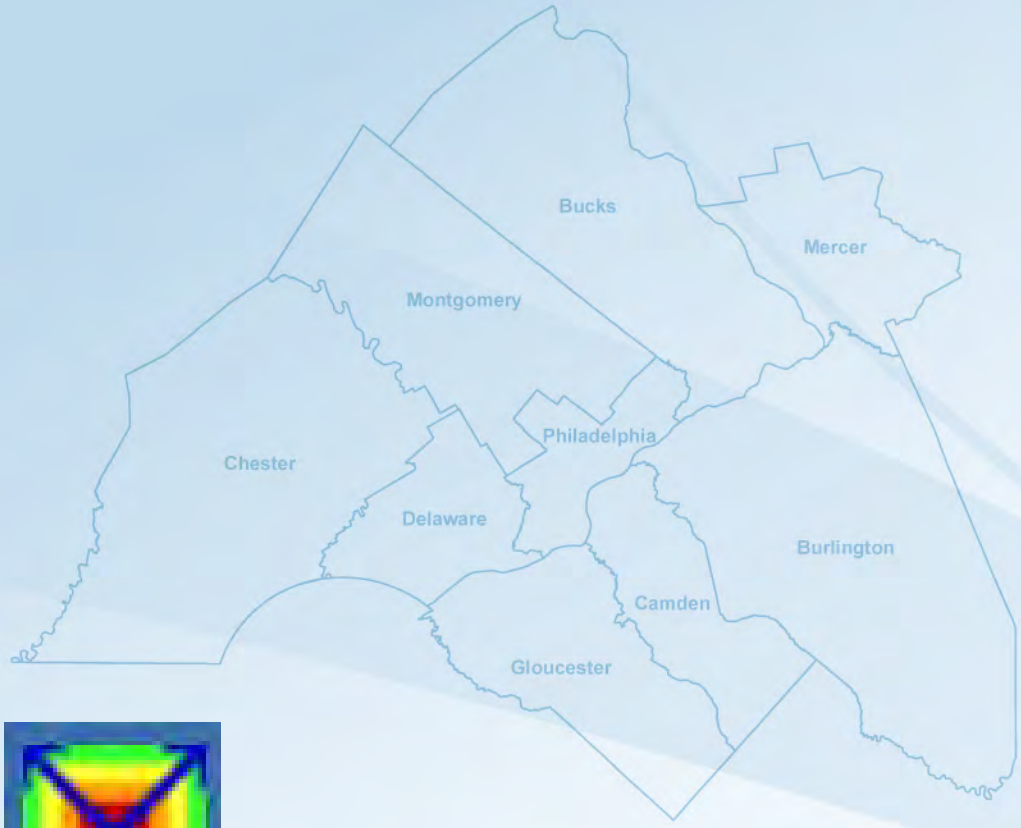


DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

RIMIS

RIMIS Deployment Update
Public Participation Meeting
June 24, 2014

RIMIS

Regional Integrated Multimodal Information Sharing

Providing safe and efficient transportation in the Delaware Valley region involves many partners…

dvrpc

Pennsylvania RIMIS Partners

- Bensalem FD
- Bensalem PD
- Berwyn Fire Company
- Bucks County 9-1-1 / OEM
- Chadds Ford Township
- Chester County 9-1-1 / OEM
- Chester Fire Dept
- Chester Twp PD
- Delaware County 9-1-1 / OEM
- Delaware Valley Intelligence Center
- EVB Towing
- George Clay FD
- Gladwyne Fire Company
- GVF Transportation
- Haverford Twp PD
- King of Prussia Fire Company
- Limerick Township PD
- Lower Merion FD
- Lower Merion PD
- Middletown Township PD
- Montgomery County 9-1-1 / OEM
- Oreland Volunteer Fire Co. No. 1
- PA Turnpike
- PEMA
- Penn DOT Central Office
- PennDOT District 6-0
- PennDOT Bucks/Delaware/Montgomery Maintenance
- Philadelphia Fire Department
- Philadelphia OEM
- Philadelphia Streets Department
- Plymouth Fire Company
- Plymouth PD
- South Media Fire Company
- Springfield Public Works
- West Conshohocken Boro PD
- West Whiteland PD
- Whitemarsh PD
- VMSC of Lower Merion & Narberth

dvrpc

New Jersey RIMIS Partners

- Bellmawr Fire Department
- Burlington County 9-1-1 / OEM
- Burlington County TOC
- Burlington Twp FD
- Burlington Twp PD
- Camden County 9-1-1 / OEM
- Cherry Hill FD
- Cherry Hill PD
- Collingswood FD
- Cross County Connection TMA
- DRJTBC
- DRPA
- Evesham Fire-Rescue
- Evesham Police Department
- Gloucester City EMS
- Gloucester County 9-1-1 / OEM
- Mansfield Ambulance
- Medford PD
- Mercer County Dept. of Transportation
- Mercer County 9-1-1 / OEM
- Moorestown FD
- Mount Laurel EMS
- Mount Laurel FD
- Mount Laurel PD
- NJ DEP
- NJ DOT – Statewide Traffic Management Center
- NJ DOT – Traffic Operations South
- NJ Transit Bus Operations
- South Jersey Transportation Authority
- Virtua EMS
- Westampton FD
- Westampton PD
- Willingboro FD
- Willingboro PD

dvrpc

Traffic Incident Management in the DVRPC Region

Task Force Locations:

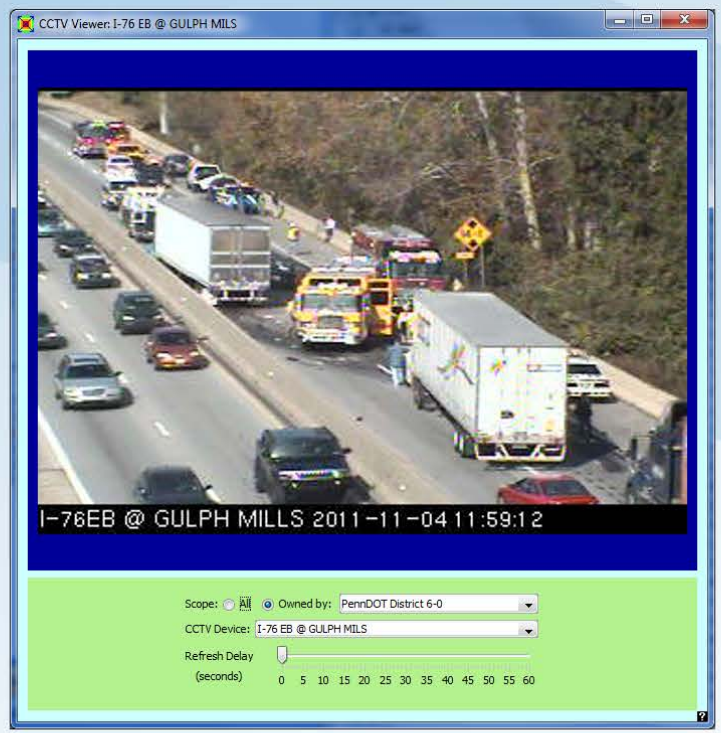
- I-76/I-476 Crossroads (1) *est. 1999*
- NJ SAFR (2) *est. 2002*
- Philadelphia (3) *est. 2007*
- Delaware County (4) *est. 2008*
- US 30 Chester County (5) *est. 2009*
- Burlington County (6) *est. 2012*
- I-95/US 1 Bucks County (7) *est. 2012*
- PA 309, US 422, US 202 (8)

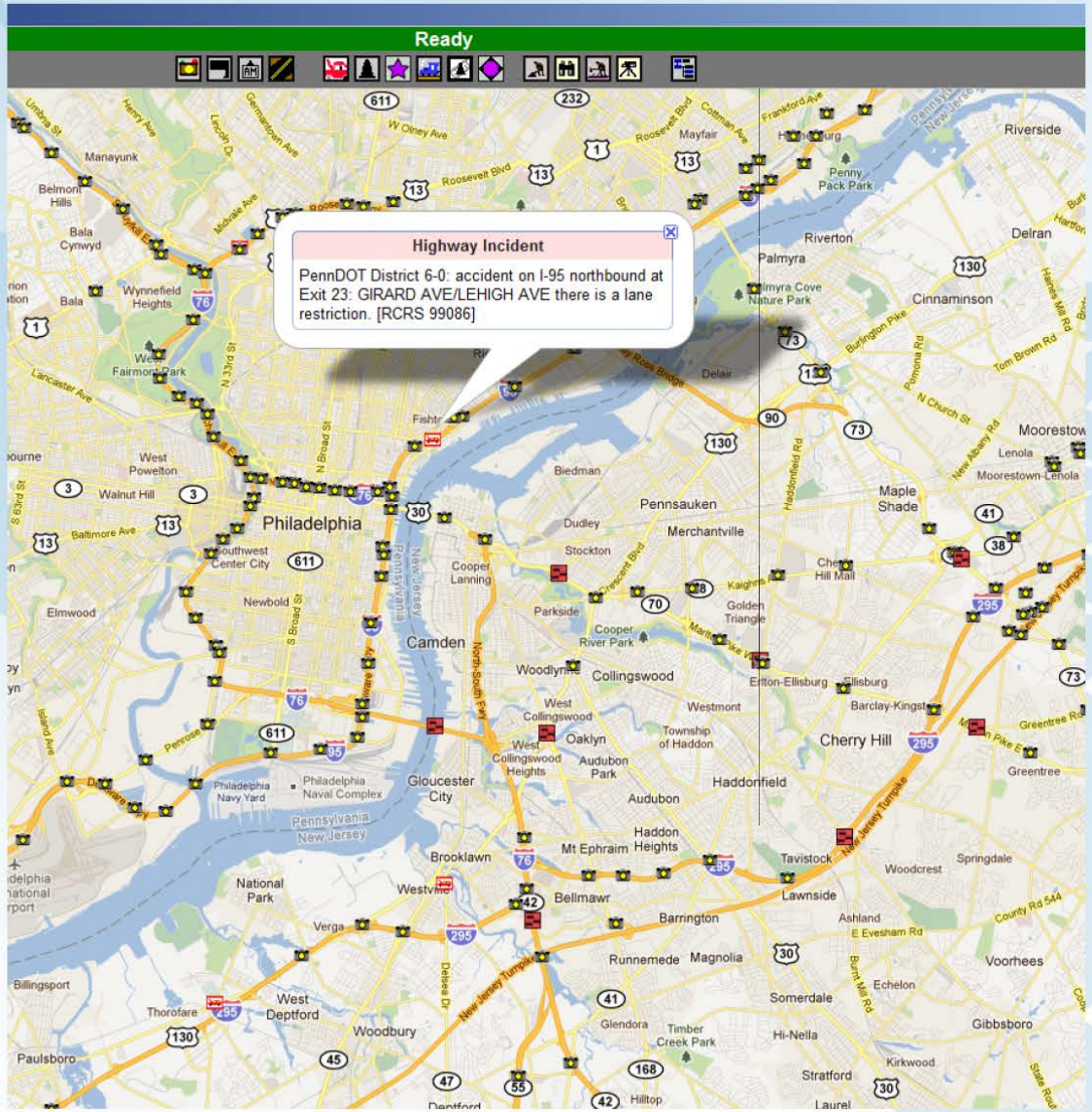
Using RIMIS

- Operations Database
  - Can be used for a Traffic Operations Center
  - Log incidents and create reports (incident, monthly, construction)
  - Notification distribution
- Situational Map
  - The “big picture”: arterial network information, local construction information, minor special events
  - Fills the gap between locals and DOT
- Video Wall
  - Incident Management: location verification, incident severity, equipment dispatch, arrival tactics

dvrpc

RIMIS Situational Map





dvrpc

RIMIS Video Wall

RIMIS: State and Regional Level

- New Jersey DOT
  - NJ 511, SWIFT System
- Pennsylvania DOT
  - PA 511, Road Closure Reporting System (RCRS)
- Pennsylvania Emergency Management Agency
- New Jersey Department of Environmental Protection
- Pennsylvania Turnpike Commission
- Delaware River Port Authority
- Delaware River Joint Toll Bridge Commission
- Delaware Valley Intelligence Center
- Federal Bureau of Investigation
- US Open Golf Tournament, 2013

