

## **Cairo Water District Rate Study**



Compiled for the Town of Cairo

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## EXECUTIVE SUMMARY

The Town of Cairo, New York, owns and operates a water district that serves approximately 1,400 individuals. Fees vary based on water service line sizes, with a flow rate ranging from \$7.778 to \$5.73 per 1,000 gallons. The Town would like to pursue needed capital projects, but rates are currently too low to afford the projects outright or to qualify for funding for those projects. The Town would like rates to meet these requirements while minimizing the burden on residents. A review of actual expenditures and customer water use data is analyzed within this report and five possible rate scenarios are proposed for consideration. Recommendations include a rate increase, the removal of descending graduated rates to encourage conservation from high demand users, a reduction in included usage to help disadvantaged community members save on their bills, and an increase in labor for the distribution system.

## **1. BACKGROUND AND PURPOSE**

The Town of Cairo is located in the heart of Greene County, New York, on the south side of Catskill Creek, about 2.5 miles north of Cairo Round Top. The Town operates both a drinking water district and a sanitary sewer district. The Cairo Water District has historical roots all the way back to 1890. In its current form, the district primarily serves the Hamlet of Cairo, centering on its downtown strip, a bustling blend of homes, government halls, restaurants, retail, and religious buildings. The district also serves a series of beautiful parks. In recent years the Town has pursued efforts to strengthen and revitalize this downtown area.

The Cairo Water District serves approximately 1,400 people, totaling 330 billed accounts. Accounts are charged a base fee quarterly, and the amount is based on the diameter of the water meter. They are also charged a flow rate based on usage above a certain number of included gallons, both of which also vary based on meter diameter. The water district currently pays \$107,334 per year in debt service on seven loans. However, that amount is scheduled to decrease every year and drop substantially in 2031 and 2034 when most of those loans close out.

While revenues are sufficient for operation of the water plant, they are not enough to staff the distribution system properly for maintenance, and they do not cover necessary capital projects. Additionally, rates are currently too low to qualify for most funding programs.

## **2. TECHNICAL DESCRIPTION OF THE WATER SYSTEM**

The water treatment system centers on two wells positioned along Shingle Kill in the Angelo Canna Town Park. The original treatment plant is over 30 years old. A new well and treatment plant were constructed in 2021. This well was intended to bring the Town into compliance with the Department of Health by providing a backup water source. However, the new well is not currently functioning. To circumvent the aging treatment plant on the old well, water is pumped from the old well into the new well, and its treatment plant is then used to treat the water before it is distributed to the system.

The water distribution system contains 7 miles of mains. While most of the mains have been replaced in recent years, the mains under Jerome Ave are about 125 years old. The lifespan of most water mains is between 50 and 100 years, making the replacement of the Jerome Ave mains a high priority. This is particularly significant since the sewer treatment plant is on the Jerome Ave line. Sewer plants often require a significant amount of water to operate.

Customer usage data is taken from water meter readings. The Village has recently pursued replacing its water meter registers. A few customers have persistently avoided changing their meter registers, creating difficulties in obtaining accurate usage data.

### 3. FINANCIAL SUMMARY

#### Overview

Water system customers are billed based on usage numbers derived from water meter usage. All customers pay a quarterly base fee which scales based on the size of the water meter. Customers receive a certain amount of included quarterly usage depending on the size of the water meter. Table 1 below illustrates the different line sizes and their associated base fees and numbers of included gallons. Customers pay a variable flow rate per 1,000 gallons above their included usage, depending on the size of the water meter and the amount of usage that quarter. All accounts are billed on the same quarterly schedule.

Rates were last raised in 2021 by approximately 13%. The last time rates were raised prior to that was 2009. Over that time, inflation of 24% took place. Therefore, rates have technically still fallen from 2009 to the present.

Line size (in inches)	Current Base Fee	Current Included Gallons	Current Flow Rate
3/4	\$70.00	9,000	\$6.48 - \$5.73
1	\$147.76	20,000	\$6.48 - \$5.73
1 1/2	\$257.65	39,000	\$5.73
2	\$395.14	63,000	\$5.73
3	\$721.77	120,000	\$5.73

*Table 1. Current Cairo Water District billing structure.*

While the current billing structure allows for somewhat predictable revenue flow, it does not yield enough revenue to sustain the actual costs of staffing, operation, and maintenance of the water system or to prepare for future capital projects. A review of the water system's financial records for the years 2019 through 2024 was completed for this report.

#### End of Year Revenues and Expenses

A comparison of budgeted vs actual expenditures and revenues was made for the most recent complete budget years (2019 - 2024). The numbers vary significantly across budgets, in part because there were multiple bookkeepers with differing methods over the course of those years. Table 2 shows revenues and expenses for the years 2020 through 2023.

	<b>Actual 2020</b>	<b>Actual 2021</b>	<b>Actual 2022</b>	<b>Actual 2023</b>
<b>Total Revenue</b>	\$180,504	\$205,730	\$239,662	\$194,117
<b>Total Operating Expenses</b>	\$121,712	\$177,938	\$117,210	\$256,191
<b>NET Income (LOSS)</b>	<b>\$58,792</b>	<b>\$27,792</b>	<b>\$122,452</b>	<b>(\$62,074)</b>

*Table 2. Water system net income 2020-2023.*

Initially, the trend appears largely sustainable. While there are substantial variances in costs year-to-year, the general outcome is a small surplus, with the average over four years being \$36,740 per year. However, as work on this report continued, the budget numbers for 2024 were completed. They also show a budget shortfall. This time of about \$57,000. Since there has been inconsistency at the bookkeeper position over previous years, those previous budget numbers are unreliable. Therefore, projections must be made based on budget years 2023 and 2024, which averaged a shortfall of about \$59,000 each year.

