Assessing the Vulnerability New Jersey’s Transportation Infrastructure to the Impacts of Climate Change
Critical Transportation Infrastructure
Determining Climate Impacts – Coastal and Inland Study Areas

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

<table>
<thead>
<tr>
<th>Station Name</th>
<th>Precipitation (in)</th>
<th>Avg. Max Temp (F)</th>
<th>Avg. Min Temp (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>A1B 2100</td>
<td>Baseline</td>
</tr>
<tr>
<td>NEW BRUNSWICK 3 SE</td>
<td>48.7</td>
<td>52.8</td>
<td>62.78</td>
</tr>
<tr>
<td>ATLANTIC CITY INTL AP</td>
<td>41.7</td>
<td>45.3</td>
<td>63.14</td>
</tr>
</tbody>
</table>

### Baseline and Projected for Select Stations from Average Grids

<table>
<thead>
<tr>
<th>Station Name</th>
<th>Days above 95F</th>
<th>Consec. dry days</th>
<th>Frost days</th>
<th>Days of &lt;20F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>A1B 2100</td>
<td>Baseline</td>
<td>A1B 2100</td>
</tr>
<tr>
<td>MOORESTOWN</td>
<td>7.2</td>
<td>33.2</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>ATLANTIC CITY INTL AP</td>
<td>3.8</td>
<td>22.9</td>
<td>22</td>
<td>20</td>
</tr>
</tbody>
</table>
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
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Identifying Adaptation Options

- 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

- 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

Thank you!