dvrpc

RIMIS: County Level

- County 9-1-1 Centers
  - Bucks, Chester, Delaware, Montgomery, Philadelphia
  - Burlington, Camden, Gloucester, Mercer
- Mercer County Department of Transportation
- Philadelphia Streets Department
- Burlington County Traffic Operations Center

dvrpc

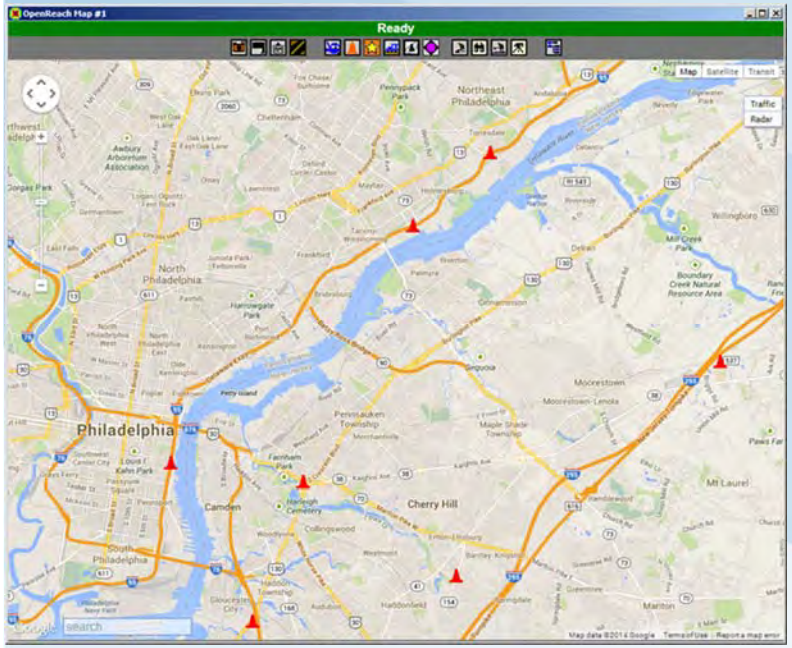
RIMIS: Municipal Level

- Local Police, Fire, EMS Departments
- Public Works Departments

Lower Merion Township Police

Moorestown Township Fire

RIMIS: Philadelphia Streets Department Under Development



- Traffic Operations Center to use RIMIS
- Integrate Street Closure Permit Data
  - Utility Emergency Work
  - Paving
  - Block Party
  - PWD Emergency Work
  - Special Event
  - Plumbers
  - Lane Closure
- Data Interface Complete
- TOC Opens Early 2015

dvrpc

RIMIS: Next Steps

- Continued Maintenance and Operations
- Continued Roll-out to More Responders
- Expand Database Input
- Potential Additional Data Interfaces
  - PennDOT Statewide Traffic Software
  - PA Turnpike
  - CAD Data
- Better Integration with SEPTA
- Performance Monitoring
- Planning for Operations

dvrpc

Contact Information

Laurie Matkowski

Manager, Office of Transportation Operations Management

Lmatkowski@dvrpc.org

215.238.2853

Resilience in the Face of Climate Change
A Regional Perspective

Presented by: Robert Graff, Manager, Office of Energy and Climate Change Initiatives, DVRPC

With help from:
Christopher Linn, AICP, Manager, Office of Environmental Planning, DVRPC
Erik Johanson, Manager of Strategic Business Planning, SEPTA

DVRPC Public Participation Task Force

June 24, 2014

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

re·sile (rĭ-zīl′) *intr.v.* **-siled, -sil·ing, -siles. 1.** To spring back, especially to resume a former position or structure after being stretched or compressed. **2.** To draw back; recoil. [Obsolete French *resilir,* from Latin *resilīre,* to leap back : *re-,* re- + *salīre,* to leap; see **sel-** in Appendix.]

re·sil·ience (rĭ-zĭl′yəns) *n.* **1.** The ability to recover quickly from illness, change, or misfortune; buoyancy. **2.** The property of a material that enables it to resume its original shape or position after being bent, stretched, or compressed; elasticity.

re·sil·ien·cy (rĭ-zĭl′yən-sē) *n.* Resilience.

---

sel-. Important derivatives are *salient, sally, sauté, assail, desultory, exult, insult, result, somersault,* and *salmon.*

Preparing to Bounce Back Faster

Doing Things Differently to Minimize Damage

More Extreme Weather Expected

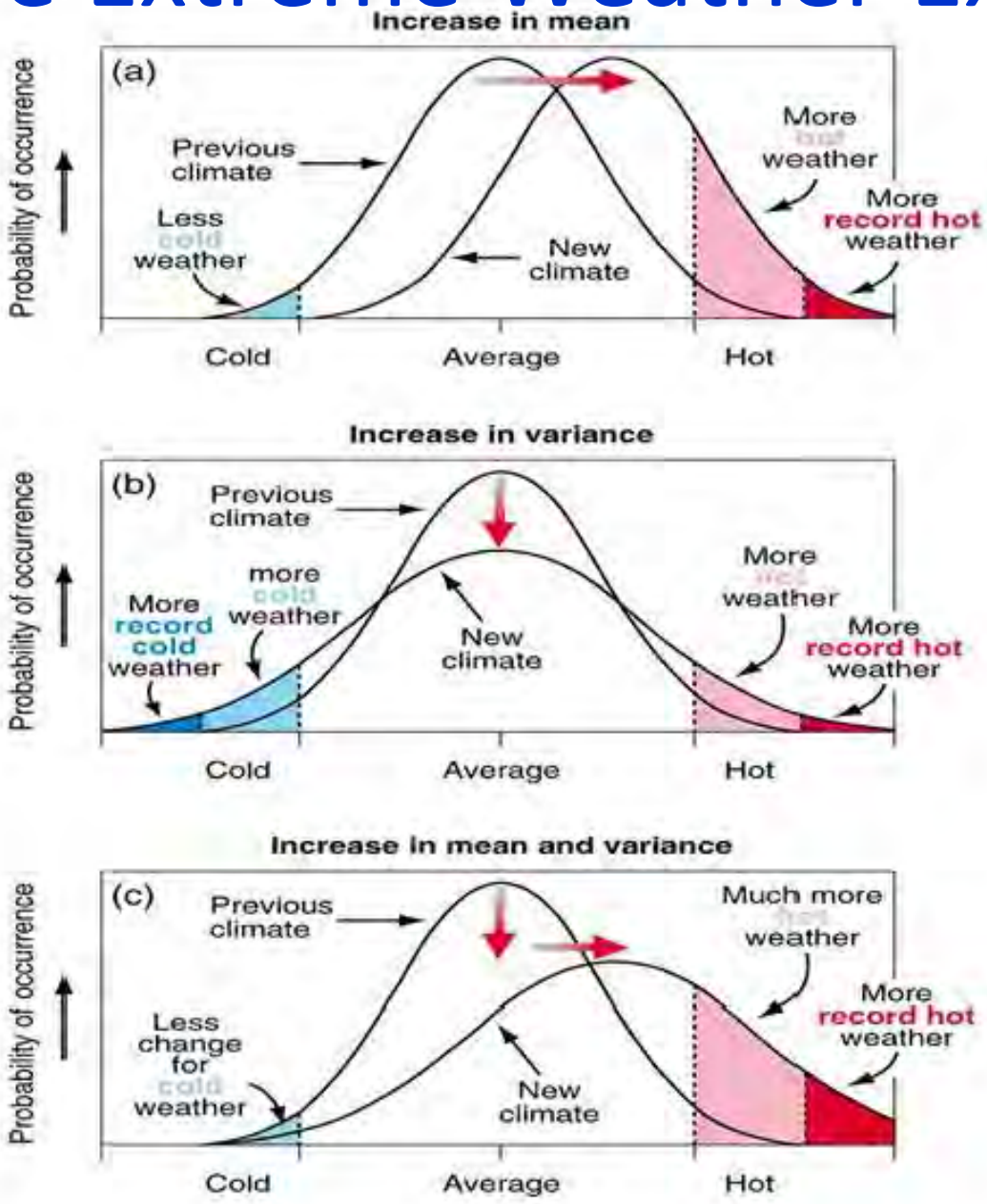


Image credit:
IPCC (2001)

Today Philly = Tomorrow Atlanta?

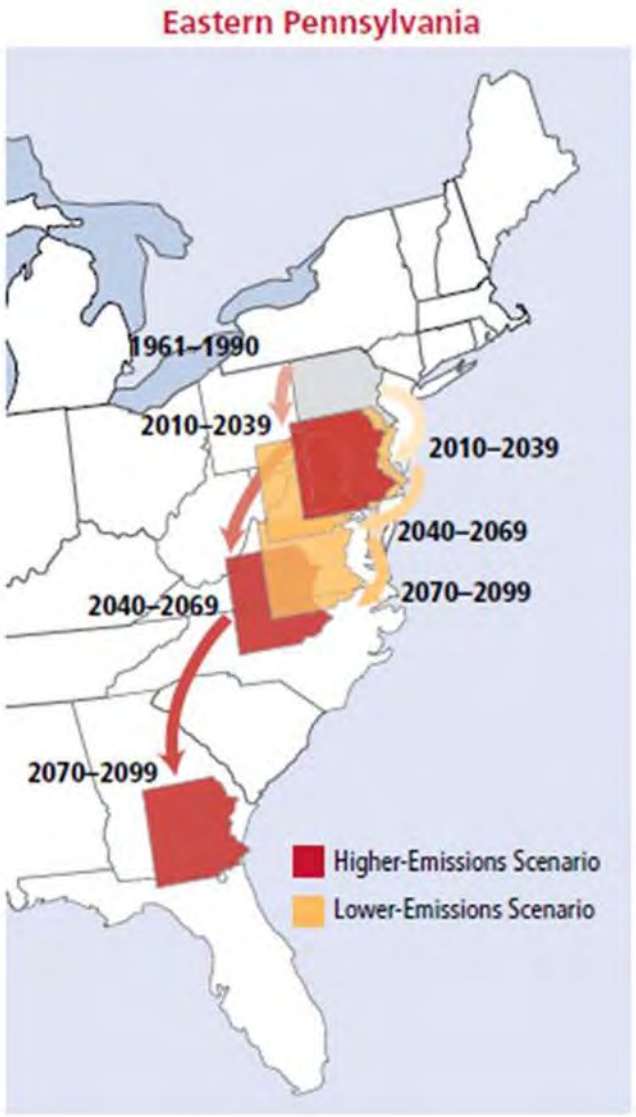
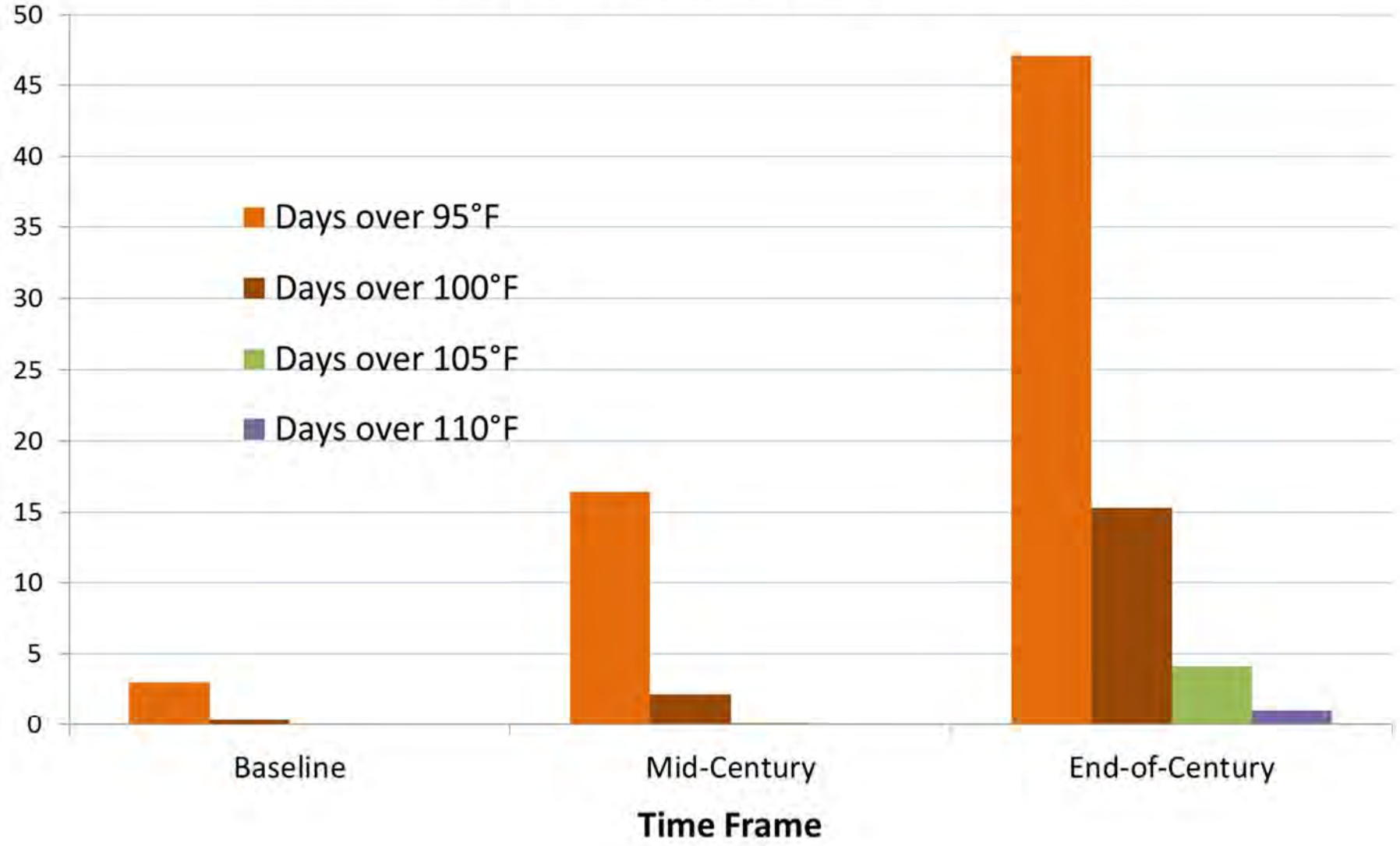