	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
<b>Total Revenue</b>	\$180,504	\$205,730	\$239,662	\$194,117	\$199,116
<b>Total Operating Expenses</b>	\$121,712	\$177,938	\$117,210	\$256,191	\$255,994
<b>NET Income (LOSS)</b>	<b>\$58,792</b>	<b>\$27,792</b>	<b>\$122,452</b>	<b>(\$62,074)</b>	<b>(\$56,878)</b>

*Table 3. Water system net income 2020 – 2024.*

A steady loss of \$59,000 can probably best be explained by drilling down on some of the system's fixed costs. For example, pumping water from the wells through the treatment plant uses a significant amount of electricity. Treatment itself also incurs significant costs in the form of required chemicals. Over the last four years, those combined costs have more than doubled. See Figure 1 for an illustration.

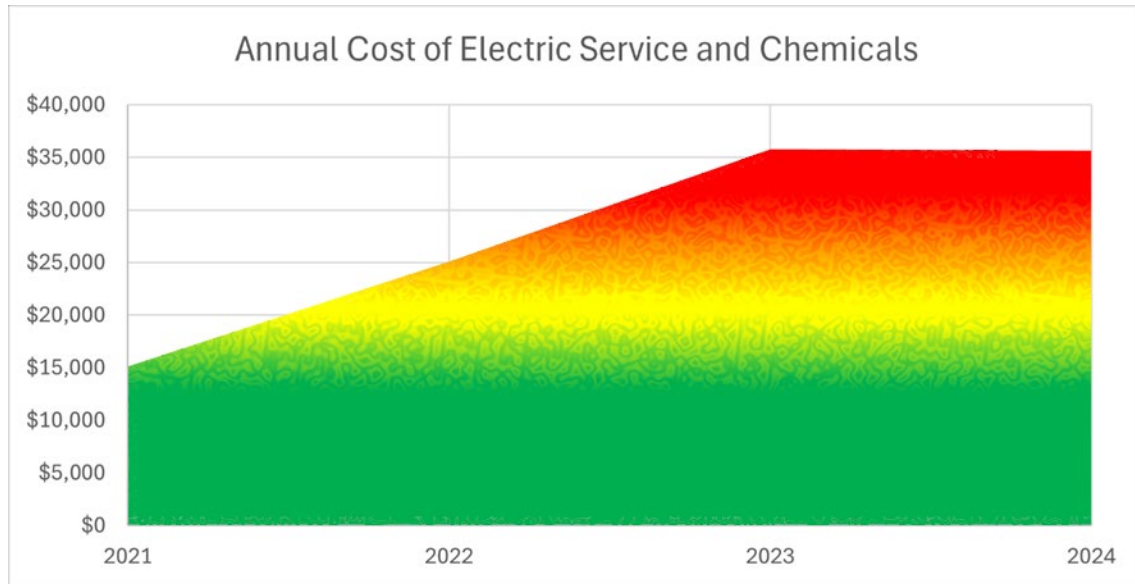


Figure 1. Annual cost of electric service and chemicals from 2021 – 2024.

### Financial Forecast

The Town currently makes payments on seven outstanding debts totaling \$107,334 per year. Five of these are interest bearing loans from the 1990's. These loans will be paid off in 2030 and 2034, reducing the Town's debt payments by \$33,580 per year. The other two loans are 0% interest loans from the EFC, one of which will be paid off in 2033, reducing the Town's debt payments by another \$20,407. As of 4/28/2025, the Water Fund is at a balance of \$78,792.32, the Water Savings account is at a balance of \$109,343.98, and the Capital Water account is at a balance of \$86,310.44.

Table 4 below shows projections based on an average of the last two complete years of data and expecting an inflation rate of at least 5% per year. With the current billing rates and structure, the district will be bankrupt sometime early in budget year 2028.

	Projected 2025	Projected 2026	Projected 2027
<b>Total Revenue</b>	\$196,616	\$196,616	\$196,616
<b>Total Operating Expenses</b>	\$268,897	\$282,342	\$296,459
<b>NET Income (LOSS)</b>	<b>(\$72,281)</b>	<b>(\$85,726)</b>	<b>(\$99,843)</b>
<b>Combined Water, Savings, and Capital Funds</b>	<b>\$202,166</b>	<b>\$116,440</b>	<b>\$16,597</b>

Table 4. Projected increases in budget deficit under current conditions.

Cost projections and interviews with Town officials indicate that the needed level of expenditure for proper operation of the water system is higher than currently budgeted.

System maintenance has been compromised in favor of operations. This is a common occurrence as testing and reporting requirements continue to grow and evolve in complexity. Recent capital projects have also taken priority as relates to labor hours, and similar projects are likely to continue for some time. Therefore, additional labor is needed to meet the operations and maintenance needs of the water system. It is necessary for the maintenance and operations of the distribution that someone be brought in to rotate valves, maintain hydrants, perform hydrant flushing, finish the meter register replacement project, be available to oversee construction, and hunt for leaks. This will require either hiring a designated employee who works for the Town or contracting an additional employee through North Dome.

