



# Nitrogen Smart Communities

## Program Guide

Nitrogen Smart Communities (NSC) is a Long Island Watershed Program (LIWP) program that encourages municipalities in Nassau and Suffolk counties to take meaningful and effective actions to reduce, prevent or eliminate nitrogen pollution in Long Island's waters through community-specific plans of action.

This document will guide the municipality through the Steps and Actions of the NSC program. Each section will provide detailed instructions and information needed to complete the associated Steps and Worksheets. Resources to be utilized in completing the NSC program Steps and Worksheets can be found in the Nassau and Suffolk County Toolkits or directly from the individual municipality.

Funding for the pilot phase of the NSC program has been provided by the United States Environmental Protection Agency (EPA's) Long Island Sound Partnership (LIS Partnership).

*To participate in the pilot program, a municipality must be within the Long Island Sound Partnership boundary in Nassau or Suffolk Counties, and in compliance with all applicable DEC permits.*

### Step 1

#### Action 1.1 Adopt the NSC Pledge

The first action is demonstrating commitment to the Nitrogen Smart Communities (NSC) program by passing the [NSC Pledge](#) as a municipal resolution. Use the provided [NSC Model Resolution](#), which includes the NSC Pledge, as a template for drafting your local resolution. The final resolution document must include a signature and date of passage from the municipal clerk verifying the authenticity of the resolution.

Complete the [Step 1 Worksheet](#) related to Action 1.1. The final resolution document will also need to be submitted.

## Action 1.2 Appoint a NSC Coordinator

To support steady progress on local nitrogen mitigation and reduction, it is necessary to have a municipality NSC coordinator to serve as a point of contact for the NSC program and facilitate project implementation. The NSC coordinator will be a crucial part of the program by guiding and managing the program for the municipality.

The individual appointed to the NSC coordinator position will be responsible for coordinating community outreach and the activities of a NSC Advisory Taskforce (Action 2.1), as well as associated nitrogen mitigation and reduction activities. The NSC coordinator can be a local government representative (staff or elected official) or a volunteer from the community. The coordinator will act as the liaison between the NSC Advisory Taskforce and the relevant municipal officials and serve as chair or co-chair of the NSC Advisory Taskforce.

When selecting the NSC coordinator, the municipality may want to consider the person's knowledge of nitrogen pollution and water quality topics, experience with project management and coordination, and experience with facilitating stakeholders and working groups.

Complete the Step 1 Worksheet related to Action 1.2. An executive letter stating the appointment of the coordinator and their duties will also need to be submitted.

The Step 1 Worksheet self-certifies that the municipality is compliant with all DEC permits and regulations. The Permits and Regulations list can be used as a reference when confirming compliance.

*Submission of the Step 1 Worksheet, resolution document, and executive letter appointing the coordinator will register a municipality as a NSC program participant, based on approval by DEC and LIRPC.*

## Step 2

### Action 2.1 Forming a NSC Advisory Taskforce

In addition to the NSC coordinator, the formation of a knowledgeable Advisory Taskforce to serve as a central body of leadership will help guide the development and execution of the municipality's NSC program. Municipal staff, the coordinator, and the Advisory Taskforce will collaborate to play key roles in facilitating community outreach, organizing public meetings, and information-gathering necessary to assess the sources of nitrogen pollution, data analysis, and assisting in executing activities that will reduce nitrogen.

Municipalities can either build an Advisory Taskforce from an existing board, commission, or committee (e.g., environmental, conservation, sustainability or water-related) or choose to create an entirely new group. It is beneficial if some of the participants already have a vision of how the community should respond to the adverse environmental impacts caused by excess nitrogen.

The Advisory Taskforce should be comprised of both experts and non-experts that bring diverse backgrounds to ensure a broad spectrum of opinions and expertise. Including a wide range of Advisory Taskforce members early in the planning process will help avoid future obstacles or setbacks. For example, if there is a homeowner association (HOA) with its own wastewater treatment facility in the municipality, then a representative from that HOA should be included. Likewise, if there is a golf course in the community, then a representative should be included in the Advisory Taskforce. In addition to interested groups and individual citizens, key local elected, and appointed officials and municipal staff should be invited to participate.