Image credit: UCS

Temperature Extremes in Greater Philadelphia

One Set of Projections from CMIP3*



* Phase **3** of the **C**oupled **M**odel **I**ntercomparison **P**roject, LLNL, from FHWA's Draft CMIP Climate Data Processing Tool

Hydrological Extremes Increase with Temperature

Floods

Blizzards

Drought

Severe Thunderstorms

Tornadoes

Hail Storms

Hurricanes

Heat

Heat

Heat

Heat

Wind

Wind

Wind

Wind

Wind

Water

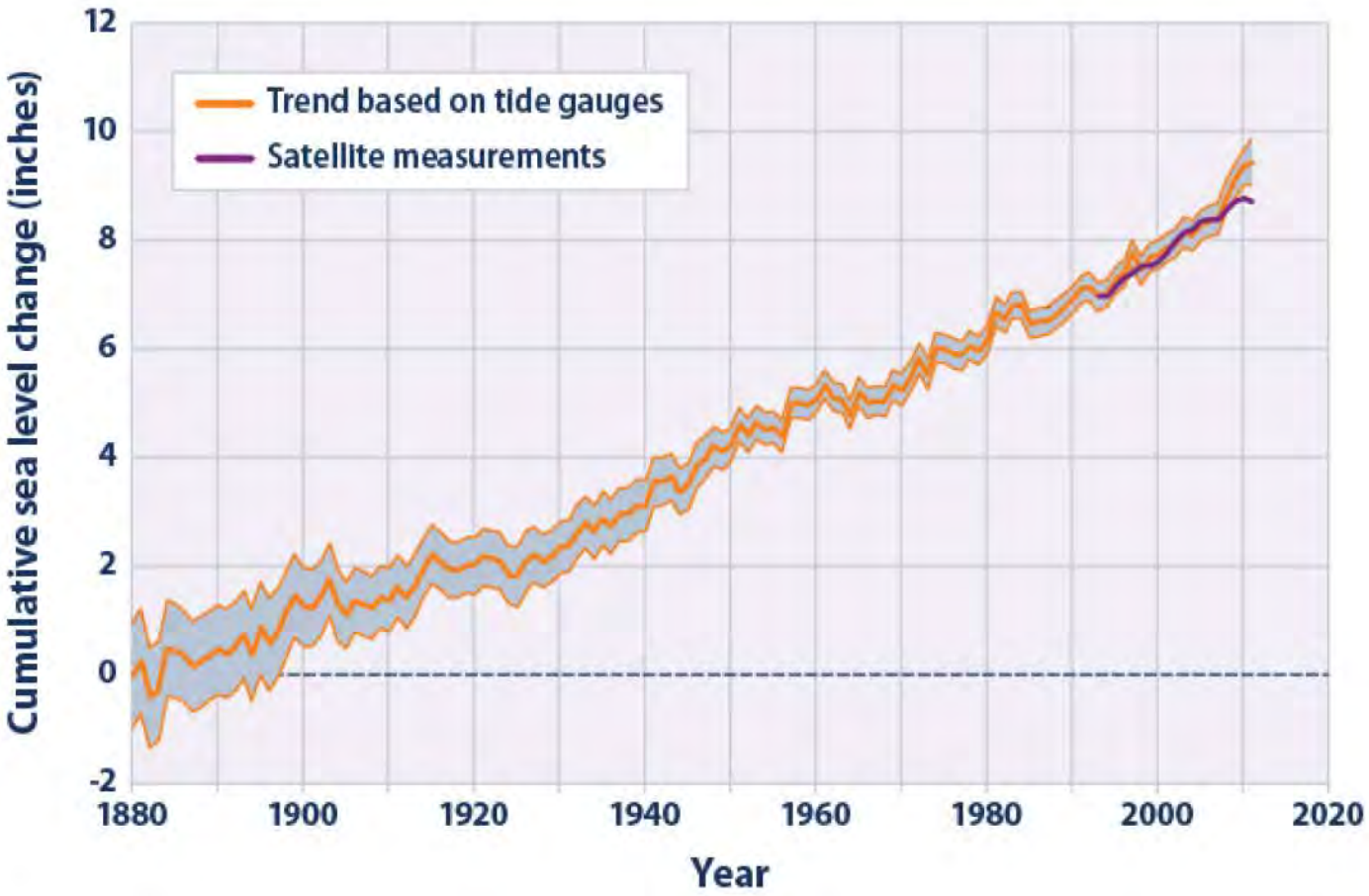
Water

Water

Water

Sea Level Rise

Global Average Absolute Sea Level Change, 1880–2011



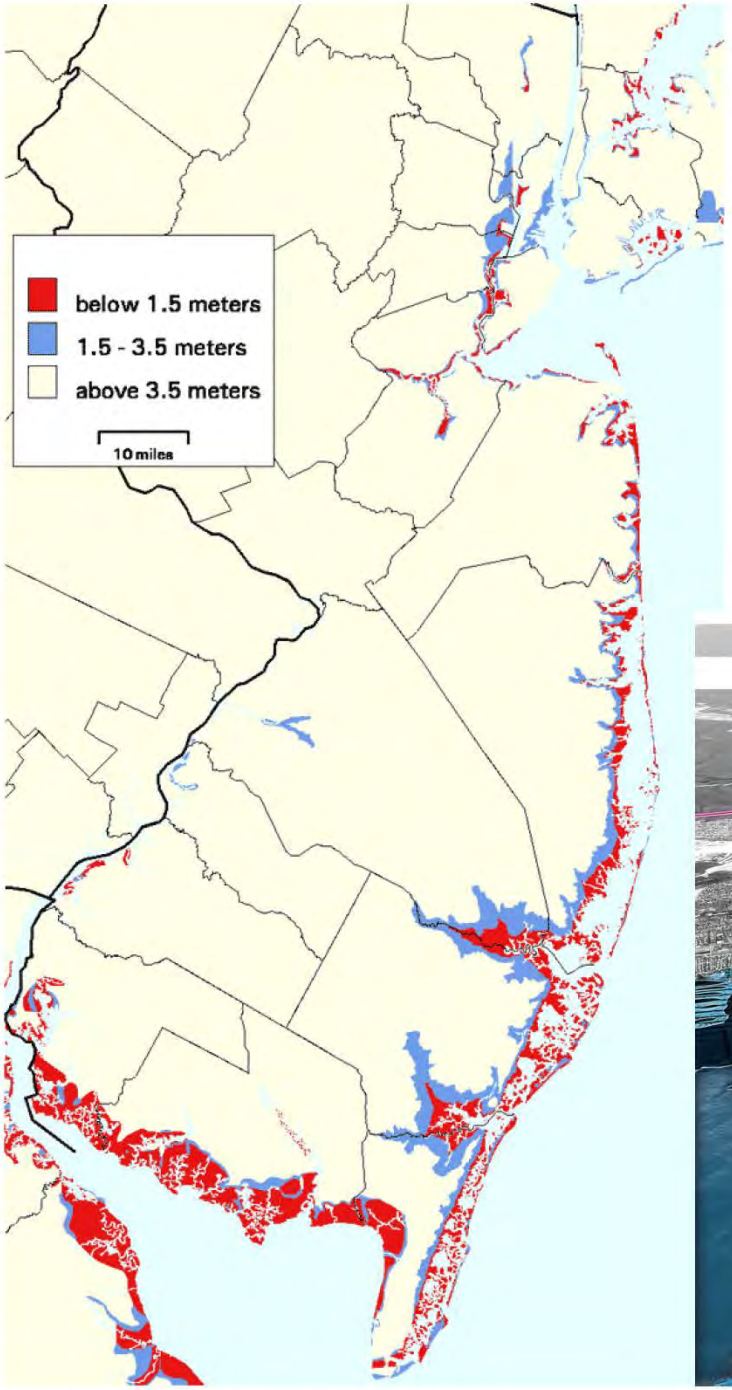
Data sources:

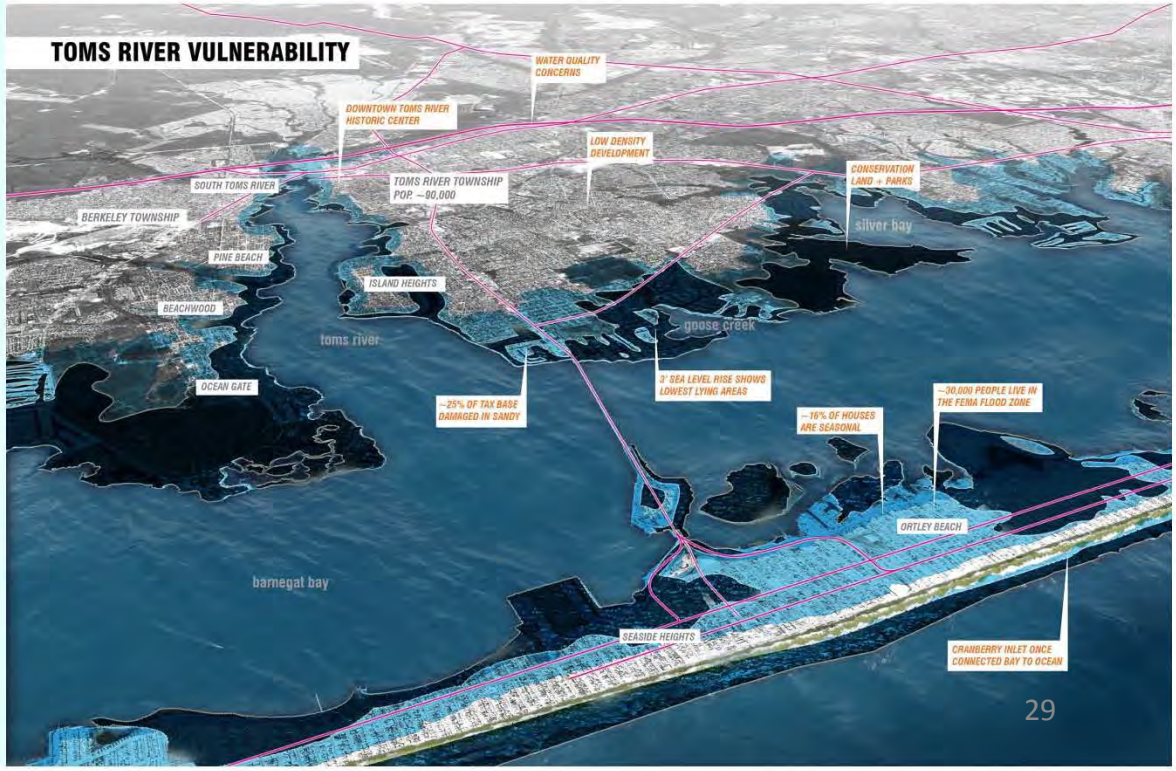
- CSIRO (Commonwealth Scientific and Industrial Research Organisation). 2012 update to data originally published in: Church, J.A., and N.J. White. 2011. Sea-level rise from the late 19th to the early 21st century. Surv. Geophys. 32:585–602.
- NOAA (National Oceanic and Atmospheric Administration). 2012. Laboratory for Satellite Altimetry: Sea level rise. Accessed May 2012. http://ibis.grdl.noaa.gov/SAT/SeaLevelRise/LSA_SLR_timeseries_global.php.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climatechange/indicators.

