Climate Change in New Jersey: NJDEP Initiatives

NJ Association of Counties

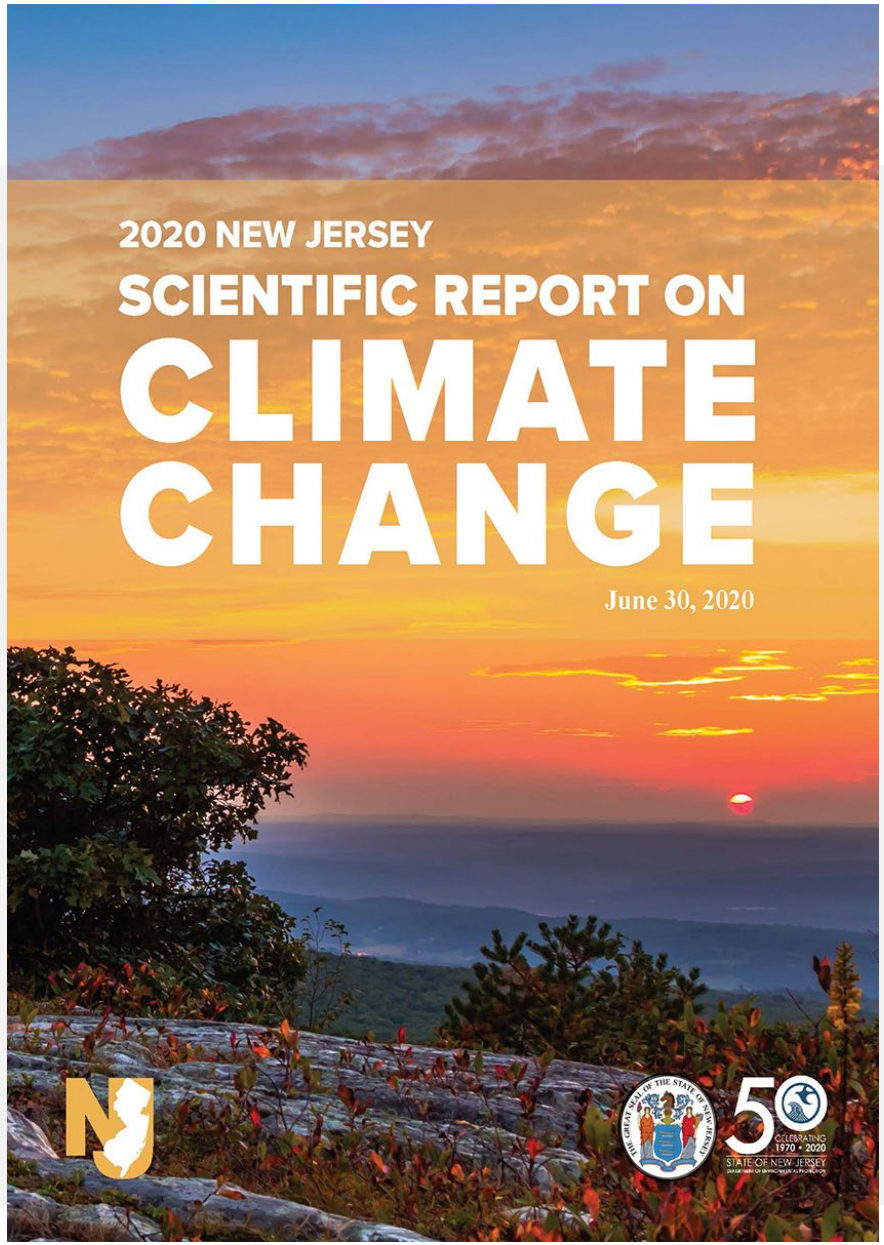
February 23, 2022

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Primer: NJ Climate Science

"Let me explain. No, there is too much. Let me sum up."

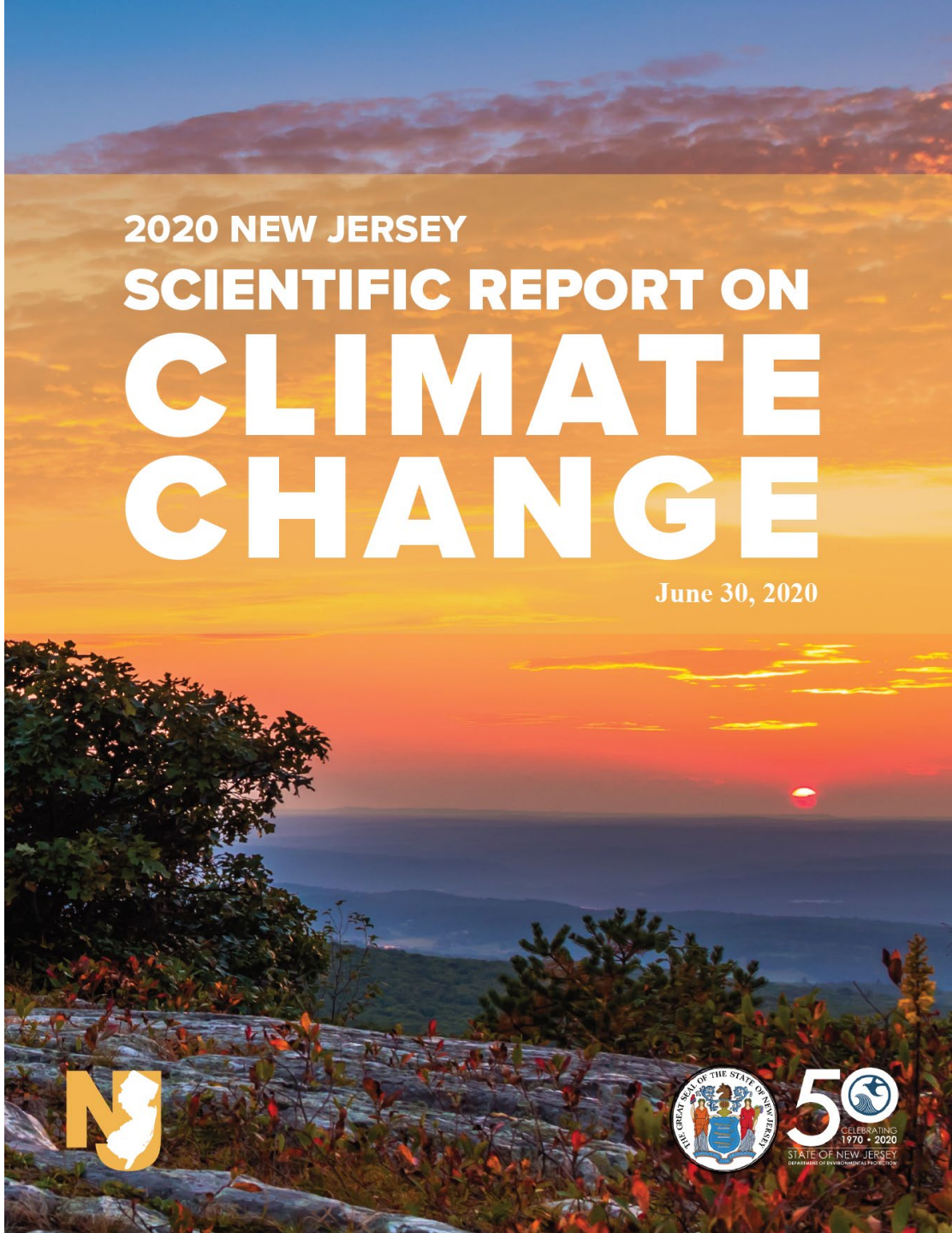
Nicholas A. Procopio, Ph.D., GISP
Assistant Director
Division of Science and Research



