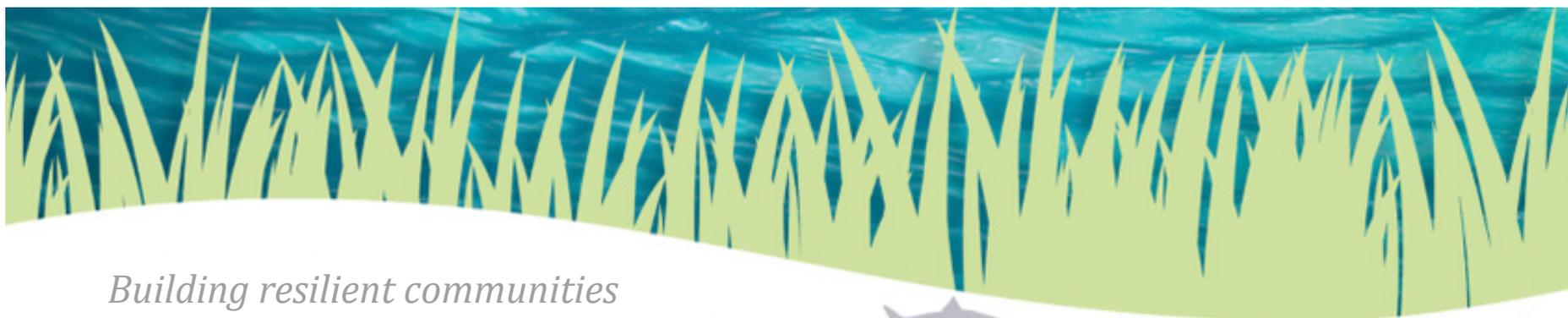




# Getting to Resilience: Restoration and Adaptation in Southeast Coastal New England

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2021 - 2025



*Building resilient communities  
connected through watershed action,  
collaboration, and innovation*



## Plan Summary

Southeast coastal New England offers a splendid sense of place and nature, with bountiful coastal embayments, open waters, ponds, and rivers, sandy and rocky beaches, extensive protected salt marshes, wetlands, fields and forests, charming villages, and breathtaking vistas. Its natural beauty and variety have been shaped by a long chain of inhabitants --- first by Native Americans long before the first Europeans arrived, and later by generations of people from every corner of the globe. For hundreds of years, they have all left their mark, shaping the iconic landscape of towns and waters we know and love today. Fishing, shipping, manufacturing, seafaring, sport --- the history of the region is one of evolving uses of land, water, and sea. But this long history has left damaged ecological systems and vulnerable communities in its wake. Against an existing array of challenging stressors, climate change now threatens the very attributes that make southeast New England so unique. Scientists predict that our region will experience increased sea level rise, more frequent and intense storms, rising ground water levels, and higher temperatures.

The good news is that the region is also home to some of the most innovative, educated, and resourceful institutions in the country --- and Congress has charged the U.S. Environmental Protection Agency (EPA) in New England (Region 1) to work with them and other stakeholders to take on these challenges under the aegis of the Southeast New England Program, or SNEP. Since 2012, SNEP has pursued coordinated action to increase our region's capacity to address complex issues at the ecosystem scale while acting locally to develop and fund sustainable restoration solutions in Rhode Island and the southeastern coastal areas of Massachusetts and the islands of Block Island, Martha's Vineyard, and Nantucket.

This bi-state area includes dozens of government agencies and academic institutions and hundreds of local governments, environmental organizations, and industry groups. To achieve the challenge set out by Congress, SNEP seeks to engage these groups in an overall planning framework and action agenda that builds on and complements their unique local capacities, relying on their on-the-ground presence and credibility to not only inform its policy, science, and funding decisions through participation on SNEP committees, but also to partner on projects with local implementers. Key to this agenda is the annual funding provided by Congress. Since 2014, SNEP has distributed almost \$35 million in various forms of assistance throughout its geographic region to address pressing restoration and protection needs and build technical and financial capacity.

These efforts are advanced primarily through two vehicles: the SNEP Watershed Implementation Grants program and the SNEP Network, currently administered by SNEP grantees Restore America's Estuaries (RAE) and the New England Environmental Finance Center (NE-EFC) at the University of Southern Maine, respectively. The Watershed Implementation Grants program focuses on integrated or interdisciplinary approaches to water quality and ecosystem restoration as well as holistic, sub-watershed wide planning; to date it has supported projects ranging from green infrastructure stormwater controls, to planning and implementing habitat restoration, to testing of innovative environmental technologies such as permeable reactive barriers. In contrast, the SNEP Network is a collaborative association of partners that provides no-cost specific expertise and technical assistance at the request of communities, tribes and other local organizations to improve their capacity to protect, maintain and restore healthy watersheds, provide sustainable financing, and build long-term climate resilience.





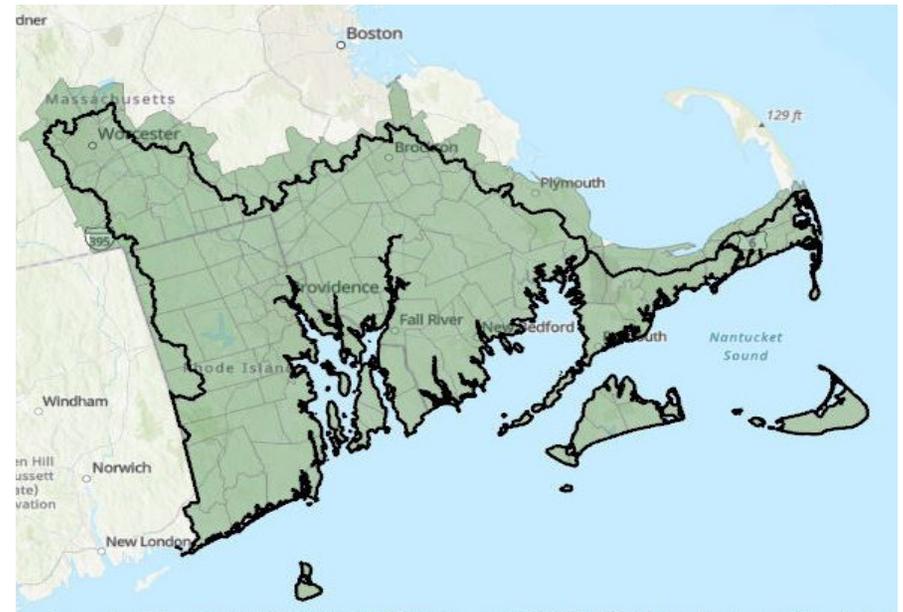
Three other regional organizations --- EPA's Narragansett Bay Estuary Program, Buzzards Bay National Estuary Program, and the Cape Cod Commission (a county planning and regulatory agency) ---are also important SNEP implementation partners and provide valuable project assistance. Finally, the EPA SNEP team itself carries out applied research to understand key challenges and potential solutions in the SNEP region through contracts with experienced consultants or agreements with other federal agencies. These focus on innovative approaches and technologies and have investigated novel solutions in areas ranging across large scale, stormwater management, DNA testing to determine animal sources of contamination, and the understanding and valuation of ecosystem services to help guide development of a monitoring and reporting framework.

All these efforts, while vitally necessary, are just the first in many steps. Environmental improvement is a long journey. It cannot happen overnight, nor can it be sustained without a long-term framework to guide action. Realizing the SNEP vision of a resilient ecosystem of safe and healthy waters, thriving watersheds and natural lands, and sustainable communities will require consensus on goals, a process to establish priorities, adaptive solutions, and meaningful monitoring to assess program impact.

This Strategic Plan lays out that framework over a projected 30 years, starting with the first 2021 – 2025 planning horizon and identifies the vision, goals, and actions for SNEP investment.

Priority Actions can be organized into five overall themes: (1) increase local capacity, (2) increase available solutions, (3) ensure diverse representation (4) demonstrate ways to address common challenges, and (5) increase community leaders' understanding of the benefit of restoration projects. Specific Actions under each theme are included and will be priorities for SNEP funding expenditures over the coming five years.

SNEP recognizes that much will and should change during that time-frame, but we expect our vision and goals to remain constant, even as we better learn the means to achieve them and apply the lessons of implementation.



*There are 133 municipalities (green) located wholly or partially within the SNEP boundary (black).*

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## Introduction

From Westerly, Rhode Island to Chatham, Massachusetts, the coastal watersheds of southeast New England occupy a special place between Long Island Sound and the Gulf of Maine. The southeast New England area includes the Narragansett Bay, Buzzards Bay, Cape Cod, and Islands watersheds, and its sub-region's share many similar geologic and hydrologic characteristics, plant and animal species, and even patterns of development. A shared natural and human use history means each sub-region experiences common environmental challenges.

The SNEP region has a splendid sense of place and nature. The region was inhabited by Native Americans long before the Pilgrims arrived and made this area their home too. The region is a national tourist destination and supports a vibrant water-based economy. It is filled with bountiful and beautiful lands and waters with coastal embayments, ponds and rivers; sandy and rocky beaches, extensive protected salt marshes, wetlands, fields and forests; and breathtaking vistas.

Since the Europeans arrived in the area, 400 years of history have left its cumulative impact on the environment. The long history of industrial and residential development in this region has led to highly impaired ecological systems. Once bountiful fisheries are in decline, beaches are sometimes unsafe for swimming, and open space has been replaced by increasing development. Rivers have been blocked by dams, disconnected from their headwaters, channeled and piped as they make their way to the ocean, and their watersheds and wetlands have been drained or filled. Excess nutrients and other pollutants from treatment plants, septic systems, stormwater runoff, even atmospheric deposition are released into ground water, streams and embayments and eventually make their way into the region's coastal waters. These conditions have contributed to severe water quality problems including algal blooms (some of them toxic), low dissolved oxygen and bacterial contamination, which have led to fish kills, impaired benthic communities, and habitat loss. This degradation is now being further compounded by the effects of climate change. Scientists predict that this region, more so than some others, will experience increased sea level rise, more frequent and intense storms, rising ground water levels and higher temperatures. All of these changes require careful planning to build resilience to these changing conditions.