When required labor costs for necessary maintenance activities on the distribution system are take into account, the Town is actually running a skilled labor deficit, which requires an additional \$60,000 to hire or contract a distribution technician. When these additional costs are taken into account, the water funds will run out in the last month of budget year 2026.

	<b>Projected 2025</b>	<b>Projected 2026</b>	<b>Projected 2027</b>
<b>Total Revenue</b>	\$196,616	\$196,616	\$196,616
<b>Total Operating Expenses</b>	\$268,897	\$282,342	\$296,459
<b>Annual Pay for Required Trainee</b>	<b>\$60,000</b>	<b>\$61,800</b>	<b>\$63,654</b>
<b>Suggested Saving for Upcoming Capital Projects (Moves to Capital Fund)</b>	<b>\$10,000</b>	<b>\$10,000</b>	<b>\$10,000</b>
<b>NET Income (LOSS)</b>	<b>(\$132,281)</b>	<b>(\$147,526)</b>	<b>(\$163,497)</b>
<b>Combined Water, Savings, and Capital Funds</b>	<b>\$142,166</b>	<b>(\$5,360)</b>	<b>(\$168,857)</b>

*Table 5. Projected budget impacts of hiring and saving for capital improvements.*

The Town suffers from very high water loss due to leaks in the distribution system. Approximations based on metered production and metered usage indicate as much as 70% of all treated water is lost in transmission. However, the water system does not possess any leak detection equipment. With the addition of personnel to focus on the distribution system, it is recommended that the Town acquire the tools needed for leak detection. Towards that end, \$7,000 should be set aside in the next budget.

The Town also needs to replace its current billing software. It is unreliable, requires regular calls to the company for assistance, and has a vulnerability to dramatically inflating bills,

which the operator and water/sewer clerk must then correct. A recent quote from a billing system provider indicates that a replacement system will cost \$11,250 plus an additional \$5,000 per year.

With all of these items taken into consideration, the water funds will run out in the ninth month of budget year 2026. This transition is illustrated in the revised projected revenue table, provided below in Table 6. As is evident, more revenue is needed to operate and maintain the water system. Therefore, a rate increase will be recommended with a target increase in revenue of \$168,497.

	<b>Projected 2025</b>	<b>Projected 2026</b>	<b>Projected 2027</b>
<b>Total Revenue</b>	\$196,616	\$196,616	\$196,616
<b>Total Operating Expenses</b>	\$268,897	\$282,342	\$296,459
<b>Annual Pay for Required Trainee</b>	<b>\$60,000</b>	<b>\$61,800</b>	<b>\$63,654</b>
<b>Suggested Saving for Upcoming Capital Projects (Moves to Capital Fund)</b>	<b>\$10,000</b>	<b>\$10,000</b>	<b>\$10,000</b>
<b>Leak Detection Equipment</b>	<b>\$7,000</b>	-	-
<b>New Billing Software</b>	<b>\$11,250</b>	<b>\$5,000</b>	<b>\$5,000</b>
<b>NET Income (LOSS)</b>	<b>(\$140,531)</b>	<b>(\$152,526)</b>	<b>(\$168,497)</b>
<b>Combined Water, Savings, and Capital Funds</b>	<b>\$123,916</b>	<b>(\$28,610)</b>	<b>(\$197,107)</b>

*Table 6. Projected budgets with new equipment and software.*

### **Capital Project Needs**

Several capital projects await the water system. Some are straightforward replacements. Others require navigating legal challenges and enforcement actions. All are necessary. The Village should consult an engineering firm or other experts to determine expected costs for these projects where appropriate. The annual capital project allocation is a projection guideline and will need to be adjusted as these projects are completed. It is also possible that funding may be found for some of these projects, though that is now dependent on several factors.

#### *Replace leaking mains-*

Approximately 70% of the treated water made by the water system is lost to leaks. The mains on Jerome Ave are close to 125 years old. Most water mains only last between 50 and 100 years. It is strongly recommended that the Town immediately pursue replacing the



oldest mains in the system until water loss is down to 30%. This may require a series of projects, and estimations of costs will certainly require the work of an engineer.

#### *Get new well working-*

The recently constructed well is not functioning properly and therefore does not meet the Department of Health requirements it was intended to meet. The Town will need to pursue the matter with Delaware Engineering. It is unclear how this will impact the financial situation of the Town, but it should be included as a consideration nonetheless.

#### *Begin saving for PFOA treatment-*

While the Town may expect to be compensated as a result of the ongoing law suit against DuPont, the timing of that compensation is uncertain. Since the Department of Health expects the Town to address any PFOA exceedances by 2030, the Town should consider PFOA treatment an impending capital need and begin to put money aside.

## **4. CUSTOMER SUMMARY**

The Cairo Water District has 330 billed customer accounts. Accounts are billed a quarterly base fee based on their meter size, as described in Table 7 below. Each account is also allowed a certain number of free included gallons of usage per quarter, also based on their meter size. Lastly, accounts are charged a descending graduated flow rate. The more water an account uses, the less that account pays per 1,000 gallons. Rates per 1,000 gallons range from \$7.778 to \$5.73.