SCIENTIFC REPORT ON CLIMATE CHANGE

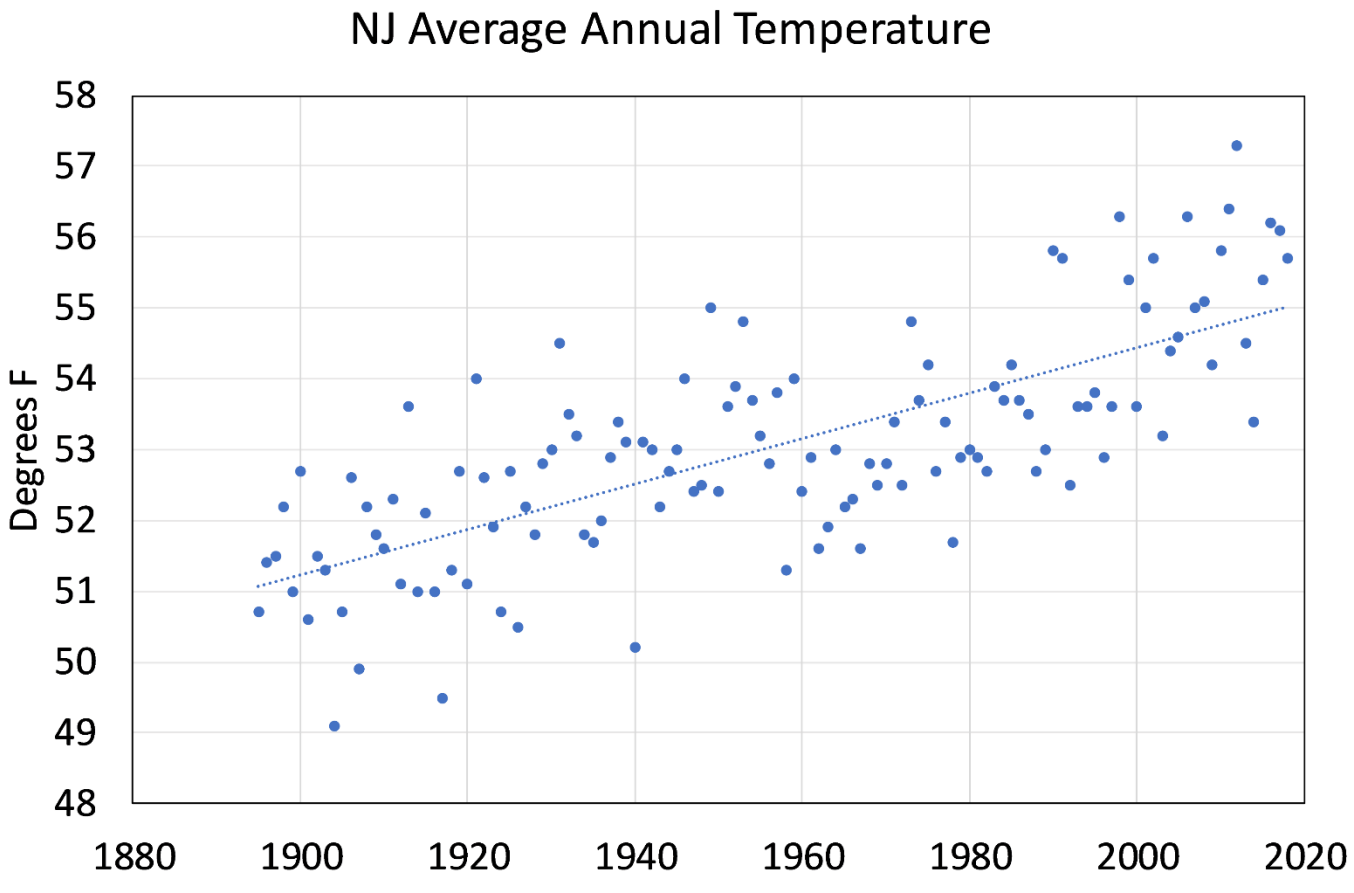
www.nj.gov/dep/climatechange

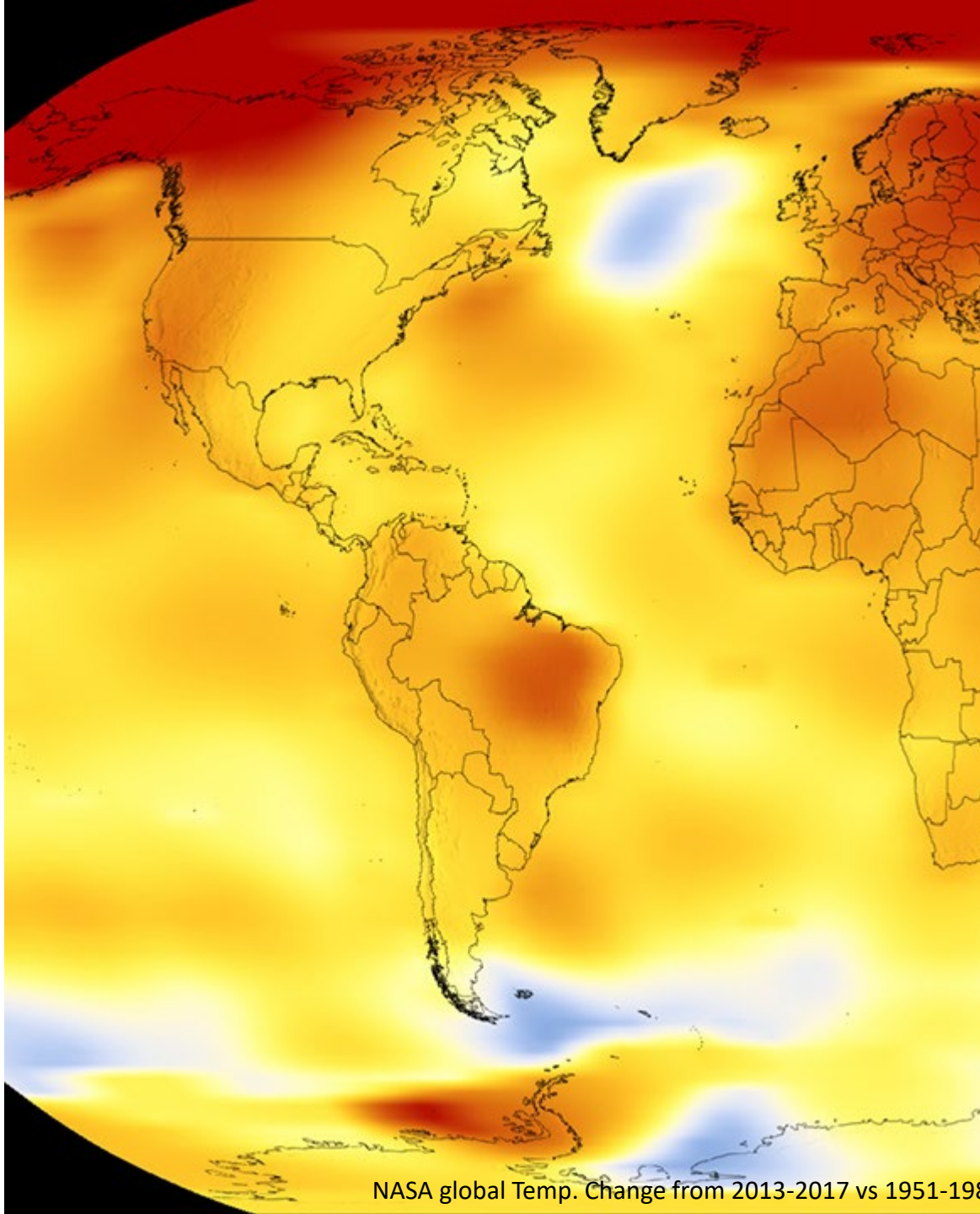
- Greenhouse Gases and Climate Pollutants
- Temperature
- Precipitation
- Sea-Level Rise
- Ocean Acidification
- Resources and Ecosystem Impacts
- Research and Data Gaps



1.5+°F – Rise in average global temperature since the industrial era driven primarily by greenhouse gas emissions.

3.5°F – Rise in average temperature in NJ since 1895



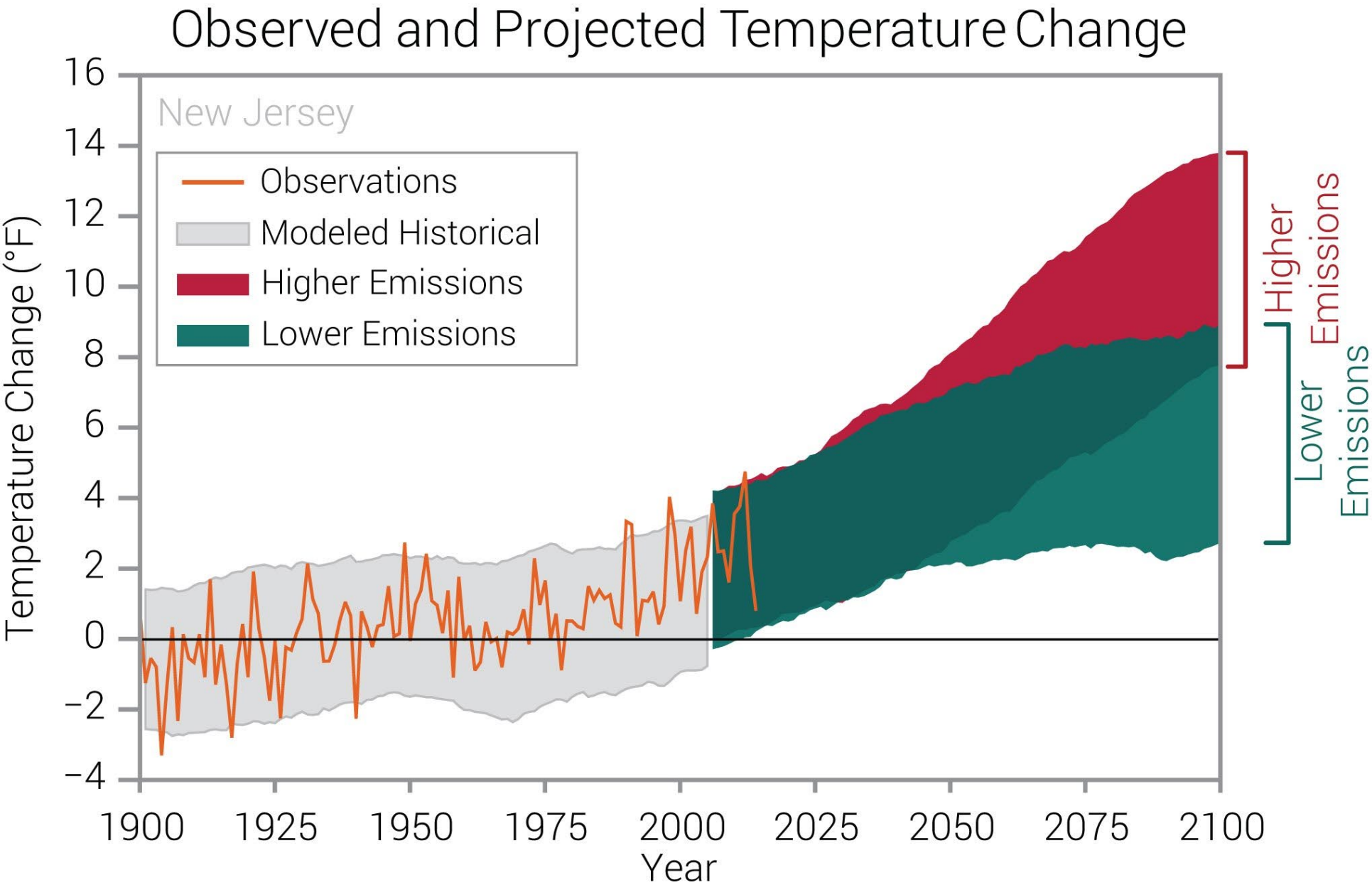


New Jersey: Temperatures

	Increase in NJ Air Temperature from 1895 to 2019 (°F)				
	Annual	Winter	Spring	Summer	Fall
Statewide	**3.5**	4.8	3.0	3.1	3.0
North	**3.6**	5.1	3.1	3.0	3.1
South	**3.4**	4.6	2.9	3.1	2.8
Coast	**4.0**	5.0	3.6	3.6	3.5

Linear trend based on data available from the NJ State climatologist

New Jersey: Temperatures



Observed and projected changes (compared to the 1901–1960 average) in near-surface air temp for New Jersey, averaged over 5-year periods.

