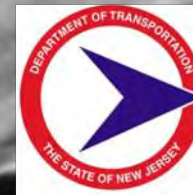
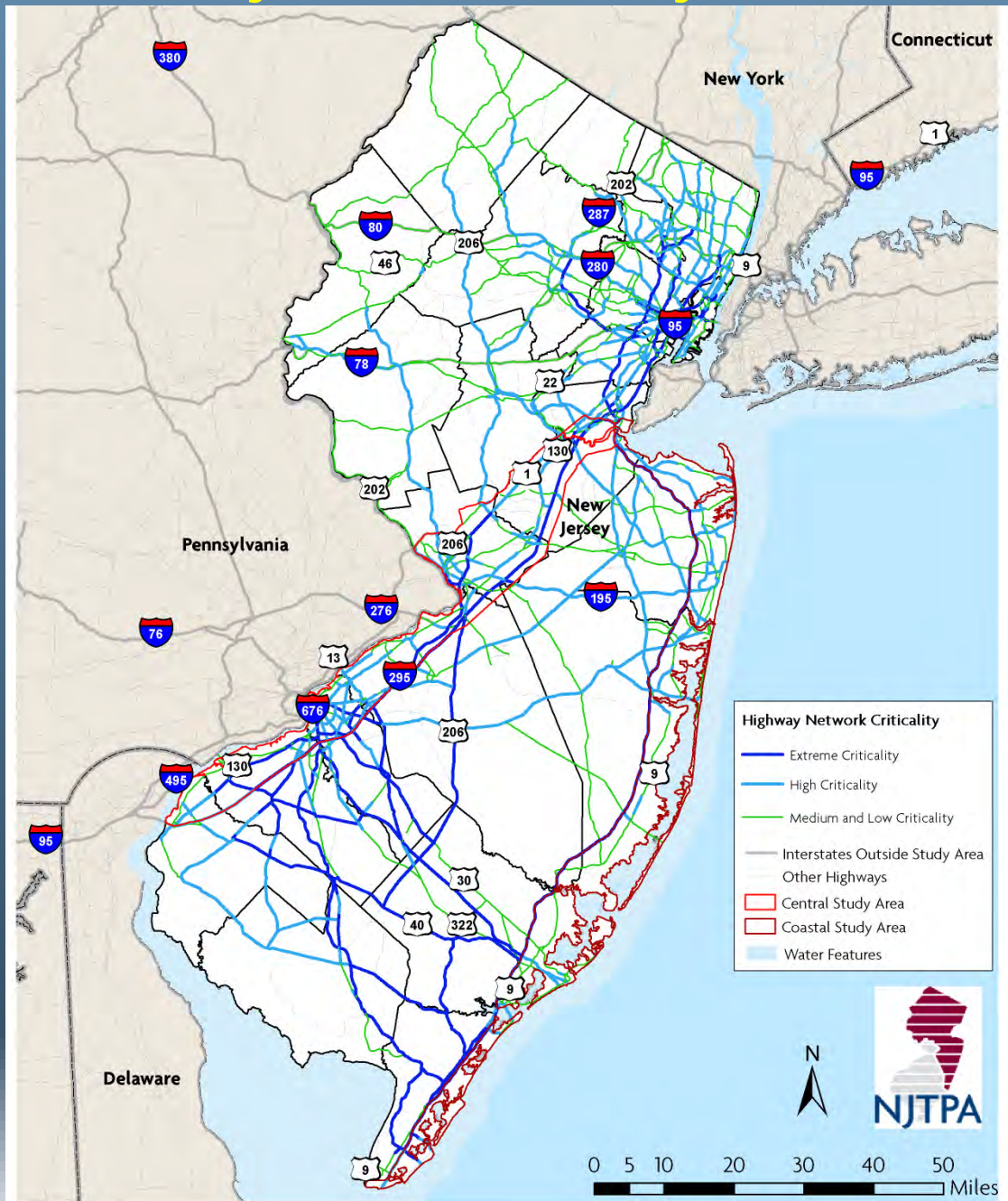


