Natural & Working Lands Strategy Stakeholder Meeting:

Aquatic Habitats and Wetlands

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY DEPARTMENT OF AGRICULTURE

3/16/2023

Ground Rules

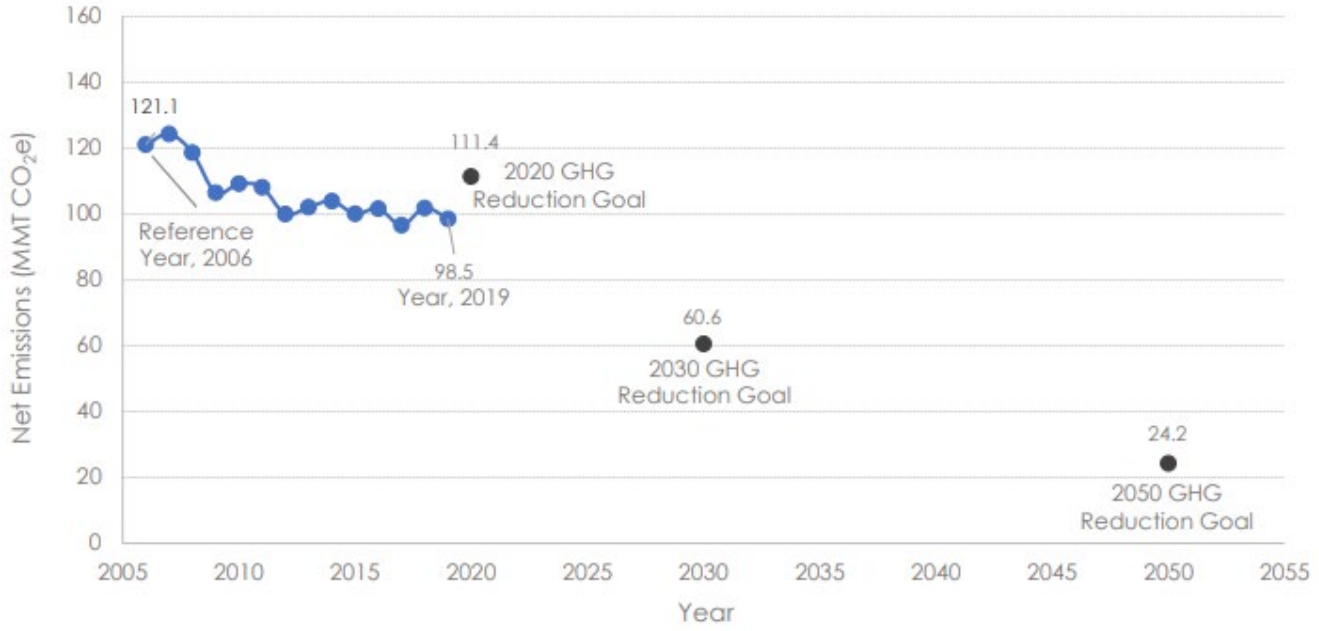
Wikimedia Commons, 2005

- Attendee microphones and cameras are off by default
- Questions or comments can be typed into the chat at any time
- Please limit your input to topics we are discussing today
- After each land type, we will address some questions from the chat and there will be time to raise your hand and speak – we will enable your microphone when you are called on
- All input will be considered, but there will not be a response to comments document
- Comments can be submitted through April 14 at https://www.nj.gov/dep/climatechange/mitigation/nwls.html

