INTEGRATING RESILIENCY PLANNING INTO STATE OF GOOD REPAIR PROGRAMS

Elizabeth Delaney
Vice President
First Environment, Inc.

July 19, 2017

State of Good Repair (SGR)

- SGR is a Transit standard and requirement but the idea is applicable to any transportation network
- Assets need to be maintained to a level that keeps the system operating smoothly and efficiently
- This is achieved through management of assets or Transit Asset Management (TAM) which is a business model that prioritizes funding and effort based on the:
  - condition of transit assets
  - risk
- The output is used to prioritize and allocate funds to maintain (operating budget), rehabilitate, and replace(capital budget) assets

Transportation Asset Management Core Concepts

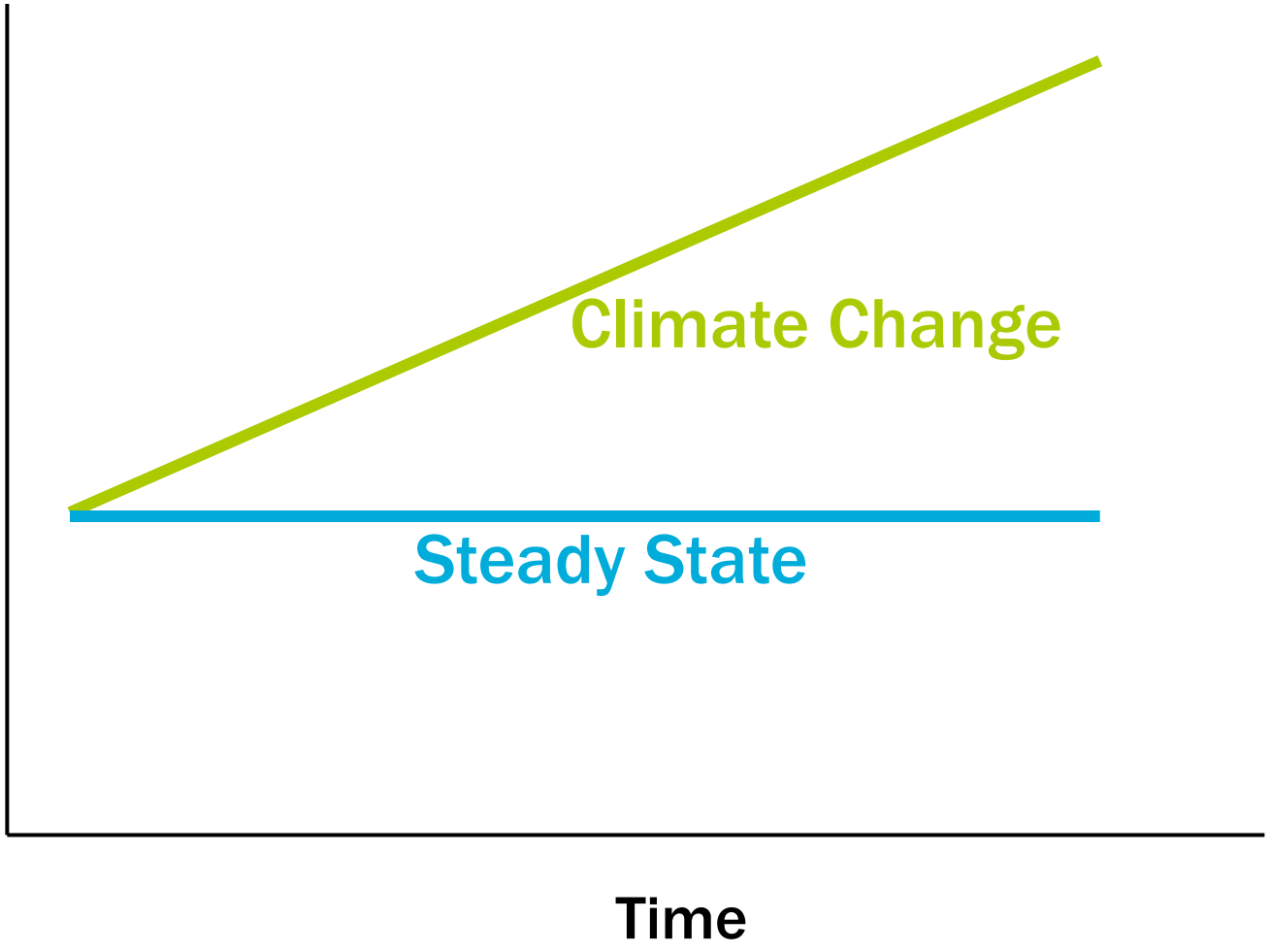
- Transportation network view
- Align with strategic direction
- Leadership
- Communication
- Data driven decisions
- Integrated programs and budgets
- Monitor outcomes
- Focus on continual improvement