Image credit: U.S. EPA

Sea Level Rise





Storm Surge

Storm Surge

Storm Surge

Storm Surge

Takeaways

- The future is expected to have more frequent and larger extreme weather events.
- These are likely to damage transportation infrastructure.
- We need to prepare now, both to protect infrastructure, and to be ready to repair it.
- The first step in preparation is knowing where we are most vulnerable.

Questions?

"Any doubling of the percentage of carbon dioxide in the air would raise the temperature of the earth's surface by 4°C" – *Världarnas Utveckling (*Worlds in the Making), 1906

Latest estimate from IPCC (2013): 1.5 – 4.5°C

Svante Arrhenius
1859-1927

Assessing the Vulnerability of New Jersey's Transportation Infrastructure to the Impacts of Climate Change

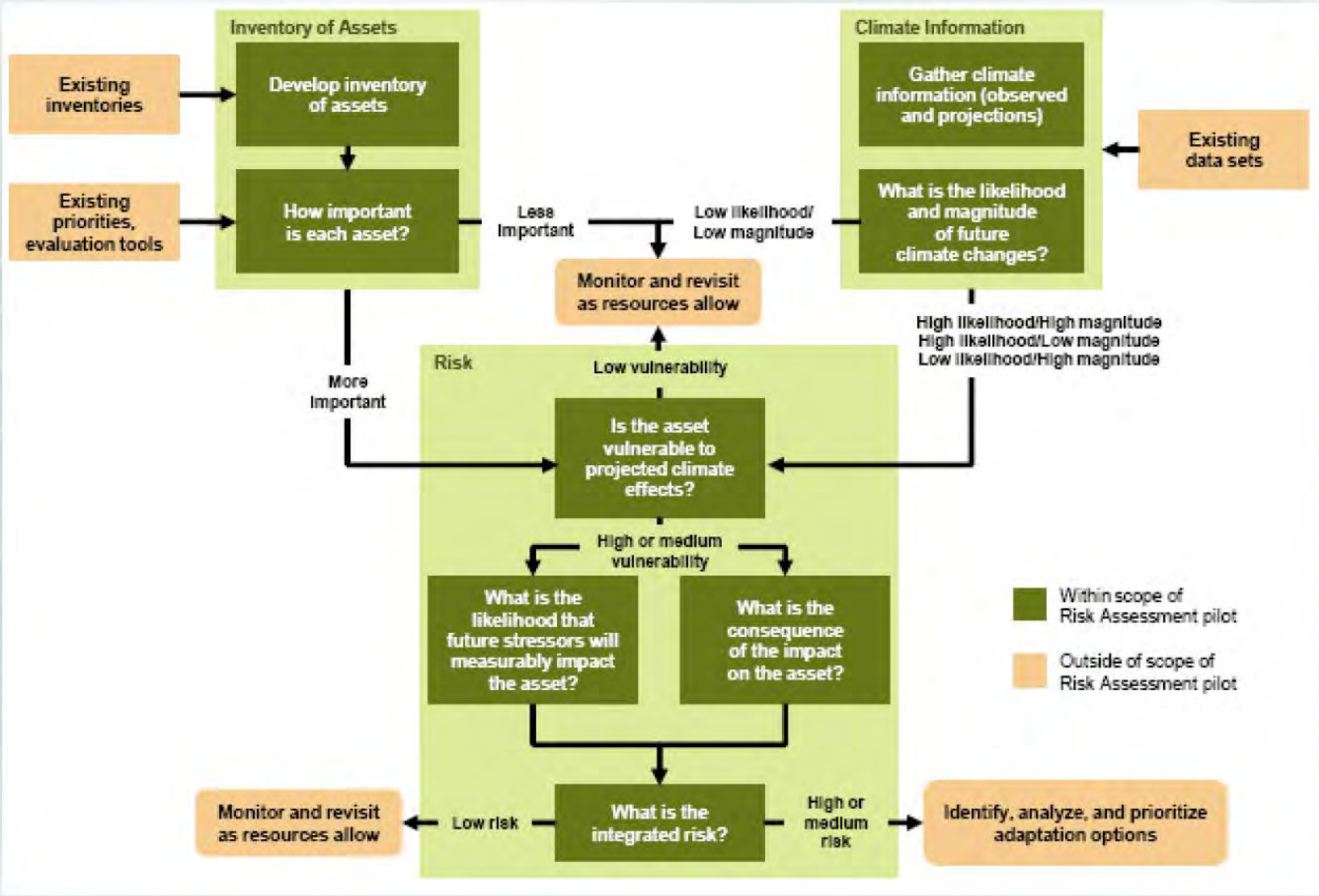
Prepared by:

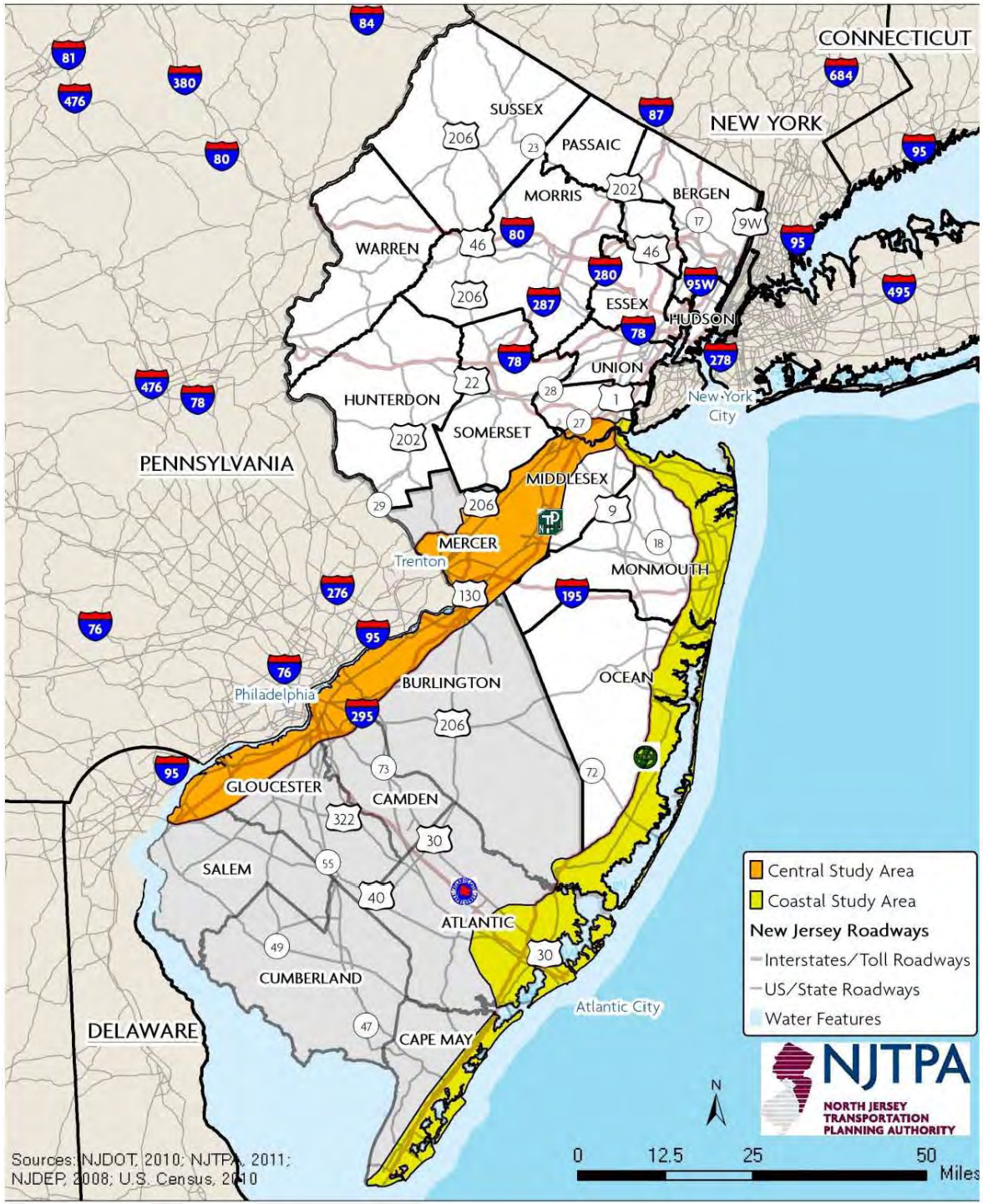
Christopher Linn, AICP, Delaware Valley Regional Planning Commission