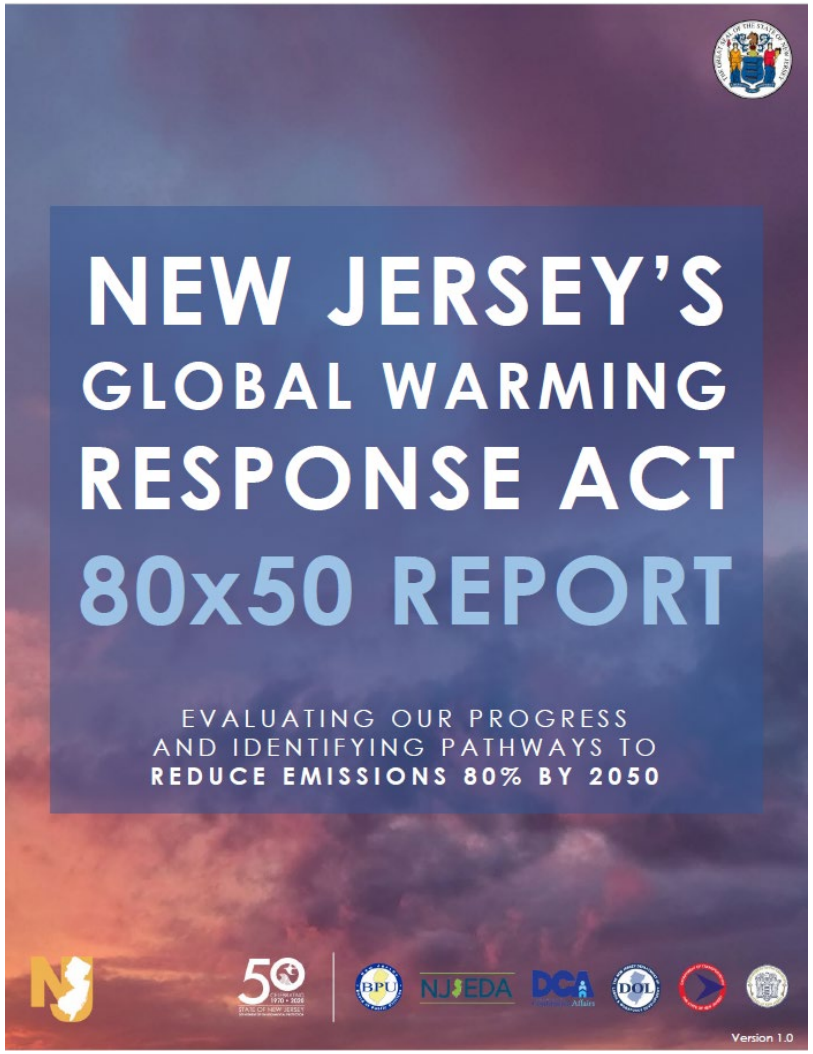
Agenda

- Introduction – Heather Genievich
- Background – Helaine Barr
- NWLS Overview – Metthea Yepsen
- Timeline - Metthea
- How recommendations were developed - Metthea
- Overview of how each habitat sequesters carbon – Metthea for wetlands and Nina Colagiovanni for aquatic habitats
- Major components of the strategy for each habitat type – Metthea and Nina
- Questions for attendees - Heather
- Input from attendees - Heather and Metthea
- Reminder of timeline and ways to send comments - Heather

Greenhouse Gas Reduction Goals



New Jersey's 80x50 Report

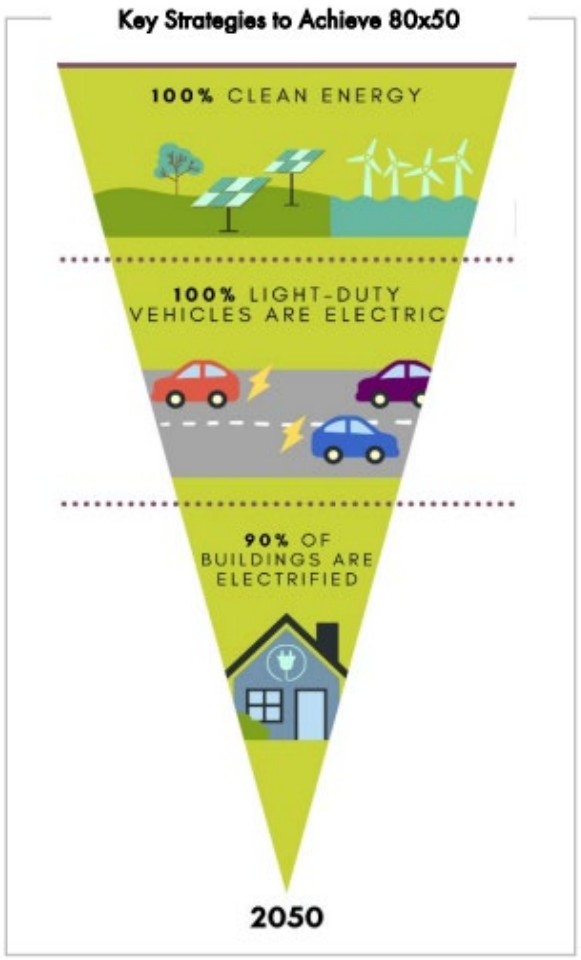


To access the report, visit:
www.nj.gov/dep/climatechange/mitigation/

- Seven emission sectors are evaluated to determine how to achieve the 80x50 Goal.
- Each Sector Includes:
  - Business-as-Usual Projection.
  - Emissions Reduction Pathway Projections.
  - Specific legislative and administrative recommendations for achieving emissions reductions.
- Four electric demand scenarios are evaluated based on various levels of electrification throughout the state.

