

**Analysis of the Comprehensive Wastewater Management Plan Funding Model**  
**by the**  
**Barnstable Comprehensive Financial Advisory Committee**  
**December 9, 2024**

**Background**

Over the next number of years, the Town of Barnstable will be responsible for paying the costs of implementing its Comprehensive Wastewater Management Plan (CWMP). Much of this consists of installing a sewer system throughout the Town to collect and treat waste. The sewer system would largely replace existing methods of waste disposal, including septic systems. The total cost of this project for the next five years (FY25 through FY29) is close to half a billion dollars – \$431.9 million in FY2025 (uninflated) dollars.

The challenge for the Town will be paying debt service on this large expenditure. To assess the feasibility of meeting those debt service obligations, the Town’s Finance Division, led by Director Mark Milne, developed a financial model to predict available resources over the next 35 years compared to projected financial commitments. The model contains a series of variables (such as inflation rates and tax revenue growth rates) that would have a direct impact on both available resources and commitments over this period of time.

The Town Council in turn requested that the Barnstable Comprehensive Financial Advisory Committee (CFAC) conduct an independent review of the Finance Division’s Funding Model as follows:

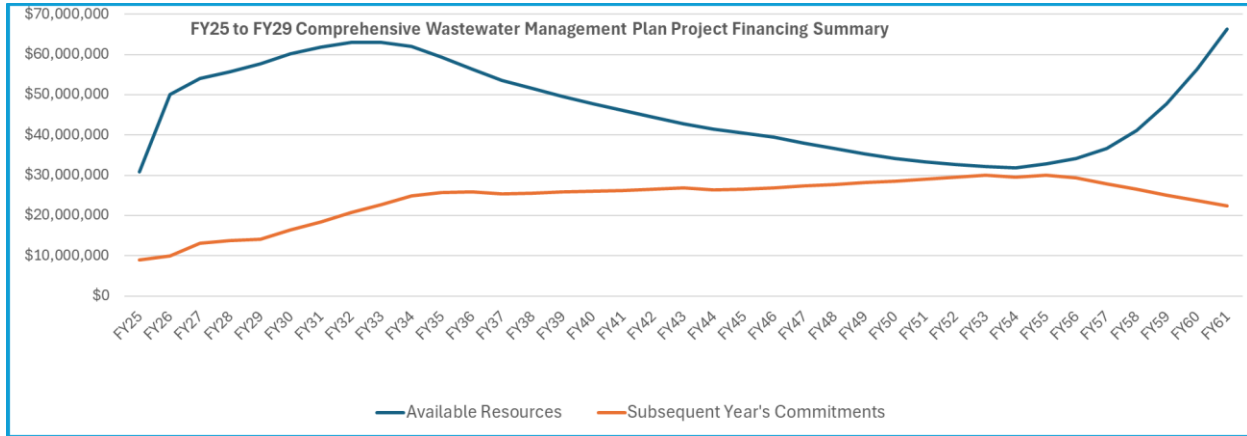
- to determine whether it was logically sound,
- to assess whether the Finance Division’s “Base Case” version of the Funding Model is realistic (the Base Case is further explained on page 4 of this report),
- to test alternatives to the Base Case, and
- to make any other observations about the CWMP Funding Model.

It is important to note that the Funding Model only evaluates the Town’s ability to pay debt service on the \$431.9 million in CWMP projects that are currently identified in the FY25 to FY29 capital plan. If there were to be further CWMP expenditures in FY30 and beyond, the Model would need to be adjusted to incorporate those new expenditures.

## **Funding Model**

The CWMP Funding Model is built in Excel. A series of 13 worksheets feed into another worksheet titled “Dashboard.” The Dashboard allows a user to modify one or more key variables. Based upon changes to those variables, available resources and financial commitments will increase or decrease.

In addition, the dashboard contains a chart that graphically displays projected available annual resources and annual commitments from FY2025 through FY2061, as can be seen below.



Put simply, if available resources (the blue line) are greater than the subsequent year’s commitments (the red line), then the Town is able to fund its obligations without having to find further resources to cover any gaps. On the other hand, if the red line at any point is above the blue line, there is a funding shortfall that the Town will somehow have to make up.

## Logical Soundness

We tested the model itself for internal accuracy by:

- Evaluating it for completeness (to determine whether it reasonably tracks important factors that could affect resources and commitments),
- Inspecting formulas (to see that they were correctly linking to cells), and
- Making changes to variables to see if the changes we saw in resources, commitments, and cashflows were reasonable given the alterations we had made.