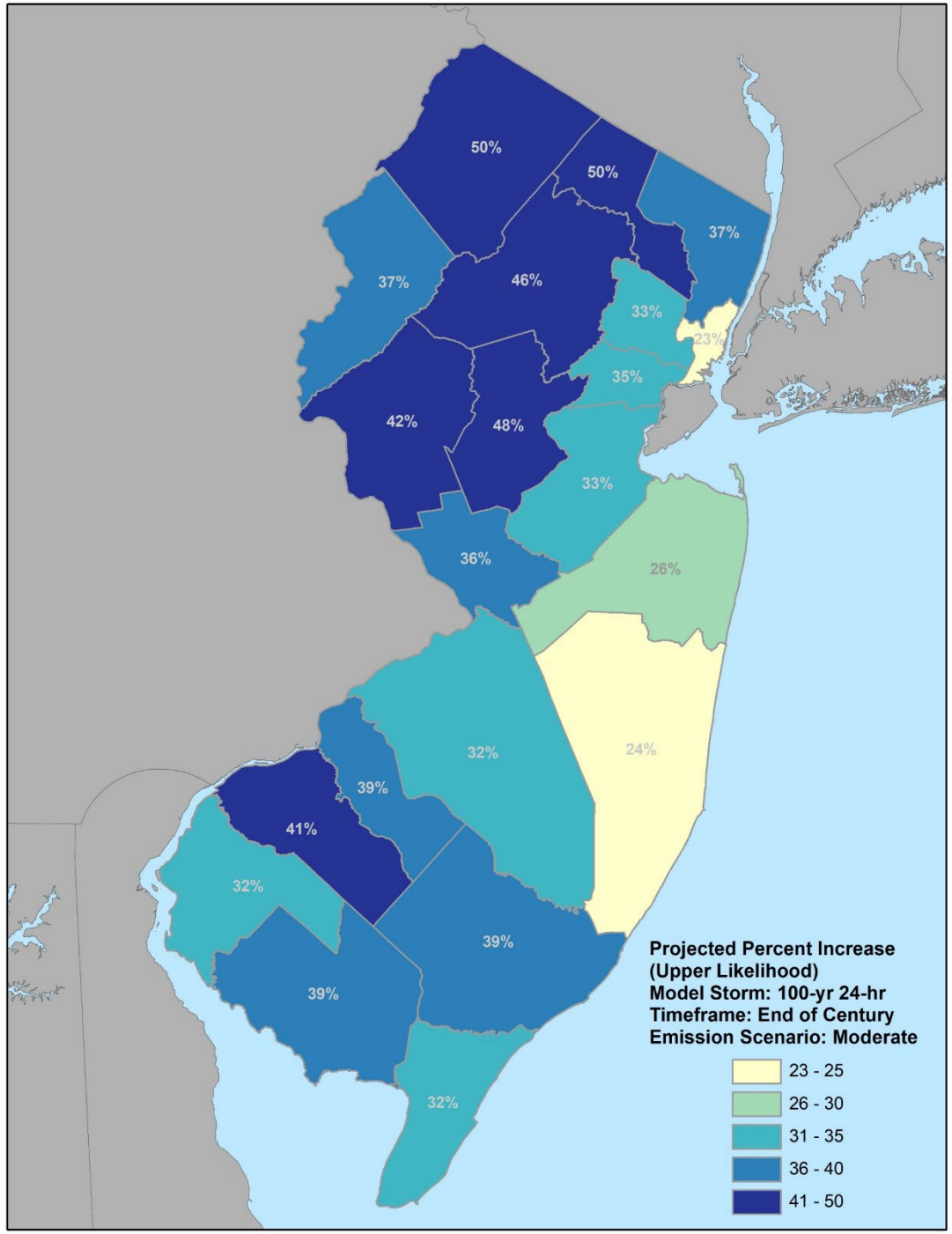
By 2050:
1°F to 6°F warmer by 2050

By 2100:
3°F to 9°F by 2100 (lower)
6°F to 13°F by 2100 (high)

Runkle et al., 2017 New Jersey State Climate Summary. *NOAA Technical Report NESDIS 149-NJ*

Precipitation changes:

- 5% and 10% increase in annual precipitation by 2050
- seasonal increases in precipitation in winter and spring
- Increased winter temperatures will result in more rain, and as a result, fewer snowfalls
- Increased frequency and intensity of heavy rains
- Increased intensity of tropical and extratropical storms
- longer and more persistent wet and dry periods throughout the Northeast



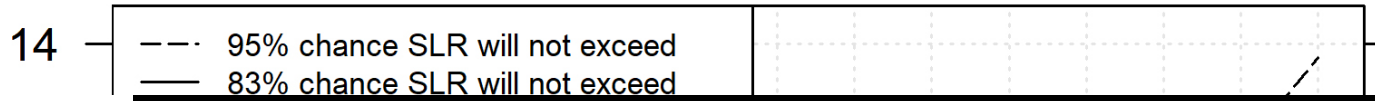
Precipitation changes: Storm Intensity

Moderate
Emission Scenario
End of Century

100yr – 24hr Storm

Upper Likelihood -
(17% likelihood that
projections can be higher)

Percentages on the map represent the projected percent increase in rainfall depth relative to current published values



Sea-level Rise (ft)

Year		2010	2030	2050	2070			2100			2150		
		Obs.			Emissions			Emissions			Emissions		
	Chance SLR Exceeds				Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
Low End	> 95% chance		0.3	0.7	0.9	1.0	1.1	1.0	1.3	1.6	1.3	2.1	2.9
Likely Range	> 83% chance	**0.2**	**0.5**	**0.9**	**1.3**	**1.4**	**1.5**	**1.7**	**2.0**	**2.3**	**2.3**	**3.1**	**3.8**
	~50 % chance		0.8	1.4	1.9	2.2	2.4	2.8	3.4	4.0	4.2	5.2	6.2
	<17% chance		**1.1**	**2.1**	**2.7**	**3.1**	**3.5**	**4.0**	**5.2**	**6.3**	**6.3**	**8.3**	**10.3**
High End	< 5% chance		1.3	2.6	3.2	3.8	4.4	5.0	6.9	8.8	8.0	13.8	19.6

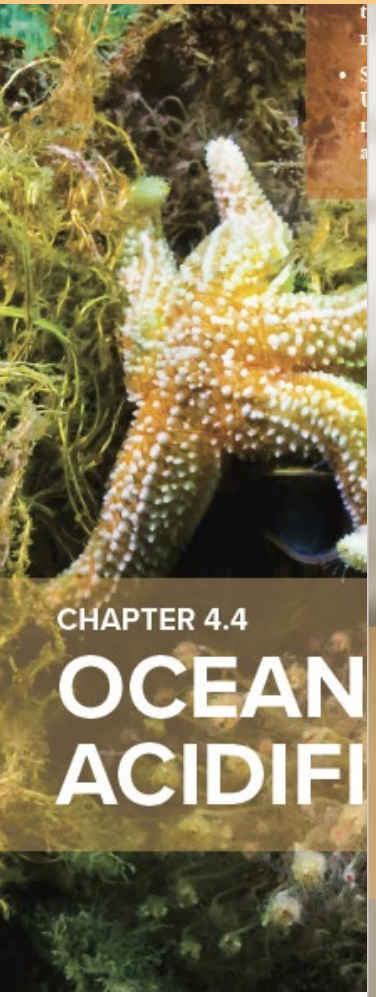
Notes: All values are 19-year means and are measured with respect to a 1991-2009 baseline. Projections are 19-year averages based on Kopp et al. (2014), Rasmussen et al. (2018), and Bamber et al. (2019). Moderate (Mod.) emissions are interpolated between the high and low emissions scenarios. Rows correspond to different projection probabilities. For example, the 'Likely Range' rows correspond to at least a 2-in-3 (66-100% chance) chance of sea-level rise from the relevant projections considered, consistent with the terms used by the Intergovernmental Panel on Climate Change (Mastrandrea et al., 2010). Note alternative methods may yield higher or lower estimates of the chances of low-end and high-end outcomes.

Table 5. Expected high-tide flooding days in Atlantic City, NJ, through 2150 for a Moderate Emissions projection

Year	Low End > 95% Chance	*Likely* Range >83% Chance	*Likely* Range ~50% chance	*Likely* Range < 17% chance	High End < 5% chance
2000			5 days		
2010			7 days		
2020	6 days	9 days	17 days	30 days	45 days
2030	10 days	17 days	35 days	75 days	110 days
2040	17 days	30 days	70 days	150 days	220 days
2050	24 days	45 days	120 days	255 days	325 days
2060	40 days	85 days	190 days	315 days	350 days
2070	55 days	120 days	265 days	350 days	**
2080	75 days	165 days	320 days	**	**
2090	85 days	200 days	345 days	**	**
2100	95 days	240 days	355 days	**	**
2110	150 days	285 days	360 days	**	**
2120	155 days	305 days	**	**	**
2130	175 days	325 days	**	**	**
2140	220 days	340 days	**	**	**
2150	255 days	350 days	**	**	**

*Notes: ** indicates high-tide flooding expected every day of the year. Note that expected number of days of flooding per year will differ from the actual number experienced in a specific year; the expected number reflects the average that would be seen were sea-level stable at the projected level for a given year.*

OTHER IMPACTS



CHAPTER 4.4

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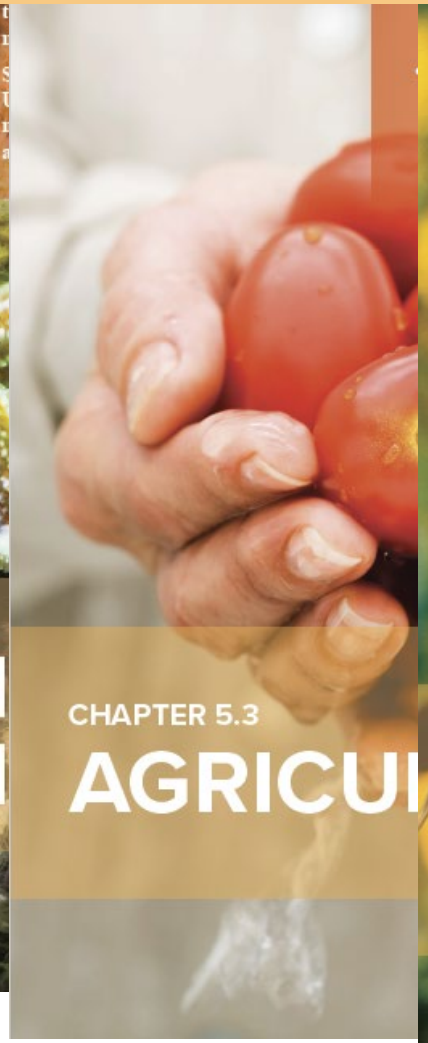

CHAPTER 5.3

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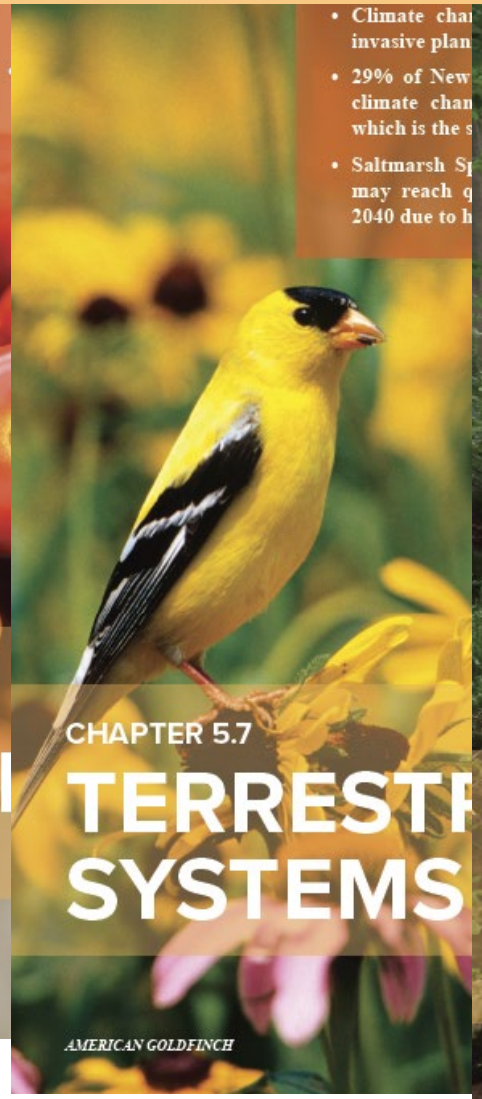

