



Department of
Environmental
Conservation

6 NYCRR Part 490 Projected Sea-level Rise 2023 Update

Pre-proposal Informational Webinar
11:00 a.m., May 3, 2023

Community Risk and Resiliency Act (2014)

as amended by the Climate Leadership and Community Protection Act (2019)

- **Requires sea-level rise projections (DEC; adopted 2017)**
- Requires consideration of climate change by applicants for major permits and in DEC facility-siting regulations
- Requires model local laws to increase resilience (DOS, DEC; released 2019)
- Requires applicants demonstrate consideration of sea-level rise, storm surge and flooding in specified funding programs
- Adds mitigation of sea-level rise, storm surge and flooding to Smart Growth Public Infrastructure Policy Act criteria
- Authorizes DEC require mitigation of significant climate risks to any natural resource, public infrastructure or services, disadvantaged communities, or private property not owned by the applicant.
- Requires guidance on implementation (DEC, DOS)
- Requires guidance on use of natural resilience measures to reduce risk (DEC, DOS)

<http://www.dec.ny.gov/energy/102559.html>



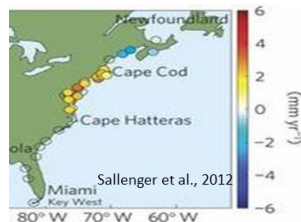
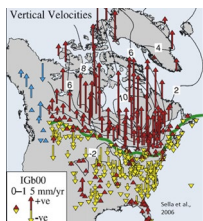
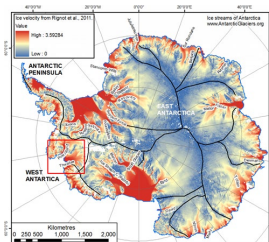
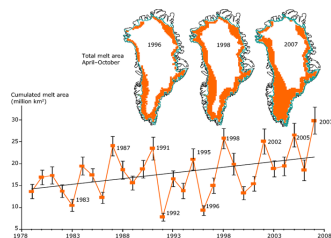
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2017 Sea-level Rise Projection Rulemaking

Downscaled from IPCC CMIP5 models

RCPs 4.5, 8.5

Projection outputs reported as percentiles



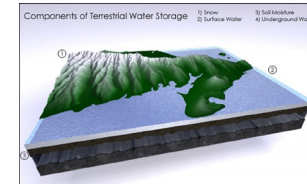
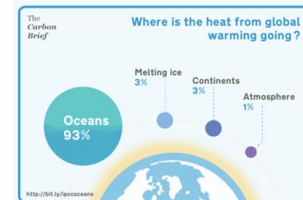
Horton, R., D. Bader, C. Rosenzweig, A. DeGaetano, and W. Solecki. 2014. Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information. New York State Energy Research and Development Authority (NYSERDA), Albany, New York.

(<http://www.nysERDA.ny.gov/climaid>)

Sea Level Rise Components

Included:

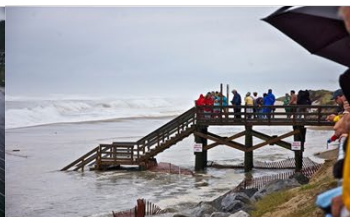
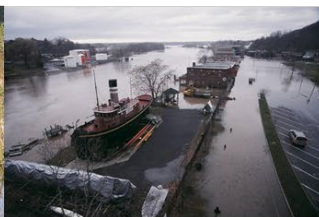
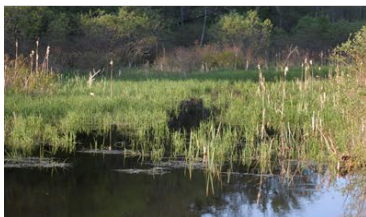
- Global
 - Thermal expansion
 - Greenland and Antarctic ice sheet melt
 - Glacier and ice cap melt
 - Land water storage
- Local
 - Ocean height change
 - Ice loss effects
 - Glacioisostatic adjustments