Each Advisory Taskforce member may be formally invited to the group with an indication of how their expertise will benefit the program. The size of the Advisory Taskforce will be dependent on community interest and manageability.

The municipality's NSC coordinator will serve as the point of contact for the municipality's governing body, chief executive (e.g., mayor, supervisor), and Advisory Taskforce. The NSC coordinator may solicit an Advisory Taskforce volunteer to serve as co-lead, whose role would be to assist the coordinator in the management of the Taskforce.

#### **Potential Advisory Taskforce Members and their Respective Roles**

Please refer to the [Advisory Taskforce Members Guide](#) which is organized by category and intended to assist the municipality in identifying potential Advisory Taskforce members to consider. Some members may not apply to all municipalities. The [Advisory Taskforce FAQ](#) will also answer many questions that may arise when forming the Advisory Taskforce.

#### **Advisory Taskforce Objective**

The Advisory Taskforce should develop a program objective during its first meeting to ensure all members are working toward the same goal(s).

#### **Sample Program Objective**

*The objective of the [Municipality's] NSC Advisory Taskforce is to identify and provide input on the sources of nitrogen, best management practices, and protection methods to be advanced through participation in the NSC Program. The priority goal is to assist in executing activities that will help reduce nitrogen pollution in our community.*

Complete the [Step 2 Worksheet](#) related to Action 2.1 which will include a list of Advisory Taskforce members and the organizations they represent.

## **Action 2.2 Community Outreach**

Communicating with and engaging local government officials, staff members and public stakeholders is an essential component of nitrogen reduction action planning. Successful nitrogen reduction action planning largely relies on community outreach and education.

The coordinator and Advisory Taskforce will develop a community outreach plan to educate, create enthusiasm, and involve the community by enlisting their long-term support of the NSC program. Outreach will also include informing the community that an Advisory Taskforce has been formed to serve as the central body of leadership for the program.

Below are some basic elements of a community outreach plan to be employed:

### *Setting Goals*

The community outreach plan should include specific goal(s). Ideally, the outreach plan will connect with as many sectors of the community as possible and encourage them to participate and support the NSC program.

*Example Goals for a Community Outreach Plan:*

- *Inform the community on the commitment to participate in the NSC program and how it will benefit the community.*
- *Educate the community on the detrimental effects of nitrogen pollution within their community.*
- *Communicate how the community can participate in the NSC program.*
- *Create partnerships with other groups within the municipality whose purpose aligns with NSC goals to increase community outreach without overlapping the message.*

### *Strategies to Achieve Goals*

Strategies can now be put in place on how to achieve each community outreach goal. Examples of strategies that can be utilized include public meetings to build community support, social media presence, free workshops and events to raise awareness and drive action, creating a NSC webpage, email newsletters and alerts, and recruiting volunteers.

The NSC coordinator appointed in Action 1.2 will be the main point of contact and should ensure that the community outreach strategies align with the goals set and relate to nitrogen and water quality within the municipality.

Complete the Step 2 Worksheet related to Action 2.2 which will include each distinct community goal, and the strategies established to achieve each goal.

*Completing Steps 1 – 2 qualifies a municipality for Bronze Status Certification. This certification validates that the municipality is committed to enlisting the community's long-term support and participation of the NSC program.*

## Step 3

### **Inventory of Nitrogen Sources**

The county subwatershed plans enable the sources of nitrogen to be understood on a county level with the aim to make the best decisions to improve water quality. The analysis of the sources of nitrogen at the municipal level in Actions 3.1 – 3.5 will bring in the details that can assist a community in better understanding their specific nitrogen sources, and therefore the reduction activities that are best suited for their municipality.

To assist with the nitrogen source inventory, LIRPC and DEC will provide a breakdown of nitrogen loading to groundwater originating from on-site wastewater disposal, discharges from sewage treatment plants, fertilizer applications, pet waste contributions, and atmospheric depositions on a municipal level. The information supplied will help to better understand the nitrogen priorities for the municipality.