NJ Greenhouse Gas Reduction Pathways

CO2e Redux:



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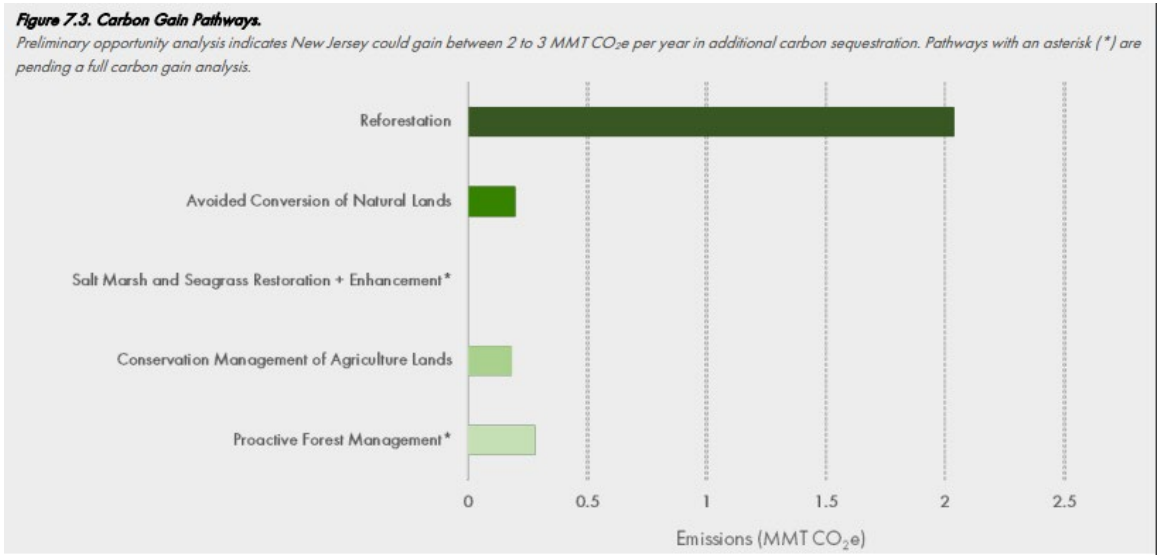
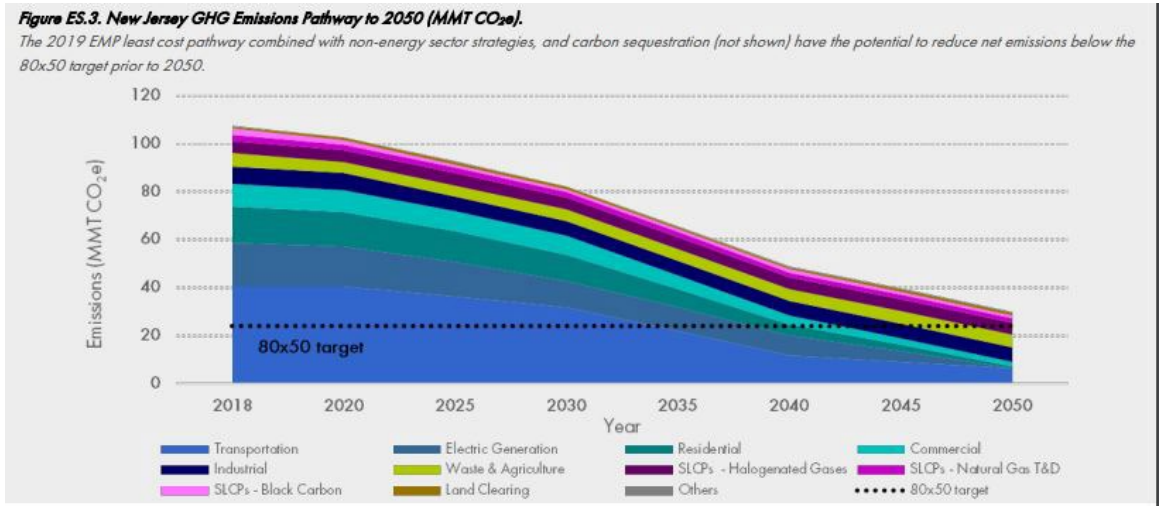
CO2e Gains:





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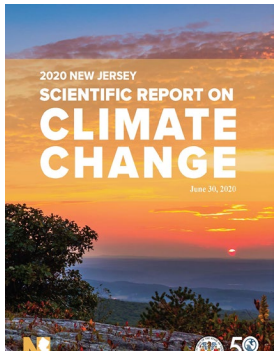
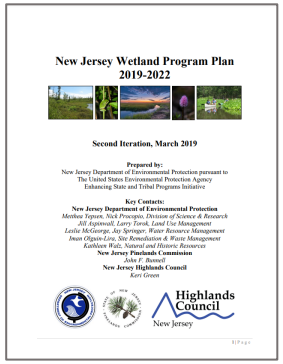
NJ needs CO2 sequestration through NWL to meet state 2050 goals!