Service line size	Service Class	2025 quarterly base fee	Included gallons	2025 flow rate per 1,000 gallons	Number of accounts
¾"	N07	\$70.00	9,000	\$7.778 - \$5.73	293
1"	N02	\$147.76	21,000	\$7.036 - \$5.73	7
1 ½"	N01	\$257.65	39,000	\$6.606 - \$5.73	11
2"	N03	\$395.14	63,000	\$6.272 - \$5.73	6
3"	N04	\$721.77	120,000	\$6.015 - \$5.73	2

*Table 7. Current quarterly billing structure.*

For the purpose of analyzing rate impacts, it is worth grouping accounts by average quarterly metered usage. In the table below the customers of the water system are separated into groups of roughly similar sizes. Using these groups, we can more easily understand how rates are impacting different customers. It is worth noting that the top 22 users are in a slightly smaller group. That's because they average about 30% of all of the system's billed flow, despite having fewer accounts than any other group.

Note: the accounts which averaged no usage have been excluded from this table.

Recent Annual Usage	Number of Accounts	Gallons Used	% of All Usage	Billing Total	% of All Revenue
12,000 - 1	51	305,311	2%	\$17,793	13%
22,000 - 12,001	52	884,063	6%	\$15,280	11%
36,000 - 22,001	49	1,454,751	9%	\$14,918	11%
58,000 - 36,001	52	2,428,184	16%	\$18,869	13%
125,000 - 58,001	49	4,092,998	26%	\$32,172	23%
>125,000	22	6,336,522	41%	\$42,198	30%
<b>TOTAL</b>	<b>275</b>	<b>15,501,829</b>	<b>100%</b>	<b>\$141,230</b>	<b>100%</b>

Table 8. Number of connections in each usage group and percentages of usage and revenue by usage group.

The water system serves ten particularly high-use customers. Some of these customers are commercial, as in the case of the carwash or the laundromat. Others are residential, in the form of apartments and housing developments. As these customers require particularly high amounts of usage, it is advisable that they be invited to participate in discussions on rate changes and solving the needs of the water system.

Highest Usage Customers by Type	Most Recent Annual Usage (in gallons)
Carwash	641,947
Apartments	578,497
Laundromat	553,416
Supermarket	493,582
House Complex	444,881
Apartments	383,003
State office	319,815
Restaurant	310,452
Toilet rental facility	267,671
Restaurant/Café	233,076

Table 9. The 10 accounts with the highest usage in the sewer system.

These customers account for approximately 18% of the sewer system's annual revenue. However, they make up 27% of the system's annual usage. This indicates that under the current billing structure, smaller customers such as single residences are subsidizing the larger customers. This conclusion is further borne out by the fact that the lowest usage group, customers using 12,000 or less gallons per quarter, makes up only 2% of the system's usage, but it pays 13% of the system's revenue. While there is often a gap between the percentages of usage and revenue for the top users of a system, this is particularly acute. This is in part a result of the descending graduated rate structure.

It is also worth noting that currently 215 of the system's 330 customer accounts average less usage than their included gallons. When this is the case, it usually creates an environment wherein the lower users are paying more relative to the amount of water they're actually using. It is one of the problems inherent in the use of a base fee with

included gallons of usage. This is the other part of the reason higher users make up so much of the usage but pay so much less of the revenue.

## **5. SUMMARY OF CURRENT RATES AND BILLING STRUCTURE**

As illustrated above, the water system uses a billing structure which accounts for meter sizes, a base fee, included gallons, and a variable flow rate. The base fee is a required quarterly fee. In most communities, this reliable revenue is intended to cover the fixed costs of operating and maintaining the water system. The included gallons generally serve two purposes. First, they act as a measure of goodwill between the Town and the community. These gallons feel like “free” usage, and for many customers they eliminate fluctuations in billing, allowing for a reliable quarterly bill. Additionally, included gallons can act as padding against aging meters. Since water meters tend to spin more slowly and show less usage as they age, the included gallons allow the water system to compensate for a certain amount of assumed usage.

Both the base fee and the included gallons are adjusted based on the size of the water meter belonging to the service address. The larger the meter, the larger the base fee and the more gallons included. This serves a similar function to an equivalent dwelling unit system. Since customers who need greater capacity generally place greater strain on the water system, they are charged a larger base fee. In the case of the Town, the increase in the included gallons correlates to the higher base fee, implying that the included gallons are part of what the customer is paying for. The base fees also take the descending graduated billing structure into account, further benefitting customers with larger meters.

The flow rate varies from \$7.778 to \$5.73 per 1,000 gallons. Descending graduated rates, also called descending block rates, are designed to benefit the largest users in a system. Typically, this is instituted as a tactic to attract businesses which depend on high water usage, such as an industrial beverage plant. However, no such customers are currently present in the system.

The current billing structure has some positive results.

1. The base fee ensures a certain amount of reliable income for the water system, which helps cover the costs of operations.
2. The included gallons keep bills stable for customers whose usage is consistently below the minimum.
3. The increase in base fees for customers with larger water meters distributes fixed costs based on expected usage, helping account for additional costs associated with larger customers.

There are also limitations inherent to the current billing structure.