*Fish kill in Narragansett Bay, RI. Credit: Tom Ardito, Restore America's Estuaries*

**Southern New England Estuaries-** The conferees recommend that the Agency convene and lead a comprehensive regional policy coordination and outreach effort to protect, enhance, and restore the coastal watersheds of southern New England. No entity or consortium exists to meet these challenges, and there is an urgent and immediate need for such an effort. For example, in Rhode Island's Narragansett Bay, there are documented extensive areas of pollution severely degrading fish and wildlife habitat and water quality; problems that are compounded by the effects of warmer water temperatures and milder winters. The conferees recommend that EPA establish goals for the regional effort, emphasizing water quality and habitat restoration as well as the development and implementation of innovative technologies to meet these challenges and create jobs. The effort should provide for streamlined interagency communication and involve an inclusive stakeholder process. Specifically, EPA should collaborate with State agencies as well as other Federal partners such as the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, U.S. Geological Survey, Natural Resources Conservation Service, and the Small Business Administration. The Agency should also include stakeholders from local governments and agencies, non-governmental organizations, and academic institutions. The conferees also recommend that the Agency, through this regional effort, facilitate the development of strategies to restore and protect the southern New England Estuaries.

-Language included in the Interior section of the Omnibus Appropriations Bill for Federal Fiscal Year 2012 (FFY12) and calls for coordinated action by New England coastal and estuarine agencies and organizations.

Many federal, state, and local agencies – along with partners in research institutions and nongovernmental organizations – implement programs to restore, preserve, and monitor the coastal watersheds of southeast New England. These entities have distinct functions, and it is important to retain their capabilities and authorities. However, each of these entities has limited responsibility and jurisdiction. None is charged with considering broad ecological needs across the southeast New England coastal region as a whole or has the tools to adequately address the full range of coastal issues in this region.

To address this gap in 2012 the United States Congress charged the U.S. Environmental Protection Agency (EPA) with forming an interagency group to address the region's environmental challenges and since 2014 has appropriated funding to support restoration activities.

Congress authorized EPA to coordinate and catalyze these various functions and programs to enhance the region's overall capability – convening an interagency process to address complex issues at the ecosystem level, using existing resources more efficiently, finding synergies and leveraging opportunities across multiple agencies and organizations, and increasing the likelihood of developing sustainable solutions. This interagency group, headed by the EPA, came to be known as the Southeast New England Program (SNEP).





## SNEP in Brief

SNEP (or the Program) is a bi-state, geographic program administered by the EPA to restore and protect the environment of southeastern New England. The Program covers Rhode Island and the southeastern coastal areas of Massachusetts including the southern facing watersheds of Cape Cod, Martha's Vineyard and Nantucket, Narragansett Bay, and Buzzards Bay. SNEP's focus on the region's ecosystems offers an opportunity to address complex common issues while also working at the local scale with local implementers.

SNEP's role as a partnership facilitator among multiple organizations is central to its mission to empower collective action. By convening governmental and non-governmental organizations to gather and provide their input on how best to address regional challenges, the Program acts as a collaborative framework for the region to identify strategic restoration priorities, enable testing and adoption of restoration best practices, and build broad regional capacity to adopt and implement innovative approaches, particularly in meshing habitat restoration with reducing excess nutrients and alleviating their impacts, as well as administering grants and contracts for on-the-ground implementation projects and research. SNEP aims to foster innovative solutions and build local capacity in the pursuit of maintaining and improving water quality and habitat conditions in the region.

The result is an overall planning framework and action agenda that builds on and complements the individual capacities of the many organizations engaged in the region and that advances solutions using strategies that are cost-effective, comprehensive and sustainable, and connected to the economic interests of coastal communities.



*A group of environmental professionals gather at the first SNEP forum*

# Collaborative Structure

## Key Elements of the Congressional Charge to EPA from the FY12 Omnibus Appropriations Act

Facilitate development of strategies to restore and protect southeast New England estuaries

Convene/lead comprehensive regional policy coordination and outreach effort

Establish goals for a regional effort emphasizing water quality, habitat restoration

Develop and implement innovative technologies that meet challenges and create jobs

Provide for streamlined interagency communication and inclusive stakeholder process

Collaborate with state agencies and other federal partners

Include local governments and agencies, NGOs, and academic institutions as stakeholders

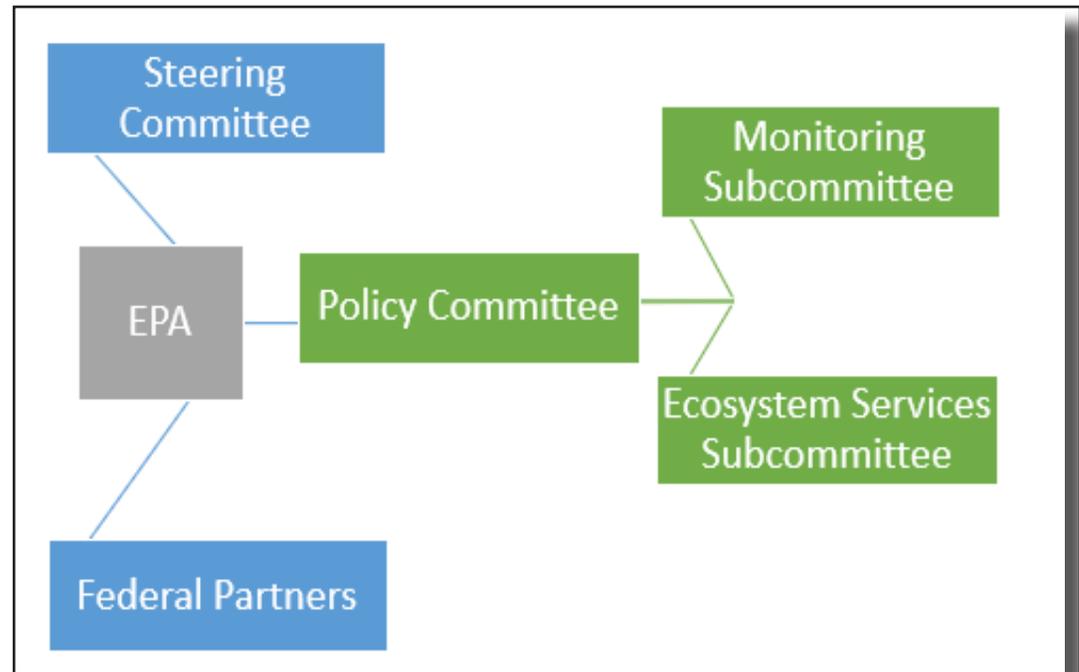
EPA is charged with administering SNEP as directed by Congressional authorizations. The EPA team is based in the Region 1 office in Boston, Massachusetts, and consists of EPA managers and staff that administer the overall Program, including making final Program decisions about direction, priorities, and annual funding allocation. EPA seeks and considers feedback from SNEP committees and stakeholders. EPA administers grants, contracts, and interagency agreements used to support applied research, technical assistance and implementation, and tracks and evaluates progress. The team is also charged with coordinating stakeholder committees and subcommittees in order to gather input from key stakeholders to inform the above-mentioned duties. EPA regularly shares information about program activities, and solutions to regional challenges through forums, webinars, newsletters and workshops.





## SNEP Committees

EPA has convened committees with broad representation from local and tribal government, state and federal government, academia, and nonprofit organizations. SNEP is fortunate to have the input of these regional experts to inform its policy, science, and funding decisions. Each committee and subcommittee member plays a key role in SNEP by bringing the expertise, experience, and perspective of various governmental and non-governmental organizations in the region.



*Entering Nantucket Harbor*

### Steering Committee

Convenes at least twice each year and includes representatives of state and federal agencies, tribes, EPA's Office of Research and Development (ORD), non-governmental organizations, regional planning organizations, and the two National Estuary Programs.

- Provides a forum to inform SNEP implementation, funding priorities, regional challenges, and needs.
- Suggests future program directions and opportunities to leverage resources and partnerships.

### Policy Committee

Convenes several times each year and includes Steering Committee representatives with key planning and program management significance. Provides regional perspectives on how best to implement SNEP's vision and goals.

- Considers program priorities and decision making, policy issues, opportunities for action, regional solutions, leveraging of resources, and promising technologies and approaches.
- Suggests annual program and budget priority to Steering Committee.
- Proposes options to support subcommittee recommendations.

### Federal Partners

Convenes twice a year with members currently from EPA, National Oceanic and Atmospheric Administration (NOAA), U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Natural Resources Conservation Service (NRCS), and the Federal Emergency Management Agency (FEMA).

- Informs agency perspectives and seeks synergies in agency activities in the SNEP region.
- Welcomes participation of all federal agencies.