(2011 AASHTO Transportation Asset Management Guide)

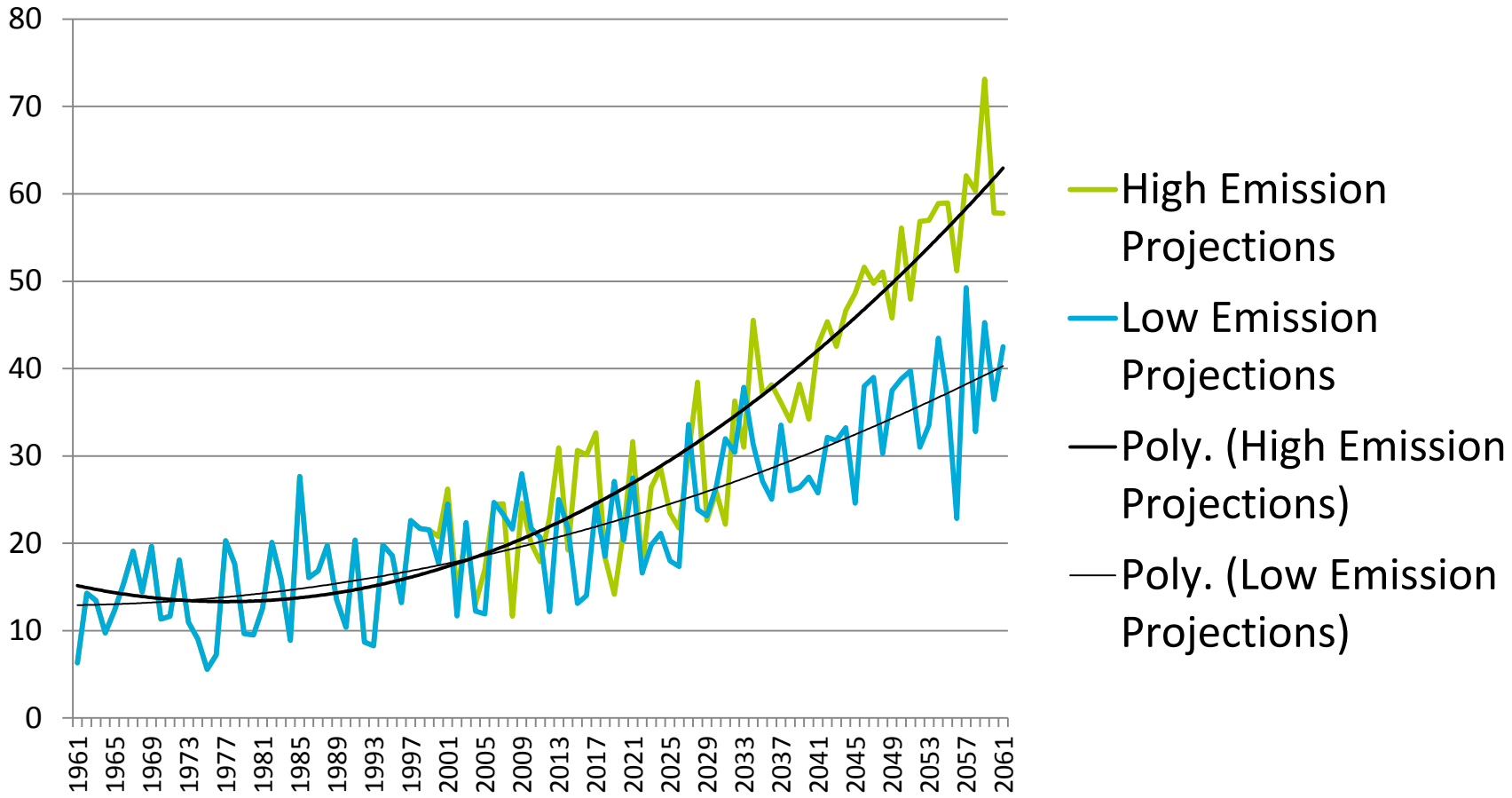
Developing the Plan

- Asset inventory and assessment
  - Expected service years
  - Construction/last rehabilitation
- Underlying concepts
  - Critical
  - Vulnerability to failure

Maintaining SGR



New Jersey Transit
Days over 90° F



Days Over Days over 90° F Indicators