In our judgment, the Funding Model is well-built and operates correctly.

As noted, the “Dashboard” page of the Funding Model contains a table of 18 variables that can be modified by a user. As can be seen below, in some cases an increase in a variable (say, for example, an increase in the rate of inflation) will increase the risk that the Town will need to provide additional funding. In other cases, an increase in a variable (for example, the percentage increase in the Meals Tax) will decrease that risk. (Note that, conversely, a decrease in all of those variables would have the opposite effect.)

Assumptions		Impact of an Increase
Investment Rate of Return	2.50%	Decreases Risk
Percentage Increase on Traditional Lodging Tax	1.25%	Decreases Risk
Percentage Increase on Meals Tax	4.50%	Decreases Risk
Percentage Increase on Vacation Rental Tax	3.50%	Decreases Risk
Annual Increase in General Fund Contribution - Beyond FY27	\$0	Decreases Risk
Year General Fund Contribution Increase Ends	FY32	Decreases Risk
Annual Salary Increase	5.00%	Increases Risk
Annual Health Insurance Increase	7.50%	Increases Risk
Annual Retirement Increase	5.30%	Increases Risk
Annual Increase in Operating Expenses	2.00%	Increases Risk
General Obligation Bond Rate	3.70%	Increases Risk
Mass Clean Water Trust Borrowing Rate	1.70%	Increases Risk
Annual Design & Construction Cost Inflation	5.00%	Increases Risk
Annual Sewer Utility Rate Increase	5.00%	Decreases Risk
% of new User Charge Revenue Allocated to CWMP	50.00%	Decreases Risk
Average No. of Years for Sewer Assess. Amortization	15	Increases Risk
Cape Cod & Islands Water Protection Fund Subsidy	25.00%	Decreases Risk
New England Wind 1 Contribution	\$16,000,000	Decreases Risk

In many cases, a change in some variables would have only a small effect on risk. In a few cases, however, a change in a variable can have a major impact, such as the contribution from New England Wind 1 or the Cape Cod & Islands Water Protection Fund Subsidy.

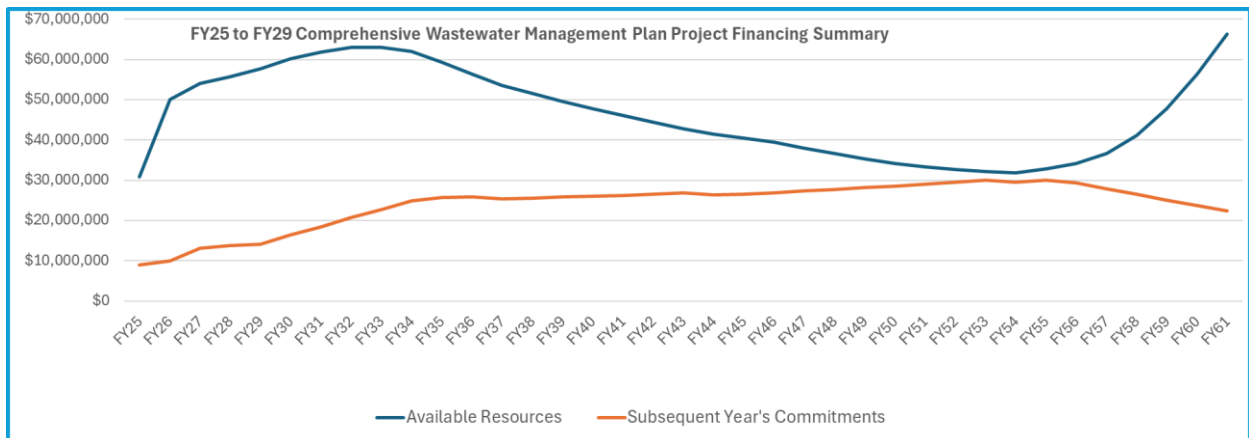
**Base Case**

The Finance Department developed its own Base Case version of the model which reflected its best estimate of these key variables. Those variables are as follows:

<b>Assumptions</b>	
Investment Rate of Return	2.50%
Percentage Increase on Traditional Lodging Tax	1.25%
Percentage Increase on Meals Tax	4.50%
Percentage Increase on Vacation Rental Tax	3.50%
Annual Increase in General Fund Contribution - Beyond FY27	\$0
Year General Fund Contribution Increase Ends	FY32
Annual Salary Increase	5.00%
Annual Health Insurance Increase	7.50%
Annual Retirement Increase	5.30%
Annual Increase in Operating Expenses	2.00%
General Obligation Bond Rate	3.70%
Mass Clean Water Trust Borrowing Rate	1.70%
Annual Design & Construction Cost Inflation	5.00%
Annual Sewer Utility Rate Increase	5.00%
% of new Sewer Utility Revenue Allocated to CWMP	50.00%
Average No. of Years for Sewer Assessment Amortization	15
Cape Cod & Islands Water Protection Fund Subsidy	25.00%
New England Wind 1 (Park City Wind) Contribution	\$16,000,000

The Base Case also assumes that the General Fund makes an annual contribution of \$5.75 million to the CWMP, which means that the total General Fund contribution through FY2061 is \$270.25 million.

As can be seen from the chart below, the Base Case variables result in a scenario where at all times available resources are greater than commitments. This is readily the case for the next 20 years. However, in Year FY2051 through FY2056, the two lines come quite close to each other, suggesting that adverse changes in some variables might put the Town at peril for having to make additional contributions from the General Fund to meet its obligations.



## Alternative Scenarios

There are a myriad of alternative scenarios to the Base Case. One could vary any or all of the 18 variables in the Funding Model to see their future impact. At the request of CFAC, the Finance Division developed four alternative scenarios to test certain variables that could have a major impact on resources and commitments. Those four scenarios are as follows:

- *Alternative Scenario #1: New England Wind is zero.* In this scenario, the model assumes that the \$16 million contribution from New England Wind 1 (Park City Wind) project is zeroed out (perhaps under a circumstance where the project is cancelled outright). **Impact: Negative. The Town needs to contribute from the General Fund an additional \$36.75 million over the Base Case Scenario.**
- *Alternative Scenario #2: Economy is in a recession.* In this case, New England Wind's contribution remains at \$16 million but the economy slips into a recession. The investment rate of return declines and lodging, meals, and vacation rental tax increases are zero. There are a few pluses that a recession brings, however: the General Obligation bond rate declines (from the Base Case of 3.7% to an estimated 3.0% and Construction Cost Inflation would likely decline (this scenario assumes a decline from 5.0% annually to 2.0% annually). **Impact: Negative. The Town needs to contribute from the General Fund an additional \$53.25 million over the Base Case Scenario.**
- *Alternative Scenario #3: New England Wind is zero and the economy is in a recession.* This scenario is a combination of Scenarios #1 and #2: New England Wind's contribution goes to zero and the economy is in a recession. **Impact: Negative. The Town needs to contribute from the General Fund an additional \$83.75 million over the Base Case Scenario.**
- *Alternative Scenario #4: The Mass Clean Water Trust Borrowing Rate drops to near zero.* This scenario is an optimistic one. It uses all of the Base Case variables but also drops the Mass Clean Water Trust Borrowing Rate from 3.70% to 0.3%. This is a realistic possibility. If the Town were to adopt a so-called "flow neutral land use," it would qualify for 0% loans through the trust with a 20-year amortization. In practice, the actual interest rate would be slightly greater than zero, at 0.3%. (A "flow neutral land use" policy basically means Town would manage development and land use in ways that would offset any new wastewater from a new projects.) **Impact: Positive. The Town needs to contribute \$111.00 million less from the General Fund than it does in the Base Case Scenario.**

The table on the next page provides a quick summary of the Base Case and the four Alternative Scenarios. (The yellow highlights show changes in any variables from the Base Case.)