A Collaborative Call to Action

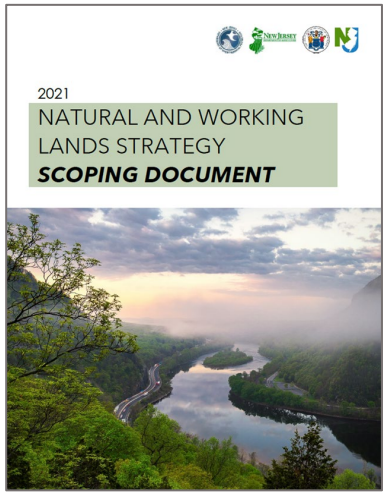
Scientific Report on Climate Change



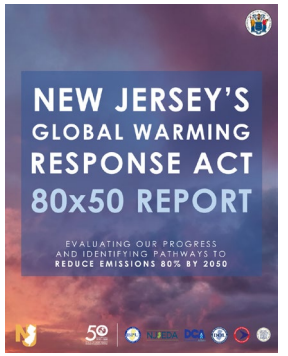
New Jersey Wetland Program Plan



RGGI Strategic Funding Plan

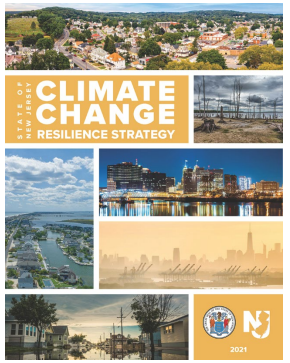


GWRA 80x50 Report



New Jersey Forest Action Plan

Climate Change Resilience Strategy



Carbon Sequestration Basics

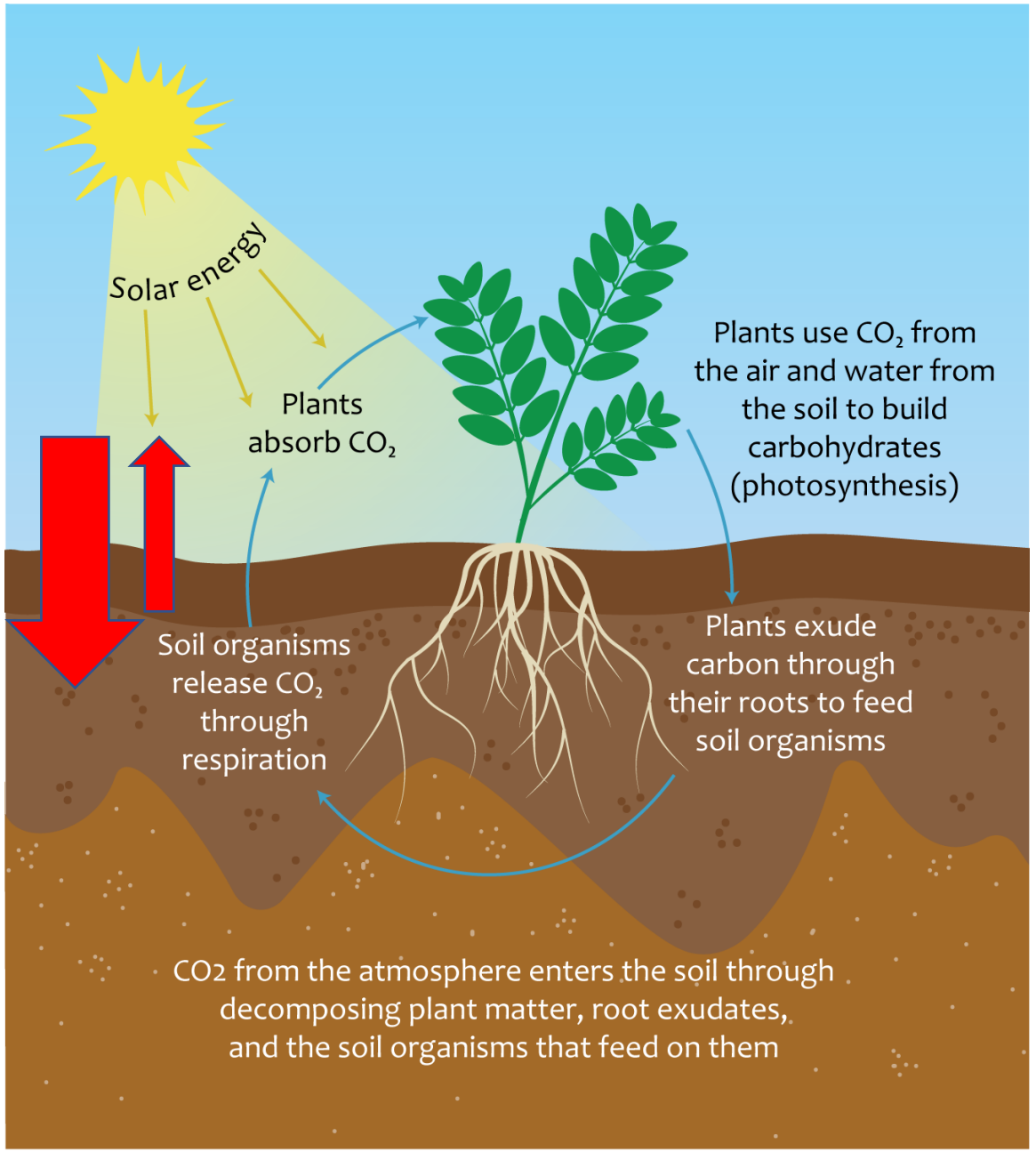


Image from https://sustainability.colostate.edu/humannature/jocelyn-lavallee/

Land Types in the NWLS

- Forests
- Agriculture
- Wetlands
- Developed Lands
- Aquatic Habitats

Milestones

NWLS Kickoff

Work on the strategy began in **May 2021**

Scoping Document

Scoping Document was released **December 2021**

Recommendation and Target Development

Stakeholdering

Four stakeholder meetings are set for the second half of **March 2023**

Final Strategy

Release final strategy in **third quarter of 2023**

How was the strategy developed?

- Reviewed other NWLS
- Honed the list for NJ
- Modeling and literature searches:
  - Carbon benefit
  - Cost
  - Scalability
- Recommendation selection
  - Who, what, where, when, why, how
  - Impediments
  - Environmental justice
  - Climate change
- Targets
  - 2030 and 2050

Our questions for you:

1. What is missing from our draft list of targets?
2. Are there any targets that do not belong on these lists?
3. What are key obstacles to achieving these targets?
4. What financing mechanisms are available?

Tidal Wetlands

- New Jersey's wetlands cover approximately 21% total land area in NJ.