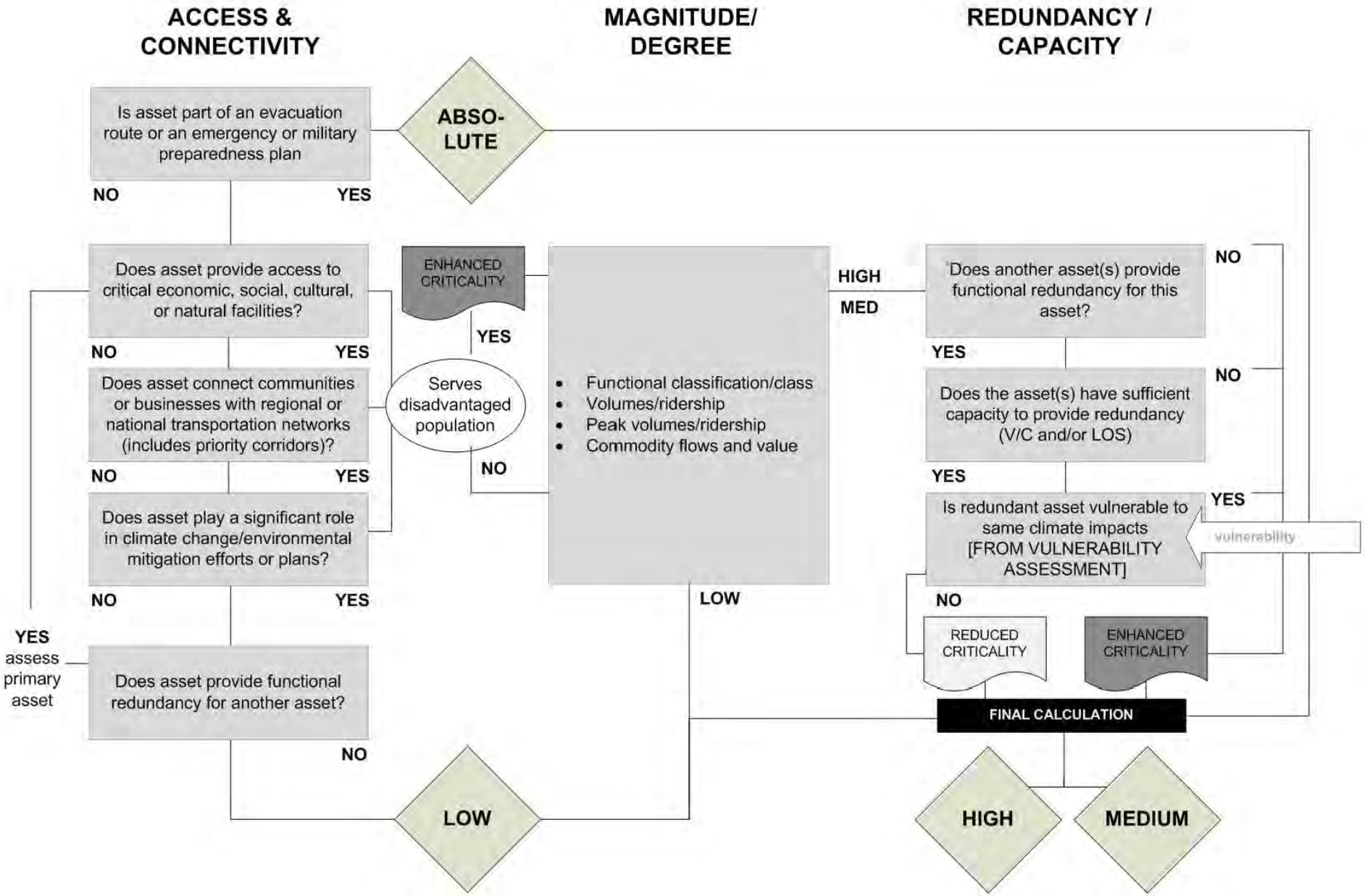
DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION | CAMBRIDGE SYSTEMATICS | STRATUS CONSULTING ENVIRONMENTAL RESEARCH AND CONSULTING

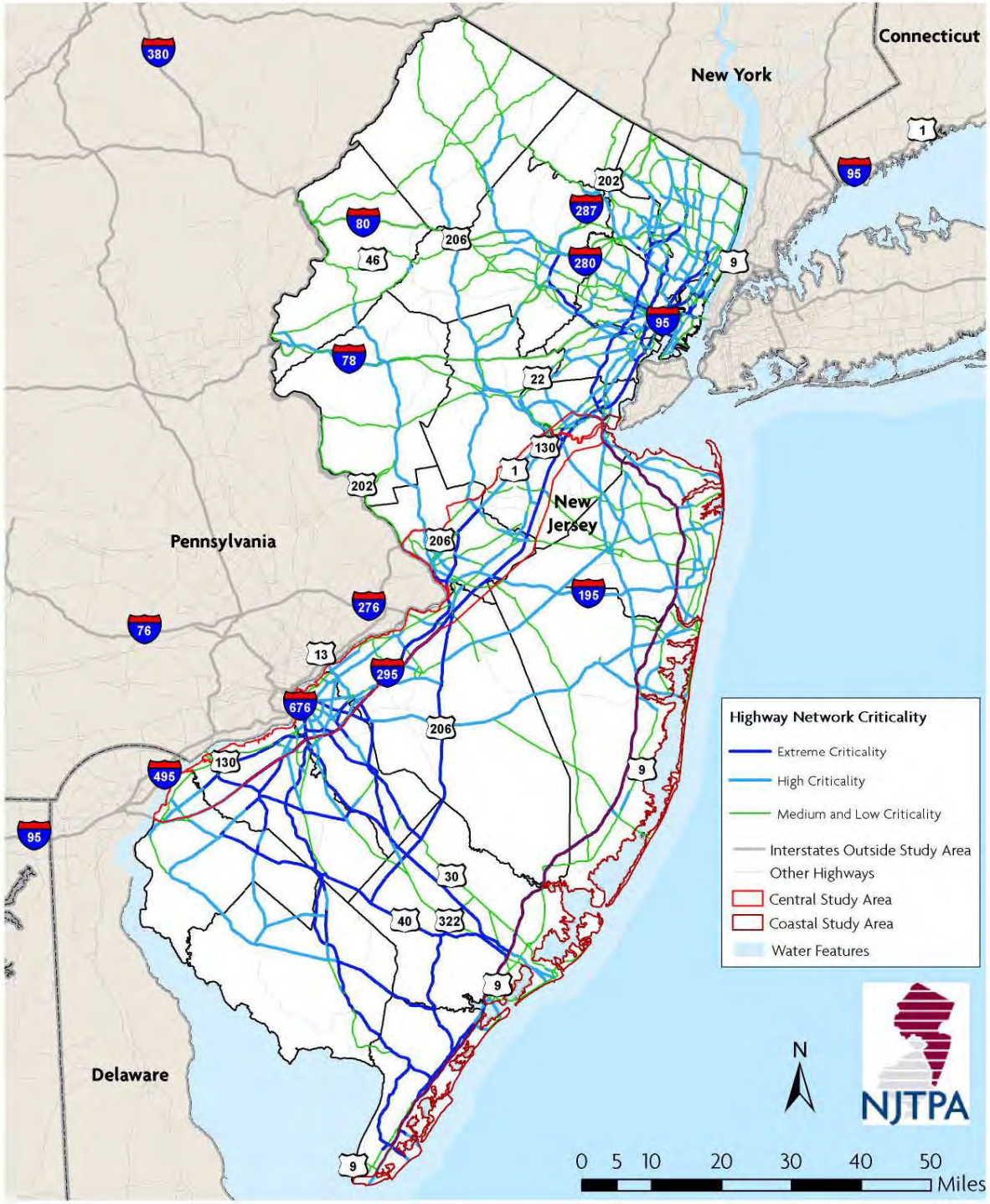
Project Goals

FHWA Conceptual Model




CONNECTICUT
NEW YORK
PENNSYLVANIA
DELAWARE
SUSSEX
PASSAIC
MORRIS
BERGEN
WARREN
HUNTERDON
SOMERSET
ESSEX
HUDSON
UNION
MIDDLESEX
MERCER
MONMOUTH
OCEAN
BURLINGTON
GLOUCESTER
CAMDEN
SALEM
ATLANTIC
CUMBERLAND
CAPE MAY
Trenton
Philadelphia
New York City
Atlantic City
Central Study Area
Coastal Study Area
New Jersey Roadways
Interstates/Toll Roadways
US/State Roadways
Water Features
NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY
N
0 12.5 25 50
Miles
Sources: NJDOT, 2010; NJTPA, 2011; NJDEP, 2008; U.S. Census, 2010


ACCESS & CONNECTIVITY
MAGNITUDE/ DEGREE
REDUNDANCY / CAPACITY
Is asset part of an evacuation route or an emergency or military preparedness plan
ABSO-LUTE
NO
YES
Does asset provide access to critical economic, social, cultural, or natural facilities?
ENHANCED CRITICALITY
YES
NO
YES
Does asset connect communities or businesses with regional or national transportation networks (includes priority corridors)?
Serves disadvantaged population
NO
YES
NO
Does asset play a significant role in climate change/environmental mitigation efforts or plans?
NO
YES
YES assess primary asset
Does asset provide functional redundancy for another asset?
NO
LOW
Functional classification/class
Volumes/ridership
Peak volumes/ridership
Commodity flows and value
HIGH
MED
LOW
'Does another asset(s) provide functional redundancy for this asset?
NO
YES
Does the asset(s) have sufficient capacity to provide redundancy (V/C and/or LOS)
NO
YES
Is redundant asset vulnerable to same climate impacts [FROM VULNERABILITY ASSESSMENT]
YES
vulnerability
NO
REDUCED CRITICALITY
ENHANCED CRITICALITY
FINAL CALCULATION
HIGH
MEDIUM

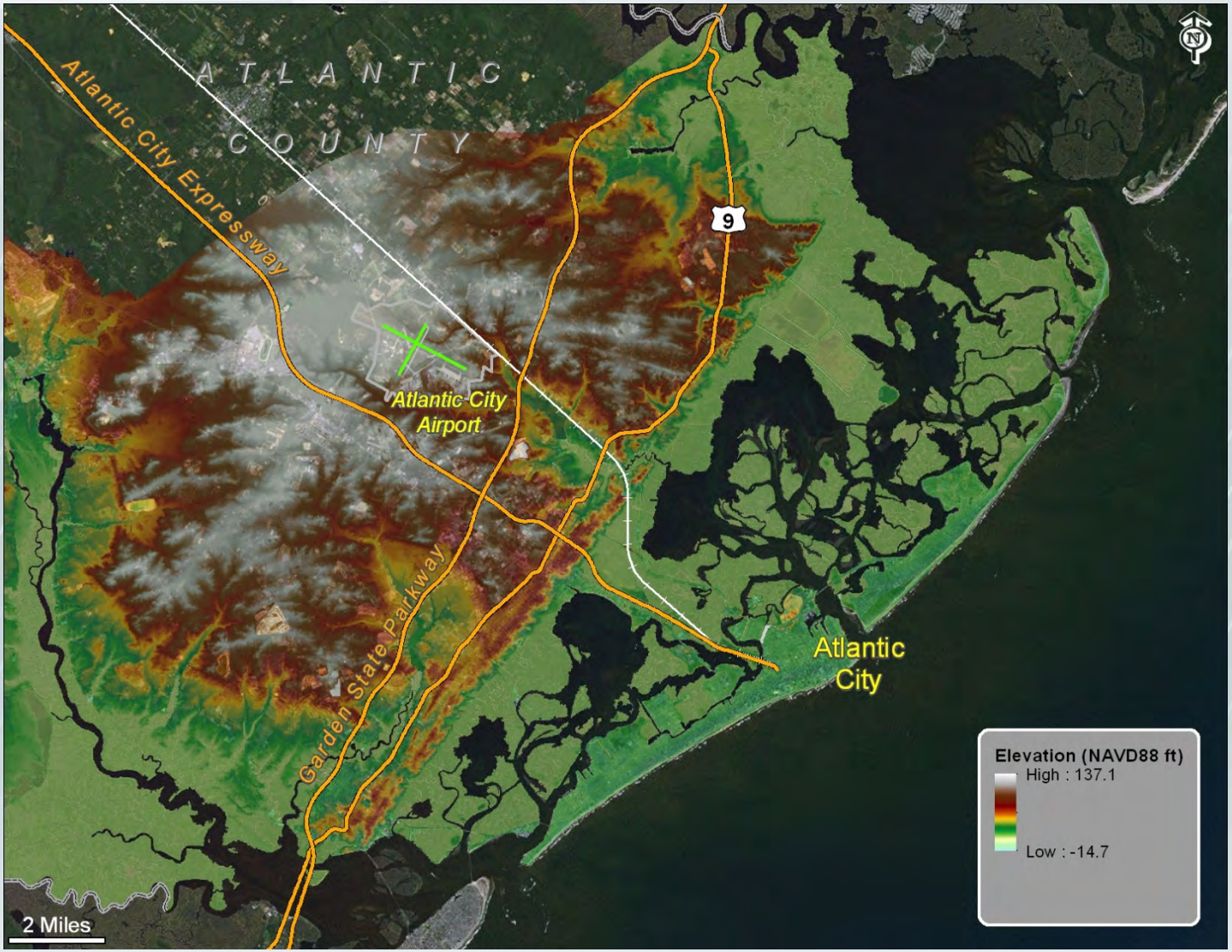

Connecticut
New York
Pennsylvania
New Jersey
Delaware
380
80
78
76
95
287
280
195
276
295
676
495
202
206
46
22
130
1
13
30
40
322
9
Highway Network Criticality
Extreme Criticality
High Criticality
Medium and Low Criticality
Interstates Outside Study Area
Other Highways
Central Study Area
Coastal Study Area
Water Features
N
NJTPA
0 5 10 20 30 40 50
Miles