### Ecosystems Services Subcommittee

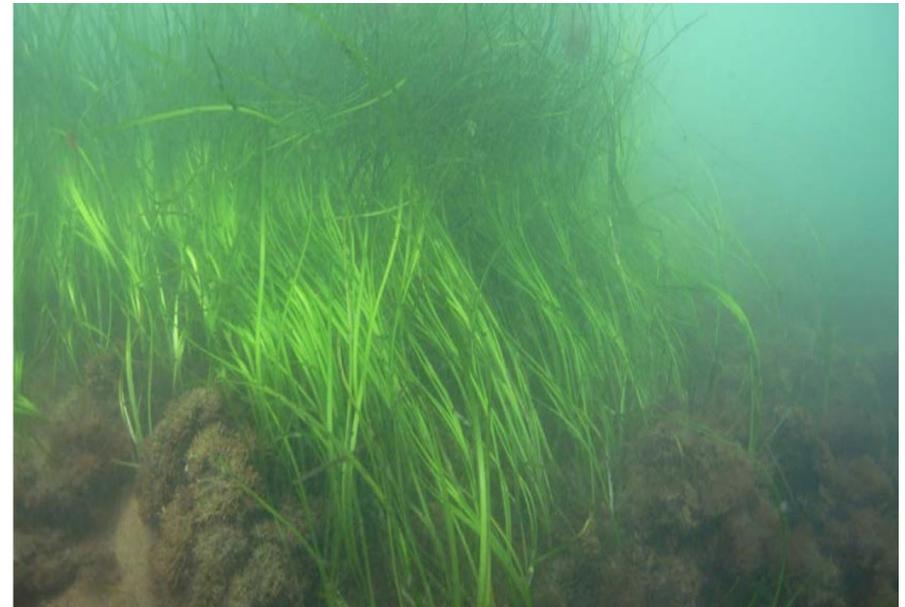
Convenes throughout the year and includes scientists and policy experts from the local, state and federal levels; academia; and nonprofit organizations.

- Charged with evaluating ecological value of the SNEP region, its ecosystem services, and the potential impact of restoration on those services.

### Monitoring Subcommittee

Convenes throughout the year and includes scientists and policy experts from the local, state, and federal level; academia; and nonprofit organizations.

- Charged with developing capacity to measure regional baseline conditions, change in condition over time, and outcomes of SNEP restoration and protection efforts.

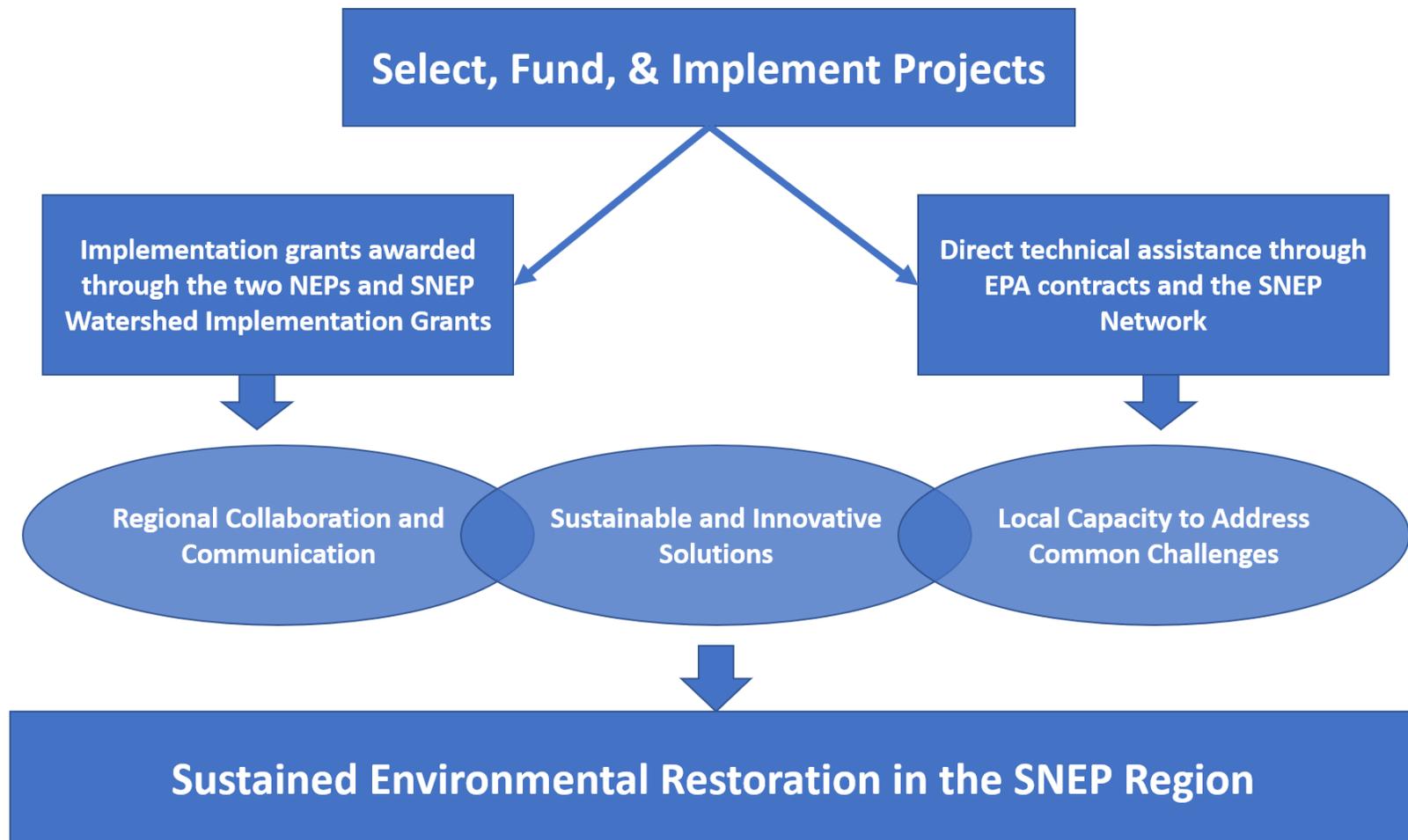


*Eelgrass Bed. Credit: Chris Pickerell and Jamie Vaudrey*





## The SNEP Process for Sustained, Regional, Environmental Restoration



## SNEP Implementation: What's Going on in the SNEP Region?

Since its inception in 2012, SNEP has grown both in terms of its membership, its stakeholder engagement, and its capacity. Annual funding is determined by Congress through its appropriations process. In FFY21, Congress appropriated \$5.5 million to SNEP to continue its work in the region. Since FFY14, Congress has appropriated \$37.9 million for SNEP to support planning and restoration projects, research, and technical assistance across the region. \$33 million has been distributed thus far with the remaining funds to be distributed in 2021.





### **SNEP Watershed Grants**

The Watershed Implementation Grants program is administered by a SNEP grantee, currently Restore America’s Estuaries, to provide funding for local, on-the-ground projects in the SNEP region that target water pollution, habitat degradation, and other high-priority environmental issues. SNEP Watershed Implementation Grants prioritize integrated or interdisciplinary approaches to water quality and ecosystem restoration as well as holistic, watershed-based planning. A wide variety of projects are eligible and have been supported to-date, ranging from green infrastructure planning and implementation to testing of innovative technologies like permeable reactive barriers.

### **SNEP Network**

The SNEP Network is also administered by a SNEP grantee, currently the New England Environmental Finance Center (NE-EFC) at the University of Southern Maine. The Network is a collaborative partnership with expertise in stormwater management, financing, water quality and habitat restoration, green infrastructure, low impact development, and watershed-scale conservation and restoration. The mission of the Network is to provide no-cost technical assistance to communities, tribes, and other local organizations to improve their capacity to protect, maintain and restore healthy watersheds, develop sustainable financing, and build long-term climate resilience.

### **SNEP-Directed Applied Research and Pilot Projects**

EPA carries out applied research to understand key challenges and potential solutions in the SNEP region. These research projects focus on innovative approaches, novel technologies, or improving programmatic efficiency and are often accomplished through contracts with experienced consultants or by agreements with other federal agencies. Contracts and interagency agreements have been used to investigate novel approaches to stormwater management at a dispersed, large scale; conduct DNA testing on water samples to determine animal sources of contamination; develop an approach to valuing and integrating ecosystems services as part of decision-making; and fund research fellows to study specific management questions.

### **Buzzards Bay and Narragansett Bay NEPs**

Because of their significant planning role in two of the SNEP region’s major estuarine systems, SNEP awards grants to the Buzzards Bay National Estuary Program and the Narragansett Bay Estuary Program. Funding supports local and watershed projects that help to implement their Comprehensive Conservation and Management Plans.

## How the Pieces Fit Together:

Each of SNEP's Committees, Subcommittees, and funded entities plays a vital and synergistic role in the accomplishment of SNEP's goals. The Steering and Policy Committees suggest future program direction and the Ecosystem Services and Monitoring Subcommittees provide expertise to improve the program's effectiveness by sharing the latest science, technologies and approaches. The Federal Partners ensure that SNEP is coordinating with other grant-making agencies to leverage project and funding opportunities. EPA relies on the input provided by these committees to inform its program priorities. The SNEP Network provides direct technical assistance, trainings, and capacity building activities to local municipalities, tribes and nongovernmental organizations (NGOs) to help them finance, plan and design implementation projects, which may then be supported through the SNEP Watershed Implementation Grants (SWIG), other available funding sources, or in coordination with SNEP's applied research and pilot projects. This process helps local communities, tribes and NGOs to develop effective projects and improve their success in receiving grants through the SWIG and other available funds, thus producing greater environmental results.