- Out of all New Jersey's natural and working lands, the ecosystem services of wetlands provide the largest economic value.
  - Freshwater wetlands: $15,869 per acre annually or $12.9 billion per year
  - Saltwater wetlands: $8,411 per acre annually or $1.6 billion per year (Costanza et al. 2007, values adjusted to 2020 dollars).

- Narayan et al. 2017 found that $625 million in storm damage was prevented by tidal marshes during Hurricane Sandy.

Costanza R, Wilson M, Troy A, Voinov A, Liu S, and D'Agostino J. 2007. The Value of New Jersey's Ecosystem Services and Natural Capital. Report to New Jersey Department of Environmental Protection, Division of Science, Research, and Technology, Trenton, NJ.

Narayan S, Beck MW, Wilson P, Thomas CJ, Guerrero A, Shepard CC, Reguero BG, Franco G, Ingram JC, Trespalacios D. 2017. The Value of Coastal Wetlands for Flood Damage Reduction in the Northeastern USA. Scientific Reports 7:9463 DOI:10.1038/s41598-017-09269-z

Tidal Wetlands

- Tidal wetlands provide essential nursery habitat for over 75% of New Jersey's important fisheries species (NOAA 2018).
- Tidal wetlands can store carbon in soils for millennia, and are over ten times more efficient at carbon burial than the most productive forests (McLeod et al. 2011).
- Despite covering less than 1% of the ocean's area, tidal wetlands store over 50% of the seabed's carbon reserves; collectively, global salt marshes have an estimated carbon burial rate of approximately 4.8 million metric tons of carbon per year (McLeod et al. 2011).