Determining Climate Impacts

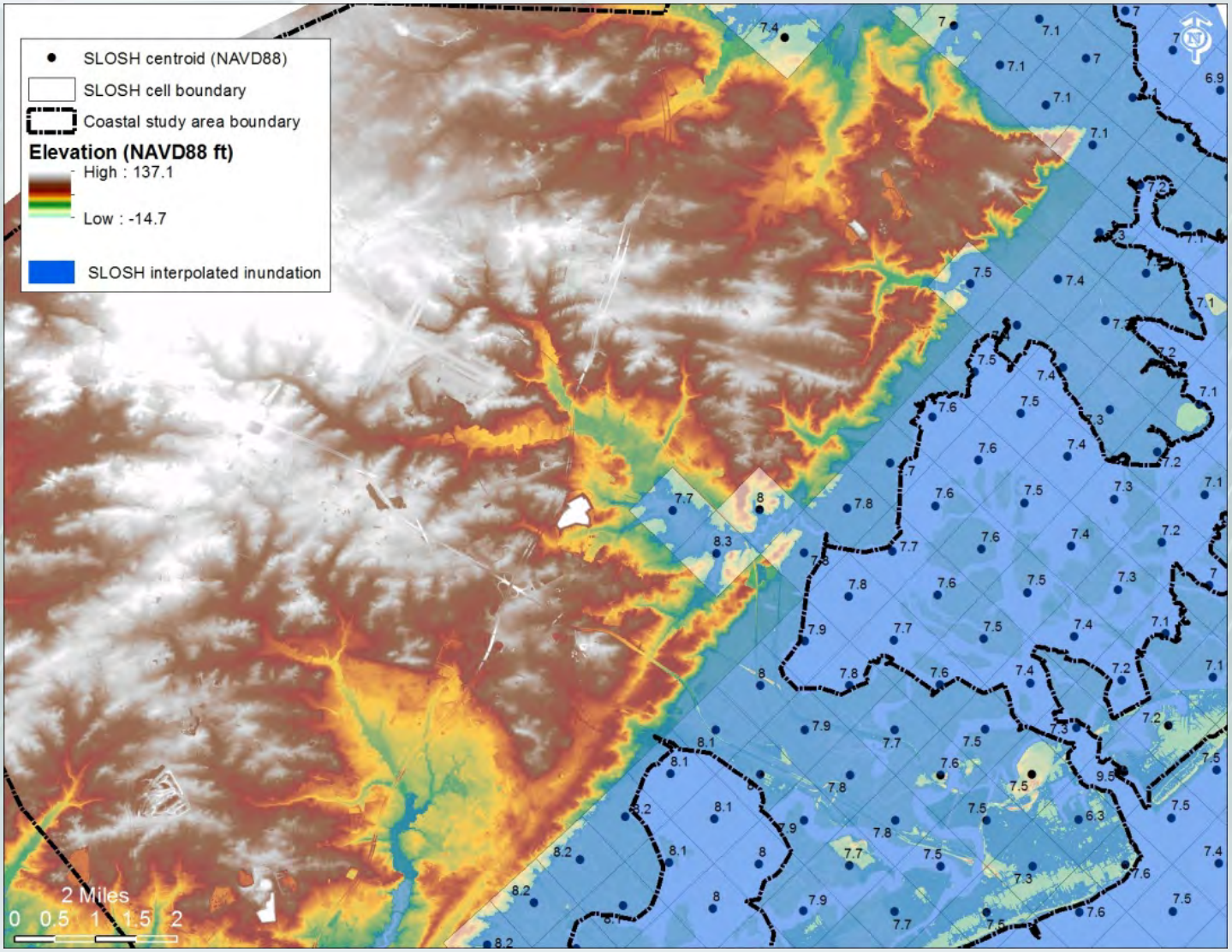
- **Sea Level Rise and Storm Surge**
- **Inland Flooding**
- **Temperature and Precipitation (avg. and extremes)**

Sea Level Rise and Storm Surge

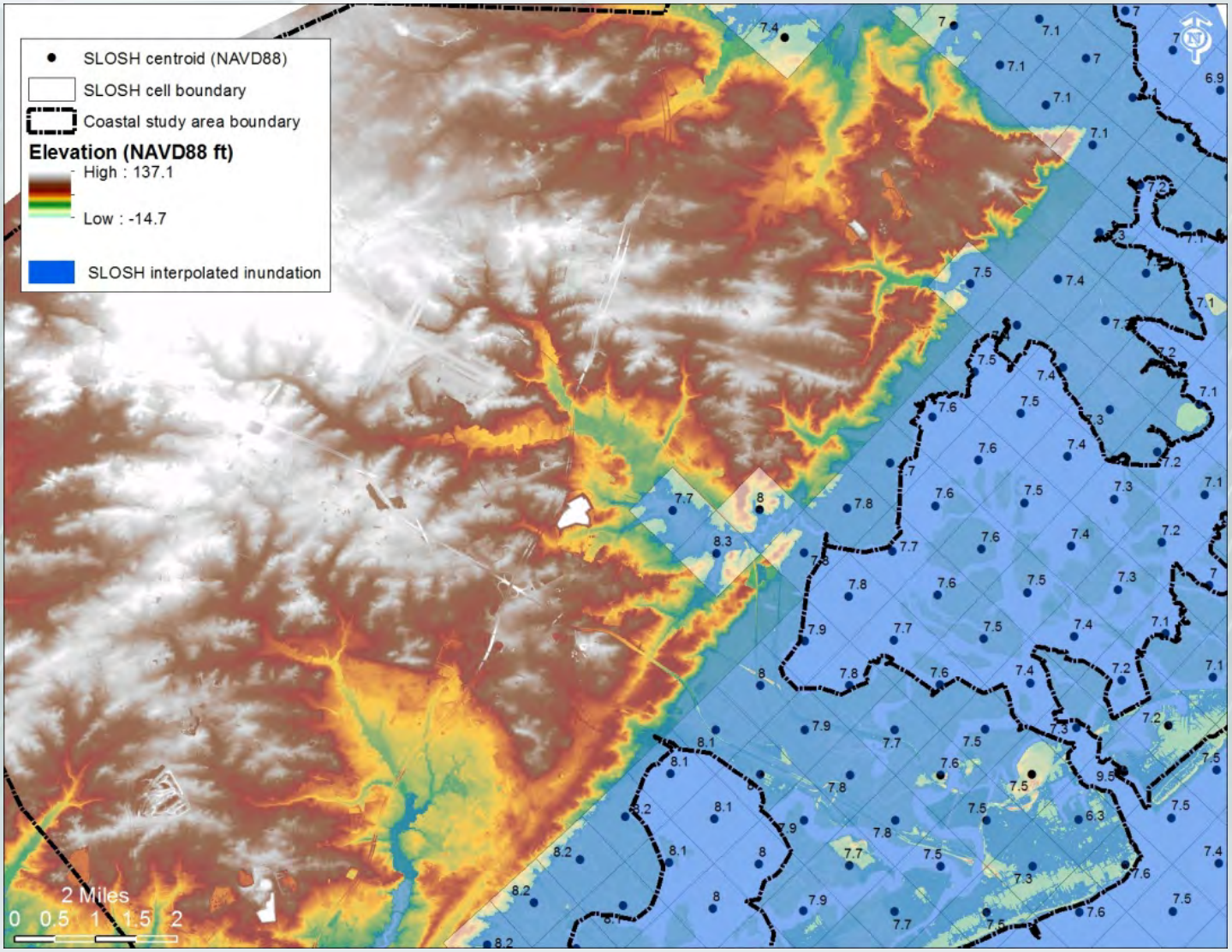
High Resolution LiDAR from USGS



SLOSH Model


SLOSH centroid (NAVD88)
SLOSH cell boundary
Coastal study area boundary
Elevation (NAVD88 ft)
High : 137.1
Low : -14.7
SLOSH interpolated inundation
2 Miles
0 0.5 1 1.5 2

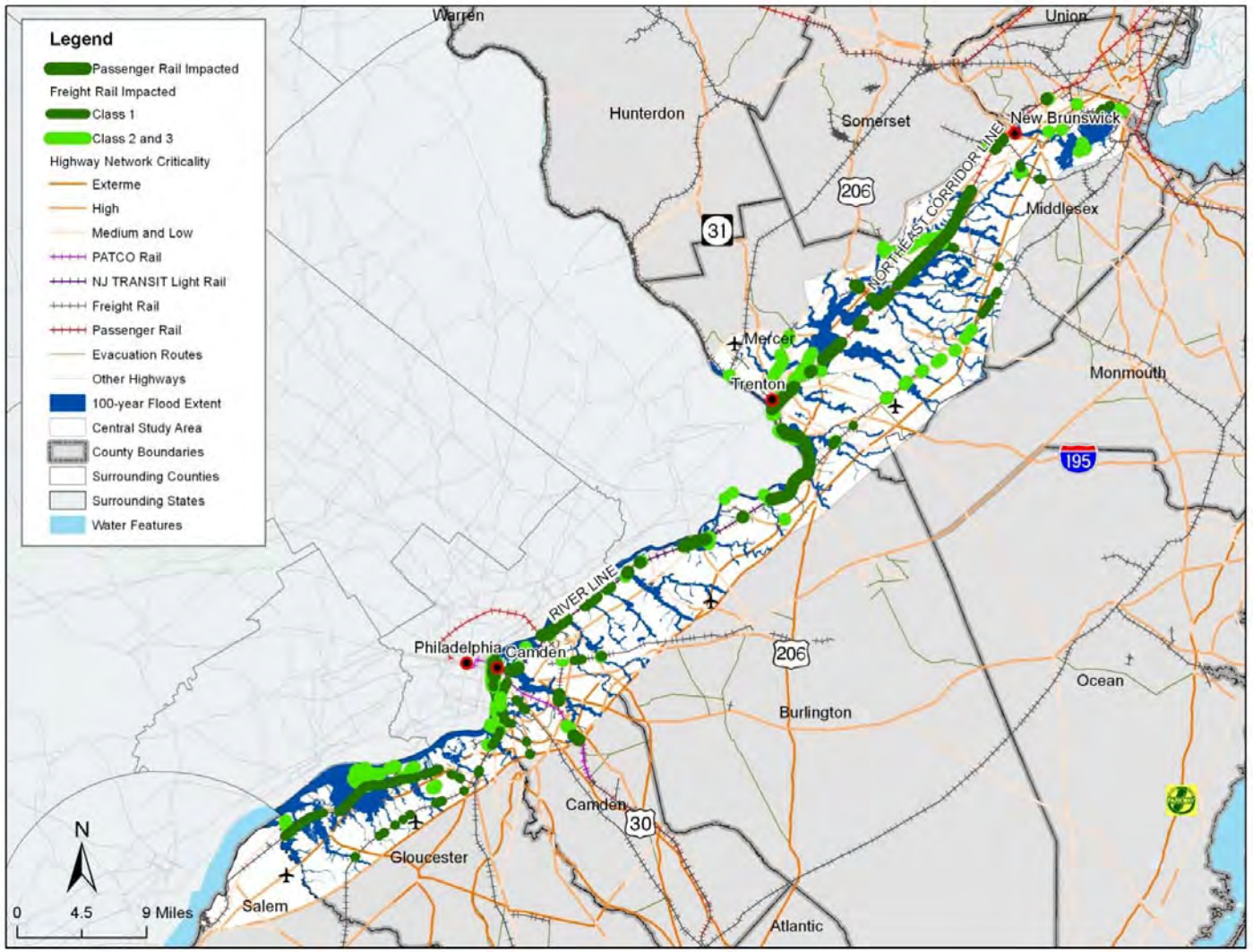
Sea, Lake and Overland Surges from Hurricanes