- Climate cha
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- Saltmarsh Sp
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CHAPTER 5.7

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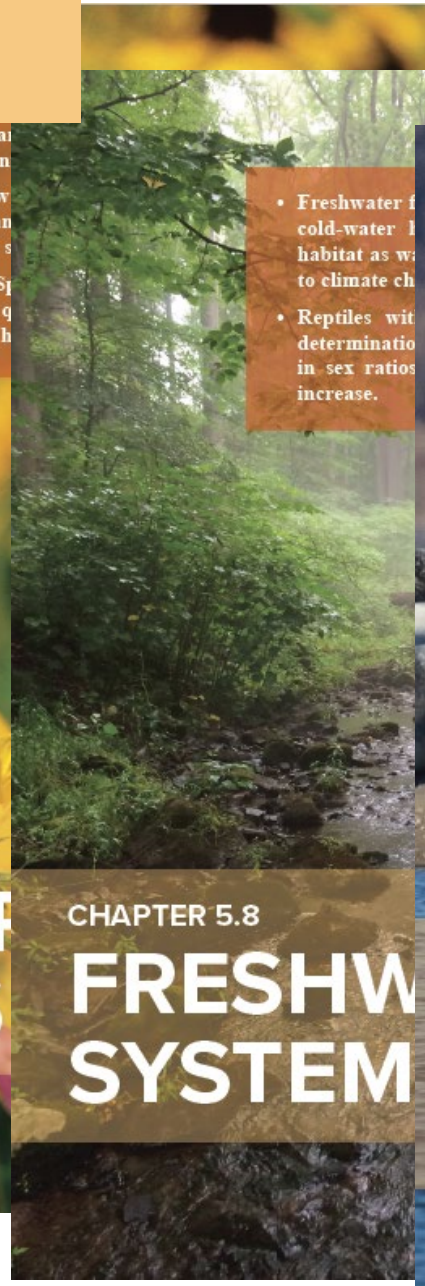
SYSTEMS

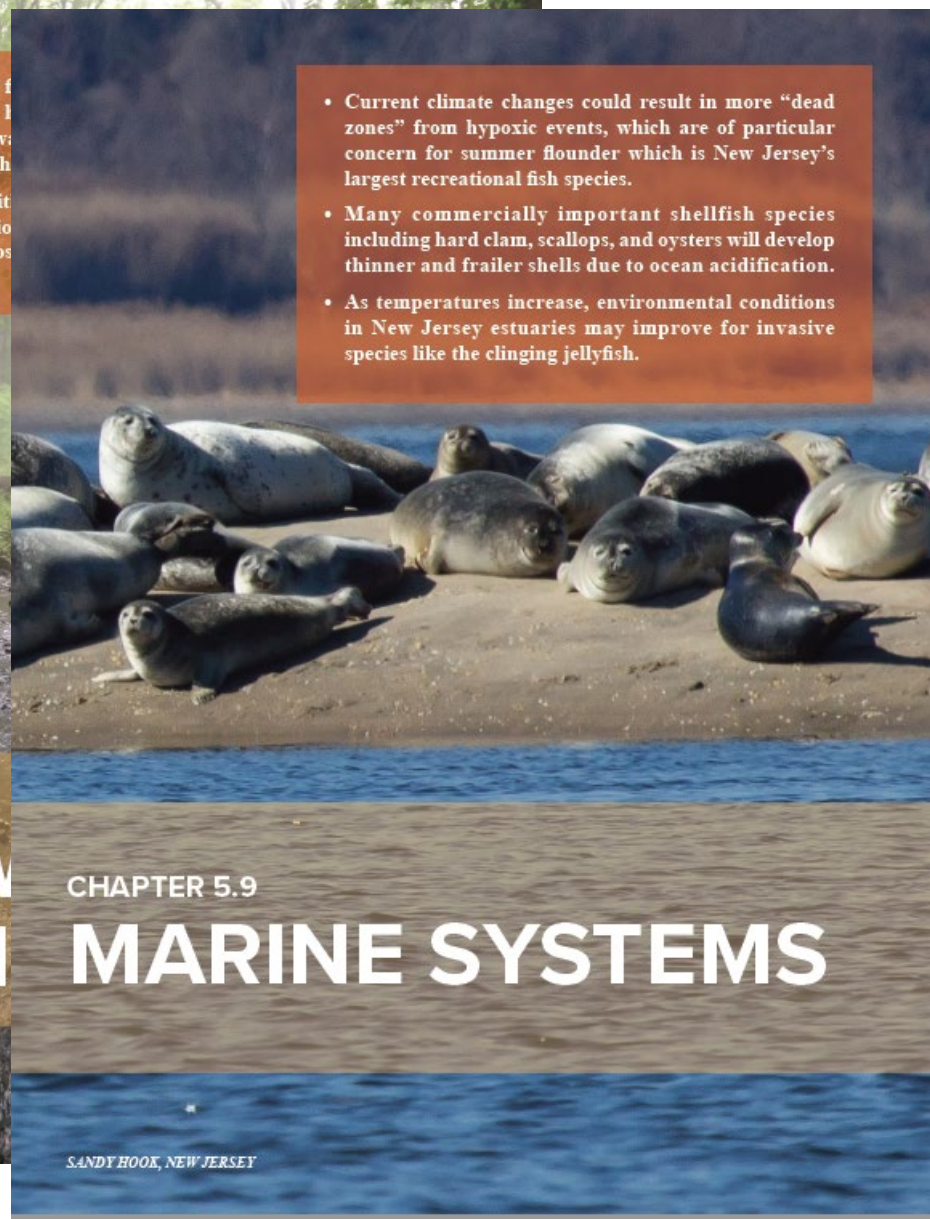
AMERICAN GOLDFINCH



- Freshwater f
cold-water h
habitat as wa
to climate ch
- Reptiles wit
determinatio
in sex ratios
increase.

