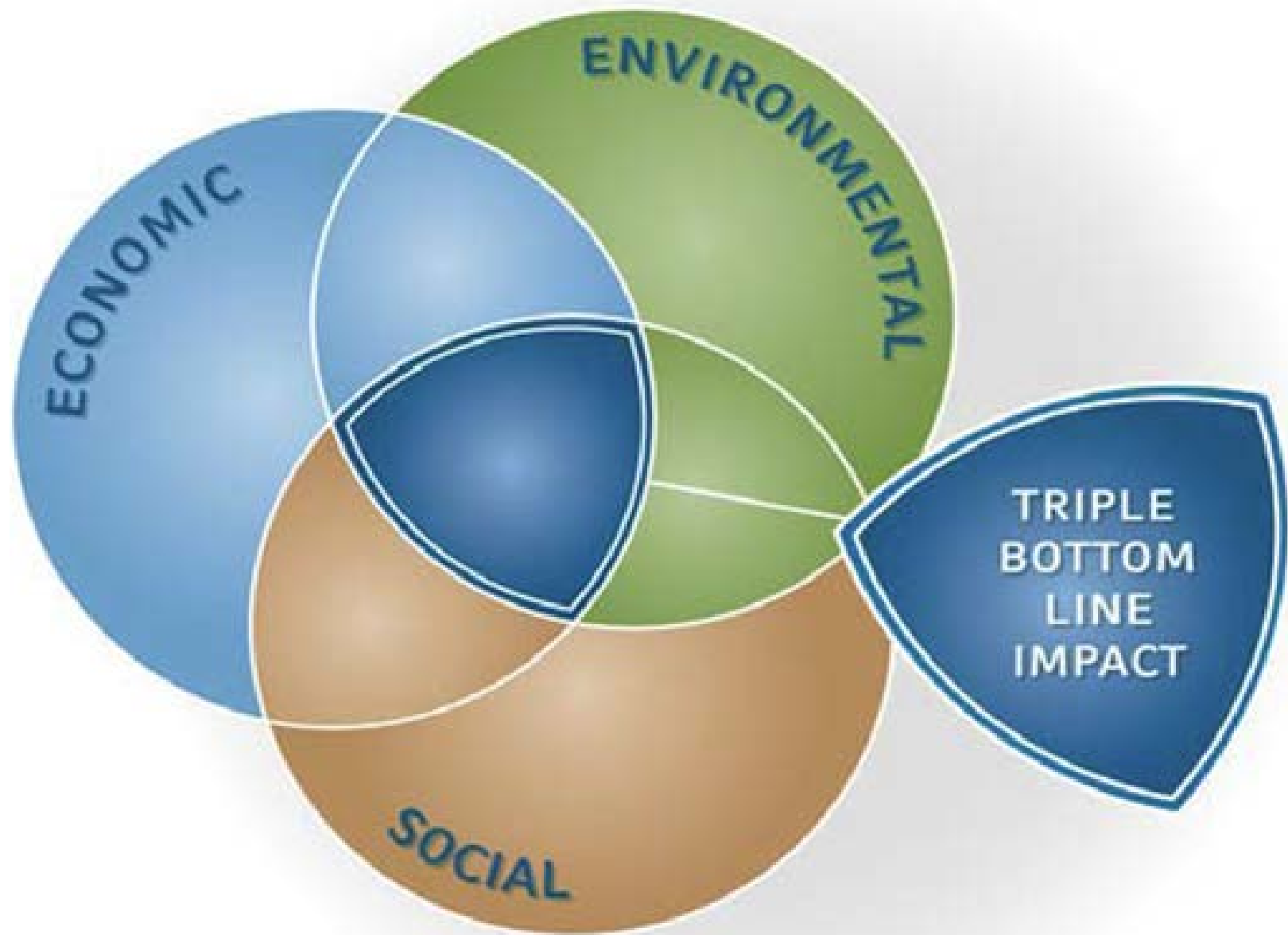
Identifying vulnerabilities to extreme weather, such as heat, coastal storms and flooding, reducing their impacts on the city and better informing the public about the value in understanding the effects of extreme weather were the main objectives of the plan.

"Present day climate stressors, such as extreme heat, severe coastal storms, flooding and drought, threaten the City of Chester's developed and natural environments," the plans' Executive Summary states. "Past observations and current modeling suggest that these climate stressors will become more severe in the future and expose the city and its residents to new hazards and heightened risks."

Members of the project team presented the plan to Chester Planning Commission on June 11, and were on hand Wednesday when it was adopted by council. The team worked for more than two years to develop the plan, but have been looking into climate issues in Chester for longer than that.