It is important to note that if a municipality is a city or town, information in the worksheet should not include incorporated villages.

NSC Suffolk and Nassau Counties Toolkits will provide the specific resources to locate the required information.

### Action 3.1 Wastewater Source Analysis

Wastewater as a source of nitrogen comes from both sewer areas (those connected to a wastewater treatment facility) and areas that have septic systems. The goal of this analysis is to understand the makeup of wastewater treatment in the municipality and determine how the information can be used to make the best management decisions to reduce nitrogen.

#### Sewers

Wastewater collection systems (underground pipes and pumping systems) transport wastewater (sewage) from homes, businesses, and industries to private or public facilities where the nitrogen and other sewage components are treated before being discharged to surface water or groundwater.

Complete the Step 3 Worksheet, Table 3.1a, which analyzes wastewater treatment facilities as a potential source of nitrogen. The municipality will need to include the following information:

- The total number of parcels connected to a sewer system. This information will be provided by DEC and LIRPC.
- The total number of wastewater treatment facilities within the municipality.
- The name of each wastewater treatment facility. Owner, address, and SPDES ID of the treatment facility. The name of the waterbody that receives the discharge, or groundwater if the facility discharges to the ground. The total permitted flow of the treatment facility.
- Average Annual Nitrogen in effluent.
- Summary of facility compliance. This includes information such as if any violations have been noted.

#### Private Sewage Treatment Plants

*Please skip this section if there are no private sewage treatment plants within the municipality.*

Although the source percentage for private sewage treatment plants is not available, it is still a source that should be analyzed and considered when planning reduction activities.

Complete the Step 3 Worksheet, Table 3.1b, detailing private sewage treatment plants as a potential source of nitrogen. The municipality will need to include the following information in the Step 3 Worksheet:

- Number of private sewage treatment plants within the municipality.
- Name of each private sewage treatment plant
- Additional information

### On-Site Wastewater Treatment Systems (Septic systems/Cesspools)

On-site wastewater treatment systems – such as septic and cesspool systems – serve residential properties or small businesses. Septic system effluent contains nutrients (nitrogen and phosphorus), pathogens (such as bacteria, parasites, viruses), and other compounds. The goal of this analysis is to understand where these systems are present within the municipality to determine if a connection to public sewers is available or to target where to prioritize upgrades to innovative/alternative on-site treatment systems that are designed to significantly reduce the amount of nitrogen leaving the system.

Complete the Step 3 Worksheet, Table 3.1c, which analyzes septic systems/cesspools as a potential source of nitrogen.

The municipality will need to include the following information in the Step 3 Worksheet:

- The total number of septic systems and cesspools within the municipality. This information will be provided by LIRPC and DEC.
- The total number of installed innovative/alternative on-site wastewater treatment systems.
- Any additional information

### Marine Pumpout Stations

*Please skip this section if there are no marine pumpout stations within the municipality.*

Pumpout stations are an important part of the equipment marinas use to remove the wastewater from toilets, kitchens, and bathrooms on boats, as well as bilge water. Proper removal of this wastewater is necessary to keep untreated waste out of the water.

Although the source percentage for marine pumpout stations is not available, it is still a source that should be analyzed and considered when planning reduction activities.

Complete the Step 3 Worksheet, Table 3.1d, detailing marine pumpout stations as a potential source of nitrogen. The municipality will need to include the following information in the Step 3 Worksheet:

- Name and number of marine pumpout stations in the municipality.

**A GIS map that includes the seweried service areas (i.e., parcels connected to wastewater treatment facilities and private sewage treatment plants), parcels that are on traditional septic, cesspool systems, and marine pumpout stations, will need to be submitted with the Step 3 Worksheet.**

### Action 3.2: Fertilizer Source Analysis

Fertilizer as a nitrogen source can come from applications to lawns, golf course properties, or agriculture properties (farms). Nitrogen is used differently on each of these three types of land use and should be treated as distinct sources. The information collected helps better understand the impact of fertilizer as a potential source of nitrogen (i.e., the amount of fertilized land relative to the size of municipality).