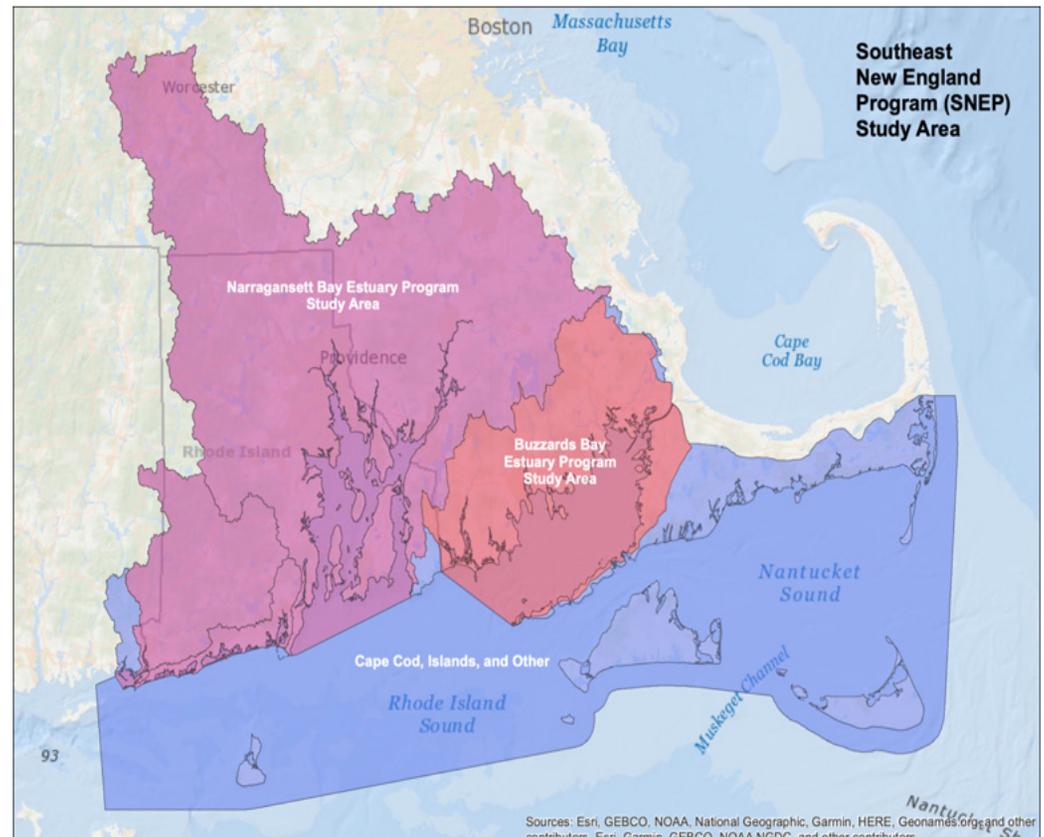
*Permeable Reactive Barrier Site Evaluation Monitoring on Martha's Vineyard*





## Current Conditions in the Region

The following section includes statistics, and other vital information, to characterize the southeast New England region, which includes the SNEP study area and the Narragansett Bay watershed (including portions that extend into Connecticut beyond the SNEP boundary). To calculate the summary statistics that follow, datasets were summarized by three subregions: Narragansett Bay watershed, Buzzards Bay watershed, and Cape Cod, Islands, and other portions of the SNEP region.



Map showing the SNEP study area and entire Narragansett Bay watershed for which spatial data were summarized and tabulated.

**STUDY AREA BASIC CHARACTERISTICS**

	Total land area (acres)	
<b>Whole SNEP Region</b>	<b>3,329,289.9</b>	
Narragansett Bay Estuary Program Study Area	2,359,794.3	70.9%
Buzzards Bay Estuary Program Study Area	500,010.2	15.0%
Cape Cod, Islands, and Other	469,485.5	14.1%

	Total water area (acres)	
<b>Whole SNEP Region</b>	<b>2,801,963.9</b>	
Narragansett Bay Estuary Program Study Area	241,718.3	8.6%
Buzzards Bay Estuary Program Study Area	285,842.2	10.2%
Cape Cod, Islands, and Other	2,274,403.4	81.2%

	Total shoreline length (km)	
<b>Whole SNEP Region</b>	<b>5,614.5</b>	
Narragansett Bay Estuary Program Study Area	2,266.8	40.4%
Buzzards Bay Estuary Program Study Area	1,319.9	23.5%
Cape Cod, Islands, and Other	2,027.8	36.1%

**Demographics**

Total Population	3,812,430
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**Land Cover**

Impervious developed (acres)	543,912
Upland trees (acres)	1,678,201
Grassland, Scrub/shrub (acres)	530,249
Bare land (acres)	34,972
Freshwater wetland (acres)	360,324

**Critical Habitat**

Eelgrass (acres)	35,652
Saltmarsh (acres)	23,629
Flood plain protection area (acres)	12,741

**Flooding Risks**

FEMA high and moderate risk flood zones	746,889
Area susceptible to high tide flooding	54,928

**Water Based Economy**

Number of establishments in all ocean sectors, 2016	5,752
Number of establishments in tourism and recreation sector, 2016	4,863

Note: The above statistics are representative of the geographic areas covered by the Buzzards Bay National Estuary Program, Narragansett Bay Estuary Program, the southern facing portions of Cape Cod, and the offshore Islands.





## Environmental Conditions

Environmental stressors refer to physical, chemical, biological, or societal constraints that impact the productivity of a species (including humans!) or the sustainability of an ecosystem. The SNEP region faces many of the same stressors that many around the globe face: human development causing changes in land use and ecosystem function; sea level rise, ocean acidification, and temperature and precipitation alterations brought on by global climate change; increased nutrient and pathogen pollution entering our waterways from growing human populations; economic stressors caused by human impacts on the environment; and environmental justice issues. While these challenges might seem daunting SNEP believes that within these stressors lies great opportunity. These stressors are not meant to deter, but rather to illustrate where SNEP feels we, as a partnership, should focus our attention in order to better our region and address common challenges in the coming years. It is important to recognize the stressors the SNEP region currently endures and how they shape contemporary and future conditions in the region. Understanding the extent, trends, and pace of these stressors will help SNEP properly mitigate, counter, or eliminate them.

<b>Climate Change</b>	including changes to the intensity of storms, the rate of sea level rise and rising ground water tables, the frequency of flooding, air and ocean temperatures; change in and/or loss of habitats; shifts in commercially and ecologically critical terrestrial and aquatic species composition and numbers; and increased vulnerability of natural ecosystems and human infrastructure
<b>Nutrients and Pathogens</b>	excessive levels caused by inadequate treatment of septic systems, stormwater, fertilizer and manure from agricultural, commercial and homeowner uses; all of which can cause harmful algal blooms, unsafe swimming, fishing, or shellfishing conditions, and water quality and habitat degradation
<b>Land Development</b>	loss of natural lands and habitat; hydrologic modification; increased impervious cover, pollution and reduced forest cover; impacts on human safety and infrastructure
<b>Economic Impacts</b>	lost ecosystem services, lost economic benefits from tourism, recreation opportunities, property values, and habitat-based food and fisheries
<b>Social Justice</b>	greater susceptibility to health and environmental stressors in underserved, poor, and minority communities; disproportionate negative effects on sustainability, environmental/cultural opportunities, and health and economic outcomes

## The SNEP 2050 Program Vision and Goals

Regionwide, positive, environmental change will not happen overnight in southeast New England, and it certainly will not happen without the effort of environmentally conscious individuals and organizations in the region. The southeast New England region is fortunate to be home to prized landscapes, abundant waters, and a vibrant water-based economy. The shared natural and human use history of the region means each sub-region experiences common environmental challenges and will benefit from regional solutions. These solutions will be used to achieve a resilient ecosystem of safe and healthy waters, thriving watersheds and natural lands, and sustainable communities in the region by 2050. SNEP has established long-term Goals and Desired Outcomes to achieve this 2050 Vision. A set of actions and targets to guide those actions over the five-year span of this plan is being developed in collaboration with SNEP partners.

### Program Vision 2050

A resilient ecosystem of safe and healthy waters, thriving watersheds and natural lands, and sustainable communities in the Southeast New England Program coastal watershed region.

### SNEP Goal: Resilient Ecosystem of Safe and Healthy Waters

- Waters support native seagrasses and aquatic life, plentiful native fish and shellfish, and a variety of water-based recreation opportunities

### SNEP Goal: Thriving Watersheds and Natural Lands

- Watersheds provide essential ecological functions, species diversity, and protection from both human-based and naturally occurring environmental stressors, and healthy, connected natural lands support a variety and range of native plant and wildlife communities.

### SNEP Goal: Sustainable Communities

- Communities share robust water-based economies, protect and provide access to natural lands, open spaces and parks, encourage local food sources, and are adapting for resilience to expected impacts of climate change.





## SNEP Goal: Resilient Ecosystem of Safe and Healthy Waters

**Waters support native seagrasses and aquatic life, plentiful native fish and shellfish, and a variety of water-based recreational opportunities**

Coastal and inland waters support native plants and animals that serve as the basis of the region's economy. With land development, waters are increasingly impaired by nutrients and other pollutants. Stormwater discharges have also contributed to closed beaches and shellfishing areas. Steps must be taken to protect and restore the water quality that communities and residents depend on for their livelihood and well-being.

### Desired Outcomes:

- Coastal waters support healthy seagrass and benthic communities, fisheries, and shellfisheries.
- Coastal waters and ponds are free from algal blooms, hypoxia, and pathogen pollution above natural levels.
- Coastal waters and ponds support safe water-based recreation (swimming, boating, fishing/shellfishing, etc.).

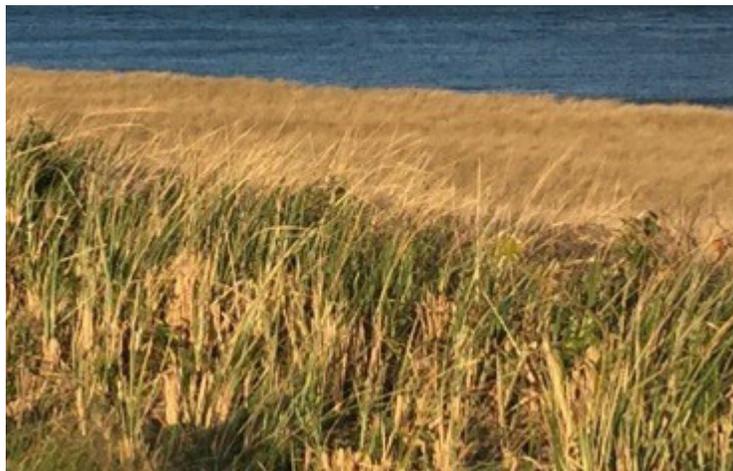


*Catching a Striped Bass (Morone saxatilis). Credit Dan Arsenault*

## SNEP Goal: Thriving Watersheds and Natural Lands

Watersheds provide essential ecological functions, species diversity, and protection from both human-based and naturally occurring environmental stressors, and healthy, connected natural lands support a variety and range of native plant and wildlife communities.