7 Recommendations:

1. Create an **Environmental Advisory Council** (EAC)
2. Engage in a **Post-Storm Redevelopment** Planning Process
3. Develop a **Heat Emergency Plan**
4. Seek Certification in the National Flood Insurance Program **Community Rating System** (CRS)
5. **Improve Floodplain Management** to protect Chester's residents, sensitive habitats, and property from flooding
6. Expand **Vegetated Buffers**, Restore Wetlands and Streams, and Protect Open Space
7. Develop a Plan to Implement **Green Stormwater Infrastructure** (GSI)

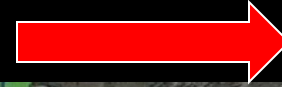


Example Philadelphia Airport Flooding Adaptation Ideas

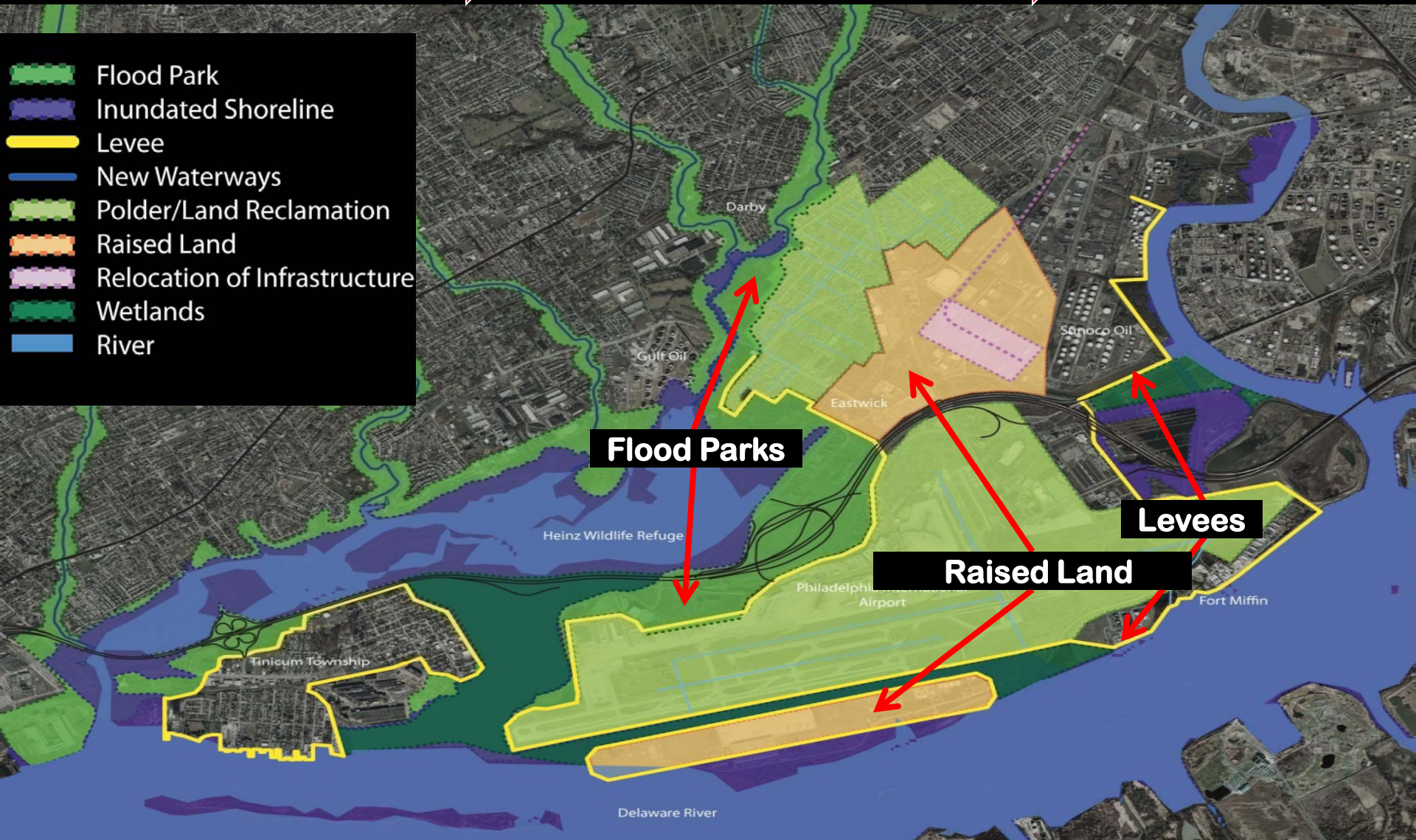
Asses Risk



Consider Solutions



Adapt Plans



EPA Technical Assistance Grant

Climate
Resiliency



Economic
Growth

GEORGETOWN CLIMATE CENTER

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Next

100 Opportunities to Prepare for Climate Impacts

A Georgetown Climate Center report seeks to improve more than 30 federal programs, initiatives, and laws that could be used to prepare for climate change. [More](#)

Featured Content



Report Identifies 100 Opportunities to Help U.S. Communities Prepare for Climate Impacts

The 100 recommendations in the report seek to improve more than 30 federal

Resources for Adaptation Action



[View resources](#)

View State-by-State Energy Profiles



NFWF Sandy Recovery Grant



Chester Green Stormwater Infrastructure Plan

To absorb floods, slow erosion, & provide habitat



Roadmap
Workshops

Climate Goals
Vision 2020

Planning
Elements for the
Vision 2020

Climate
Planning in
Zoning
Rewrite

EPA Zoning
Technical
Assistance

Georgetown
Climate
Center

Chester GSI
Plan

Brownfields Research



Roadmap Workshops

Climate Goals
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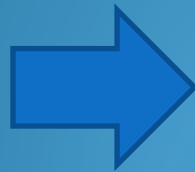
Climate
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EPA Zoning
Technical
Assistance

Georgetown
Climate
Center

Chester GSI
Plan

Need for
Brownfields
Work



Brownfield
Prioritization
EPA, NJIT



Brownfields in
Light of
Flooding &
Future Climate

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EasternPaSeaGrant.org/Chester