## Lawns

Lawns are a part of most properties including residential, commercial, business, parks, schools, and other areas (excluding golf courses or farms).

Complete the Step 3 Worksheet, Table 3.2a, detailing lawn fertilizer as a potential source of nitrogen pollution. This analysis will assist in determining where fertilizer is used and potential locations of large areas of lawn based on the local tax maps.

The municipality will need to include the following information for lawn areas:

- The total acreage of potentially fertilized lawn. Included in this analysis are residential, commercial, institutional, industrial, recreational parcels/properties, and municipal-owned properties, which all have individual property tax codes. DEC and LIRPC will provide this information to the municipality, along with the associated percentage of nitrogen loading.
- The total acreage of fertilized land municipally owned.

## Golf Courses

*Please skip this section if there are no golf courses within the municipality.*

Complete the Step 3 Worksheet, Table 3.2b, detailing golf course lawns as a potential source of nitrogen pollution. The municipality will need to include the following information with the Step 3 Worksheet:

- The number of golf courses within the municipality. Property types are classified by codes with public golf courses coded as 552 and private golf courses coded as 553.
- The total acreage of golf course land within the municipality. DEC and LIRPC will provide this information to the municipality, along with the associated percentage of nitrogen loading.
- The name and address of each golf course.
- The acreage of each golf course land.
- The extent to which the golf course is on the waterfront or not.

## Agriculture

*Please skip this section if there are no farms within the municipality.*

Agriculture includes land used to cultivate crops, livestock, and/or vineyards. Farmers apply nutrients on their fields in the form of fertilizers, including animal manure, which provide crops with the nitrogen necessary to grow and produce the food we eat. However, when nitrogen is not fully utilized by the growing plants, it can negatively impact water quality and groundwater.

Complete the Step 3 Worksheet, Table 3.2c, detailing agriculture as a potential source of nitrogen pollution. The municipality will need to include the following information in the provided worksheet:

- The name and number of farms in the municipality, including those that cultivate crops, livestock, and vineyards.
- Type of farm. The specific code will provide the type of farm.

- The total acreage of farmland in the municipality. DEC and LIRPC will provide this information to the municipality, along with the associated percentage of nitrogen loading.
- The name of each farm, including the farm's total acreage of fertilized land.
- Whether the farm is located on the waterfront or not.

**NOTE:** Specific information about farms may be deemed private and may not be available.

**A GIS map that includes where fertilizer is potentially utilized, including lawns, golf courses, and agricultural land for the municipality will need to be submitted with the Step 3 Worksheet.**

### Action 3.3 Stormwater Source Analysis

Stormwater is water from rain or melting snow that does not soak into the ground but runs off into waterways. This can include water flowing across paved areas, bare soils, or through sloped lawns. As stormwater flows, it collects and transports contaminants, including nitrogen. Anthropogenic sources of nitrogen that can end up in stormwater include fertilizer, pet waste, and atmospheric deposition. When not properly managed, these contaminants can be carried by stormwater and often end up in waterways.

Although stormwater is an important source of nitrogen to both analyze and plan reduction activities, the source percentage is not available for the Worksheet 3 Nitrogen Source Summary or Table 3.3. All excess nitrogen that ends up on impervious surfaces can contribute to stormwater pollution, and therefore any activities that reduce stormwater can in turn reduce stormwater pollution.

Complete the Step 3 Worksheet, Table 3.3, detailing stormwater as a potential source of nitrogen pollution. This information can be obtained from the municipality's Municipal Separate Storm Sewer System (MS4) program.

The municipality will need to include the following information in the Step 3 Worksheet:

- If the municipality is a permitted MS4, and if so, that the permit requirements have been met. Requirements that have been met will be recorded in the MS4 Annual Report located on the individual municipality's website or in the DEC Info Locator.
- The total acreage of impervious surface in the municipality can be found using GIS data. Impervious surfaces include roads, parking lots, and large commercial properties. Some municipalities may also have more detailed information on impervious surfaces.