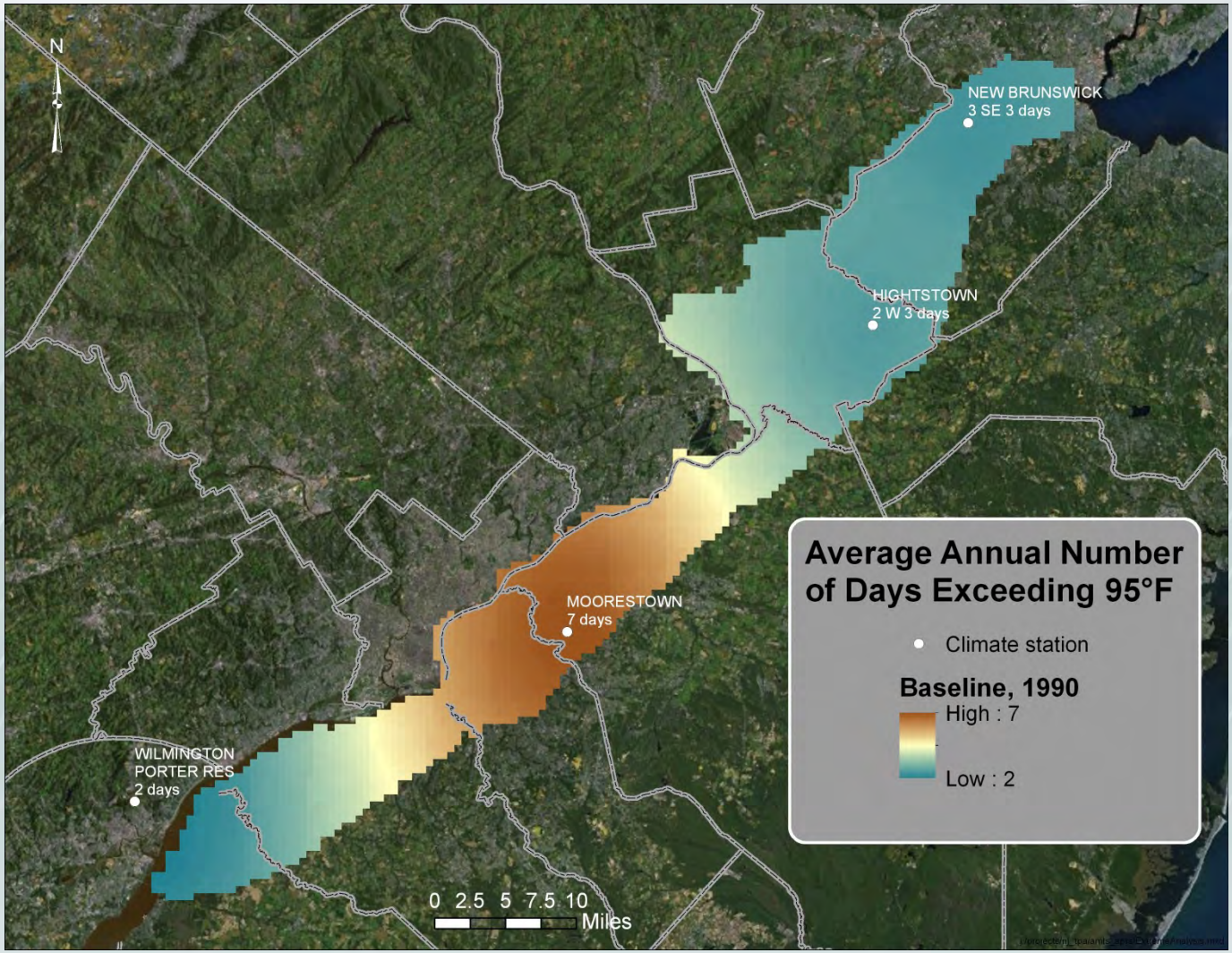
Highways Potentially Vulnerable to Sea Level Rise and Storm Surge

Inland Flooding

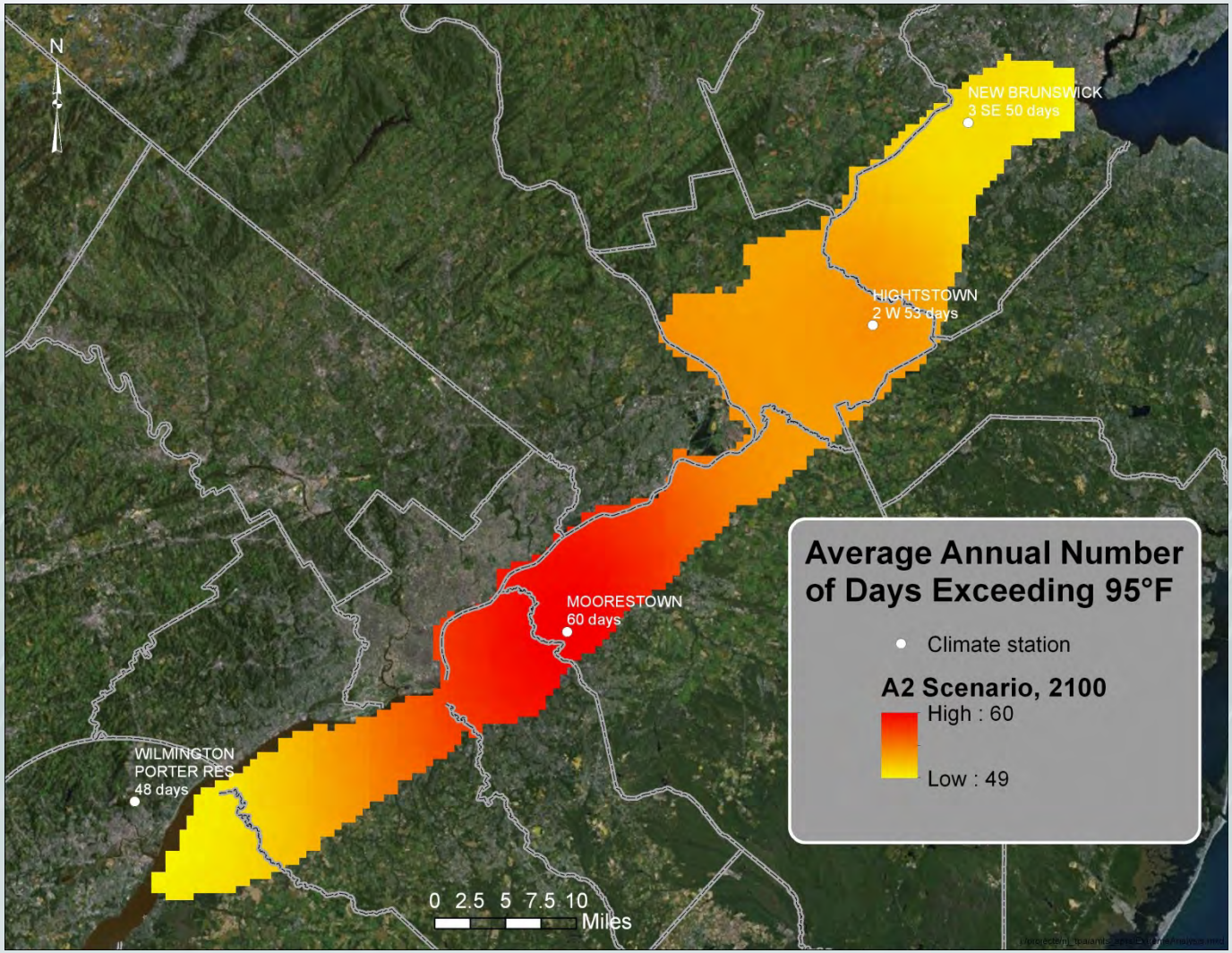
Rail Infrastructure Potentially Vulnerable to 1% Storm Event



Baseline (1990) number of “hot” days



High emissions scenario “hot” days by 2100



CLIMATE VARIABILITY & RESILIENCE STRATEGIES:
SEPTA'S EXPERIENCE

PREPARED BY:
ERIK JOHANSON
MANAGER OF STRATEGIC BUSINESS PLANNING

SEPTA'S PRIMARY CHALLENGE:
STATE OF GOOD REPAIR (SGR)

CURRENT BACKLOG:

$5 BILLION

+

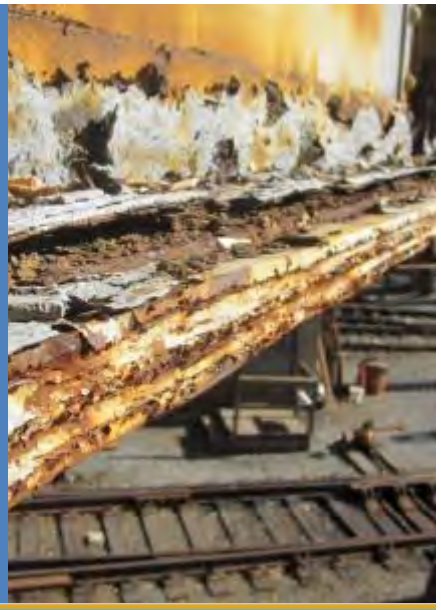
20-YEAR REHAB & REPLACEMENT NEEDS:

$8.5 BILLION

=

TOTAL STATE OF GOOD REPAIR NEED:

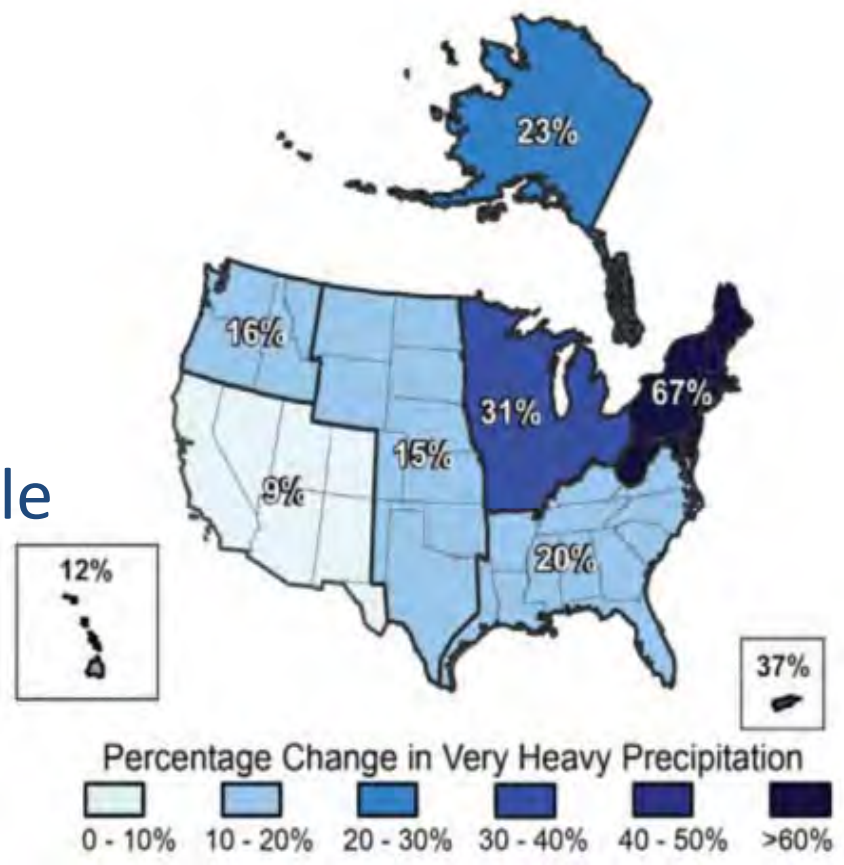
$13.5 BILLION



CLIMATE VARIABILITY:
A NEW CHALLENGE FOR SGR

WHAT WE KNOW:

- 67% increase in heavy rain since mid- 20th century
- Four FEMA Major Disaster declarations since 2010
- Aging systems more vulnerable to extreme weather
- Climate trends a key consideration to ensure asset resiliency



EXTREME WEATHER IN PHILADELPHIA

POLAR VORTEX → ICE JAM

CONTEXT FOR RESILIENCY PLANNING

- IS THIS GOING TO HAPPEN MORE OFTEN IN THE FUTURE?
- IF SO, WHAT DO WE DO ABOUT IT?