# Assessing the Vulnerability New Jersey's Transportation Infrastructure to the Impacts of Climate Change

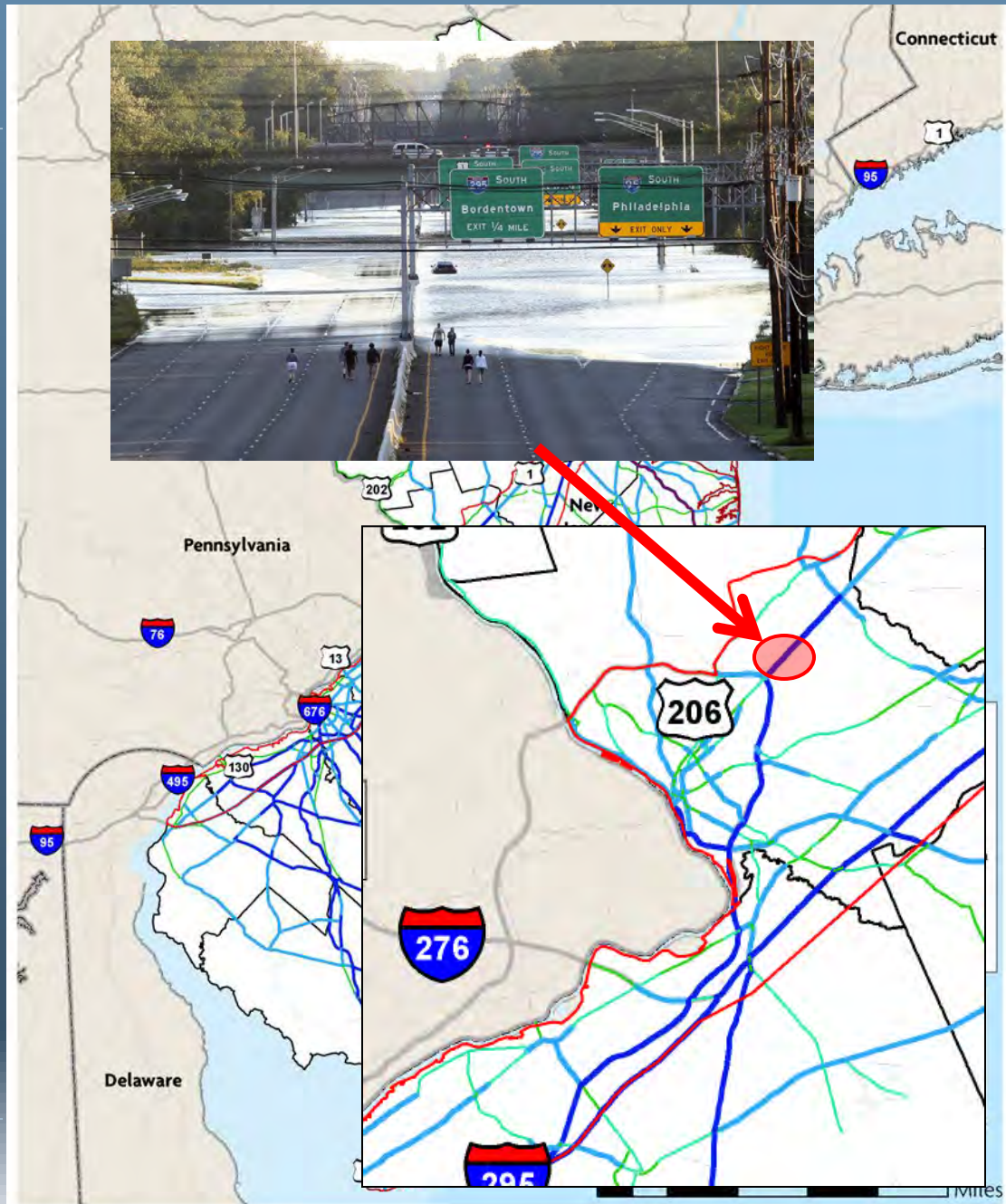




# Ranking Criticality for New