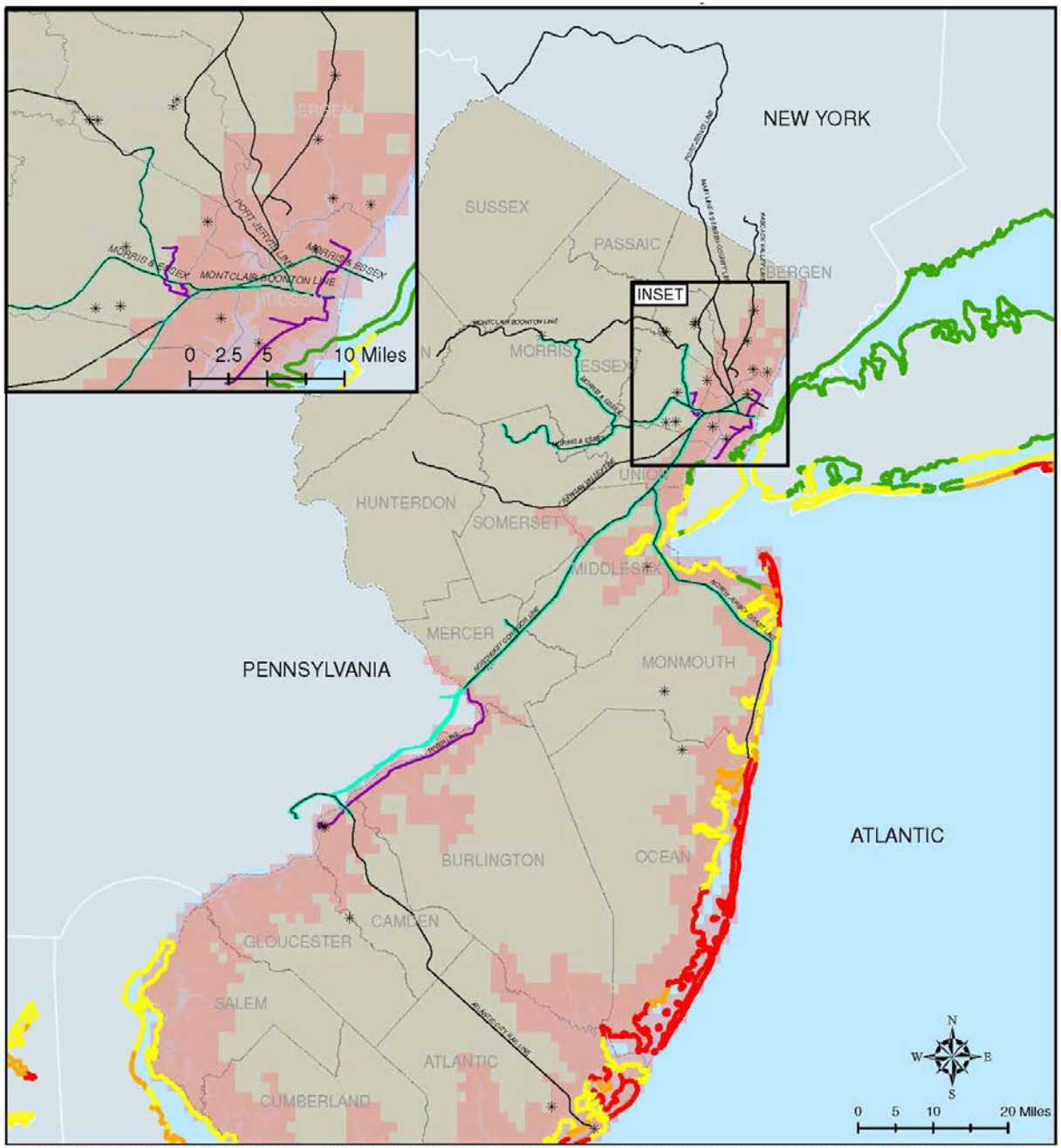
Years	Baseline Ave.	Increase in days over 90 – Trend High Emissions	Increase in days over 90 - Trend Low Emissions	% change Trend – High Emissions	% change Trend Low Emissions
1980-1999	16.3				
2012-2016		26	22	57%	37%
2017- 2021		28	24	74%	45%
2022- 2031		33	26	100%	58%
2032- 2061		47	32	187%	95%