1. Some accounts use the system dramatically more than others. These accounts create a disproportionate amount of strain on the system to meet their required usage. However, the added burden of that strain is not accounted for under the current system. Instead, high volume users are rewarded with lower rates.
2. The funds brought in do not make enough revenue to properly staff the system and save funds for expected maintenance needs or necessary capital projects.
3. The current rates make the Town extremely uncompetitive when trying to obtain funding for projects. Ideally, expected household water costs would average between 1.0% and 1.5% of the Town's median household income. Currently that number is closer to 0.5%.

## 6. RATE OPTIONS

The severity of the projected budget shortfalls means that a significant rate increase is necessary. The goal is to bring in an additional \$168,497 per year, assuming additional small rate increases of 3-5% over the following years. Since the current rate structure is a descending block rate, customers pay less for water as their usage increases. As a result, there is no incentive for customers to conserve water. Additionally, higher use customers essentially receive a discount. While this arrangement may have been suitable in the past as an enticement to manufacturing or other industries with high water needs, it does distribute more of the cost of operating the system on the smaller users. Additionally, as the Town considers expanding the number of connections served by the water system, the system itself will approach its production limits. As a result, the strain on the system incurred by larger users will need to be accounted for in the rate structure.

Current Rate Structure			
Line Size in Inches	Current Base Fee	Current Included Gallons	Current Flow Rate Over Included Gallons
0.75	\$70	9,000	\$7.778 - \$5.73
1.00	\$148	21,000	\$6.48 - \$5.73
1.50	\$258	39,000	\$5.73
2.00	\$395	63,000	\$5.73
3.00	\$722	120,000	\$5.73
Projected Revenue Impact: \$0.00			

Table 10. Current rate structure.

As a first step, RCAP looked at the impact of removing the descending graduated rate. Were all customers to pay the same price per gallon, and were all base fees and included gallons calculated without the descending rate, revenue would immediately increase by \$21,718 per year. This will also make any other rate increases more equitable to the rest of the user

base. These changes will raise the average bill by about 6%. Those most impacted by the change would be the very few customers with very high usage on smaller meters. Most of those customers would see an increase of about 30%.

No Descending Graduated Rate			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$70	9,000	\$7.778
1.00	\$124	16,000	\$7.778
1.50	\$280	36,000	\$7.778
2.00	\$498	60,000	\$7.778
3.00	\$1,120	120,000	\$7.778
Projected revenue increase: <b>\$21,718</b>			

Table 11. No Descending Graduated Rate: What happens when the flow rate is the same for every gallon and all base fees are scaled based on meter connection diameter without regard for usage.

In the interests of a circumspect approach to the rate increase, five possible options have been provided to help the Town bring in the needed additional \$168,497 per year. Below, a table is provided to illustrate the specifics of each of the proposed options. An explanation of each option follows after. All options are built around the removal of the descending graduated rate structure.

Option 1: No Allowed Gallons			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$95	0	\$10.20
1.00	\$168	0	\$10.20
1.50	\$378	0	\$10.20
2.00	\$672	0	\$10.20
3.00	\$1,512	0	\$10.20
Projected revenue increase: <b>\$168,877</b>			

Table 12. Option 1: No allowed gallons of usage.

Option 2: All Flow Rate Increase			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$70	9,000	\$28.00
1.00	\$124	21,000	\$28.00
1.50	\$280	39,000	\$28.00
2.00	\$498	60,000	\$28.00
3.00	\$1,120	120,000	\$28.00
Projected revenue increase: <b>\$168,953</b>			

Table 13. Option 2: All flow rate increase.

Option 3: All Base Fee			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$156	9,000	\$7.778
1.00	\$278	21,000	\$7.778
1.50	\$624	39,000	\$7.778
2.00	\$1,120	60,000	\$7.778
3.00	\$2,498	120,000	\$7.778
Projected revenue increase: \$169,083			

Table 14. Option 3: All base fee increase.

Option 4: Balanced Changes			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$105	3,000	\$11.90
1.00	\$187	5,333	\$11.90
1.50	\$420	12,000	\$11.90
2.00	\$747	20,000	\$11.90
3.00	\$1,680	40,000	\$11.90
Projected revenue increase: \$169,716			

Table 15. Option 4: Balanced changes.

Option 5: Ascending Graduated Rates			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$102	3,000	\$11.40 +
1.00	\$180	5,333	\$11.40 +
1.50	\$406	12,000	\$11.40 +
2.00	\$722	20,000	\$11.40 +
3.00	\$1,624	40,000	\$11.40 +
Projected revenue increase: \$170,087			

Table 16. Option 5: Ascending graduated rates.

Graduated Cutoffs	Graduated Multipliers
9,000	1.00
15,000	1.05
30,000	1.10
60,000	1.15
120,000	1.20

Table 17. Graduated rate cutoffs and multipliers.

### Option 1- No Allowed Gallons

Reducing included free gallons of water is one way to increase revenue. In this model, **the base fees would be the same, but customers would not receive any free gallons of usage. The flow rate would still need to be raised to \$10.20 per 1,000 gallons.**

Option 1: No Allowed Gallons			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$95	0	\$10.20
1.00	\$168	0	\$10.20
1.50	\$378	0	\$10.20
2.00	\$672	0	\$10.20
3.00	\$1,512	0	\$10.20
Projected revenue increase: \$168,877			

Table 18. Proposed base fee as compared to current base fee.

