



# Climate Change & Resiliency in Rhode Island

RIEC<sup>4</sup>

June 2018



# RI's Changing Climate

**Temperatures** in RI have increased by more than 3°F since the beginning of the 20th century. 2016 was the warmest year on record globally.

The five warmest years in the global record have all come in the 2010s.

The **water in Narragansett Bay** is getting warmer. Over the past 50 years, the surface temperature of the Bay has increased 2.5-2.9°F. Wintertime water temperatures are warming the most rapidly.

= CHANGES =

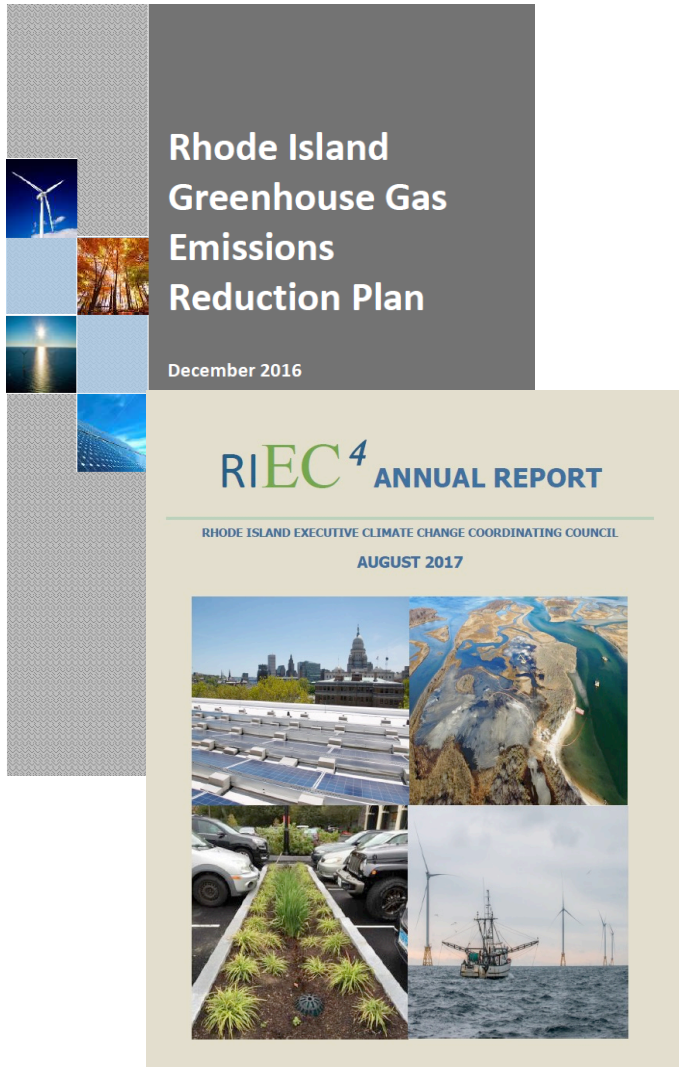
**Sea levels** have risen more than 9 inches in RI since 1930 (Newport tide gauge). Updated NOAA predictions (Jan. 2017) put sea level rise in RI upwards of 9 ft. by 2100.

**Intense rainfall events** in New England have increased 71% since 1958. RI's average annual precipitation has increased more than 10 inches since 1930.

# Impacts of a Changing Climate

- Rhode Island has a lot at stake
  - Infrastructure (roads, bridges, wastewater treatment facilities, dams, etc.)
  - Built environment (homes, municipal buildings, etc.)
  - 400 miles of coastline & permanent loss of land
  - Ecological transformation of coastal wetlands/estuaries
  - Water-quality
  - Vulnerable populations/human health
- Stressors (*increasing air/water temperatures, increased precipitation, and rising sea levels*) associated with climate change are increasing rapidly. These stressors are already causing ecological responses such as altering the estuarine fish community, with warm-water species increasing and cold-water species declining.
- Impacts of climate change on the cities, towns, and ecosystem of Narragansett Bay are projected to intensify, such as increased flooding and erosion of coastal properties, loss of salt marshes, and potentially more beach closures due to pathogens. Adaptation will require well informed action by local communities.

