

Cape Cod Septic and Sewer Financial Planning Tool: Introduction

About the Tool:

The Septic and Sewer Financial Planning Tool provides stakeholders with financial insights to guide preliminary decisions and scenario analyses to improve water quality infrastructure in Cape Cod. This tool aggregates critical financial data previously unavailable, enabling town, state, and federal stakeholders to make informed budget and financing decisions for projects which meet nitrogen reduction goals for both short-term and 20-year project timelines. The intent of this tool is to help users analyze financial and nitrogen reduction impacts of different combinations of sewer and septic improvement projects.

The model incorporates stakeholder insights gathered during the diligence process — including homeowners, towns, states, and the federal government — to inform potential funding approaches. However, it is not designed to provide specific funding solutions or identify definitive financing mechanisms. Weighted averages around homeowner willingness to pay/ability to pay were analyzed based on housing inventory. Homeowner interest rate or other variables may need to be revised.

When to use this guide: This guide will help you understand how to navigate the tool and use each of the tool's six worksheets, learn how to correctly enter and update data, and how to understand, interpret, and use the tool's outputs to guide budgeting, planning, and policy decisions. A more in-depth user guide will be available.

Who should use this tool: Planners, financial analysts, municipal leaders, and other stakeholders overseeing environmental infrastructure and budgets.

Why use this tool? Streamlines the evaluation of costs, project scheduling, and nitrogen reduction targets, integrating demographic and financial assumptions for holistic planning.

Who created this model? This model was created by John Stinehour at Sustainable Finance Partners, LLC under a contract with The Nature Conservancy in Massachusetts. It was tested and reviewed by many partners, including members of the NEWEA Innovative/Alternative Onsite Wastewater Treatment Systems Task Force and staff of the Massachusetts Alternative Septic System Test Center.

How do I access the model? Contact David Iorio Izzo at the Massachusetts Alternative Septic System Test Center to access the model and more in-depth training resources at david.iorioizzo@capecod.gov.

What's in this introduction:

- Overview of [Workbook Tabs](#) – simplified overview of the tool components
- [Workflow Guide](#) – basic steps to operate the tool

Working Tabs

1. **Summary Output:** Aggregates data from all inputs to show cost estimates, nitrogen reduction progress, and overall budget impacts. (See snippet in figure 2.)
2. **Assumptions:** Acts as the “control center” for all financial, project, and scheduling parameters. Changes here flow through the entire workbook.
3. **Town Demogr.:** Stores town-level housing and demographic data that inform cost and load calculations.
4. **Town Cost Calc.:** Calculates the total cost of projects, balancing sewer versus septic allocations for each municipality. (See snippet in figure 1.)
5. **#Projects Cost Calc:** Enables custom phasing over a 20-year timeline, tracking year-by-year costs and nitrogen reductions.

6. **WWTP Worksheet:** Outlines capital and operating expenditures for Wastewater Treatment Plants (WWTP), if included in the plan.

Step 1 -->Town Code	18	CAPE COD	----->
Step 2 -->% Homes to be Sewered	50.0%	Homes to be EIA Septic	50.0%
Step 3 -->Enter %Town Remediated	77.0%		
Step 4 -->Review WWTP Investment Y/N	Y	#####	
Model Projection			
Total Project Costs w/Inflation +WWTP	#####		
Total Projected Costs w/Financing +Inflation +WWTP	#####		
Total Nitrogen Removal Target kg/yr, modeled	914,068	918,387 kg/yr	
Total Sewer N Removal	507,169	49,609 #Homes Sewer	
Total EIA N Removal, homes	411,218	#####	
Sewer Cost/KG	\$28,256		
EIA Septic Cost/KG	\$20,382		

Figure 1: Sample values from the “**Town Cost Calc**” tab. All numbers shown here are for illustrative purposes only.

Workflow Guide

This workflow summary gives you a simple starting point for using the tool – Users will be provided a full guide and can use the hover comments¹ throughout the document for additional guidance.

- Gather key data to tailor the model to your purposes, including:
 - System costs, financing interest, and inflation data
 - Number of single-family homes and existing sewer homes
 - If your project requires a new or upgraded wastewater treatment plant (WWTP), add plant-specific capital and operating expenses.
- Adjust cost and nitrogen reduction calculations to meet cost and nitrogen reduction goals.
 - Select a town code to automatically pull housing data or enter your own.
 - Iteratively adjust the number of homes to be connected to sewer, the number that must be upgraded to meet nitrogen reduction goals, and the resulting ratio of sewer expansions to septic upgrades to understand how each decision impacts nitrogen reduction and total cost.
 - The model cells will turn green when you’ve met your nitrogen reduction goals.
- Use the same process to explore the impacts of different project phasing approaches using #Projects Cost Calc to design multi-year project schedules and budgets.
- Review Final Outputs in Summary Output Tab to confirm that the scenario you’ve built aligns with financial constraints and environmental targets.

Figure 2: Sample values from the “**Summary Output Tab**. All numbers shown here are for illustrative purposes only.

Town Selected	CAPE COD
Nitrogen Load Removal Target kg/yr	914,068
Nitrogen Removed based on Input	918,387
%Sewer Projects	50%
#Homes Added to Sewer	49,609
Sewer Cost/Total Cost	62.9%
%EIA Septic Projects	50%
#Homes EIA Septic	49,609
EIA Cost/Total Cost	37.1%
Total Projected Cost (+INFL+INT)	#####
Total Project Costs (+INFL)	#####
Discounted to PV (@ cost of debt)	#####
Summary Output	Assumptions Tab
Town Demogr.	Town Co

¹ These comments are indicated with red triangles in the upper righthand corner of the cell. You can see them by hovering your mouse over them or by right clicking the cell and selecting “show note.”