The region has abundant natural lands providing habitat to a diverse range of species. However, increasing land development is causing a reduction of those lands as they become replaced with suburban and urban features. This goal focuses on protection and maintenance of important natural lands, and restoration of important habitat to ensure the area can continue to provide a wide range of functions and can support plant and animal life native to the region.



*Chatham, MA*



*Surveying a Wetland. Credit: Save the Bay*

### Desired Outcomes:

Watersheds and landscape components maintain diverse natural lands and habitats; support native species diversity and inhibit the introduction, spread, and impact of invasive and nuisance species; and provide critical services such as pollution attenuation, air purification, flood protection, carbon sequestration, and pollination.

- Habitat can adapt and/or migrate in response to the climate change impacts of sea level rise, storm surge, higher temperature, and altered precipitation patterns.
- Major rivers discharging to Narragansett Bay, and streams discharging to embayments sustain aquatic habitat with adequate stream flow, appropriate temperature, riparian buffer, and stream connectivity.





## SNEP Goal: Sustainable Communities

Communities share robust water-based economies, protect and provide access to natural lands, open spaces and parks, encourage local food sources, and are adapting for resilience to expected impacts of climate change.

Communities have robust water-based economies and are major tourist destinations. As land development continues, it is critical that communities continue to support natural lands, open spaces, and parks both to support the economy and to support resident well-being. Access to local foods like fish, shellfish, and crops will provide healthy nutrition and decrease the region's dependence on fossil fuels which in term will help reduce atmospheric nitrogen deposition in the region and help to mitigate climate change. As communities become increasingly vulnerable to climate change impacts, it is essential that communities take steps to build resilience to avoid loss of infrastructure and the natural resources their economies depend upon.



*Looking Upstream at Downtown Providence, RI Skyline*



*Flooding in Cranston, RI*

### Desired Outcomes:

- Secure sustainable water-based resources to foster local economies in the key areas of tourism, property values, and locally significant industries.
- Communities support and implement resilient development that protects populated areas and vulnerable infrastructure through nature-based solutions and climate adaptation approaches.
- Communities ensure widespread access to local greenspace to support mental, physical, and spiritual wellbeing.
- The region develops a locally sustainable food production framework that provides access to healthy foods in the region.
- The region establishes policies to foster social/climate equity and eliminate disproportionate harmful impacts to Environmental Justice (EJ) and underserved communities in the region.

## We Can Do This! Planning for Results

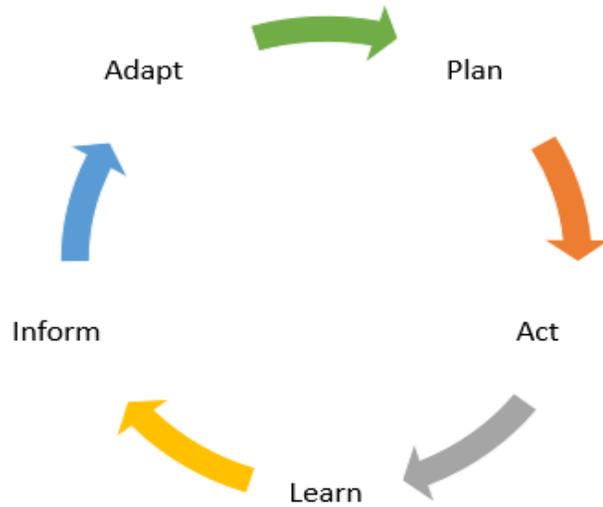
This document establishes a regional Vision and Goals, desired outcomes, priority actions, and a framework for target-setting over the next five years that together provide a pathway for SNEP and its many diverse partners to work towards a thriving and resilient region. Recognizing that much work must be done the plan lays out a stepwise approach starting with this first Five-Year Strategic Plan and subsequent updates every five years until we achieve the ultimate 2050 Vision.

- **Desired Outcomes** describe the conditions that EPA aims to achieve for the SNEP region. These outcomes will be used to steer the actions necessary to meet specific five-year Targets.
- **Targets** are specific and quantitative metrics that EPA will strive to achieve over the next five-years. Targets will be identified based on each SNEP goal and priority metrics for each five-year period.
- **Actions** are detailed activities that SNEP and its partners will undertake during each five-year period in order to meet quantitative Targets, work towards accomplishing its Objectives, and ultimately achieve the 2050 regional Vision and Goals. Because conditions in the region will change over time, in part in response to SNEP partners' efforts, the **Actions** presented in each five-year plan are based on an adaptive management approach and are meant to change as SNEP learns from experience, data, and regional condition.



EPA staff plans to work with partners and stakeholders throughout the SNEP region to coordinate implementation and monitoring activities, leverage resources from partners, and weave together partner efforts throughout the SNEP region in order to successfully protect and restore coastal watersheds. The following framework will be used to lay the foundation for the program over the next 5 years and beyond.

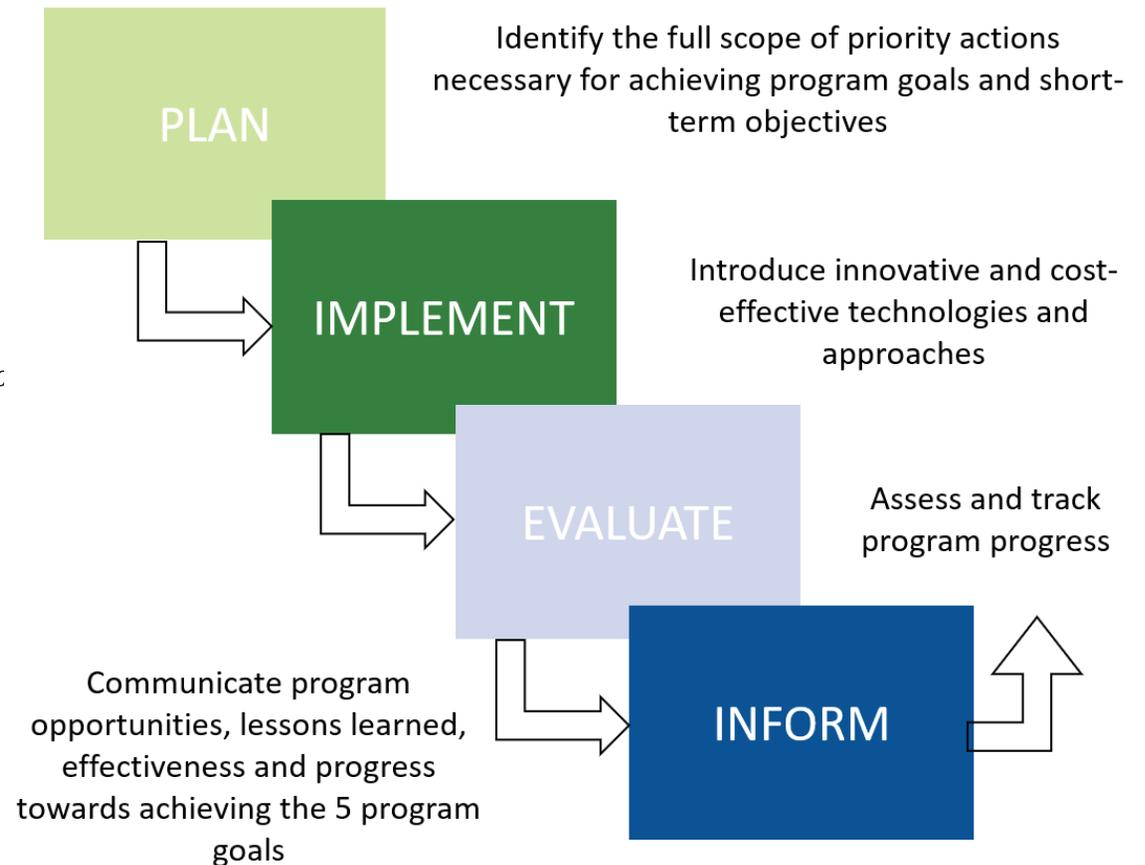




*Illustration of the iterative and adaptive approach to changing SNEP five-year plan Actions*



*Bikes on Block Island*



## Using Program Metrics to Establish Future Targets

EPA has identified a preliminary suite of indicators and metrics that together will help SNEP and SNEP partners better understand current conditions in the region and set targets to guide action. While not final, they will serve as the foundation of a SNEP monitoring framework that includes both a regional strategy and a protocol for collecting data. Many of the proposed metrics are already being measured in the region; we will work with communities, partner organizations, and scientists to identify other potential additions such as resiliency and stewardship, and consider how we can incorporate the use of new and existing data to evaluate conditions in the region. These data, in concert with a meaningful set of metrics and indicators, will help us assess our performance in the coming years and enable SNEP to produce a “State of the Region Report.” Further implementation of the monitoring strategy may lead to changes in the proposed set to better suit regional needs.

While the terms “indicators” and “metrics” are often used interchangeably, for the purposes of this document “metrics” are specific, measurable, quantifiable, entities that when combined give an idea of the status and trends of “indicators” of regional condition. For instance, dissolved oxygen, nitrogen concentration, and chlorophyll (individual Metrics) when combined give an idea of Water Quality (Indicator).