CHAPTER 5.8

FRESHW
SYSTEM

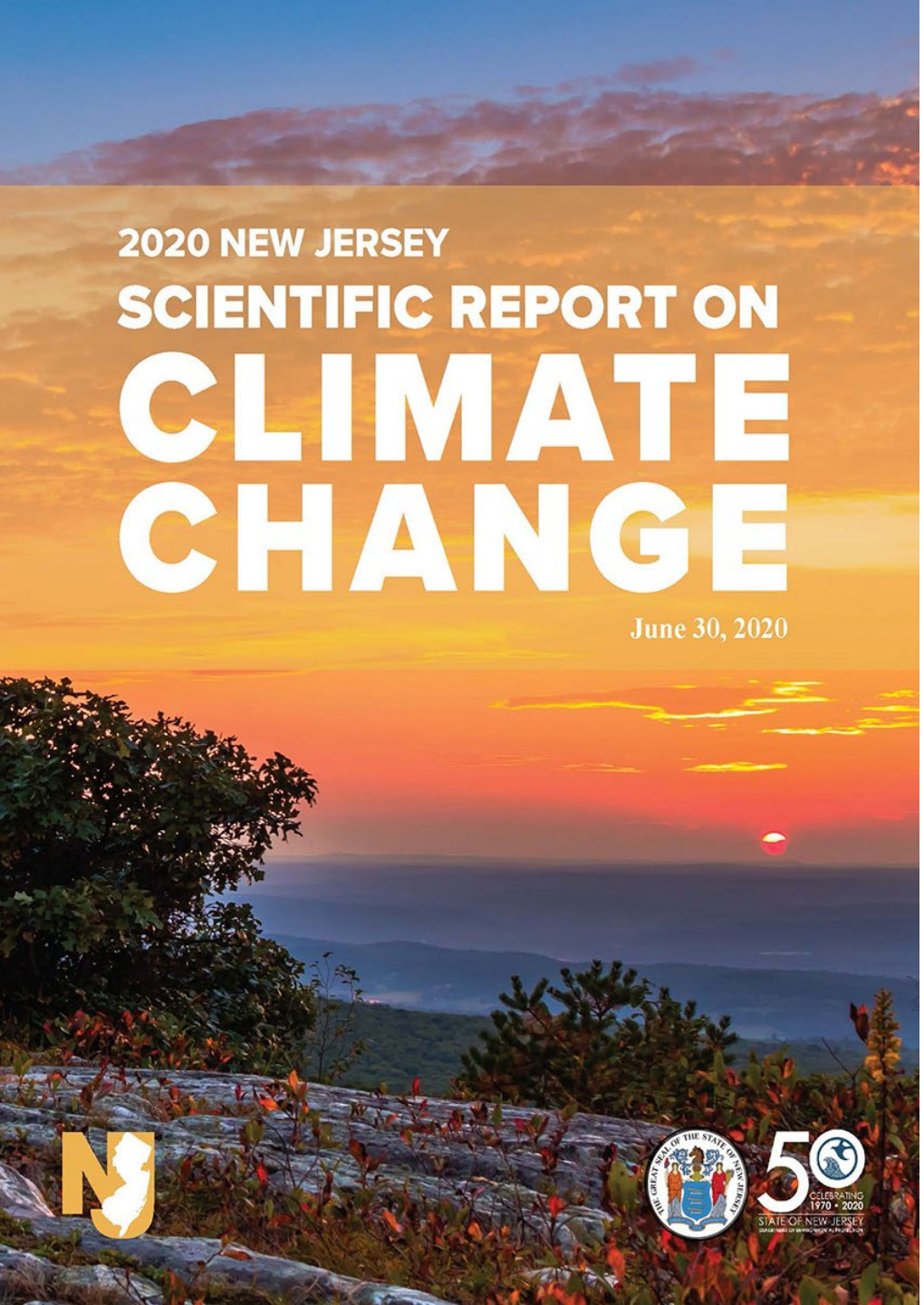


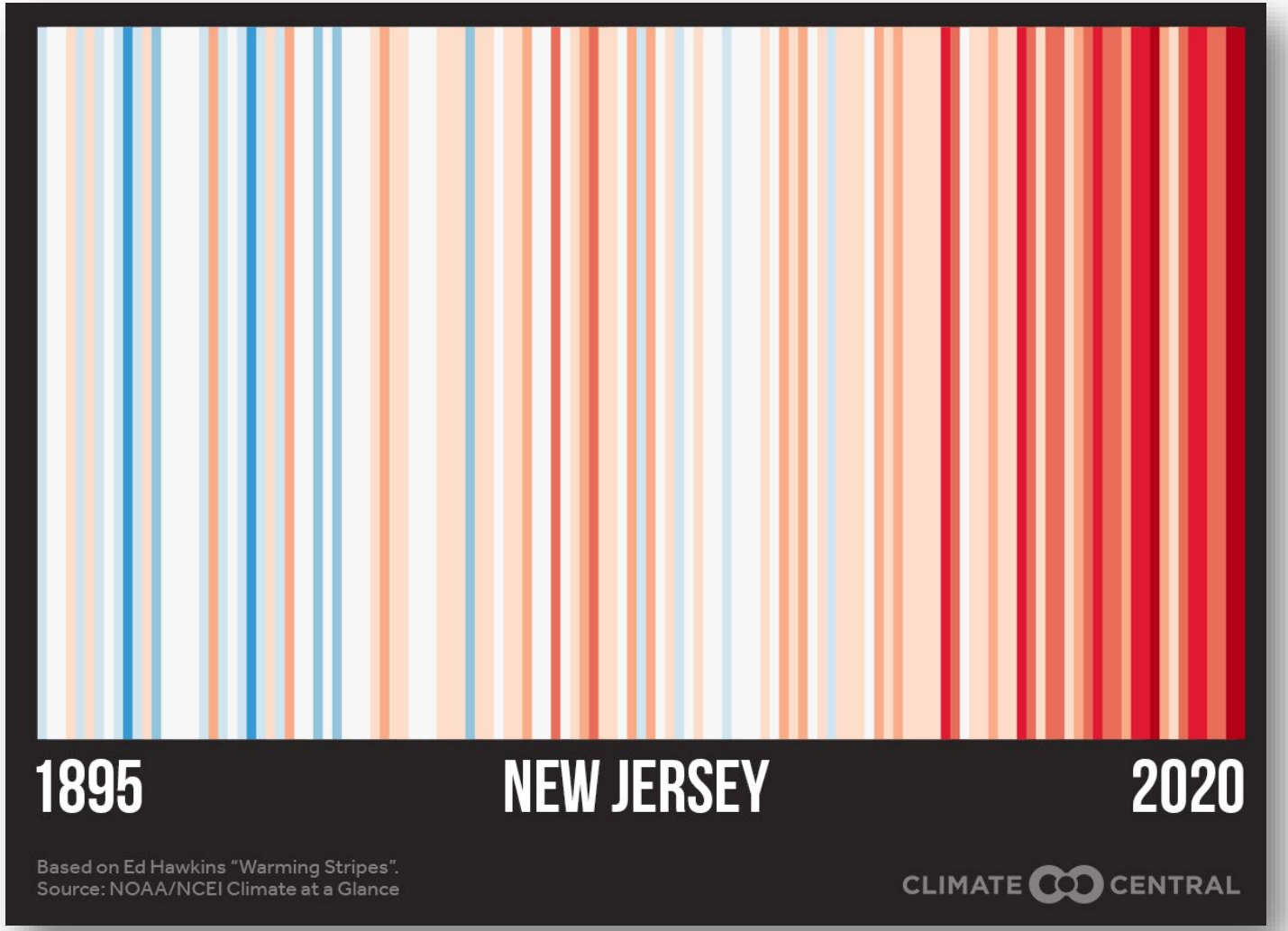
- Current climate changes could result in more "dead zones" from hypoxic events, which are of particular concern for summer flounder which is New Jersey's largest recreational fish species.
- Many commercially important shellfish species including hard clam, scallops, and oysters will develop thinner and frailer shells due to ocean acidification.
- As temperatures increase, environmental conditions in New Jersey estuaries may improve for invasive species like the clinging jellyfish.

CHAPTER 5.9

MARINE SYSTEMS

SANDY HOOK, NEW JERSEY





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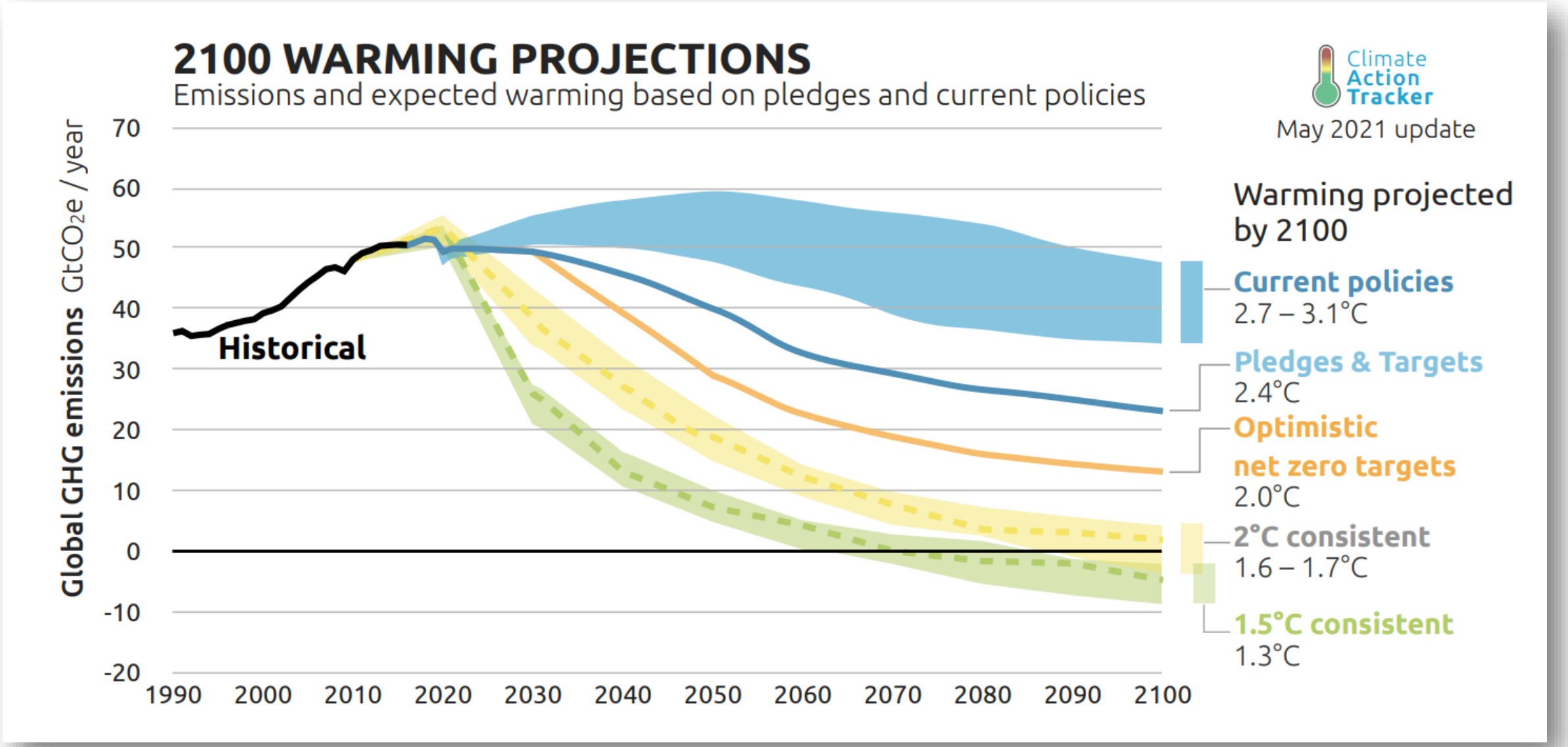
So where are we?



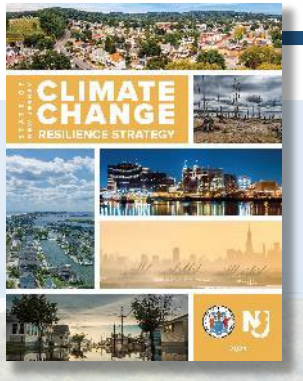
Source Climate Action Tracker:
https://climateactiontracker.org/publications/global-update-climate-summit-momentum/

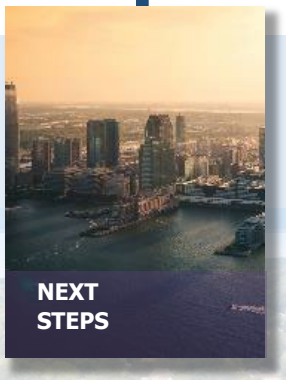
CLIMATE RESILIENCE IN NJ: NJDEP INITIATIVES

Nick Angarone, PP/AICP
Chief Resilience Officer, New Jersey Dept. of Environmental Protection

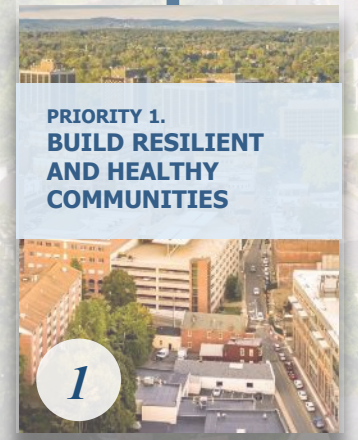
Executive Order 89

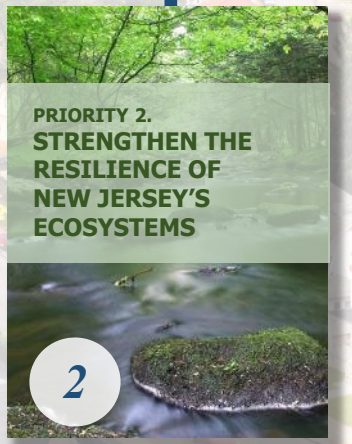
- Signed October 29, 2019
- Established position of State of New Jersey Chief Resilience Officer (CRO)
- Established Interagency Council on Climate Resilience
- Directed CRO to develop and regularly update:
  - Scientific Report on Climate Change
  - Statewide Climate Change Resilience Strategy & Coastal Resilience Plan
- "…it is the policy of this State that Executive Branch departments and agencies shall take proactive and coordinated efforts, where appropriate, to protect public health and safety and to promote and protect the physical, economic, and social vitality and resilience of New Jersey's communities from the current and anticipated impacts of climate change."