Mcleod E, Chmura GL, Bouillon S, Salm R, Bjork M, Duarte CM, Lovelock CE, Schlesinger WH, Silliman BR. 2011. A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2. Frontiers in the Ecology of the Environment 9(10):552-560

National Ocean Service. What is a Salt Marsh? National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 2018. https://oceanservice.noaa.gov/facts/saltmarsh.html

Draft Targets for Tidal Wetlands – Management Practices

Recommendation Type	Target	2030	2050
Wetland protection	Install X linear feet of living shorelines per year	7,800	10,000
Salt marsh restoration	Increase cover of X acres of salt marsh vegetation per year	70	200
Restored hydrology	Complete X number of tidal reconnection projects per year	1	2
Protection	Protect and Manage Salt Marsh Migration Zones	X	X

Draft Targets for Tidal Wetlands – Policy Recommendations

Recommendation Type	Target	2030	2050
Guidance	Develop best management practices for maximizing carbon sequestration in Blue Carbon projects, integrating lessons learned from earlier implementation projects.	X	-
Outreach	Develop and implement a public outreach campaign.	X	X
	Create a voluntary wetland stewardship program, similar to federal programs that incentivize restoration and stewardship on private lands such as the Natural Resources Conservation Service's Wetlands Reserve Program.	X	-
	Educate and assist private landowners and developers in the management of their lands to minimize impacts to wetlands and reduce risk from climate change.	X	X

Draft Targets for Tidal Wetlands – Policy Recommendations

Recommendation Type	Target	2030	2050
Prioritization/ Planning	Reevaluate Green Acres and Blue Acres programs to consider prioritizing acquisition of land and conservation easements that will protect areas with high current carbon storage and future sequestration potential.	X	-
	Develop a Blue Carbon Action Plan.	X	-
	Develop a project pipeline: continuously identify blue carbon projects and assist in the design and permitting so that there is a list of shovel-ready projects when funding becomes available.	X	X
	Review state and local Natural Hazard Mitigation Plans and Climate Adaptation Plans to ensure that wetlands are incorporated as essential green infrastructure.	X	-
Funding	Evaluate adoption of a blue carbon market or other incentive program to help fund wetland conservation and restoration in NJ.	-	
Regulation	Identify and reduce drivers of degradation and destruction of high-carbon coastal systems by implementing or improving wetland protection regulations in tidal areas.	X	-

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Non-tidal Freshwater Wetlands

- Terrestrial wetlands in North America account for approximately 36 percent of global wetland carbon stock (Kolka et al. 2018).

- Mixed findings in literature regarding net greenhouse gas emission benefit
  - High density of carbon storage
  - Methane production in freshwater wetlands – 1 unit of methane is equal to 25 to 86 units of CO2 with respect to warming potential.

Kolka R, Trettin C, Tang W, Krauss K, Bansal S, Drexler J, Wickland K, Chimner R, Hogan D, Pindilli EJ, Benscoter B, Tangen B, Kane E, Bridgham S, and Richardson C. 2018. Chapter 13: Terrestrial wetlands. In Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report [Cavallaro N, Shrestha G, Birdsey R, Mayes MA, Najjar RG, Reed SC, Romero-Lankao P, and Zhu Z. (eds.)]. US Global Change Research Program, Washington, DC, USA, pp. 507- 567, https://doi.org/10.7930/SOCCR2.2018.Ch13.

Draft Targets for Non-tidal Freshwater Wetlands Management Practices

Recommendation Type	Target	2030	2050
Afforestation/ Reforestation	Restore Atlantic White Cedar Swamps	10,000 ac	20,000 ac
Research	Map non-tidal wetlands, particularly peatlands, and advance regional research to generate modeling to guide conservation efforts.	X	X
	Advance research on net GHG benefits of non-tidal freshwater wetland conservation, enhancement, and restoration.	X	X
Monitoring	Create a statewide non-tidal freshwater wetland monitoring network to research, monitor, and document trends.	X	X
Outreach	Educate the public as well as landowners of non-tidal wetlands of the long-term GHG benefits of non-tidal wetlands.	X	X

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Aquatic Habitats

- Aquatic resources and habitats in New Jersey may include rivers and lakes, oyster reefs, freshwater and saltwater aquatic vegetation, and more.

- Originally, aquatic habitats included shellfish/aquaculture. However, the literature on carbon sequestration in oyster reefs and aquaculture is somewhat limited, with varying results. For example, "whether or not shellfish farming can be considered a carbon sink is controversial" (Feng et al. 2023).

- Submerged aquatic vegetation (SAV) in coastal New Jersey is predominantly characterized by seagrass beds consisting of eelgrass (*Zostera marina*) and widgeongrass (*Ruppia maritima*).