Jersey's Infrastructure



# Critical Transportation Infrastructure



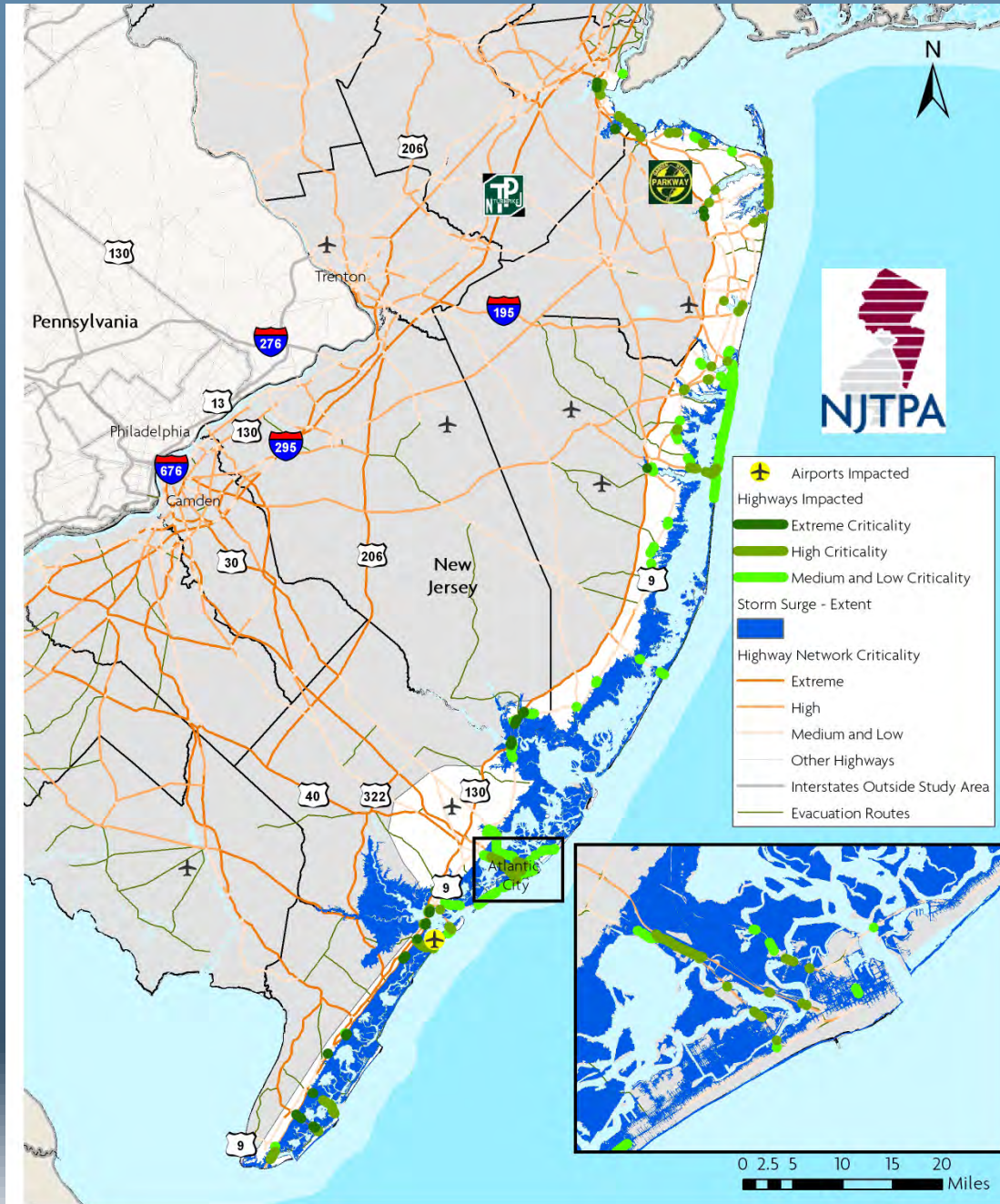
## ***Determining Climate Impacts – Coastal and Inland Study Areas***