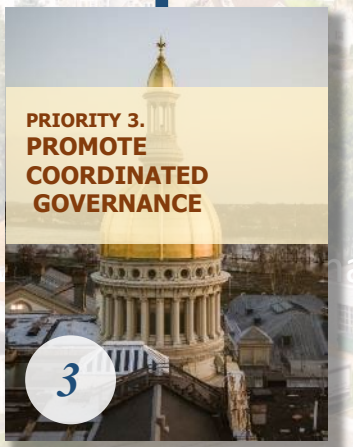


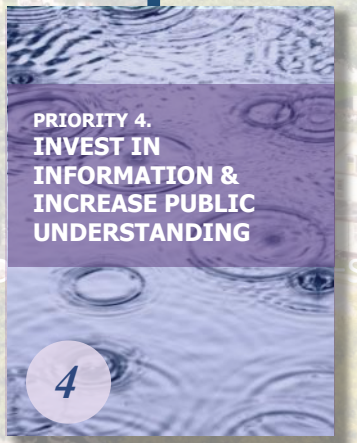


CLIMATE RESILIENCE PRIORITIES









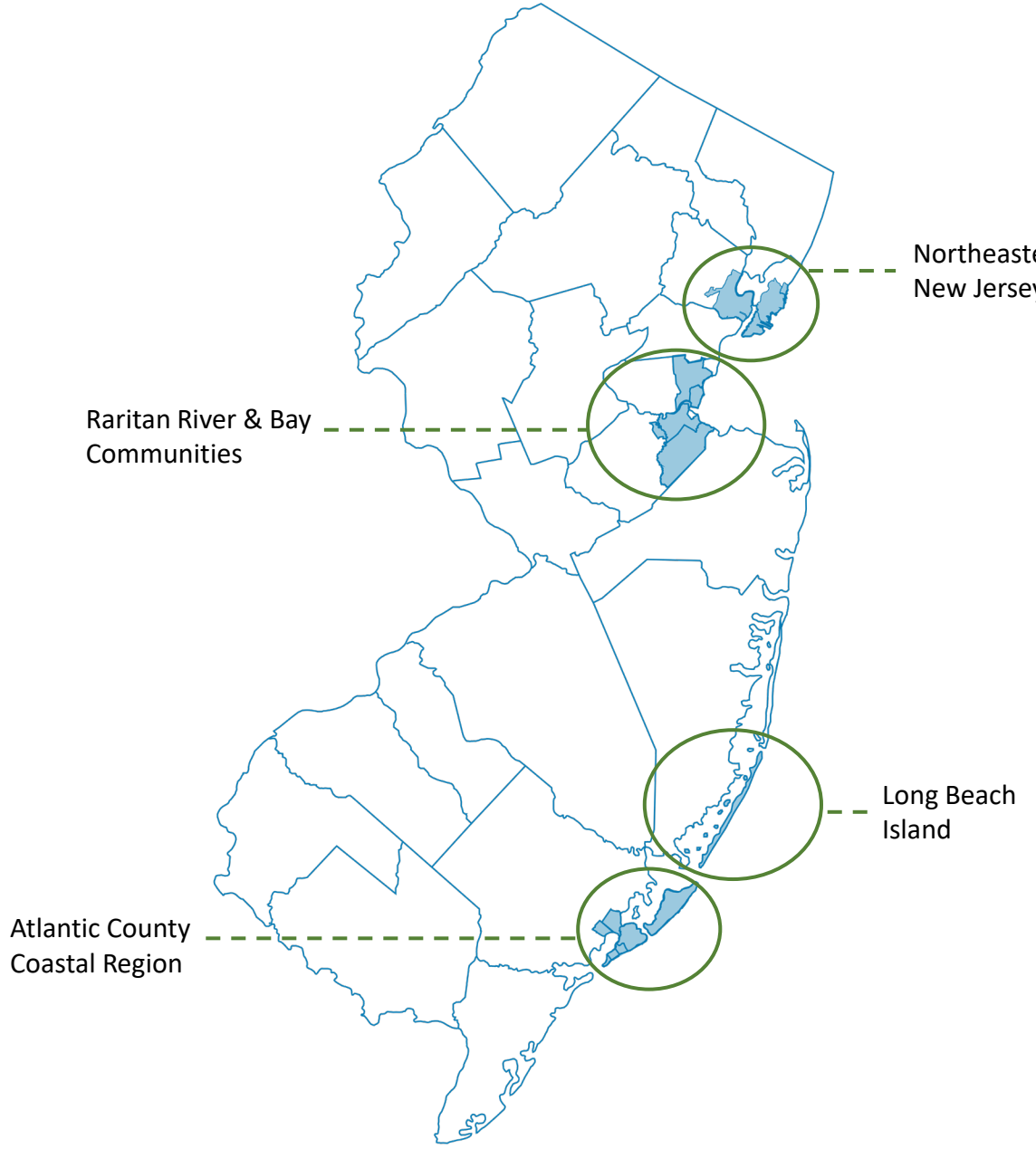
- Build Resilient and Healthy Communities
- Strengthen the Resilience of New Jersey's Ecosystems
- Promote Coordinated Governance
- Invest in Information & Increase Public Understanding
- Promote Climate-Informed Investments & Innovative Financing
- Coastal Resilience Plan

https://www.nj.gov/dep/climatechange/resilience-strategy.html

RESILIENT NJ

- **Northeastern New Jersey:** Jersey City, Newark, Hoboken & Bayonne
- **Long Beach Island:** Long Beach Township, Beach Haven, Ship Bottom, Surf City, Harvey Cedars, & Barnegat Light
- **Raritan River & Bay Communities:** Woodbridge, Perth Amboy, Sayreville, Old Bridge, Carteret, & South Amboy
- **Atlantic County Coastal Region:** Ventnor, Margate, Longport, Atlantic City, Brigantine, Pleasantville, & Northfield

https://resilient.nj.gov



RESILIENT NJ

OVERVIEW | 1. INITIATE & ENGAGE | 2. UNDERSTAND YOUR VULNERABILITY | 3. DEVELOP A STRATEGY | 4. TRACK YOUR PROGRESS

https://resilient.nj.gov

RNJ MUNICIPAL ASSISTANCE PROGRAM

- Direct resilience planning assistance to individual municipalities in the coastal zone for development of a local climate resilience strategy and/or climate change-related hazard vulnerability assessment
- Inaugural funding award: $400,000 across five municipalities:
  - Ocean Township (Monmouth County)
  - Salem
  - Stafford Township
  - Trenton
  - Upper Township

CLIMATE AND HUMAN HEALTH

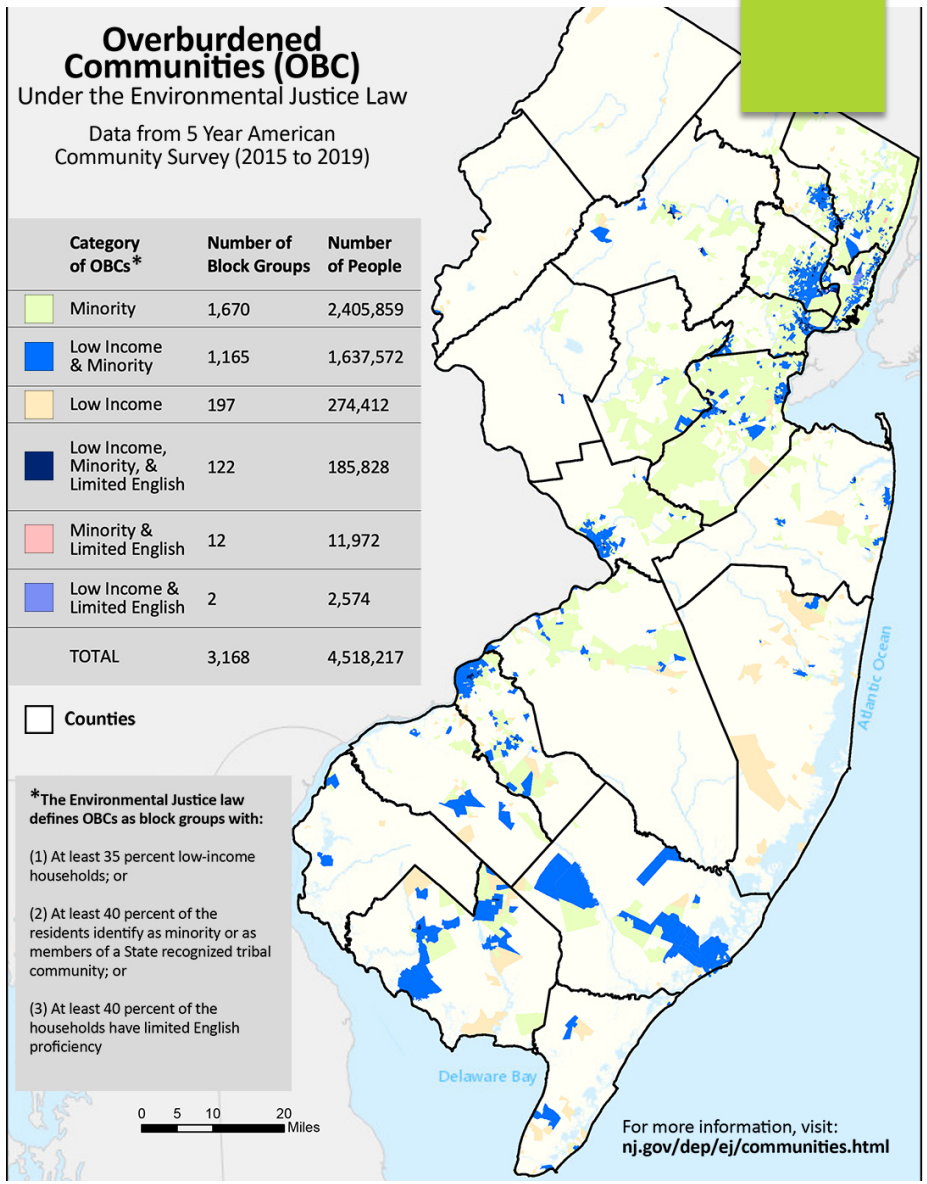
Christine Schell
Manager, Office of Env. Public Health and Safety

Climate and human health

- Human health risks from a changing climate are two-fold:
  - As a threat multiplier, climate change exacerbates existing health concerns
  - New climate-enhanced health concerns
- Both direct and indirect risks
- Compounding extremes can overwhelm emergency and health systems

Health Resilience and Health Equity

- Already overburdened communities will feel the effects of climate change more acutely and are less prepared to recover.
  - High percent of impervious cover
  - Water adjacent
  - Fewer emergency and health resources