*Will Helt of the Nature Conservancy programs water level monitoring equipment to be deployed at the outflow to Elm Lake in Roger Williams Park. Photo credit: Providence Innovation Center, The Nature Conservancy*





Indicator of:	Water Quality	Habitat Health	Climate Change	Economic Health	Recreation and Wellbeing
<b>Metrics</b>	Annual Beach Closures (# closure days)	Percent Change in Land Cover Types/Land Use (% change)	Water pH, Temperature, and Salinity (pH, Degrees F, ppt)	Commercial Shellfish sales (\$/effort)	Acres of Public Natural Open Space (acres)
	Annual Number of (Shell)Fish Kills (# of events)	Acres of Protected Area (Core Habitat, Cooridors, Buffer areas) (acres)	Annual number of extreme weather events (# events)	Average Property Value per Parcel (\$)	Number of Public Beaches (# beaches)
	Frequency, Extenet, and Duration of Marine and Freshwater Harmful Algal Blooms (# of events, acres affected, days)	Miles of connected streams (miles)	Average Annual Precipitation (in./year)	Acres of Permitted Aquaculture (acres)	Amount of Public River, Lake, Ocean Shoreline (miles)
	Listed/De-Listed Water Quality Segments for Nutrients and Bacteria (# segments)	Acres of Inland Wetland (acres)	Average Annual Air Temperature (Degrees F)	Annual Income from Aquaculture Industry (\$)	TPL ParkScore rating based on methodology of acreage, investment, amenities, and access (ParkScore)
	Dissolved Oxygen (mg/L, %sat)	Acres and Condition of Saltmarsh (acres, status)	Stream Temperature and Flow (Degrees F, Mgal/year)	Commercial Fish Landings (\$/effort)	Number of Local Farmers' Markets or Local Production Based Stores (#)
	Chlorophyll Concentrations (ug/L)	Acres and Condition of Eelgrass Beds (acres, status)	Acres of Saltmarsh that can Survive Predicted Sea Level Rise (acres)	Number of Commercial (Shell)Fishing Licenses (# licenses)	Annual number of heat-related deaths (# deaths)
	Nitrogen, Phosphorous, Total Suspended Solids Concentrations and Loads (mg/L, tons/year)	Annual Number of Successful Fish (Shad, Herring, Alewife) Runs (# runs)	Annual Maximum Five Day Precipitation Total (in.)	Seasonal Workforce Supported by Tourism (# jobs)	
	Acres of Conditionally or Permanently Closed Shellfishing Areas (acres)	Watershed (bodies) Colonized by Invasive Species (# watershed/bodies)	Days Above 90F per Sub-Region (# days)	Annual Tourism Expenditure (\$)	
	Water Clarity (secchi depth)	Percent Impervious Cover (% of total area)	Annual Highest Number of Consecutive Dry Days (# days)	Annual Beach Revenue (\$)	
	Extent and Duration of Hypoxic Events (acres, days)	Number of Dams and Road Crossings (#)	Number of reproducing populations of mid-Atlantic aquatic species occurring in SNEP waters (# species)	Population Growth (% and # people)	
	Number of Combined Sewer Overflow Events (# events)	Number of municipalities promoting, enabling, or requiring green infrastructure (# municipalities)	Annual cost of Flooding/Storm Damage (\$)		
	Percent population on septic systems (%)				

## SNEP 2021-2025 Priority Actions:

**Actions** represent the priority activities that SNEP will focus on over the next five years to achieve our vision for the region. The **Actions** for 2021-2025 were developed with input from a public forum held in October 2019 and multiple discussions with the SNEP Policy Committee and Federal Partners (Appendix A). Based on their thoughts, the EPA SNEP Team distilled key priorities for SNEP’s future direction. These will drive the 2021-2025 Strategic Plan. EPA will endeavor to take on as many of these actions as possible over the next five years in order to meet the 2025 SNEP Targets (to be developed).

**The Actions in this plan will be used together to support new implementation projects and policies to achieve the goals of safe and healthy waters, thriving watersheds and natural lands, and sustainable communities.**

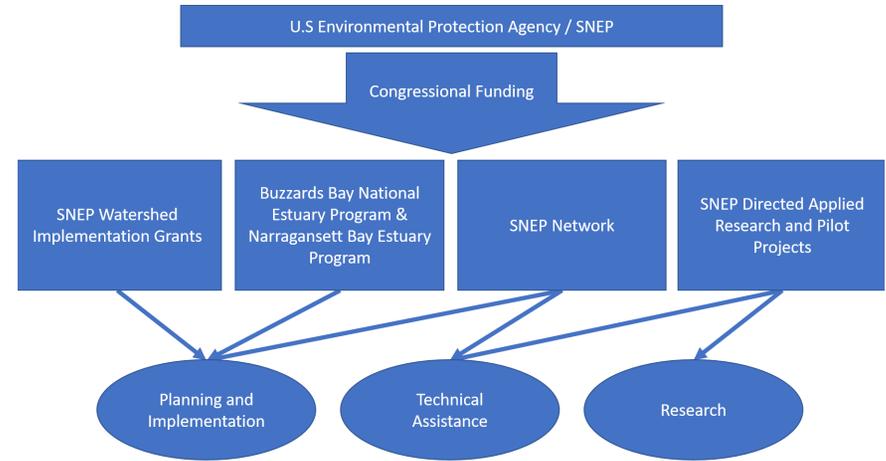
We have grouped priority Actions into five overall themes: **(1) increase local capacity to complete projects and adopt new policies; (2) increase available solutions; (3) ensure diverse representation, (4) demonstrate ways to address common challenges; and (5) increase community leaders’ understanding of the benefit of restoration projects.**



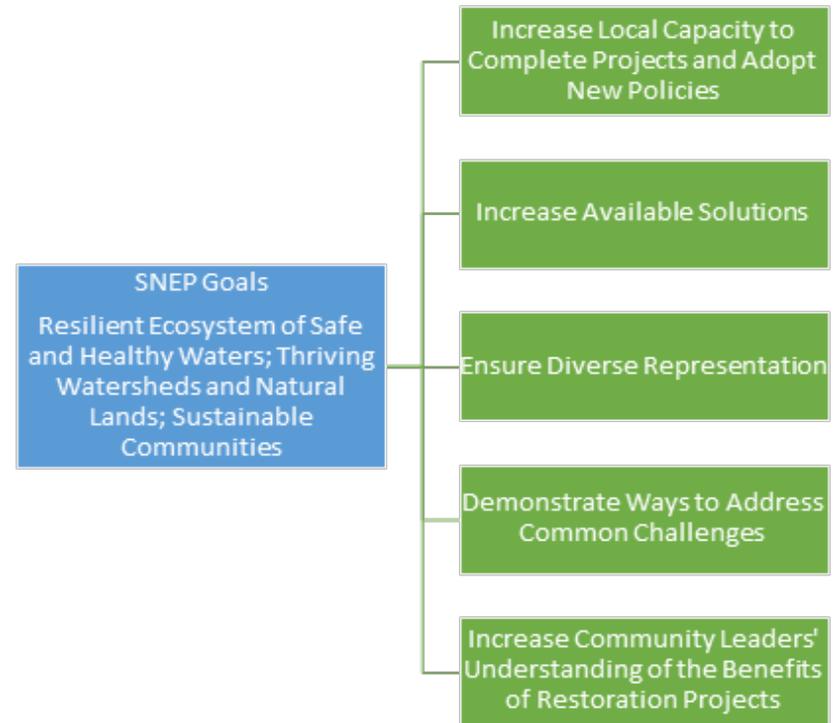
*Nantucket Island, MA*

## Use of SNEP Funds

EPA will allocate its SNEP funding in a way that will best support the following Priority Actions for the next five years. To do this, the majority of funding will be dedicated to supporting local efforts to finance, design, implement, and evaluate the effectiveness of local restoration efforts. This will be accomplished by supporting the SNEP Network, Watershed Implementation Grants for project implementation, Pilot Watershed demonstration areas, the Buzzards Bay National Estuary Program, and Narragansett Bay Estuary Program. EPA will seek to maximize the effectiveness of SNEP projects by prioritizing projects that include leveraging of multiple financing and technical resources. The remaining funding will be used to continue research-based investigations to answer key questions that, when answered, will improve the effectiveness of the overall program.



*Flow of SNEP funding*





## Action: Increase Local Capacity to Complete Projects and Adopt New Policies

Approach: Increase local capacity by providing financial and technical assistance to communities for the application of environmentally sustainable solutions towards the restoration of water quality and the stewardship of natural habitats

### Priority Actions:

- Continue to allocate at least 80% of SNEP funding to establish and maintain funding mechanisms to: (1) provide technical assistance to communities and tribes; (2) support holistic watershed restoration projects that demonstrate ways to address common water quality, habitat, and storm resilience challenges in the region; (3) support local implementation projects; and (4) support the development and evaluation of nontraditional technologies and new regional approaches to solve common challenges.
  - Share best practices with municipal and tribal staff and consultants for planning ecological restoration and share systematic cost-efficient approaches to gain agreement on selection of solutions.
  - Provide opportunities (workshops, site visits, webinars, symposia, newsletters, peer-to-peer discussions) to bring community professionals and local decision-makers together with scientists, businesses, tribal and municipal staff, NGOs, and regulators to share information about effective practices, both traditional and nontraditional, to find joint solutions to facilitate their broadscale use in the region.
  - Provide communities, tribes, and regional decision-makers with clear, accurate information about benefits achieved from SNEP's site-specific implementation projects and holistic watershed restoration efforts and describe ways those benefits may be achieved in other areas in the region.
- Encourage the development of regional strategies and tools that can be used to overcome systemwide barriers to project/policy/solution implementation.
  - Encourage municipalities to pursue sustainable financing efforts when applying for SNEP Watershed Implementation Grants or SNEP Network Technical Assistance Awards.
  - Partner with Environmental Justice groups in the SNEP region to understand the ways they are affected by water quality and habitat degradation and related climate change impacts and pursue steps to minimize the resulting effect on the health, wealth, and welfare of these communities.
  - Educate professional staff (towns, tribes, states, and their consultants) about the ecosystem services and economic benefits of restoration to give them the information needed to justify investments in implementing environmental solutions.
  - Educate professional staff (towns, tribes, states, and their consultants) about the social, environmental, and economic risks of inaction on environmental issues especially climate change.
  - Encourage and support collaboration between municipalities on financing, leadership development, peer exchange, and environmental projects.



