

How to Calculate Water and Sewer Charges

All water and sewer accounts in the town of Marblehead are billed quarterly. This means that each account will be invoiced 4 times; once every 3 months. The following document will walk through 3 different scenarios with step-by-step instructions on calculating the bill.

Administrative Charges for FY25 (July 1, 2024– June 30, 2025).

Water

Administrative Charge - \$40.00

Usage 1 – Usage under 3,000 cubic feet..... \$7.10 per 100 Cubic Feet

Usage 2 – Usage over 3,000 cubic feet..... \$11.50 per 100 Cubic Feet

Sewer

Administrative Charge - \$37.50

Usage 1 – Usage under 3,000 cubic feet..... \$12.00 per 100 Cubic Feet

Usage 2 – Usage over 3,000 cubic feet.....\$12.25 per 100 Cubic Feet

Step 1: Calculate the water / sewer usage since the last billing cycle.

In order to calculate the water / sewer usage since the previous billing cycle, the difference between the current read and last invoiced read (previous) must be used. The previous read can be found on the last bill for the property. If you do not have the last invoice the Water and Sewer Office can provide you with the previous read information. The current read can be found by physically reading the main meter in the home. Water and sewer usage is accounted for by the main meter and should be equal.

Step 2: Determine the charge according to the water rate.

To determine the charge that is owed, multiply the water usage found in step one by the current water rates. If the usage is over 3,000 cubic feet, the first 3,000 will be charged at the lower rate, while the remaining usage will be charged at the higher rate.

The formula below may help in determining the usage that will be charged to the higher rate.

$$A = \text{Total Usage} - 3,000$$

With A representing the usage to be charged to the higher rate.

Step 3: Determine the charge according to the sewer rate.

Similar to calculating the water usage charge, the sewer usage charge is found by multiplying the same usage from step 1 by the current sewer rate. Like water, if the usage is over 3,000 feet, the first 3,000 will be charged at the lower rate, while the remaining usage will be charged at the higher rate.

Sewer Deduct Meters

Properties that have a sewer deduct meter (listed as meter 2 on invoice), the current usage being read by the sewer deduct meter will be subtracted from the main sewer meter current usage. To calculate the credit provided by the sewer deduct meter, follow steps 1 and 3 listed above; instead utilizing readings from the sewer deduct meter. Once the charge is calculated, this will be deducted from the total bill. Scenario 3 outlines this below.

We have provided the following calculations for various scenarios to assist you:

Scenario 1: Water usage that is under 3,000 cubic feet.

Step 1: Calculating Water and Sewer Usage

Current Main Meter Reading = 200700 cubic feet

Last Billed Main Meter Reading = 200000 cubic feet

$$\begin{array}{r} 200700 \text{ cubic feet} \\ - 200000 \text{ cubic feet} \\ \hline = \quad \mathbf{700 \text{ cubic feet}} \end{array} \quad \leftarrow \text{Water that was used since the last billing cycle}$$

Since we charge per 100 cubic feet, we must divide the usage calculated in step 1 by 100. We will use this result to calculate both water and sewer charges.

$$700 \text{ cubic feet} \div 100 \text{ cubic feet} = 7$$

Step 2: Calculating the charge for water

Since the usage is under 3,000 cubic feet, we will only be using the low usage rate for water.

Usage 1 – Usage under 3,000 cubic feet..... \$7.10 per 100 Cubic Feet

$$\$7.10 \times 7 = \mathbf{\$49.70}$$

The \$49.70 represents the total owed to the Water and Sewer Commission for water use.

Step 3: Calculating the charge for sewer

Since the usage is under 3,000 cubic feet, we will only be using the low usage rate for sewer.

Usage 1 – Usage under 3,000 cubic feet..... \$12.00 per 100 Cubic Feet

$$\$12.00 \times 7 = \mathbf{\$84.00}$$

The \$84.00 represents the total owed to the Water and Sewer Commission for sewer use.

There is also an administrative fee placed on the Quarterly Invoice.