FTA PILOT PROGRAM

OBJECTIVES:

- Better Understand Climate Projections
- Assess Key Vulnerabilities
- Develop Forward-Looking Resiliency Strategies

ONE OF SEVEN PROJECT TEAMS ACROSS U.S.

ICF INTERNATIONAL

SEPTA

dvrpc DELAWARE VALLEY REGIONAL PLANNING COMMISSION

PROJECTED CLIMATE TRENDS

PHILADELPHIA REGION BY MID-CENTURY (2050)

	TODAY'S WEATHER…	…% CHANGE IN FREQUENCY BY 2050		
	CLIMATE VARIABLE	MINIMUM PROJECTED CHANGE	MAXIMUM PROJECTED CHANGE	AVERAGE PROJECTED CHANGE
HEAT	AVERAGE TEMPERATURE	4%	9%	**7%**
HEAT	93° F (5TH %)	101%	302%	**196%**
HEAT	98.1° F (1ST %)	215%	1,107%	**540%**
PRECIP	AVERAGE RAINFALL	-6%	17%	**7%**
PRECIP	1.4" (5TH %)	2%	30%	**15%**
PRECIP	2.5" (1ST %)	-1%	69%	**39%**
	"SNOW CHANCE" DAYS	-12%	-35%	**-25%**

MANAYUNK/NORRISTOWN LINE

MORE THAN 50% OF THE HIGHEST SCHUYLKILL RIVER CRESTS @ NORRISTOWN HAVE OCCURRED IN THE LAST 10 YEARS

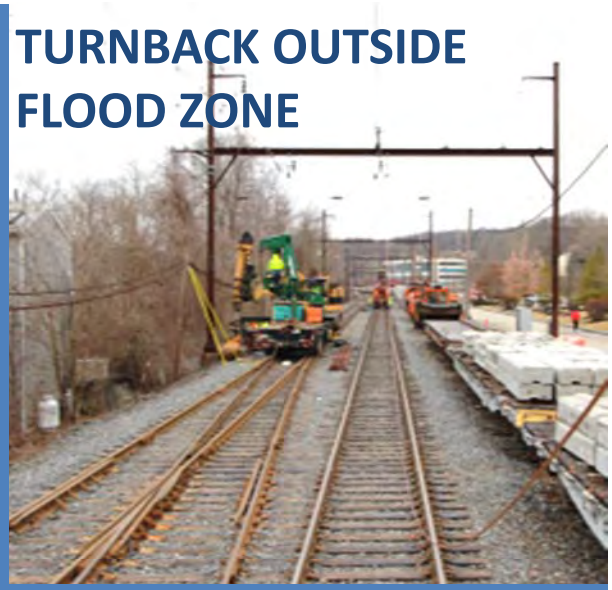
RANK	CREST	DATE
(1)	25.10 ft	06/23/1972
(2)	22.00 ft	09/17/1999
(3)	21.00 ft	08/24/1933
(4)	19.76 ft	08/28/2011
(5)	19.30 ft	09/13/1971
(6)	19.13 ft	06/28/2006
(7)	19.00 ft	01/20/1996
(8)	18.40 ft	08/19/1955
(9)	18.30 ft	10/01/2010
(10)	18.00 ft	10/19/1991
(11)	17.92 ft	10/09/2005
(12)	17.60 ft	12/05/1993
(13)	16.28 ft	06/21/2003
(14)	16.06 ft	09/07/2011
(15)	16.06 ft	04/03/2005
(16)	16.00 ft	09/18/2004
(17)	15.37 ft	09/29/2004
(18)	14.35 ft	03/11/2011

RESILIENCE STRATEGIES UNDERWAY: CAPITAL

SLOPE STABILIZATION

RAISED SIGNAL HUTS

TURNBACK OUTSIDE FLOOD ZONE



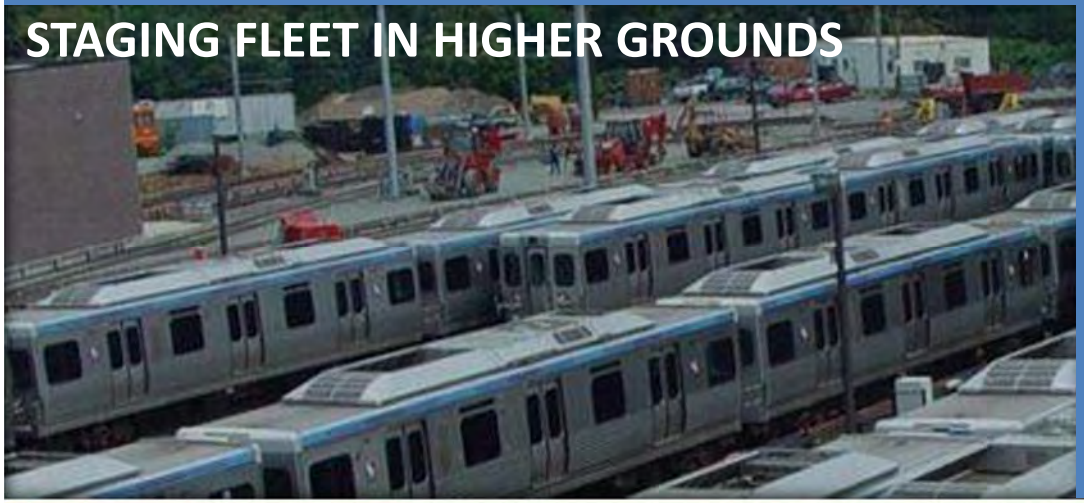
EMERGENCY GENERATORS

RESILIENCE STRATEGIES UNDERWAY: OPERATING & MAINTENANCE

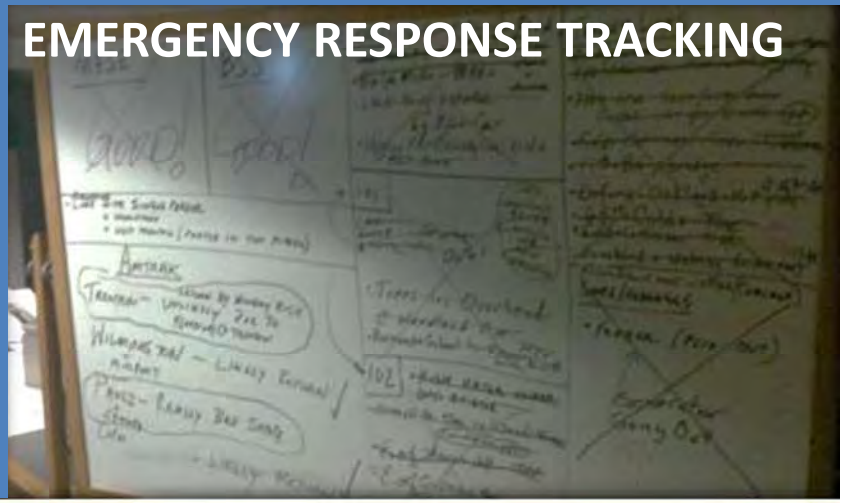
DILIGENT TREE-TRIMMING

SANDBAGGING VENTWELLS

STAGING FLEET IN HIGHER GROUNDS

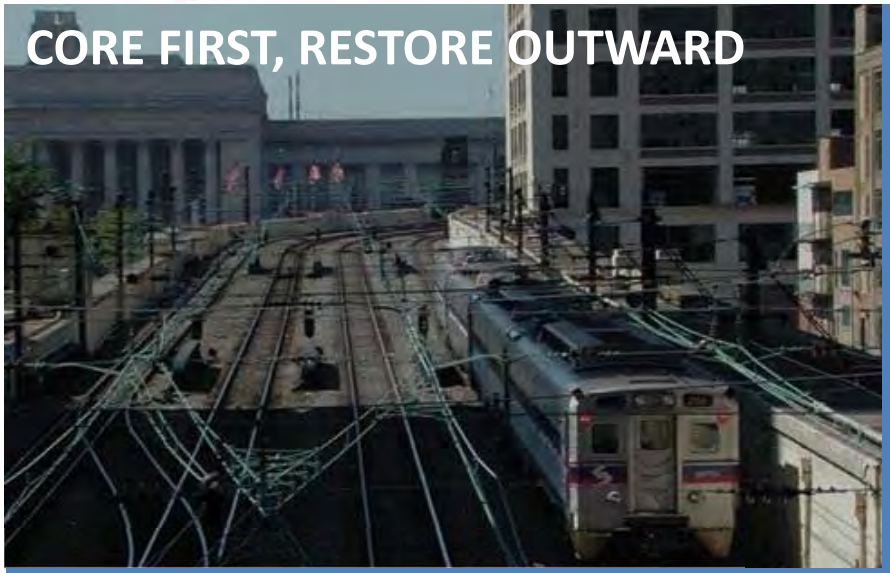


EMERGENCY RESPONSE TRACKING



RESILIENCE STRATEGIES: ADMINISTRATIVE

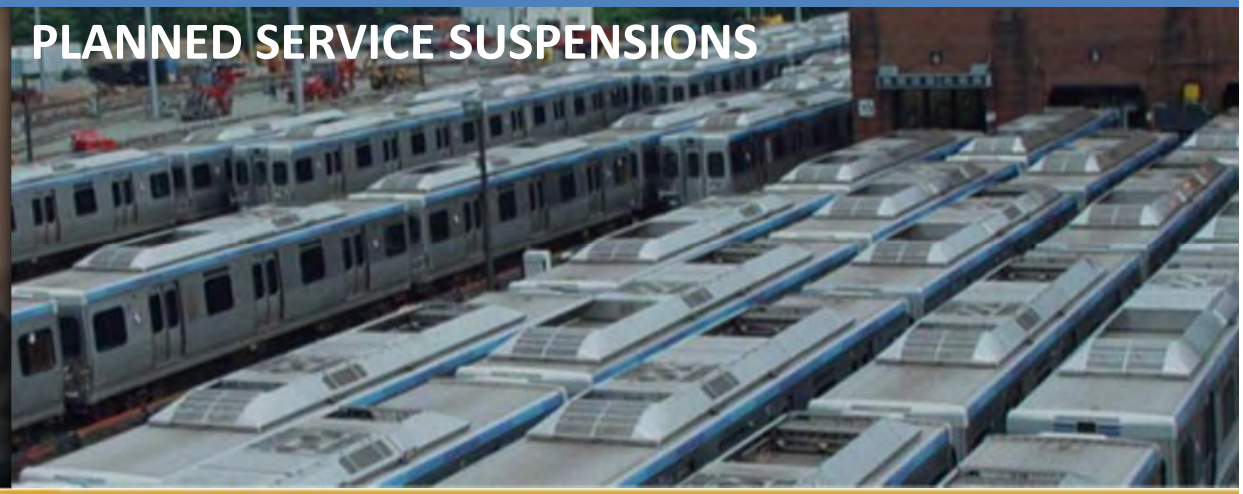
CORE FIRST, RESTORE OUTWARD



CUSTOMER COMMUNICATIONS

INTERAGENCY COOPERATION

PLANNED SERVICE SUSPENSIONS



FTA FUNDING OPPORTUNITY

$3 BILLION AVAILABLE FOR "SANDY ZONE"

- Prioritizes Projects that:
  - Harden Assets Against Future Natural Disasters
  - Reduce Risk of Disruptions from Natural Disasters
  - Cost-Effective Projects From Collaborative Planning Efforts

- SEPTA's Application includes:
  - Power Resiliency
  - Right of Way Hardening
  - Flood Mitigation
  - Emergency Communications

Resilience in the Face of Climate Change

A Regional Perspective

Presented by: Robert Graff, Manager, Office of Energy and Climate Change Initiatives, DVRPC

With help from:
Christopher Linn, AICP, Manager, Office of Environmental Planning, DVRPC
Erik Johanson, Manager of Strategic Business Planning, SEPTA

DVRPC Public Participation Task Force

June 24, 2014

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

Questions