# What is the EC4?



- The Resilient Rhode Island Act established the **Executive Climate Change Coordinating Council (EC4)** in 2014.
- The 11-member Council, comprised of State Agency department directors, is chaired by DEM Director Janet Coit.
- Two advisory bodies support the Council's work – the **EC4 Advisory Board** and the **EC4 Science and Technical Advisory Board**

# Resilient RI Act: GHG Reduction Targets

**10%** below 1990 levels by 2020

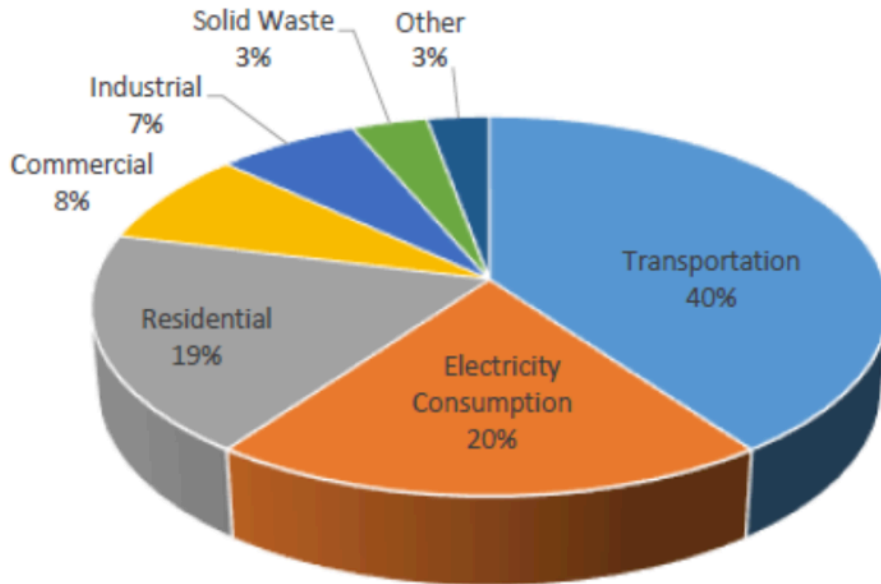
**45%** below 1990 levels by 2035

**80%** below 1990 levels by 2050

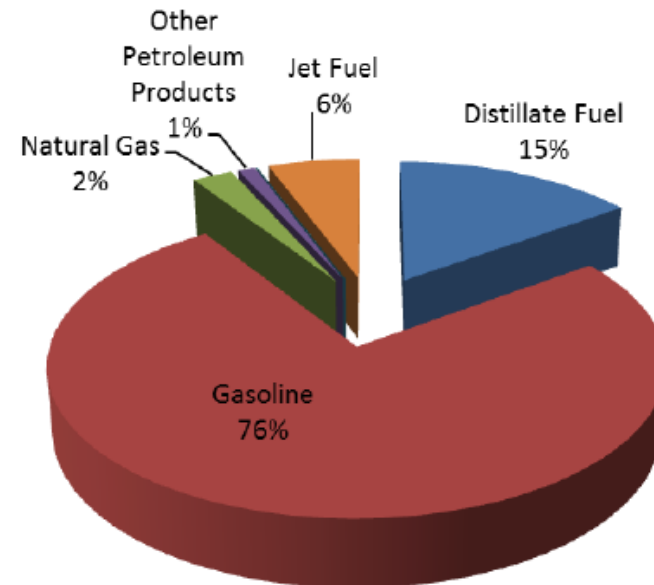
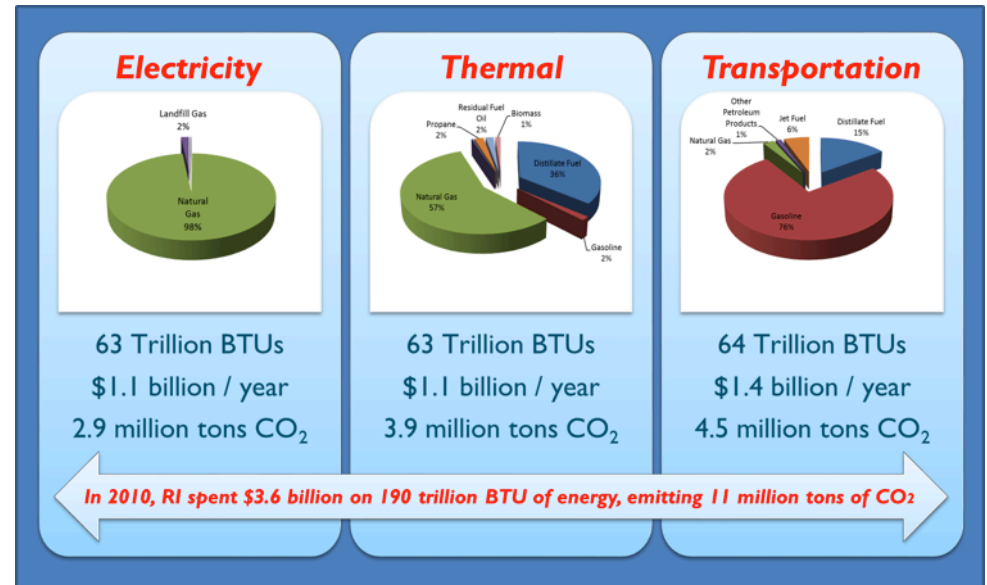