**A GIS map of stormwater infrastructure and drainage areas will need to be submitted with the Step 3 Worksheet.**

### Action 3.4 Pet Source Analysis

Pets are an integral part of human culture and can be found in all communities. Urine and excrement from domesticated animals, such as dogs and cats can be a source of nitrogen in the urban/suburban environment. Most nitrogen is excreted as urine, which renders its management impractical. The analysis should briefly discuss the role that pet waste plays in the local nitrogen load.

Complete the Step 3 Worksheet, Table 3.4, detailing pet waste as a potential source of nitrogen pollution. Some MS4 plans address pet waste in the pathogen section of the permit. It may also be helpful when speaking to the Stormwater contact to inquire about pet waste management within the municipality.

**Please note** that the proportion of total nitrogen source provided in the Nitrogen Source Summary refers specifically to dogs and cats, however, many people own other domesticated animals such as horses and goats. Please provide details and preventative measures related to those animals in the Step 3 Worksheet.

### Action 3.5 Atmospheric Deposition Analysis

Nitrogen deposition is a result of global, regional and local nitrogen oxide (NOx) emissions from fossil fuel combustion (electric power generation and transportation), industry, agricultural fertilizer application and livestock waste. Generally, atmospheric deposition is not a community driven pollutant and is difficult to track, however, it is important to include this source of nitrogen in any source breakdown being analyzed to recognize its contribution to a community's overall load.

Complete the Step 3 Worksheet, Table 3.5, detailing atmospheric nitrogen deposition as a potential source of nitrogen pollution. LIRPC and DEC will provide the source percentage. The Activity List provides examples of where atmospheric deposition may be a source of nitrogen pollution at the local level.

*Completing Steps 1 – 3 qualifies a municipality for Silver Status Certification. This certification validates that the municipality has committed to understanding its sources of nitrogen pollution and is ready to take meaningful action in reducing, eliminating, and preventing excess nitrogen from entering its waterways.*

## Step 4

A specific plan for implementation of nitrogen reduction activities is critical for a successful NSC Program. In Step 3, all sources of nitrogen were compiled and analyzed. Before determining what activities should be pursued, a discussion about the Step 3 results should be had within the municipality that includes the NSC coordinator and the Advisory Taskforce. This discussion will help direct the municipalities' efforts and focus on activities that will result in reducing nitrogen pollution.

- Replace 20 septic systems with innovative/alternative on-site wastewater treatment systems per year
- Expand the sewer system to connect 50 additional parcels
- Hold 3 free communitywide fertilizer workshops each year for five years

There are three main categories of strategies that can be employed for each of the identified goals.

- ***Education/Outreach*** - Communicating with and educating the community is an important activity for each source of nitrogen. Creating an education strategy for each source is a way to ensure best management practices are followed. Education is a critical part of reducing nitrogen and could be considered an ongoing activity.
- ***Projects*** - These include individual activities that have a start and end. This can come in the form of a specific wastewater or stormwater construction activity or a feasibility study. The goal of each distinct project is to reduce or eliminate nitrogen pollution.

- *Regulation* - In some cases, a change in the policies or regulations of the municipality might be the best course of action to reduce or eliminate nitrogen. This type of strategy requires internal discussions before moving forward and are not usually a quick fix but is a way to make large-scale changes that can benefit a wide area.

## Action 4.1 Activity List

Based on priority sources of nitrogen, goals and strategies established, the municipality should review the [NSC Activity List](#) which is categorized by nitrogen source. When considering and selecting activities, the municipality should consider existing subwatershed conditions and wastewater management plans and modeling. A municipality could coordinate with Nassau County, Suffolk County, Cornell Cooperative Extensions, and Soil and Water Conservation Districts, as the groups can possibly provide technical expertise and assistance in planning and executing activities. Municipalities should be aware that the Activity List is intended as a guide and does not replace detailed analysis and engineering for a specific nitrogen reduction project.

Complete the Step 4 Worksheet as it relates to Action 4.1.