6 NYCRR Part 490, Projected Sea-level Rise, 2017

Inches of rise relative to 2000-2004 baseline

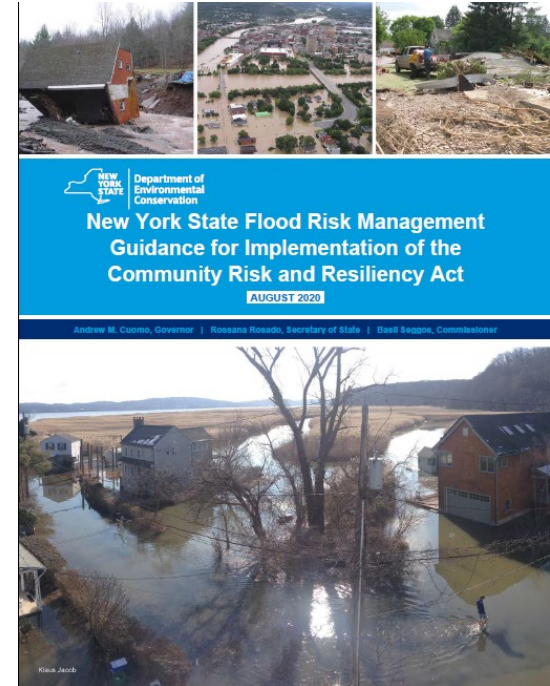
Time Interval	Region	Long Island					New York City/Lower Hudson					Mid-Hudson				
	Descriptor	Low	Low-medium	Medium	High-medium	High	Low	Low-medium	Medium	High-medium	High	Low	Low-medium	Medium	High-medium	High
2020s		2	4	6	8	10	2	4	6	8	10	1	3	5	7	9
2050s		8	11	16	21	30	8	11	16	21	30	5	9	14	19	27
2080s		13	18	29	39	58	13	18	29	39	58	10	14	25	36	54
2100		15	21	34	47	72	15	22	36	50	75	11	18	32	46	71



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State Flood Risk Management Guidance

- Non-binding technical guidance to agencies.
- Guideline design elevations by structure type, tidal/nontidal.
- Available for incorporation into
 - CRRA topical guidance and CRRA program-specific guidance, regulations, etc.,
 - programs not covered by CRRA.



CRRA Implementation to Date

- Statewide General Permit for Stream Activities
- Statewide General Permit for Concentrated Animal Feeding Operations
- Industrial SPDES Application Requirements
- Asset Management Guide for Publicly Owned Treatment Works



NY State Sea-level Rise Projections

2017

Source: ClimAID

Baseline: 2000-2004

Time intervals:

- 2020s
- 2050s
- 2080s
- 2100

Scenarios:

- Low
- Low-medium
- Medium
- High-medium
- High

2023 Update

Source: IPCC

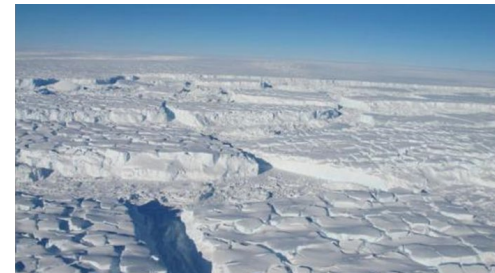
Baseline: 1995-2014

Time intervals:

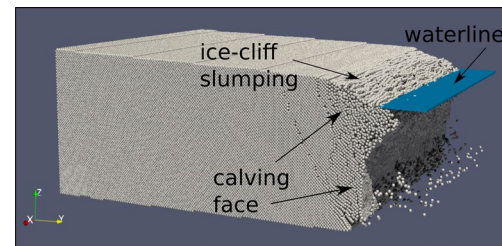
- 2030s
- 2050s
- 2080s
- 2100
- 2150

Additional Scenarios:

- “Very High” – low probability, high consequence rapid ice melt for 2080s, 2100
- 2150



West Antarctic Ice Sheet. photo: NASA



AR6: Drivers of Sea Level Change and Projection Sources

Sum of the components

Energy Budget Emulator:

- Thermal expansion
- Greenland ice sheet mass balance
- Antarctic ice sheet mass balance
- Glacier mass balance

Relationship to population:

- Land water storage

CMIP6 relationships:

- Ocean dynamic sea level

Tide gauge data:

- Isostatic adjustments



Emissions Scenarios

Projected changes in global surface temperature by 2081-2100, for five illustrative emissions scenarios, relative to 1850-1900 baseline.