Total Amount Owed for Mid Cycle Water and Sewer Usage

| | |
|-----------------------------|-----------------|
| Water | \$ 49.70 |
| Sewer | \$ 84.00 |
| Water Administrative Charge | \$ 40.00 |
| Sewer Administrative Charge | \$ 37.50 |
| Total | \$133.70 |

Scenario 2: Water/ Sewer usage that is over 3,000 cubic feet

Step 1: Calculating Water / Sewer Usage

Current Meter Reading = 203100 cubic feet

Last Billed Reading = 200000 cubic feet

$$\begin{array}{r} 203100 \text{ cubic feet} \\ -200000 \text{ cubic feet} \\ \hline = \text{3100 cubic feet} \end{array} \quad \leftarrow \text{Water that was used since the last billing cycle}$$

Since we charge per 100 cubic feet, we must divide the usage to each rate calculated in step 1 by 100. We will use this result to calculate the balance owed.

$3,000 \text{ cubic feet} \div 100 \text{ cubic feet} = 30$ charged to the low rate

$100 \text{ cubic feet} \div 100 \text{ cubic feet} = 1$ charged to the high rate

Step 2: Calculating the charge for water

Since the usage is over 3,000 cubic feet, we will only be using both the low and high usage rate for water.

Usage 1 – Usage under 3,000 cubic feet..... \$7.10 per 100 Cubic Feet

Usage 2 – Usage over 3,000 cubic feet..... \$11.50 per 100 Cubic Feet

The first 3,000 cubic feet of usage will be charged to the lower rate, while the remaining amount will be charged to the higher rate.

$\$7.10 \times 30 = \213.00 \leftarrow At the lower rate

$\$11.50 \times 1 = \11.50 \leftarrow At the higher rate

Total = \$224.50

The total of \$224.50 represents the total charge for water use.

Step 3: Calculating the charge for sewer

Since the usage is under 3,000 cubic feet, we will only be using the low usage rate for sewer.

Usage 1 – Usage under 3,000 cubic feet..... \$12.00 per 100 Cubic Feet

Usage 2 – Usage over 3,000 cubic feet..... \$12.25 per 100 Cubic Feet

$\$12.00 \times 30 = \360.00

$\$12.25 \times 1 = \12.25

Total = \$372.25

The total of \$372.25 represents the total charge for sewer use.

Total Amount Owed for Mid Cycle Water and Sewer Usage

| | |
|-----------------------------|-----------------|
| Water | \$224.50 |
| Sewer | \$372.25 |
| Water Administrative Charge | \$ 40.00 |
| Sewer Administrative Charge | \$ 37.50 |
| Total | \$674.25 |

Scenario 3: Accounts that have a Sewer Deduct Meter (Meter 2 on Invoice)

Accounts with an active sewer deduct meter do not pay sewer charges on water that passes through the second meter and does not enter the sewer. This will reduce the sewer charges because this water does not enter the sanitary sewer system. A sewer deduct meter does not affect the water charges, which are payable in full.

The values calculated in scenario 1 will be used in this example.

Water

$$\$7.10 \times 7 = \$49.70$$

Sewer

$$\$12.00 \times 7 = \$84.00$$

Step 1: Sewer Deduct Reading Calculations

Current Deduct (Meter 2) Reading = 10200 cubic feet

Last Billed Deduct Meter (Meter 2) = 10000 cubic feet

$$\begin{array}{r} 10200 \text{ cubic feet} \\ - 10000 \text{ cubic feet} \\ \hline = \text{200 cubic feet} \end{array}$$

Water that passed through the sewer deduct meter since the last billing cycle

Since we charge per 100 cubic feet, we must divide the usage calculated by 100. We will use this result to calculate the balance to be deducted.

$$200 \text{ cubic feet} \div 100 \text{ cubic feet} = 2$$

Step 2: Calculating Sewer Deduct Credit

Since the usage is under 3,000 cubic feet, we will only be using the low usage rate for sewer.

Usage 1 – Usage under 3,000 cubic feet..... \$12.00 per 100 Cubic Feet

$$\$12.00 \times 2 = \$24.00$$

The \$24.00 represents the total credit from the sewer deduct meter. This will be deducted from the bill.

Total Amount Owed for Mid Cycle Water and Sewer Usage

| | |
|-----------------------------|-----------------|
| Water | \$ 49.70 |
| Sewer | \$ 84.00 |
| Sewer Deduct Amount | (\$24.00) |
| Water Administrative Charge | \$ 40.00 |
| Sewer Administrative Charge | \$ 37.50 |
| Total | \$235.20 |