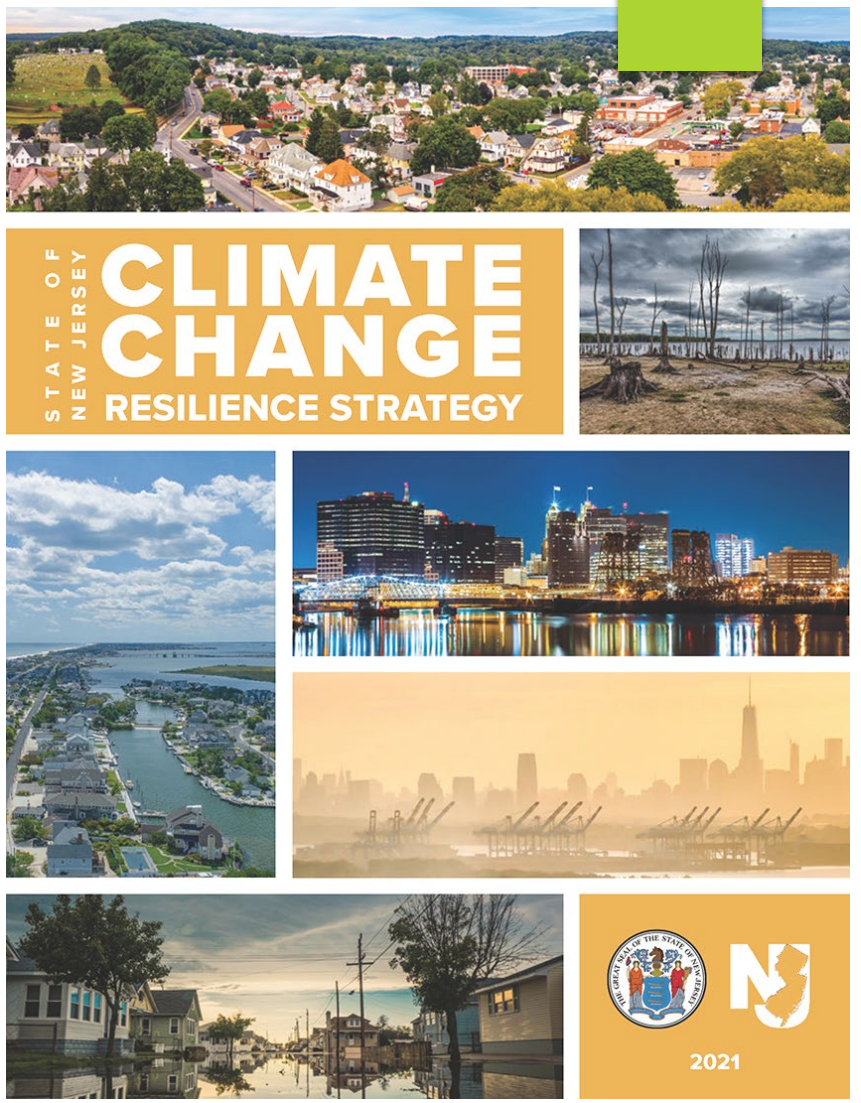


NJ Climate Resilience Strategy

- Priority 1 – Build Resilient and Healthy Communities
  - Integrate Public Health into Community Resilience Planning and Activities

    Enhanced capacity

    Expand monitoring, assessment and planning tools for public health



Healthy NJ 2030

- Internal and external partners focused on developing topic areas, objectives and health indicators
- Overarching themes of resilience, policy and equity
- Healthy Communities Action Team
  - Goals include equitable access to resources and conditions that support optimal health and well-being, and establishment of an inclusive and just health system
- Building blocks for the next State Health Assessment and State Health Improvement Plan

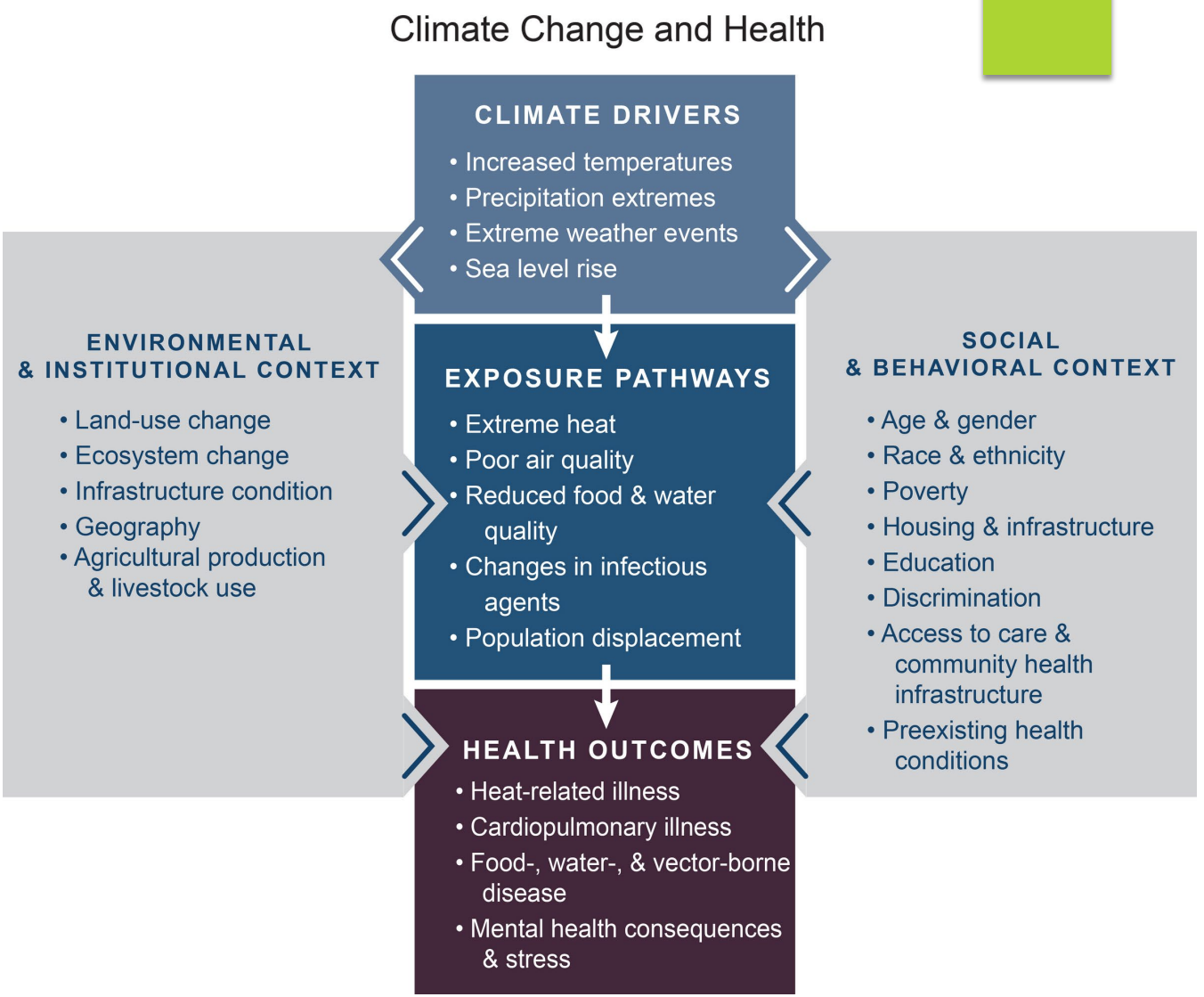
Healthy New Jersey 2030

New Jersey Climate Change Alliance

- Statewide network of diverse organizations that share the goal of advancing science-informed climate change strategies at the state and local levels in New Jersey
- Public Health Workgroup
  - Community health needs assessment and how to link this to the larger initiatives

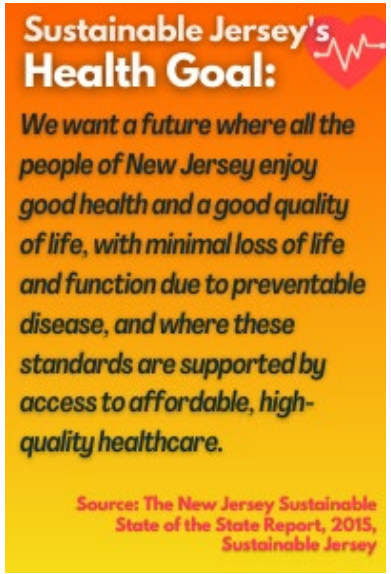
National Climate Assessment 5

- Federal evaluation of body of scientific and Knowledge using best professional judgments on how its relevant to policy and decision-making
- 5th iteration in development for Fall 2023 release
- Human Health Chapter
  - Extreme events
  - Water and food security and infection diseases
  - Community health and environmental justice



Sustainable Jersey's Health Gold

- Identifies specific municipal actions and levels of performance that demonstration effective incorporation of health in municipal decision-making and addressed certain social and environmental conditions impacting the health of their communities



Climate Change Mitigation

Helaine Barr
NJDEP, Bureau Chief, Climate Change and Clean Energy
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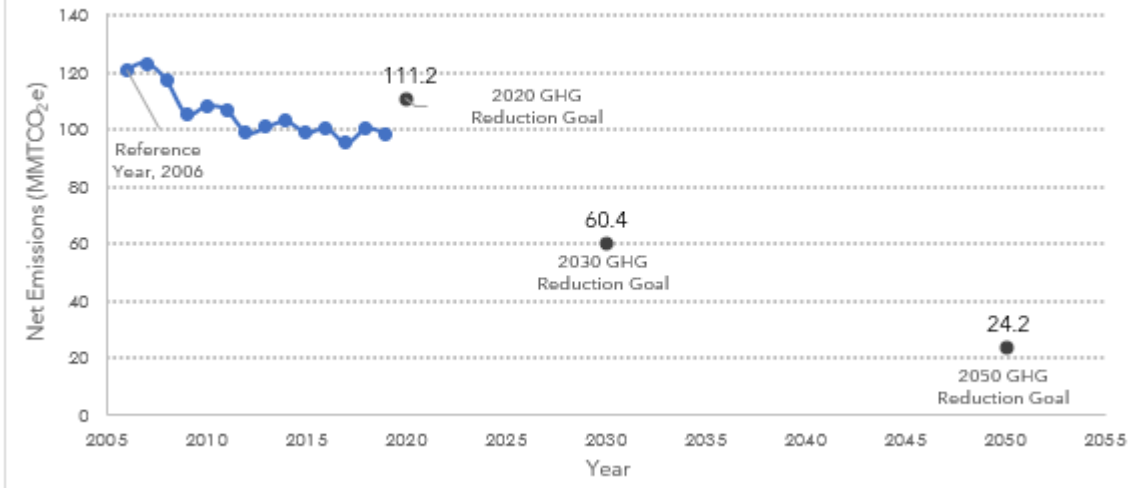
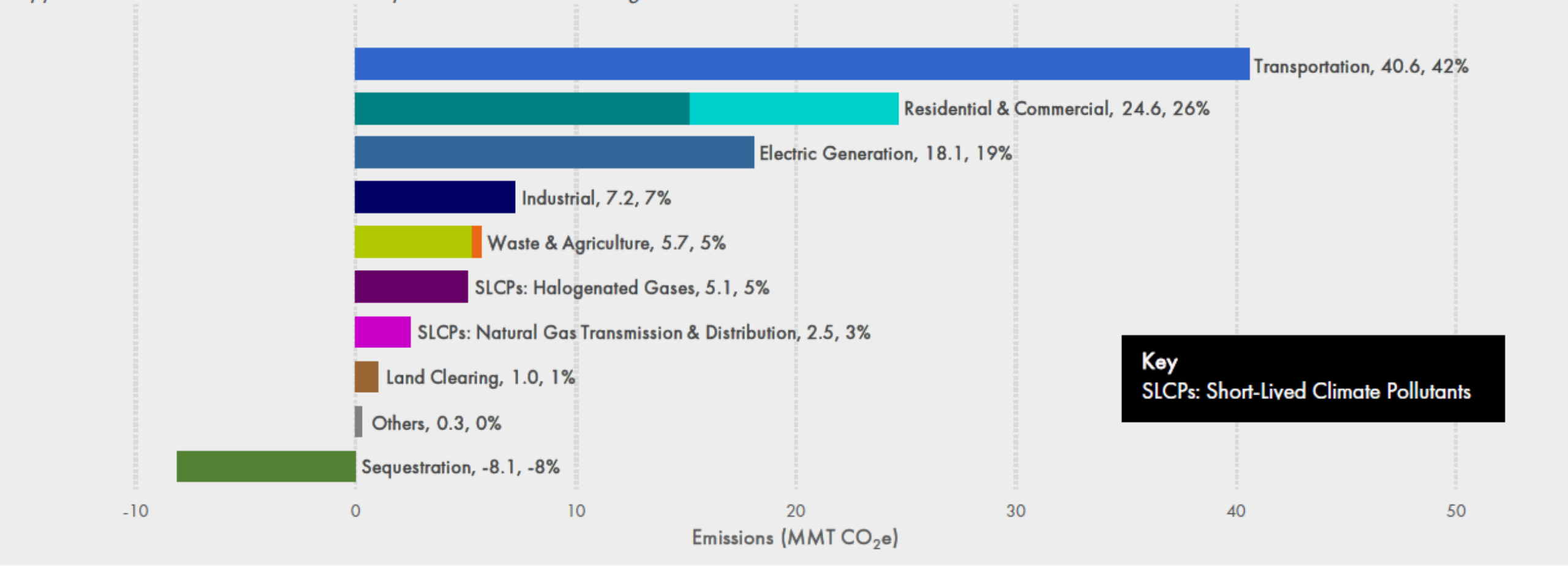
New Jersey Greenhouse Gas Reduction Goals