Scenario	Description	Best estimate (°C)	Very likely range of warming (°C)
SSP1-1.9	Sustainability	1.4	1.0-1.8
SSP1-2.6	Inequality	1.8	1.3-2.4
SSP2-4.5	Middle of the road	2.7	2.1-3.5
SSP3-7.0	Regional rivalry	3.6	2.8-4.6
SSP5-8.5	Fossil fueled development	4.4	3.3-5.7

IPCC Regional and Station Projections

Medium confidence:

- SSP1-1.9
- SSP1-2.6
- SSP2-4.5
- SSP3-7.0
- SSP5-8.5

Low-confidence

- SSP1-2.6
- SSP5-8.5



<https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool>



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NYS Scenario Development

- SSP2-4.5 – consistent with Paris Agreement NDCs
- SSP5-8.5 – medium confidence – additional amplifying feedback mechanisms
- SSP5-8.5 – low confidence – includes some rapid ice melt

Distribution of model outputs adjusted for consistency with Part 490

Mid-Hudson projections based on NYC projections, adjusted for glacial isostatic rebound

Very high (RIM) scenario based on potential acceleration of ice mass loss and ice cliff instability



<http://climatestate.com>



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Proposed 6 NYCRR Part 490, Projected Sea-level Rise, 2023

	Region	Long Island						New York City/Lower Hudson						Mid-Hudson					
	Descriptor	Low	Low-medium	Medium	High-medium	High	Very High	Low	Low-medium	Medium	High-medium	High	Very High	Low	Low-medium	Medium	High-medium	High	Very High
Time Interval	2030s	7	8	10	12	14	NA	6	7	9	11	13	NA	5	7	8	10	12	NA
	2050s	13	15	18	21	25	NA	12	14	16	19	23	NA	11	12	14	17	21	NA
	2080s	23	26	32	41	48	83	21	25	30	39	45	83	18	21	26	35	41	83
	2100	27	32	39	54	69	114	25	30	36	50	65	114	21	25	32	46	60	114
	2150	42	50	63	94	185	NA	38	47	59	89	177	NA	32	41	52	82	171	NA

Inches of rise relative to 1995-2014 baseline



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Percentage Differences 6 NYCRR Part 490, 2017/2023

Time Interval	Region	Long Island					New York City/Lower Hudson						Mid-Hudson						
	Descriptor	Low	Low-medium	Medium	High-medium	High	Very High	Low	Low-medium	Medium	High-medium	High	Very High	Low	Low-medium	Medium	High-medium	High	Very High
2030s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2050s	63%	36%	13%	0%	-17%	NA	50%	27%	0%	-10%	-23%	NA	120%	33%	0%	-11%	-22%	NA	
2080s	77%	44%	10%	5%	-17%	NA	62%	39%	3%	0%	-22%	NA	80%	50%	4%	-3%	-24%	NA	
2100	80%	52%	15%	15%	-4%	NA	67%	36%	0%	0%	-13%	NA	91%	39%	0%	0%	-15%	NA	
2150	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

To comment:

Email:

climatechange@dec.ny.gov, include “Sea Level Rise” in subject line.

Postal Mail:

Sea Level Rise
Office of Climate Change
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-1030

Pre-proposal comments due by May 12, 2023

Request for comments and additional information:

<https://www.dec.ny.gov/lands/102559.html>



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