CWMP Funding Model: Alternative Scenarios					
CWMP Funding Model: Base Case and Alternative Scenarios	Base Case	Scenario 1: NE Wind Zero	Scenario 2: Recession	Scenario 3: NE Wind Zero & Recession	Scenario 4: Near Zero Interest Rate
<b>Key Variables</b>					
Investment Rate of Return	2.50%	2.50%	1.00%	1.00%	2.50%
Percentage Increase on Traditional Lodging Tax	1.25%	1.25%	0.00%	0.00%	1.25%
Percentage Increase on Meals Tax	4.50%	4.50%	0.00%	0.00%	4.50%
Percentage Increase on Vacation Rental Tax	3.50%	3.50%	0.00%	0.00%	3.50%
Annual Salary Increase	5.00%	5.00%	5.00%	5.00%	5.00%
Annual Health Insurance Increase	7.50%	7.50%	7.50%	7.50%	7.50%
Annual Retirement Increase	5.30%	5.30%	5.30%	5.30%	5.30%
Annual Increase in Operating Expenses	2.00%	2.00%	2.00%	2.00%	2.00%
General Obligation Bond Rate	3.70%	3.70%	3.00%	3.00%	3.70%
Mass Clean Water Trust Borrowing Rate	1.70%	1.70%	1.70%	1.70%	0.30%
Annual Design & Construction Cost Inflation	5.00%	5.00%	2.00%	2.00%	5.00%
Annual Sewer Utility Rate Increase	5.00%	5.00%	5.00%	5.00%	5.00%
% of new Sewer Utility Revenue Allocated to CWMP	50.00%	50.00%	50.00%	50.00%	50.00%
Average No. of Years for Sewer Assessment Amortization	15	15	15	15	15
Cape Cod & Islands Water Protection Fund Subsidy	25.00%	25.00%	25.00%	25.00%	25.00%
New England Wind 1 (Park City Wind) Contribution	\$16,000,000	\$0	\$16,000,000	\$0	\$16,000,000
<b>General Fund</b>					
Annual Increase in General Fund Contribution - Beyond FY27	\$0	\$150,000	\$250,000	\$250,000	-\$1,000,000
Year General Fund Contribution Increase Ends	FY32	FY35	FY34	FY38	FY31
<b>Total General Fund Contribution Required</b>	<b>\$233,500,000</b>	<b>\$ 270,250,000</b>	<b>\$ 286,750,000</b>	<b>\$ 317,250,000</b>	<b>\$122,500,000</b>
<b>Change from Base Case</b>	<b>NA</b>	<b>\$36,750,000</b>	<b>\$53,250,000</b>	<b>\$83,750,000</b>	<b>(\$111,000,000)</b>

The first three Alternative Scenarios require the Town to contribute more from the General Fund. This is hardly desirable; any contributions must necessarily mean concomitant cuts in other areas. On the other hand, the Fourth Alternative Scenario *reduces* the Town's required by \$111 million over the Base Case, thereby freeing up funds for other uses.

*Other Scenarios.* We also tested other scenarios, adjusting variables up and down to see their impact. It is clear, however, that the combination of a recession and a zero contribution from New England Wind would – with one exception – be the most significant adverse scenario.

The exception is some catastrophic event which might undermine the economy of the entire Cape, such as a major storm that wiped out tourism and destroyed property on a truly epic scale. In circumstances such as these, one would hope that federal disaster relief funds would become available to potentially make up any shortfalls.

## **Further Observations**

- The CWMP Funding Model is a powerful strategic-planning tool that provides policymakers and government officials with the ability to project resources and financial commitments several years out. In the event it looks as if available resources will not be sufficient to meet commitments, it then gives them time to adjust revenues and expenses to ensure future needs are met.
- The Base Case version of the Funding Model uses what seem to CFAC to be realistic variables. Having said that, however, we caution that – since the future is never fully known – no model is perfect. Moreover, the further one’s time horizon, the reliability of variables made today become less certain. For those reasons, financial models such as this need to be constantly scrutinized and updated to reflect real-world changes. It is the Finance Department’s intent to adjust the Funding Model annually. Revisions for FY2026, for example, are scheduled to begin in April of 2025. CFAC hopes to be regularly involved in this process.
- It is important to note that this Model only evaluates funding of projects that are currently identified in the FY2025 to FY2029 capital plan. Any new project expenses would require adjusting the model.
- One possible significant additional source of new revenues would be funding from the Municipal Empowerment Act (MEA). This year’s state budget did not include any such funding but that may change in future years.

## **Conclusion**

CFAC believes that the CWMP Funding Model is a powerful method for tracking future available resources and spending commitments. At present, we believe that the Base Model – which shows that resources will be sufficient to meet commitments through FY2061 – is based upon realistic and reasonable variables.

CFAC welcomes the opportunity to play a key role in the ongoing review and adjustment of the CWMP Funding Model to ensure its accuracy as conditions evolve. Regular updates to variables and analyses should be conducted annually and during significant economic or legislative changes. This proactive approach will maintain the model's relevance and strengthen its value as a financial planning tool.