# Emissions in Rhode Island

Rhode Island GHG Source Sectors (2015)

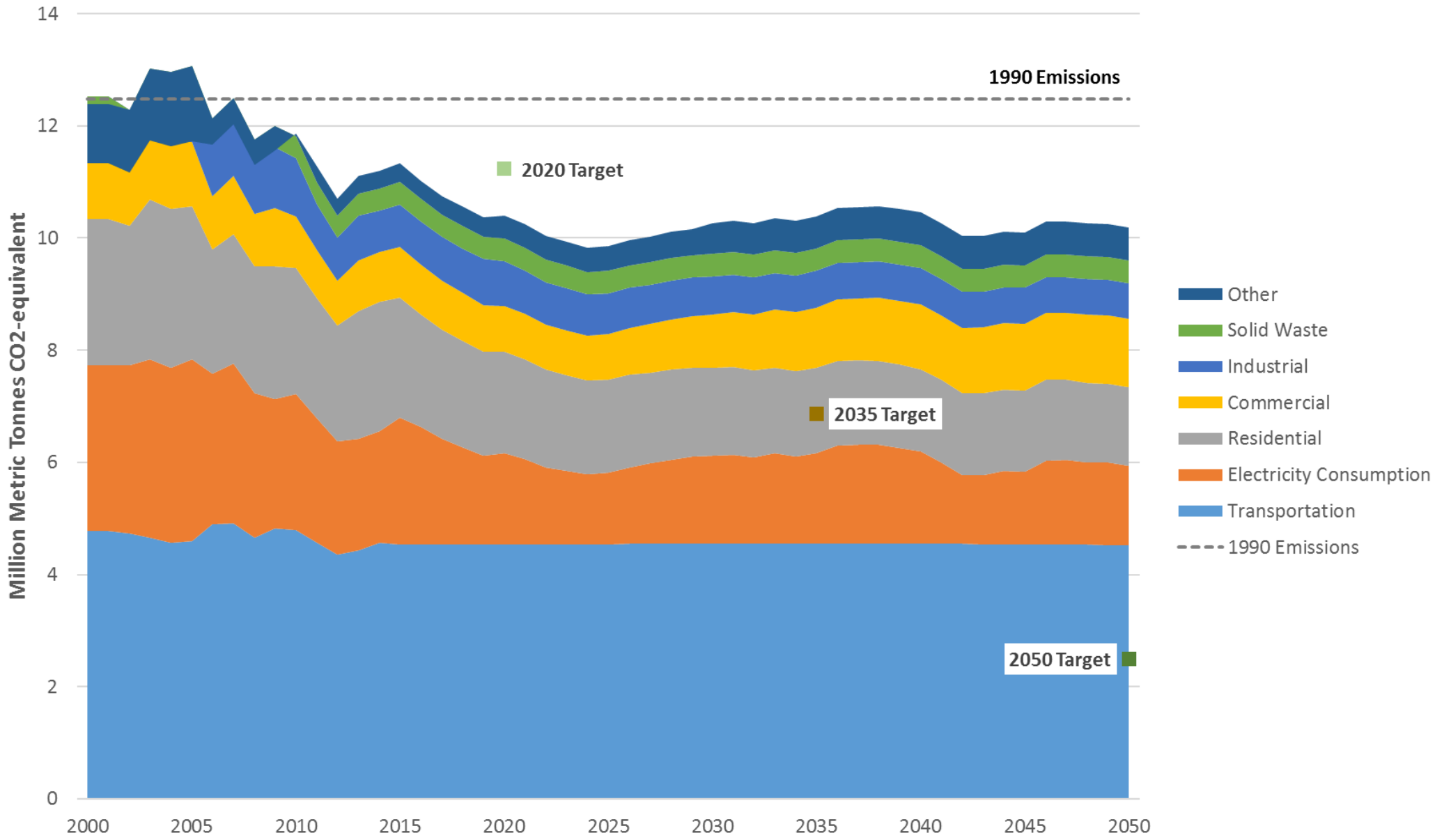


\*Other includes transmission/distribution, wastewater, agricultural, and land use/land use change/forestry



Transportation Consumption 2010

# Rhode Island Business-as-Usual GHG Projection



# Regional Initiatives

- Transportation Climate Initiative (TCI), Georgetown University
  - Collaboration of 12 Northeast and Mid-Atlantic jurisdictions that seeks to develop the clean energy economy, improve transportation, and reduce carbon emissions in the transportation sector.
- New England Governors and Eastern Canadian Premiers (NEG/ECP)
- Regional Greenhouse Gas Initiative (RGGI)
- U.S. Climate Alliance
  - A bipartisan coalition of governors, including Governor Raimondo, committed to reducing GHG emissions consistent with the goals of the Paris Agreement.
- Multi-State Zero Emission Vehicle (ZEV) MOU
  - 8 state agreement to jointly coordinate actions with a goal to place 3.3 million ZEVs on their roadways by 2025.