This structure would place the burden of the rate increase on the highest users. Of the 330 billed accounts in the system, 65% of them averaged less than the current included gallons over the course of the last year. Their annual cost would increase in direct correlation to their usage. This would create a strong incentive for financially disadvantaged customers to conserve water. As the Affordability Assessment by Water Finance Assistance shows, reducing included gallons can actually save customers money when that reduction helps prevent a rate increase. This gives disadvantaged customers the opportunity to save money if they need to by reducing usage.

However, zero allowed gallons comes with a requirement that meters be replaced. Since meters spin more and more slowly as they age, customers with older meters will benefit from the reduction in flow rate without having to pay the actual cost of the water they use. Also, it should be mentioned that customers who were precise about their water usage and consistently used just their allowed gallons will see the highest increase, potentially more than triple. However, very few customers meet this criteria, and if they have the precision to consistently use just their included gallons, they are also likely to have the ability to reduce their water usage if they need to. The average customer would see their rates increase by 109%, just over double

### Option 2- All Flow Rate Increase

The second option increases the rate for usage from \$7.778 per 1,000 gallons to **\$28.00** per 1,000 gallons, almost quadruple. This would cover the Water Fund's current expenses and allow for saving for needed projects. However, it should be noted that customers who use less than the included gallons each quarter would see no rate increase at all, making this

the least equitable way to increase rates of the five options discussed in this report. Higher use customers would see their bills increase by almost 350%

If the Village decides to pursue this option, it can be made somewhat more equitable by reducing the amount of included usage each quarter. Were the Village to reduce included gallons of usage by half, the flow rate would only have to be raised to \$19.25 per 1,000 gallons.

Of all the options presented in this report, a pure flow rate increase is the least reliable way to bring in the needed additional revenue of \$168,497 per year. This is a result of reductions in usage by customers having a much larger impact on revenues. And the quadrupling of rates is likely to result in a significant reduction in usage.

### Option 3- All Base Fee Increase

Increasing the base fee is the most reliable way to secure needed revenue for the water system. Under this structure, the base fees would be increased by 40%. The flow rate would be **\$7.778** per 1,000 gallons. And the included gallons each quarter would be the same.

Option 3: All Base Fee			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$156	9,000	\$7.778
1.00	\$278	21,000	\$7.778
1.50	\$624	39,000	\$7.778
2.00	\$1,120	60,000	\$7.778
3.00	\$2,498	120,000	\$7.778
Projected revenue increase: \$169,083			

Table 19. Option 3: All base fee increase.

Under this rate structure, the average customer will see an increase of about 40% in their quarterly bill. Customers most impacted would see an increase of about 104%.

Regarding included gallons, many utility boards consider them a gesture of good will towards the community. However, since the users still end up paying for all of the costs of the utility, the included usage isn't actually free. What's more, it prevents users from saving money by reducing their usage below the included amount. Therefore, options with a reduction in minimum gallons are worth considering. This is particularly true since 46% of user accounts use less than the included amount of gallons on average. Were the included gallons to be reduced by 50%, the number of users who average less than the included gallons would fall to 36%, increasing revenues and leaving room for users to save money by further reducing their usage.



#### Option 4- Balanced Changes

The fourth option tries to distribute the rate increase as evenly as possible. Base fees are increased by 65%. The flow rate is set to \$11.15 per 1,000 gallons. And the included gallons each quarter are reduced by 67%. Under this structure, the average user will see rates double.

Option 4: Balanced Changes			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$105	3,000	\$11.90
1.00	\$187	5,333	\$11.90
1.50	\$420	12,000	\$11.90
2.00	\$747	20,000	\$11.90
3.00	\$1,680	40,000	\$11.90
Projected revenue increase: \$169,716			

Table 20. Option 4: Balanced changes.

#### Option 5- Ascending Graduated Rates

The fifth option creates an incentive for users to reduce their usage by increasing the rates paid for higher quantities of usage. This method also ensures that the most demanding users carry more of the burden of the cost to run the utility. This is perhaps the most complicated structure to understand. All users would pay the same amount for water usage in the first usage grade. They would pay slightly more for any additional usage in the second usage grade, and so forth up to the top usage grade.

The base fees would increase by 28%. As in Option 4, the included gallons of usage would be reduced by 67%. The flow rate would begin at **\$11.40 per 1,000 gallons**. Customers would pay that rate for any usage amount up to 15,000 gallons. Every gallon after 15,000 would cost 5% more (\$11.97) until the usage reached 30,000 gallons. Every gallon after 30,000 would cost 10% above the flow rate (\$12.54) until the usage reached 60,000. Every gallon after 60,000 would cost 15% above the flow rate (\$13.11) until the usage reached 120,000. Every gallon after 120,000 would cost 20% above the flow rate (\$13.68).

Graduated rates serve a very specific purpose. They create an incentive for users to keep track of their usage and prevent it from climbing too high. Essentially, they are an invitation for the community to work with the system to keep costs down. However, this would be a dramatic and impactful swing in policy. Transitioning from descending graduated rates to ascending graduated rates would be particularly hard on the car wash and the laundry, which have no direct control over how much water is used each quarter, though they can invest in efficiency measures if necessary.