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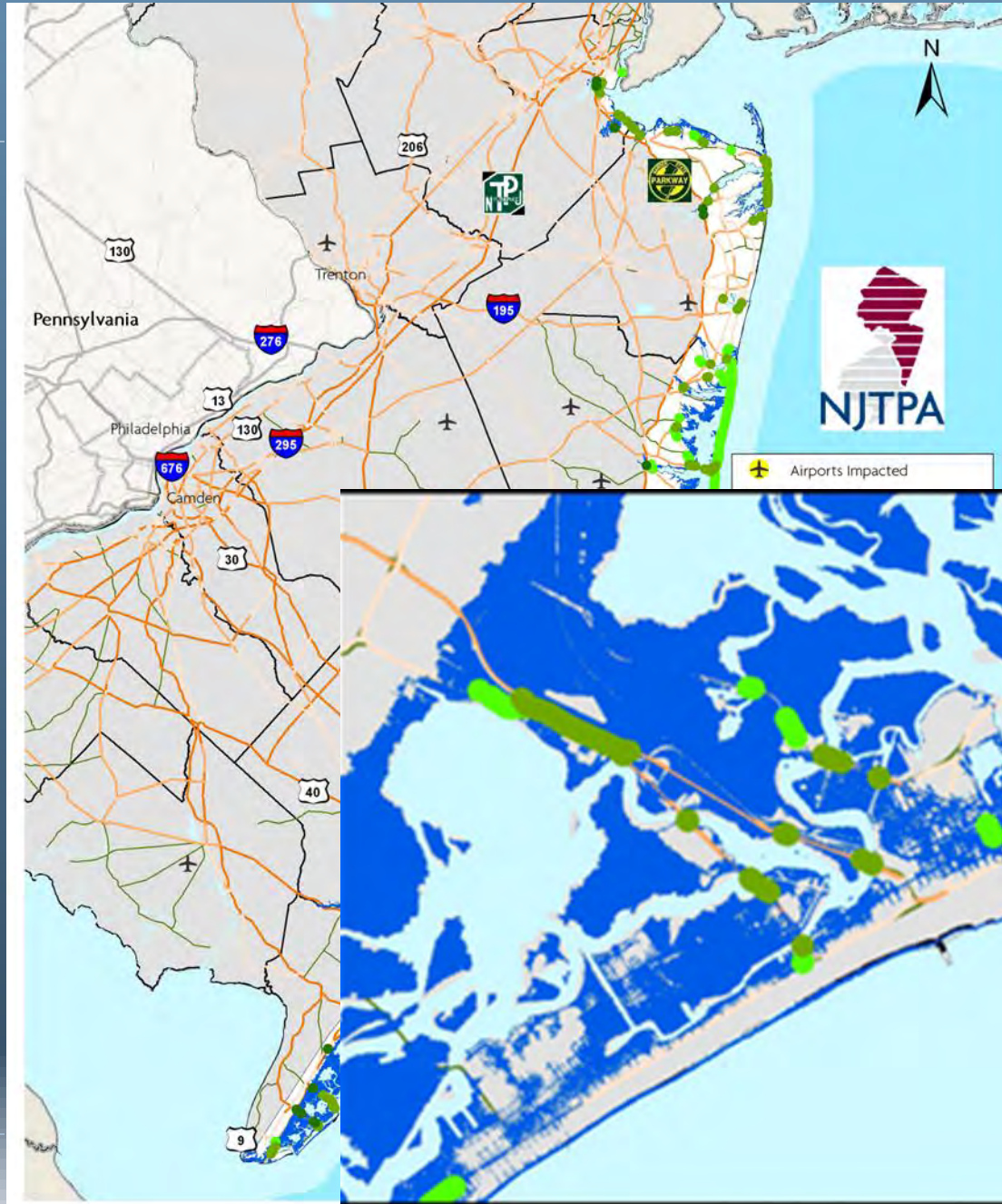
- **Sea Level Rise and Storm Surge Impacts**
- **Temperature and Precipitation**
- **Inland flooding impacts**