*Misquamicut Beach, Rhode Island*

## Action: Increase Available Solutions

Approach: Increase available solutions to address stressors/issues by spurring the development, evaluation, and dissemination of innovative technologies, financing approaches, and policy development.

### Priority Actions

- Focus on the development and evaluation of nontraditional technologies and techniques, including:
  - ◇ Innovative/alternative septic systems capable of reducing nitrogen, contaminants of emerging concerns (CECs), and pathogens.
  - ◇ Stormwater controls for land-constrained areas capable of reducing nitrogen, CECs and pathogens.
  - ◇ Nature-based protection and restoration technologies capable of protecting saltmarshes, eelgrass beds, and/or riparian corridors vulnerable to nutrients, storms, sea-level rise, and erosion.
  - ◇ In-situ technologies to reduce nutrients, including permeable reactive barriers (PRBs), wetland bio-reactors, and in-water treatment to reduce the occurrence of harmful algal blooms.
  - ◇ Aquaculture to reduce nutrients and support food production to sustain a more robust seafood economy.
  - ◇ New monitoring technologies capable of predicting or determining changes in nutrients and harmful algal blooms, such as unmanned aerial vehicles (drones), real-time monitoring and remote sensing.
- Promote regional or watershed-wide approaches and planning initiatives, including:
  - ◇ Multi-town wastewater solutions.
  - ◇ New market-based approaches to restoration financing.
  - ◇ Stormwater solutions designed to reduce impacts on nutrients, peak flows and flooding, and sustain river baseflow and habitat function.
  - ◇ Eelgrass and saltmarsh restoration and protection.
  - ◇ Harmful algal bloom prediction, monitoring, confirmation, treatment and information sharing.
- Facilitate a coordinated SNEP region-wide approach to pilot the use of priority nontraditional technologies, including:
  - ◇ Identifying priority technologies in need of effectiveness evaluation and representative locations.
  - ◇ Developing technology assessment, installation, operation and maintenance protocols, and construction protocols.
  - ◇ Encouraging development and use of common monitoring protocols, investigating the potential for a regional data portal, and supporting broad access to monitoring data.
  - ◇ Determining and assessing barriers to adoption and wide-spread use; e.g., permitting, economic feasibility, public perception.
  - ◇ Exploring the feasibility of extending SNEP's approach among related programs in the Northeast also seeking adoption of new technologies.





## Action: Ensure Diverse Representation in Program Decision-making

Desired Outcome: Ensure diverse representation of community needs, science, and management solutions in SNEP committees to include a wide range of perspectives and input in program decision-making by building relationships with Environmental Justice (EJ) communities, municipal/state/federal governments, tribes, non-profit organizations, businesses, and academia.

### Priority Actions:

- Increase representation of community needs, businesses, Environmental Justice issues, and the academic research community on the SNEP Steering Committee and Policy Committee to improve understanding of local needs and leverage a broader range of resources.
- Increase understanding of local community needs and leverage a broader range of input by increasing involvement of overburdened communities, businesses, municipalities, community organizations, and academia in SNEP priority-setting.
- Include municipal representatives from the four major subregions to incorporate local needs in the SNEP Steering Committee.
- Explore the feasibility and benefits of establishing a SNEP environmental justice committee to inform program actions.
- Explore the feasibility and benefits of establishing a “blue coast business partnership” focused on improvement of water quality and habitat to leverage business resources to support local solutions across the entire SNEP region

- Examine the feasibility and benefits of establishing a SNEP research consortium with representation by regional academic institutions and government agencies to share ongoing research relevant to SNEP goals and actions.
- Ensure EPA, the SNEP Network, the SWIG, and the two NEPs coordinate and build on each other’s outreach, engagement, and actions in EJ communities.
- Coordinate with the EPA Region 1 EJ Team and use its guidance and SOPs to support systemic and sustained community-driven change.



*Man-made public ponds in Roger Williams Park with stormwater outfalls draining into them.  
Photo credit: Horsely Witten Group*

## Action: Demonstrate Ways to Address Common Challenges

Approach: Demonstrate ways to address common challenges by selecting pilot watersheds to support a holistic and targeted watershed management approach that is tailored to the differing characteristics in the region, with a focus on innovative, systemic solutions to environmental stressors that can be transferred to other areas in the SNEP region and beyond.

### Priority Actions:

- Establish representative pilot watershed locations across the region to support demonstrations of holistic approaches as examples to communities of ways to address common challenges efficiently, cost-effectively, and successfully.
- Implement a watershed-based approach that demonstrates how to tailor best management practices (BMPs) to different geologic, hydrologic, and habitat and physical characteristics; pollution sources; climate change scenarios; and community characteristics
- Quantify and widely disseminate the benefits of pilot watershed restoration efforts, large watershed implementation projects, and innovative technology pilot applications.
- Establish a standard methodology, including pre-and post-monitoring protocols, capable of tracking and quantifying the full range of benefits achieved by holistic watershed projects and site-specific implementation projects.
- Explore development of a systems-level regional approach to monitor the development and success of innovative solutions post-implementation and track environmental change over time in the SNEP region.



*Testing to develop a low-cost sensor to record nitrogen concentration in effluent released from innovative/ alternative septic systems. Location: Massachusetts Alternative Septic System Test Center*





## Action: Increase Community Leaders' Understanding of the Benefits of Restoration Projects

Desired Outcomes: Increase community leaders' understanding of benefits achieved by supporting clean water, healthy natural lands, and sustainable practices by quantifying multiple benefits of ecosystem/habitat restoration projects.

### Priority Actions:

- Partner with scientists, planners, and economists to compile available data and initiate applied research to understand and quantify the multiple environmental, economic, health, and social benefits of ecosystem/habitat restoration projects.
- Establish a standard methodology capable of tracking and quantifying the full range of benefits achieved by holistic watershed projects and site-specific implementation projects.
- Quantify benefits of pilot watershed restoration efforts, large watershed implementation projects, and innovative technology pilot applications, and share that information with local municipal and tribal leaders and staff, and their consultants through reports and scientific articles, technical assistance visits, site visits, webinars, newsletters, and symposia.
- Encourage new SNEP local watershed project proposals to provide multiple benefits for surrounding communities (e.g. projects that could benefit community health, wealth, and wellness) and to maximize and measure those benefits where possible.

- Update SNEP grant and contract reporting requirements to obtain information necessary to begin tracking co-benefits in the next five years.
- Support applied research projects focused on quantifying the regional return of investment (shellfishing/fishing, recreation, jobs, public health, other) achieved through improving coastal water quality.
- Consider the future impacts of climate change by quantifying co-benefits of solutions for supporting community resilience and share information with local leaders on the cost-savings potential of adaptive and restorative climate solutions.
- Partner with local community leaders and organizations to incorporate the quantification of social and economic benefits of clean water, healthy natural lands, and sustainable practices into regional decision-making and long-term policy practices.



*Demonstration of a Stormwater Gravel Wetland to Treat Runoff in Chatham, MA*

## Research-guiding Questions: Finding Regional Solutions

Convenes at least twice each year and includes representatives of state Applied research is used by SNEP to seek information to improve regional decision making on the evaluation of new technologies, the evaluation of restoration potential, quantification of benefits arising from restoration activities, monitoring, tracking of program effectiveness, approaches to cross-cutting regional issues like harmful algal blooms and to provide effective communication with local leaders, professional staff, and consultants. The following research-guiding questions are meant to illustrate the priority topics SNEP wishes to investigate in the coming five years. The guiding-questions themselves should be used by researchers to develop their specific research questions.

### Innovative Technologies and Approaches

- What nontraditional technologies and new approaches should SNEP evaluate over the next five years that hold strong potential to more efficiently and effectively reduce pollution from septic systems, stormwater, and fertilizer, address HABS, further evaluate PRBs and aquaculture, and restore saltmarsh, eelgrass and riparian habitat? How can SNEP better compile, track and share results of innovative pilot projects? What data or information is needed to effectively assess and communicate the results of nontraditional technologies and approaches? How do we communicate the multiple benefits of nontraditional technologies (social, economic, environmental)?
- What are the barriers for getting selected high priority innovative technologies permitted, approved for general use, accepted for widespread use? How can SNEP break down those barriers? How can SNEP facilitate cooperation between state, federal, and local partners?

- Explore the potential benefits of incorporating unmanned aerial vehicles (drones) and remote sensing technologies into the development of a systems-level regional approach to track the progression of environmental changes over time, to monitor the development and success of innovative solutions post-implementation, and to apply nuanced economic analyses that can more accurately and successfully convey the potential negative/positive impact of the environment on regional economies.

### Evaluation of Ecosystem Service Benefits

- What methodology(ies) are appropriate in the SNEP region to track, compile, evaluate and demonstrate the full range of environmental, social and economic benefits achieved by water quality, resiliency and habitat restoration projects at both a site-specific, watershed and regional scale.

### Monitoring

- How do the different geological, biological, chemical, and physical characteristics of each part of the SNEP region dictate pollutant (nutrients, total suspended solids, bacteria) movement and impact solutions?
- How can we use this information to better tailor BMPs (both BMP type and design)?
- How do we use this information to focus future monitoring?
- How do we use this information to focus future project funding?
- How do we use this information to estimate the expected impacts BMPs will have?

### Tracking Program Effectiveness

- How should we track site specific, watershed, and system wide changes in environmental quality (water quality, habitat health) and resiliency (flood mitigation, protection from sea level rise) from SNEP funded projects?