Option 5: Ascending Graduated Rates			
Line Size	Base Fee	Included Gallons	Flow Rate Over Included Gallons
0.75	\$102	3,000	\$11.40 +
1.00	\$180	5,333	\$11.40 +
1.50	\$406	12,000	\$11.40 +
2.00	\$722	20,000	\$11.40 +
3.00	\$1,624	40,000	\$11.40 +
Projected revenue increase: \$170,087			

Table 21. Option 5: Ascending graduated rates.

Graduated Cutoffs	Graduated Multipliers
9,000	1.00
15,000	1.05
30,000	1.10
60,000	1.15
120,000	1.20

Table 22. Graduated multipliers.

## 7. DISCUSSION AND RECOMMENDATIONS

### Summary of Impact from Changes in Revenue

The five rate structures proposed each offer benefits and drawbacks when aiming to meet the goals of a balanced budget, equitable rates, and reduced strain on the aging treatment and distribution systems. A balance must be struck so that the Town can reliably project revenues from user fees while also incentivizing and rewarding efforts by users to reduce usage.

If actual customer use is lower than projections, the Village may not be able to reach the financial targets set for the future sustainability of the system. On the one hand, if the base fee is too heavily relied upon for revenue generation, low-volume customers will pay more for less water usage and high-volume customers will have no incentive to reduce their usage. On the other hand, if the base fee is removed altogether, revenues will be much less predictable for the Water Fund, leading to unexpected financial shortfalls and generating further expenses.

Table 22 shows the projected impacts on revenue of a 20% increase and 20% decrease in customer use under each rate scenario. The higher the proportion of revenue reliant upon the flow rate, the more vulnerable the Water Fund becomes to revenue shortfalls.

Projected Usage	2023 Rate Structure	Without Descending Graduated Rates	Option 1: No Allowed Gallons	Option 2: All Flow Rate Increase	Option 3: All Base Fee Increase	Option 4: Balanced Changes	Option 5: Ascending Graduated
80%	\$175,784	\$193,627	\$326,908	\$292,781	\$340,992	\$323,427	\$321,360
100%	\$189,807	\$212,120	\$359,280	\$359,356	\$359,485	\$360,118	\$360,490
120%	\$204,669	\$232,061	\$391,651	\$431,142	\$379,426	\$397,270	\$400,461

Table 23. The impacts of decreases and increases in water use on projected revenues.

As the Town needs its rates to help it qualify for funding, RCAP has evaluated the annual cost for an account using 15,000 gallons per quarter (60,000 per year). The most recent American Community Survey (2023) 5-year estimate data lists the Town's median household income at \$54,479. That means that funders would want to see an annual cost for water between \$545 and \$817 for the Town to be competitive. While the criteria for how this is evaluated are opaque, the 60,000 gallons per year customer example is a helpful signpost. The current annual cost of water for a user with 60,000 gallons of annual usage is \$467. All five rate increases were evaluated against this criteria, and the results are in Table 24 below. While any of the five options can work, Options 1 and 4 are the most suitable to making rates attractive to funders.

	Without Descending Graduated Rates	Option 1: No Allowed Gallons	Option 2: All Flow Rate Increase	Option 3: All Base Fee Increase	Option 4: Balanced Changes	Option 5: Ascending Graduated
Expected annual cost for 60,000 gallons of service	\$467	\$990	\$952	\$811	\$991	\$953
% of MHI	0.86%	1.82%	1.75%	1.49%	1.82%	1.75%

Table 24. Expected cost percentage of median household income for each rate option.

## Recommendations

Option 4, Balanced Changes, is the recommended billing structure for the next three years. It raises base fees, allowing for a predictable revenue increase for the system. It incentivizes users to reduce usage by raising rates in general and eliminating the descending graduated rate structure. Making adjustments to the base fees, included gallons, and flow rate helps spread the burden of the increase across the user base, preventing any particular group from having to subsidize the others. While the ascending graduated rates of Option 5 might seem like an appealing way to reduce costs for low-income customers with low usage, it must be remembered that many of these customers may rely on the laundromat. Switching from descending to ascending graduated rates would hit the largest usage accounts particularly hard, and that includes the laundromat. Therefore, Option 4 is the better recommendation.

The Town should also consider whether it is better to roll out these billing structure changes all at once or over the course of a year. It is certainly possible to begin by making changes to the billing structure itself, eliminating the descending graduated rates, and then in subsequent quarters make adjustments to the base fees or the flow rate, etc. However, the Town will not get the full benefit of the higher percent of median household income of the new rate until it has been completely implemented.

**Additional Recommendations:**

- The Town should arrange for an additional skilled technician to focus on the distribution system. This tech should focus on finishing the meter register replacement project, sweeping for leaks, exercising valves, watching over related capital projects, and the general maintenance needs of the distribution system.
- The Town should consider a multiplier for N07 accounts which serve multiple residences. The most notable example is the Town's second highest user account, which uses as much water as 10 residences but still only pays a single quarterly base fee. These kinds of users require more water availability from the system than their meter size indicates, and they should have a higher base fee as a result.
- The Town should pursue enforcement action in the form of fines to finish the meter register replacement project. Customers who refuse accurate metering are technically receiving free service and essentially stealing from the community. With these measures in place, the Town should consider bringing in extra labor to conduct the replacement project in the form of contract workers. It is important that the work be completed quickly.