# Vulnerable Transportation to sea level rise and storm surge - highway



# Vulnerable Transportation to sea level rise and storm surge - highway



# Climate Change Projections – select stations and emissions scenarios

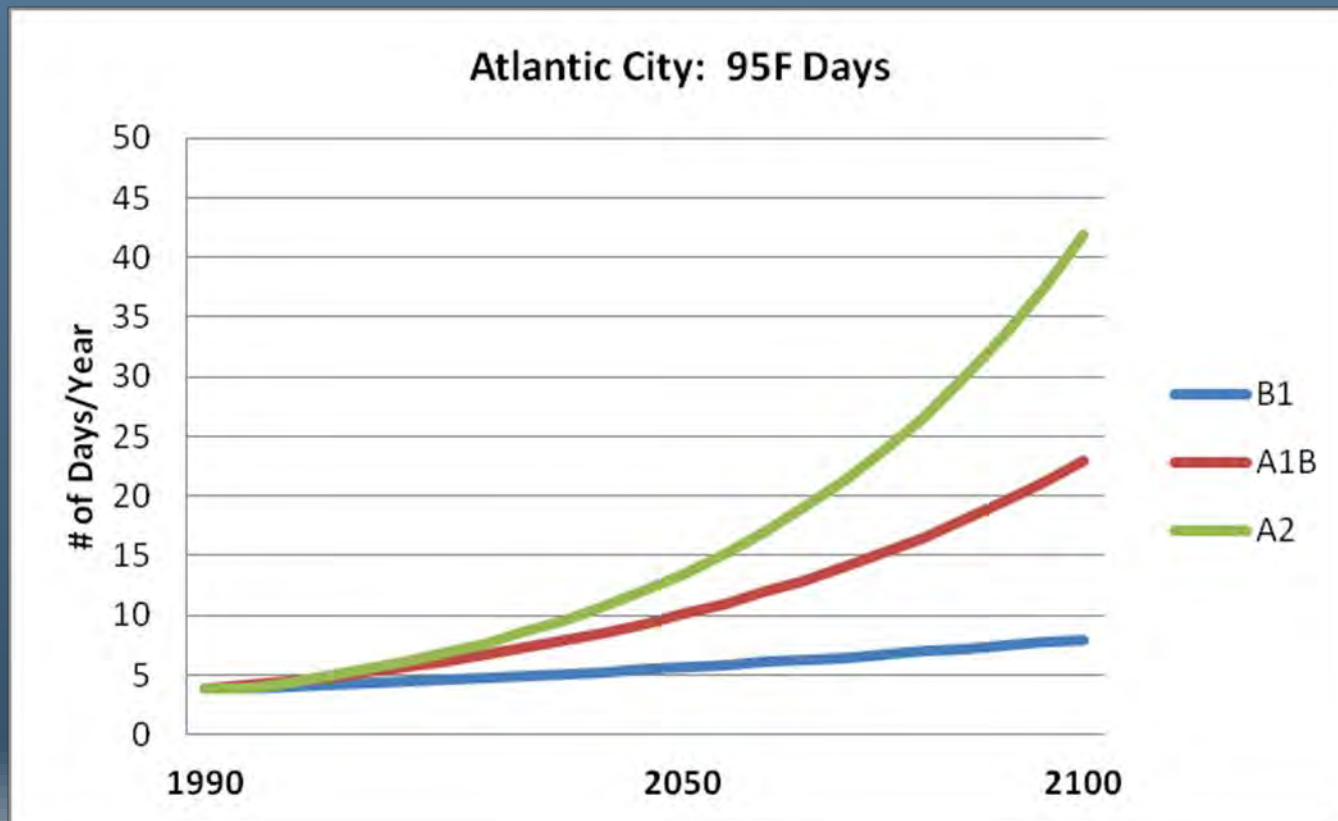
Baseline and Projected for Select Stations from Average Grids						
	Precipitation (in)		Avg. Max Temp (F)		Avg. Min Temp (F)	
Station Name	Baseline	A1B 2100	Baseline	A1B 2100	Baseline	A1B 2100)
NEW BRUNSWICK 3 SE	48.7	52.8	62.78	69.44	42.8	49.28
ATLANTIC CITY INTL AP	41.7	45.3	63.14	69.62	44.42	50.54

Baseline and Projected for Select Stations from Average Grids								
	Days above 95F		Consec. dry days		Frost days		Days of <20F	
Station Name	Baseline	A1B 2100	Baseline	A1B 2100	Baseline	A1B 2100	Baseline	A1B 2100
MOORESTOWN	7.2	33.2	16	18	90	51	25.1	10.9
ATLANTIC CITY INTL AP	3.8	22.9	22	20	100	60	31.3	14.5