New Jersey Emissions and Greenhouse Gas Reduction Goals

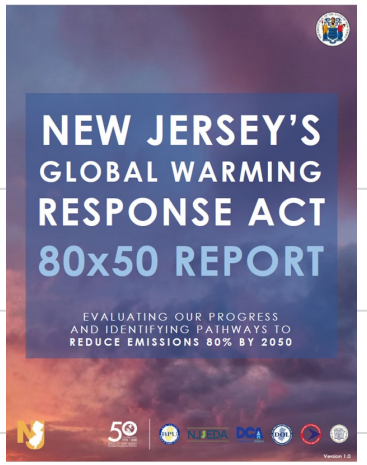


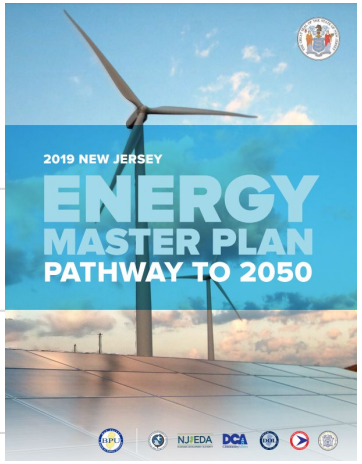
New Jersey Greenhouse Gas Emissions

Figure ES.2. New Jersey GHG Emissions Inventory for 2018 (MMT CO_2e and Percentage).
Opportunities for emissions reductions are present in each of the categories.



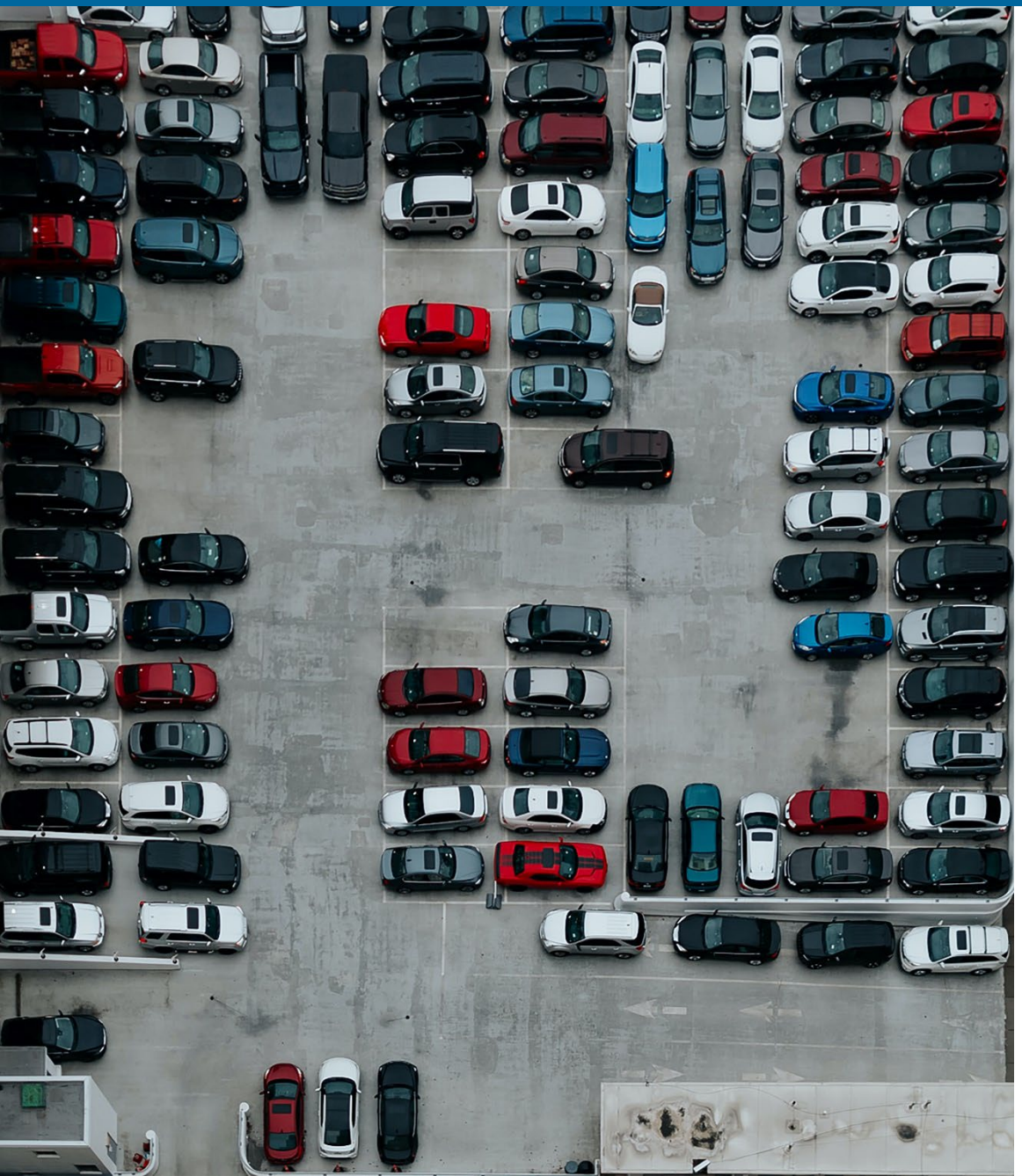
New Jersey Greenhouse Gas Emissions | Pathway to 2050





https://www.nj.gov/dep/climatechange/mitigation.html
https://nj.gov/emp/docs/pdf/2020_NJBPU_EMP.pdf

What is the State doing? | Vehicle Electrification



Electric Vehicle Adoption Targets (by law)

- 330,000 EVs by 2025
- 2 million EVs by 2035
- State lead by example by electrifying 25% of fleet by 2025

Electric Vehicle Incentive Programs

- Clean Fleet EV Incentive Program - BPU
- It pays to plug in – DEP
- Medium and Heavy-Duty Electrification Grants - DEP

Other EV Resources

- EV on NJ State Purchasing Contracts
- Drive Green Website – variety of other resources and information

What is the State doing | Building Decarbonization

Energy Efficiency Targets (by law)

- 5-year savings targets of;
  - 2.15% for electric utilities
  - 1.10% for gas distribution companies

Energy Efficiency Incentive Programs

- Local Government Energy Audits – BPU
- Energy Savings Improvement Program (ESIP) - BPU

Building Decarbonization Targets (by modeling)

- 90% of residential and commercial buildings will need to install electric, high-efficiency alternatives for space and hot water heating by 2050

Building Decarbonization Efforts

- ZEB Code Collaborative

What is the State doing? | Grid Decarbonization

In-state installed capacity goals by year (GW) (by modeling)

Resource Type	2020	2025	2030	2035	2040	2045	2050
NJ Solar	3.5	5.2	12.2	17.2	22.2	27.2	32.2
Offshore Wind	0	1.1	3.5	7.5	8.8	10.1	10.7
Nuclear	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Fossil Gas	11.7	10.1	10.7	10.8	12.4	13.7	0
Biogas, Biofuels and Hydrogen	0	0	0	0	0	0.3	17.6
Storage	0.6	1.6	2.5	2.5	2.5	5.2	8.7
Other[1]	0.97	0.25	0.26	0.22	0.19	0.16	0.15
Total	**20.3**	**21.8**	**32.7**	**41.7**	**49.6**	**60.2**	**72.9**

Renewable Energy Incentive Programs

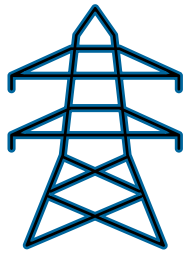
- Solar Act of 2021, provides incentives for development of 3.75 GWs of new solar of 2026 – including a carve out for community solar.
- NJ is committed to procuring 7,500 MW of offshore wind by 2035.

Other Efforts

- DEP is updating its Solar Siting Analysis for the state, to guide solar arrays to be sited in most preferrable locations
- State buildings - solar PPA

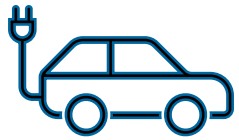
What can Counties do?

Do more of what you already do.



- Lead by example - continue efforts, like the wind port partnerships, solar projects on landfills, brownfields and county buildings, and extensive energy efficiency work.

- Develop and maintain systems for bulk purchase of products and services to decarbonize municipalities, other governmental and quasi- governmental units, businesses, households, and of course the counties.



- Adopt EV Readiness Plans, site EV charging and purchase EVs.
  - https://nj.gov/dep/drivegreen/pdf/incentivesummary.pdf
  - https://nj.gov/dep/drivegreen/evs-on-state-purchasing-contract.html

- Lobby the state for increased roles, guidance, support, partnerships and more in reducing greenhouse gases in the short and long term.

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