## Action 4.2 Resources and Other Considerations

Each activity has resources and other considerations to be discussed within the municipality prior to implementation. Review each activity and determine the resources and other considerations that will need to be made available to successfully implement the activity.

### *Resources:*

- Financial – Personnel costs (salaries, consultants), training, permit fees, cost of activity implementation.
- Staff availability – Who will assume responsibility of the implementation activity, will it require training, additional hours, or salary.
- Physical resources – Equipment, materials, supplies, facilities, and infrastructure that will need to be utilized for activity implementation.

### *Other Considerations:*

- Potential grant opportunity – Explore grants to help fund implementation activities. This could also include certain planning and assessment projects. Consideration should be given to who will be responsible for completing and submitting grant applications and managing the contract for grant funds.
- Schedule – Determine the start and end dates for individual tasks within the activity timeline to make sure the entire project advances at an appropriate speed. Consideration should be given to projects that overlap and how that might affect timing.
- Legal – Contract writing, permits, zoning, codes, and regulations.
- Contracting - Procurement contracts that may be necessary for outsourcing the delivery of products or services required to implement the activity.
- Permitting – Determine permits, licenses or registrations that are required to implement the activity.

- Policy – Any policies and procedure changes that would need to be made within the municipality to implement the activity.

Complete the Step 4 Worksheet, Action 4.2, detailing the resources and other considerations for each activity.

### Action 4.3 Plan and Schedule Activities

Organizing the municipality's activities and creating a schedule will provide an overview of how implementation will occur. For each activity planned, the municipality will need to include:

1. Name of the activity
2. Description of the activity
3. Source(s) of nitrogen addressed
4. Outcomes expected (whether that be qualitative or quantitative)
5. Resources needed
6. Target start date
7. Target end date

Because some activities may take longer than others, it is recommended that several activities are underway at the same time. A municipality's successful implementation of a few activities early on can encourage the community to support the larger and more difficult activities. Plan additional activities each year, building on the successes of the previous activities.

If grant funding is a consideration, the municipality will need to factor in the application period and time required to prepare grant paperwork and contract documents into the schedule.

Complete the Step 4 Worksheet as it relates to Action 4.3, detailing the planning and scheduling of each activity, including partnerships. Use the [Sample Plan and Schedule](#) as a reference.

## Step 5

The previous steps provided the foundation for creating the municipality's plan for nitrogen reduction in the waters of Long Island. The completed steps identified the unique sources of nitrogen within the municipality, which steered the development of community-specific goals, strategies, and activities.

The NSC Activity List designates a point reward for each activity to be earned by the municipality upon completion.

### Action 5.1 Plan Execution

Municipalities are encouraged to implement as many activities across priority sources of nitrogen as possible, as well as carry out activities in more than one category of strategy - Education/Outreach, Projects, and Regulation. If an activity is implemented more than once (i.e., a monthly educational workshop focusing on the same topic) it earns points only one time. Activities implemented up to five years prior to adoption of the NSC pledge are also eligible for points.

In addition to municipality-lead activities, partnership activities/programs with other municipalities or groups within the municipality are encouraged and can lead to a sharing of resources. A municipality

must demonstrate substantial involvement in the activity to earn points (participation on a board, a letter of support, staff resources, etc.).

Complete an Activity Certification Form for each individual activity as it is completed which will self-certify the activities and points rewarded for the municipality.

*Completing Steps 1 – 5 and earning at least 5 activity points qualifies a municipality for Gold Status Certification. This certification validates that a municipality has prepared a strategic plan based on analysis of its unique sources and has completed significant reduction activities.*

## Action 5.2 Recertification

To retain Gold Certification Status, municipalities will need to recertify bi-annually by providing an updated Step 4, Action 4.4 Plan and Schedule, which will include dates of projects completed, new activities that have been planned, and updated information for ongoing activities. Recertification confirms that the municipality is demonstrating an ongoing commitment to the NSC program.

Submit the updated Plan and Schedule (Action 4.3 Worksheet), bi-annually by the date the municipality originally reached Gold Status Certification.