Feng, Jing-Chun, Sun, Liwei, Yan, Jinyue. (2023). Carbon sequestration via shellfish farming: A potential negative emissions technology. Renewable and Sustainable Energy Reviews, Volume 171. https://doi.org/10.1016/j.rser.2022.113018

Aquatic Habitats

- Seagrass meadows provide an essential refuge for shellfish and finfish, and they also play an important role in sediment stabilization in coastal waters (Lathrop & Haag 2011).
- While New Jersey's seagrass habitat has been declining in size and density in recent decades, it still provides one of the most efficient carbon burial rates of any ecosystem type (Lathrop and Haag 2011).
- Carbon burial executed by seagrasses is estimated to occur at a rate of approximately 1.38 metric tons of carbon per hectare per year (McLeod et al. 2011).

Lathrop RG and Haag SM. 2011. Assessment of Seagrass Status in the Barnegat Bay – Little Egg Harbor Estuary System: 2003 and 2009. Center for Remote Sensing and Spatial Analysis, Institute of Marine and Coastal Sciences. School of Environmental and Biological Sciences, Rutgers University. https://crssa.rutgers.edu/projects/sav/downloads/CRSSAreport2011- 01_Assessment_Seagrass_in_BBAY_LEH_2003_and_2009.pdf

Mcleod E, Chmura GL, Bouillon S, Salm R, Bjork M, Duarte CM, Lovelock CE, Schlesinger WH, Silliman BR. 2011. A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2. Frontiers in the Ecology of the Environment 9(10):552-560

Draft Targets for Aquatic Habitats – Management Practices

Recommendation Type	Target	2030	2050
Monitoring	Develop a dedicated and consistently funded Submerged Aquatic Vegetation (SAV) monitoring program	X	X
	Conduct an SAV aerial survey with field validation	Every 2 years	Annually
	SAV health parameter assessment program	X	X
Conservation	Protect existing SAV from further loss.	Limit to 10% loss	No net loss

Draft Targets for Aquatic Habitats – Management Practices

Recommendation Type	Target	2030	2050
Education	Launch public outreach and educational program for recreational and commercial stakeholders to be aware of potential impacts to SAV.	Within 5 years	Expand program
Monitoring and Conservation	Create an SAV Alliance (advisory group consisting of SAV practitioners, academia, non-profits and staff) to better coordinate SAV conservation and restoration efforts across NJ.	Within 5 years	Expand program

Draft Targets for Aquatic Habitats – Policy Recommendations

Recommendation Type	Target	2030	2050
Conservation	Promote SAV protection at local, state, and federal levels by developing new programs, policies, and regulations.	Within 2 years	Expand program
	Adopt and implement water quality and clarity standards that protect SAV habitat.	Within 5 years	Expand program
Mitigation	Adopt regulations requiring compulsory compensatory mitigation for all functional and temporal impacts to SAV habitats.	Within 2 years	-
Restoration	Create and fund an SAV restoration program with targets of X acres enhanced per year.	Within 2 years	Expand program
Guidance	Develop SAV restoration guidance with suggestions for best practices, adaptive management strategies, and success criteria.	Within 5 years	Expand program

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What's next?

- ❑ Virtual stakeholder meetings from 2-4 pm
  - March 21 – developed land
  - March 23 – agriculture
  - March 28 – forests