# RIDEM Leadership

- Electric vehicles (EVs), renewable energy & energy efficiency investments
- Wastewater Treatment Climate Vulnerability Study
- “CHAMP” Project
- Stormwater
- Office of Air Resources:
  - *RGGI*
  - *Emissions Reduction (e.g. transportation sector)*

# Governor's Leadership

- “Lead by Example” Executive Order in Energy Efficiency and Clean Energy (December 2015)
- “1,000 MW by 2020” Clean Energy Goal (March 2017)
  - *Represents a ten-fold increase in state’s clean energy portfolio*
- “Reaffirming RI’s Commitment to the Principles of the Paris Climate Agreement” Executive Order (June 2017)
- “Resiliency Action Plan to Stand Up to Climate Change” Executive Order (September 2017)
- [www.ClimateChange.ri.gov](http://www.ClimateChange.ri.gov) website launched late 2017



*"Rhode Island is a leader. We're the only state with an offshore wind farm, and we're committed to upholding the principles of the Paris Climate Agreement. By aggressively working to combat climate change and protect our coastal state from its effects, we're creating a stronger, safer, and greener Rhode Island for future generations."*

**-Governor Gina M. Raimondo**

## Climate Change Success Stories

2 of 7



# State of Narragansett Bay and Its Watershed Technical Report

Narragansett Bay  
Estuary Program  
2017

# Calendar of Events

<	>	today	<b>June 2018</b>	Month	List
<b>June 8, 2018</b>		<b>Friday</b>			
all-day	●	Draft Climate Resilience Action Strategy Public Feedback Period Closes June 8th			
<b>June 11, 2018</b>		<b>Monday</b>			
2:30pm - 4:00pm	●	RI Executive Climate Change Coordinating Council (RIEC4)			
3:30pm - 4:30pm	●	Metcalf Institute's 2018 Annual Public Lecture Series			

# Rhode Island Resources

[RIDOH Guide for Climate Change and Your Health](#)

[Prep-RI Providing Resilience Education for Planning in Rhode Island](#)

[Rhode Island Resiliency Tools](#)

[State of Narragansett Bay and Its Watershed 2017 Technical Report](#)

[2017 Watershed Counts](#)

[Waves of Change Website](#)

[Beach SAMP Website](#)

[Stormtools ARCGIS Online](#)

[NOAA State Climate Summaries- Rhode Island](#)

[Rhode Island Climate Stories](#)

# Mapping Resources

Stormtools

ArcGIS online

RIGIS

Climate Central Surging Seas

Digital Coast

CDC Social Vulnerability Index Mapper

NOAA Climate Maps

NASA Global Maps

Riverine Flood Mapping

Sea Level Affecting Marshes Model (SLAMM) Maps

A photograph of a suspension bridge at sunset. The sky is a deep red and orange, with the sun low on the horizon. The bridge's towers and cables are silhouetted against the sky, and the water below reflects the vibrant colors. The bridge has a distinctive arch in its towers and is illuminated with small lights along its length.

# **Resilient Rhody:** **Climate Resilience Action Strategy**

# Statewide Climate Resilience Action Strategy

## Goals

- Catalyze the planning and vulnerability studies already developed and move towards implementation
- Identify and prioritize resiliency **actions** the State can control to demonstrate progress and implementation
- Prioritize actions that promote cross-agency collaboration and support municipalities in resilience planning and project implementation



# Resiliency Themes

## “Prioritize to Optimize”

- Critical Infrastructure Assets
  - Clean Water, Roads and Bridges
- Utilities
  - Drinking Water, Electric Grid
- Natural Systems
  - Coastal & Upland
- Emergency Response and Preparedness
- Local Community Resilience / Education
- Paying for Climate Resilience Projects



# Types of Actions

## Projects

Projects and processes that can be accelerated now and in the future with existing resources

## Policies

Policies in state control to drive climate adaptation across agencies

## Programs

Programs and initiatives developed by state agencies to assist municipalities and communities become more climate resilient

## Financing

Highlight existing and new and emerging financing mechanisms

# Hot Topic Items

- \$48.5M Green Economy & Clean Water Bond:
  - Includes \$5M for coastal resiliency & public access
  - Includes \$4M for wastewater treatment facility resilience
- July 1<sup>st</sup> – Rhode Island ‘Climate Resilience Action Strategy’.
- ‘Revolution Wind’ – RI’s second offshore 400MW wind farm (proposed May 2018 by Deepwater Wind).
- Reducing emissions from transportation sector.
- Responsible land-based solar development projects.
- RI Beach SAMP due to be completed later in 2018.

# Thank You!

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*For more information, please visit:*  
<http://climatechange.ri.gov>