Increase in Flood Frequency

	Average % Increase in Frequency over Year 2000		
	10 Year Flood	100 Year Flood	500 Year Flood
2012-2016	13%	39%	23%
2017-2021	23%	51%	30%
2022-2031	47%	72%	41%
2032-2061	209%	171%	93%

Sea Level Rise

Sea Level Rise in inches over 1990 base year	Range in inches during period - IPCC	Range in inches during period-Rahmstorf
2012-2016	2.4-3	3.4-4.2
2017-2021	3.1-3.7	4.4-5-3
2022-2031	3.9-5.5	5.5-7.7
2032-2061	5.7-12.5	7.9-16.8



SOURCE: NJDEP Tidelands ;New Jersey Department of Environmental Protection (NJDEP), Bureau of Tidelands Management, 1998; Coastal Vulnerability to Sea-Level Rise: A Preliminary Database for the U.S. Atlantic Coast, U.S. Geological Survey, 2001; New Jersey Transit Data, 2011; Counties of New Jersey ;New Jersey Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS), 2010

FIRST ENVIRONM

Proposition

- Change is occurring
- Resiliency to climate change must be included in State of Good Repair Planning; it is integral
- State of Good Repair that does not consider climate impacts is not and cannot be State of Good Repair

Cross-Silo Management of SGR

How to Start

- Present the necessity of alignment to leadership
  - Cost containment
  - Efficiency
  - A smoothly operating system
- Get a seat at the table in the beginning
  - At the end is too late
- Make sure you are part of the initial needs assessment for data collection

What Data

What information/data should Environmental provide

- Identify regional/local impacts
- Collect the regional and local data on projected climate impacts
- Provide estimated rate of expected change over time to allow engineering/ operations/maintenance to assess the consequences

What information/data should Planning and Ops provide

- Current state of assets
- Useful life
- Criticality of assets
- Vulnerability of assets

FIRST ENVIRONMENT

Information Technology

EMIS/Asset Management

- Identify the climate change data that should be collected in maintenance work orders
  - Temperature
  - Winds
  - Precipitation
  - Flooding and storm surge
- Reports

GIS

- Create layers for climate vulnerabilities
  - Catenary lines (high heat, high winds)
  - Rails (flood plain, high heat)

FIRST ENVIRONMENT

Monitoring Data and Continual Improvement

- Collect the data on corrective maintenance events
  - Temperature
  - High winds
  - Storms and flooding
- Analyze the data and adjust

QUESTIONS?

Elizabeth Delaney
First Environment
973.334.0003
end@firstenvironment.com
Linkedin profile