- ❑ Comments on all draft targets are due April 14

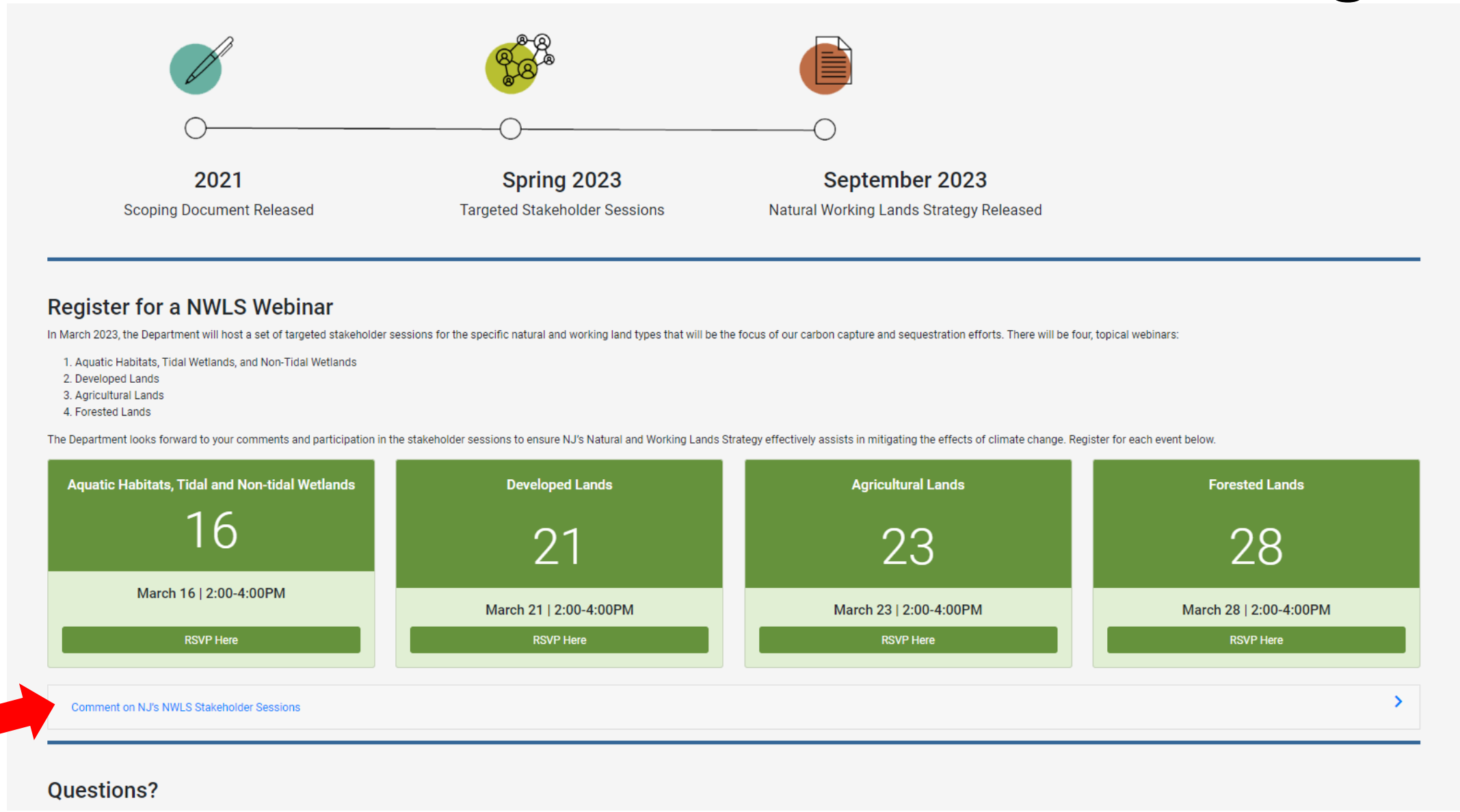
- ❑ Final strategy to be released in 2023 Q3

https://www.nj.gov/dep/climatechange/mitigation/nwls.html

Full list of draft NWLS targets:

https://www.nj.gov/dep/climatechange/mitigation/nwls.html

To submit comments after the meeting:



2021
Scoping Document Released

Spring 2023
Targeted Stakeholder Sessions

September 2023
Natural Working Lands Strategy Released

Register for a NWLS Webinar

In March 2023, the Department will host a set of targeted stakeholder sessions for the specific natural and working land types that will be the focus of our carbon capture and sequestration efforts. There will be four, topical webinars:

1. Aquatic Habitats, Tidal Wetlands, and Non-Tidal Wetlands
2. Developed Lands
3. Agricultural Lands
4. Forested Lands

The Department looks forward to your comments and participation in the stakeholder sessions to ensure NJ's Natural and Working Lands Strategy effectively assists in mitigating the effects of climate change. Register for each event below.

Aquatic Habitats, Tidal and Non-tidal Wetlands	Developed Lands	Agricultural Lands	Forested Lands
16	21	23	28
March 16 | 2:00-4:00PM	March 21 | 2:00-4:00PM	March 23 | 2:00-4:00PM	March 28 | 2:00-4:00PM
RSVP Here	RSVP Here	RSVP Here	RSVP Here

Comment on NJ's NWLS Stakeholder Sessions

Questions?

https://www.nj.gov/dep/climatechange/mitigation/nwls.html

Comment on NJ's NWLS Stakeholder Sessions

NWLS Stakeholder Sessions

Comment on NJ's NWLS Stakeholder Sessions

To submit a comment on NJ's NWLS, please complete the form below, select the comment topic you are commenting on (if multiple topics are addressed in your comments, please select "other"), and enter your comments in the space provided. Then click the Submit button to send them.

* indicates required field

First Name*

Last Name*

Email*

We'll never share your email with anyone else.

Affiliation (if any)

Comment Topic (please select one)*

Comments*

20000 characters left

Reset Submit

https://www.nj.gov/dep/climatechange/mitigation/nwls.html