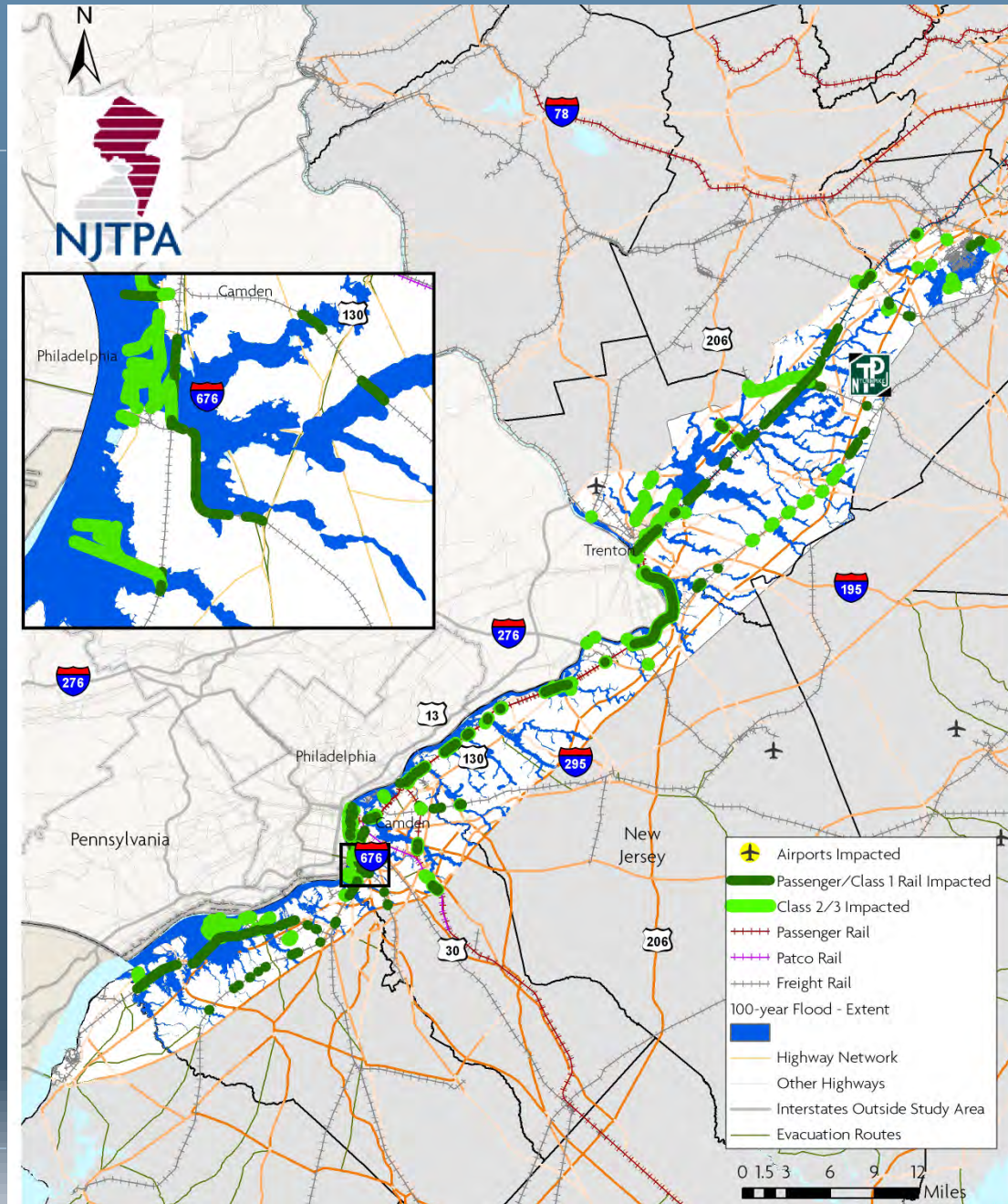


# Climate Extremes: Average Annual 95F Days

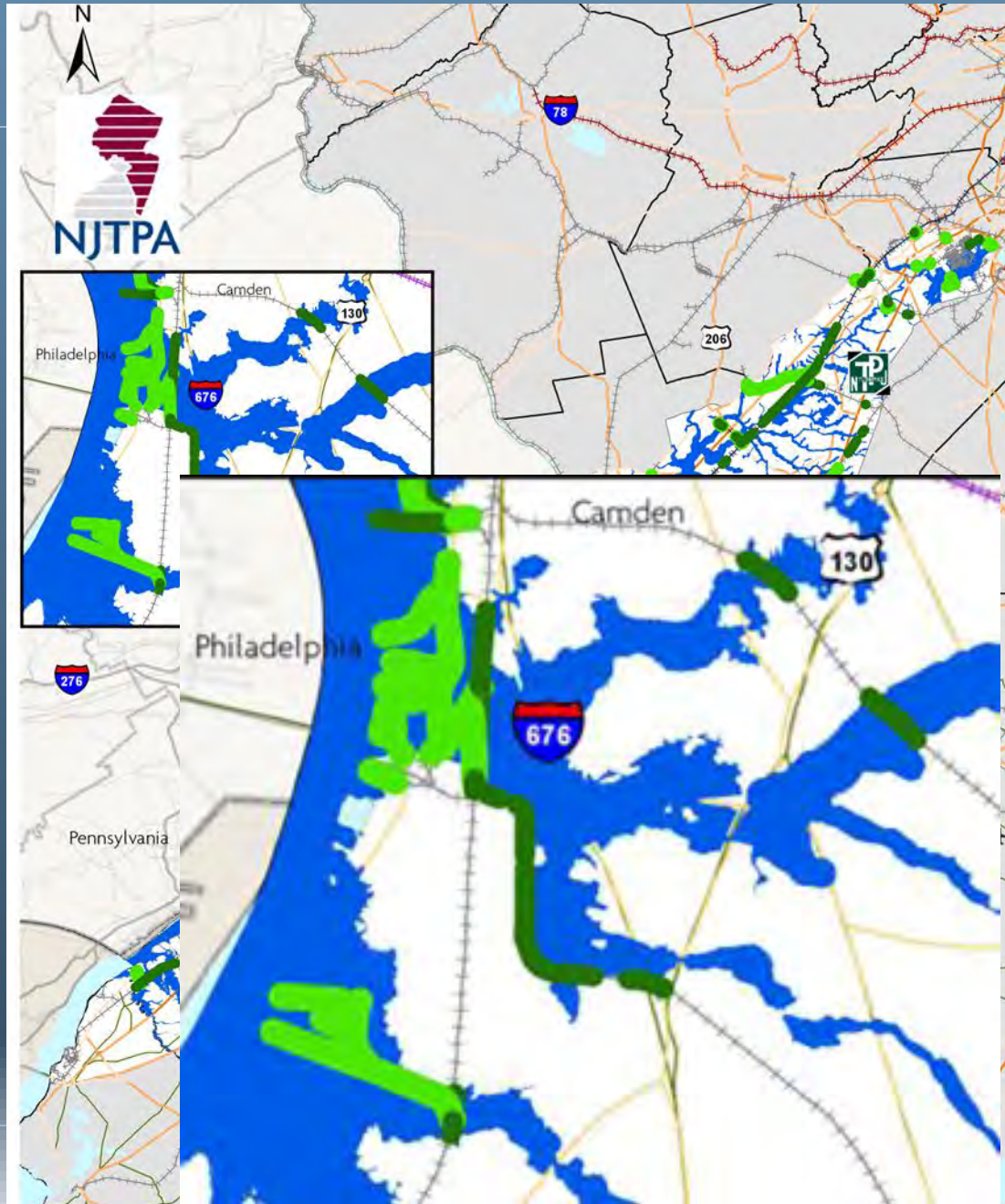
- **EXAMPLE:** Atlantic City International Airport climate station
  - » *based on daily maximum temperatures over the 1971-2000 baseline period*



# Vulnerable Transportation from Inland Flooding - Rail



# Vulnerable Transportation from Inland Flooding - Rail



## Identifying Adaptation Options

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- Manage/Maintain
- Protect/Harden
- Develop Redundancy
- Relocate/Abandon



Route 287 in Morris County – Northbound shoulder washed away by floodwaters from Hurricane Irene



## *Data Challenges and Next Steps*

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- Important challenges and barriers:
  - Transportation infrastructure and operations data availability
  - GIS data on infrastructure redundancy
  - Data processing capability (multi-terabyte climate data)
- Resources needed for future analyses:
  - Unified network data (had to stitch three TAZ structures and run new highway skims)
  - Better data on weather-related system interruptions (rudimentary data available)
- Comparison of Adaptation Strategies (Relative Effectiveness)
- Implementation Roadmap

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*Thank you!*