## Harmful Algal Blooms

- What data is currently available about the occurrence of harmful algal blooms (HABs), and how can the region establish a mechanism to receive, compile and track monitoring data about the presence of HABs in the region?
- What methodologies are best capable of tracking the occurrence of HABs?
- What monitoring data is missing and needed to track the existence of HABs and their potential risk to public health?
- What practices are most promising to reduce HABs through treatment at the source, in ground water, and where they occur?
- How can SNEP quantify the health, social, economic, and environmental impacts of freshwater HABs? What data is necessary to do this? Conversely, how do we quantify the social, economic, and environmental impacts of BMPs that aid with HAB reduction?
- To what extent, and from what distance, do septic systems contribute phosphorus to coastal ponds experiencing HABs in the SNEP region?
- How can SNEP and other organizations in the region best share information about the presence of HABs?
- How can SNEP support the development of new potential technologies available to improve HAB detection?

## Effective Communication

- What training and information is needed for professionals to help towns and tribes plan for and finance protection and restoration activities?
- What are the factors that drive people's decisions about whether to support local environmental protection and restoration projects in the region? How do we use this information to identify viable solutions to common challenges and develop effective education and outreach programs?

- What are the best venues and approaches to disseminate information about land use practices, effective technologies and approaches, and the co-benefits of local and holistic sub-watershed management projects to our SNEP partners, especially municipal and tribal professional staff and volunteers, consultants and local decision-makers?



*Monitoring Ground Water in Neighborhood Undergoing Hook up to from Septic Systems to a public wastewater facility. Credit: USGS*

## How Will We Know How We Are Doing?

EPA will assess the effectiveness of its SNEP projects and overall program progress both to be accountable to the American people as well as to continuously improve the results of our work.

### Ecosystem Service Valuation

EPA will use the results of ecosystem service valuations to understand the technologies and approaches that provide greatest benefits to the region. As part of the effort, EPA will partner with the ecosystem services subcommittee as well as other scientists and planners to identify priority ecosystem services and compile information about their environmental, social, economic, and health benefits. Results of the assessment will inform selection of future research, use of solutions, and selection of future watershed implementation grant projects.

### Local Capacity to Take on Restoration

EPA will work with partners to assess improvements in local knowledge and capacity to address regional challenges due to technical assistance from the SNEP Network and identify ways to improve its effectiveness.

### SNEP Project Evaluation and Assessment

In 2021 EPA will, with the help of a contractor, develop a dashboard and methodology to evaluate the successes, shortcomings, and environmental impacts of previously funded SNEP projects. The dashboard will be used to track research projects, contracts and grants, and record their reported outcomes. Evaluation of previous projects will create a baseline to which we can add future projects. By evaluating the successes and shortcomings of previous projects, EPA will also better be able to execute future SNEP projects.

### Partner Monitoring

SNEP and its partners will continue to conduct environmental monitoring across the region. Monitoring by partners range from water quality or habitat assessments to economic analysis and social impact studies. Available data may be used to assess changes in the SNEP region including improvements made from implementation of SNEP projects. In the coming five-year cycle, SNEP will work to engage other regional organizations (both those we currently work with and those we do not) to develop a more comprehensive picture of data availability, gaps, and utility in the region.

### SNEP Programmatic Monitoring Strategy

In 2021 EPA will develop a community-driven programmatic monitoring strategy with the help of a contractor, and feedback from regional partners and its monitoring subcommittee. This Strategy will help EPA and its partners better understand regional trends, how SNEP projects are impacting them, how to best monitor innovative projects, and how to focus monitoring on specific priority watersheds. The Strategy will inform future projects and how to best monitor their environmental impacts. SNEP will begin to implement the Strategy in 2022 and use it to better track its progress.

### Metrics Tracking

EPA will coordinate with Program committees and subcommittees to compile regional data assembled through its monitoring strategy and public data sources to assess changes leading to clean and safe water quality, thriving watersheds and natural lands, and sustainable communities using environmental metrics and indicators.





## How Will SNEP Communicate with the Public?

EPA will communicate program opportunities, lessons learned, effectiveness and progress towards achieving program goals

### SNEP Communications Coordinator

Beginning in winter 2020, EPA Region 1 will support a Communications Coordinator charged with improving communications with municipal and tribal leaders, their professional staff, and their consultants. The Coordinator will participate in research efforts to improve the program's delivery of information to communities, tribes and the general public; and will provide relevant information to spur restoration and share program accomplishments.

### Symposia/Forums

SNEP symposia or forum events are scheduled to occur every two to three years. These Symposia or forums are offered to update our stakeholders on SNEP's achievements, provide new findings on available approaches and technologies, celebrate accomplishments, present interesting case studies and research, and gather input from stakeholders on the direction SNEP should take in next few years. The symposia or forums are whole day events open to any SNEP partner or member of the public.

### Workshops

Both the SNEP EPA Team and the SNEP Technical Assistance Network will host workshops throughout the year. These Workshops are focused on a central theme such as green infrastructure, harmful algal blooms, stormwater treatment, or living shorelines. The Workshops will be used to bring together experts, provide up-to-date information on each topic, followed by a panel discussion or group discussions to brainstorm solutions. These workshops are generally half-day events and are open to any SNEP partner or member of the public.

### SNEP Newsletter

The EPA SNEP Team issues up to six newsletters annually that highlight SNEP projects, SNEP partners, goings-on in the region, and upcoming technical or learning opportunities. These newsletters are available to the public. Past editions can be found here: <https://www.epa.gov/snep/past-snep-newsletters>

### SNEP Website

The EPA SNEP Team maintains a SNEP website to share information about the program and post the results of completed priority projects (<https://www.epa.gov/snep>) to keep the public informed on progress and priorities.

The SNEP Network site (<https://snepnetwork.org/>) provides information on upcoming trainings, the types of technical services the Network provides, and highlights Network projects.

The SNEP Watershed Implementation Grants site (<https://estuaries.org/snepgrantprogram/>) hosts information on when and how to apply for SNEP grants as well as information on previous and upcoming SNEP Watershed Implementation Grants awardee projects.

## EPA and SNEP Network Webinars

EPA hosts up to four webinars each year focused on regional topics of interest such as aquaculture, permeable reactive barriers, and innovative septic systems. SNEP brings together regional experts to share research happening in the region as well as progress on SNEP grantee projects. These webinars are open to the public. Recordings of past webinars and announcements of upcoming ones can be found here: <https://www.epa.gov/snecwrp/snep-webinars>. The SNEP Network also hosts periodic webinars where Network members provide information on on-going projects and the state of knowledge on various topics of interest to SNEP's municipal stakeholders. Past webinars can be found here: <https://snepnetwork.org/past-webinars/>.

## Peer-to-Peer Learning

The SNEP Network and Watershed Implementation Grants Program provide peer-to-peer technical transfer opportunities where SNEP grantees and partners can share project progress, accomplishments, and lessons learned with their peers. In certain circumstances SNEP may also require its grantees, as a part of their grant conditions, to present the results of their SNEP-funded work publicly. This brings attention to SNEP-funded projects and aids in the transfer of "lessons learned".

## Annual Accomplishments Report

Beginning in 2021, EPA will provide an annual accomplishments report that will highlight program progress over the prior year.

## 2025 State of the Region Report

SNEP will track regional indicators and metrics to measure environmental trends and Program progress. EPA will provide a State of the Region Report every five years to inform its next five-year Strategic Plan. The State of the Region Report will describe the region's condition, challenges and solutions. This Report will provide an assessment of environmental, social, and economic trends in the region.

# Adapting for the Future

EPA will update priorities and actions at least every five years to incorporate what the Program has learned, including new technologies and approaches, for solving regional challenges

SNEP recognizes that environmental and climatic conditions, the state of the science, the state of policy, and the objectives of the Program and its partners can and will change during a five-year period, let alone during a 30-year period. As such, while we expect that the **Goals, Vision and Desired Outcomes** will remain constant, how SNEP achieves them is meant to be adaptive both between and within five-year plans. This document, and any produced in the future, are not meant to be set in stone, and should change as priorities or conditions change and as SNEP and its partners acquire new techniques, knowledge, and approaches to more effectively solve the region's environmental challenges and achieve the program vision.



*Father and Daughter at the Beach*





## Appendix A. Committee Membership

### Policy Committee Members

Association to Preserve Cape Cod  
Buzzards Bay National Estuary Program  
Cape Cod Commission  
U.S. EPA Office of Research and Development  
Atlantic Coastal Environmental Sciences Division (ACESD)  
U.S. EPA Region 1  
MA Division of Ecological Restoration  
Martha's Vineyard Commission  
MA Department of Environmental Protection  
Narragansett Bay Estuary Program  
New England Interstate Water Pollution Control Commission  
RI Department of Environmental Management  
Save the Bay  
The Nature Conservancy

### Federal Partners Committee Members

U.S. EPA Office of Research and Development ACESD  
U.S. EPA Region 1  
U.S. Federal Emergency Management Agency  
U.S. National Oceanic and Atmospheric Administration  
MA Natural Resources Conservation Service  
RI Natural Resources Conservation Service  
U.S. Army Corps of Engineers  
U.S. Fish and Wildlife  
U.S. Geological Survey

### Steering Committee Members

Wampanoag Tribe of Gay Head (Aquinnah)  
Association To Preserve Cape Cod  
Buzzards Bay National Estuary Program  
Cape Cod Commission  
MA Division of Ecological Restoration  
MA Coastal Zone Management  
Martha's Vineyard Commission  
Mashpee Wampanoag Natural Resources Department  
Mass Department of Environmental Protection  
Narragansett Bay Estuarine Research Reserve  
Narragansett Tribe  
Narragansett Bay National Estuary Program  
New England Interstate Water Pollution Control Commission  
National Oceanic and Atmospheric Administration  
MA Natural Resources Conservation Service  
RI Natural Resources Conservation Service  
RI Department of Environmental Management  
Save the Bay  
The Nature Conservancy  
UMass Boston  
U.S. Army Corps of Engineers  
U.S. Fish and Wildlife  
U.S. Geological Survey  
U.S. EPA Region 1  
U.S. EPA Office of Research and Development ACESD  
Waquoit Bay Estuarine Research Reserve