## 8. DEMOGRAPHIC PROFILE

The Cairo Census Designated Place (CDP) represents the closest survey overlap with the Cairo Water System. The demographic data shown in Table 25 are derived from the 2023 American Community Survey 5-year estimate for the Cairo CDP. However, the wide spread of percentages makes it difficult to draw conclusions from this table alone. Fortunately, in tandem with this rate study, an affordability assessment was created by Water Finance Association. Analysis of their assessment will be provided in the next section.

<b>Household Income</b>	<b>% of Households 2023 Estimate</b>
Less than \$10,000	5.0%
\$10,000 to \$14,999	1.4%
\$15,000 to \$24,999	18.8%
\$25,000 to \$34,999	9.2%
\$35,000 to \$49,999	12.7%
\$50,000 to \$74,999	9.5%
\$75,000 to \$99,999	26.6%
\$100,000 to \$149,999	7.8%
\$150,000 to \$199,999	2.8%
\$200,000 or more	6.3%
<b>Median income (dollars)</b>	54,479
<b>Mean income (dollars)</b>	95,666
<b>Total Households</b>	654

*Table 25. Distribution of annual household income, Cairo CDP (2023 ACS Estimates)*

9. AFFORDABILITY RATIO IMPACTS

To assess the potential impact of rate increases on the members of the community, an affordability assessment was commissioned from the Water Finance Association. This assessment provides tailor-made analysis of the current affordability of water and sewer services in the Town. This report also acts as a guide for projected impacts from the rate structure options presented above.

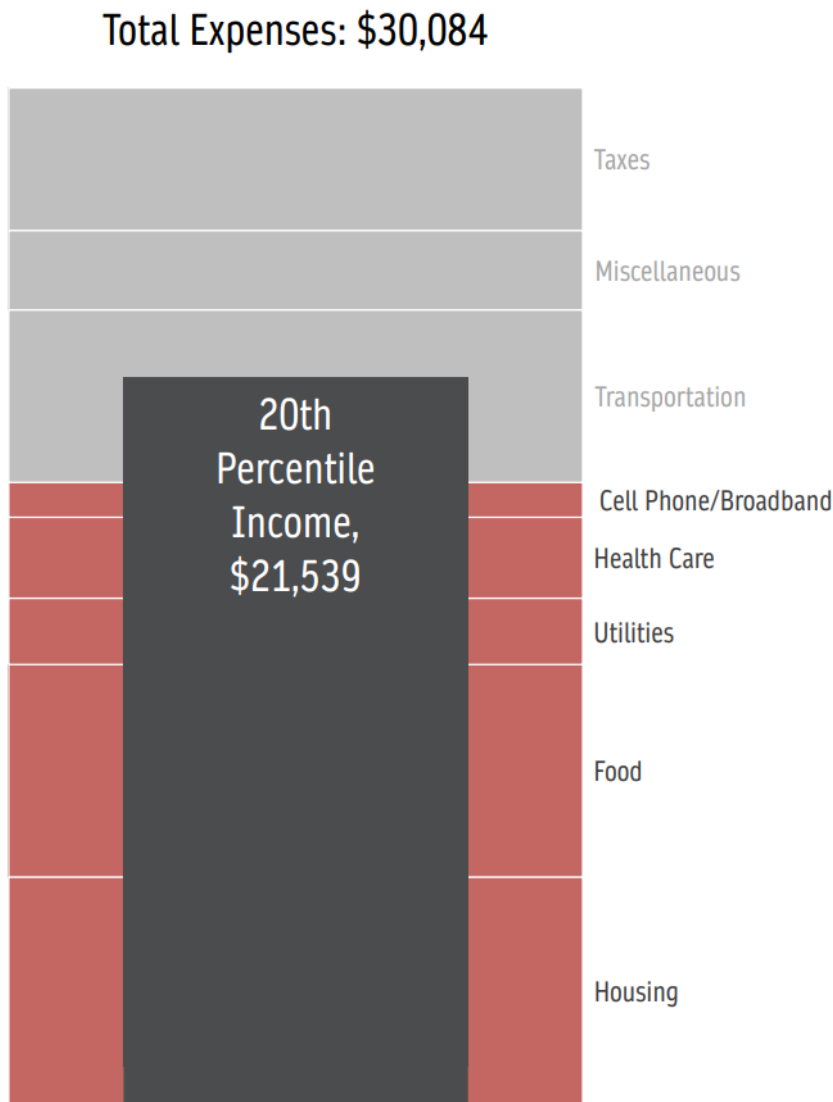


Figure 2. Low-income households in Cairo generate enough annual income to cover about 70% of expected essential expenses. (Source: Affordability Assessment for Cairo Water District, NY, January 2025)

As depicted above in Figure 2, the bottom 20% of households earn \$21,539 or less per year. Residents of the Town need approximately \$30,084 per year to cover all of their expected annual expenses. However, the bottom 20% of households in the Village may be better positioned than this statistic indicates. Since about 56% of district residents receive Social

Security, it is highly likely that retirees will make up a disproportionate segment of the community. Generally, this category of residents will have a lower income, but may also have a lower housing cost if they are home owners. In contrast, 18% of community households have received SNAP benefits in the last year. That income is included in Figure 2, indicating that the need for financial assistance remains present among the low-income households of the Village.

In response to the concerns raised by the affordability assessment, this report has embraced the recommendation that included gallons of usage be lowered to help offset an increase in rates. While the Village should probably retain some measure of included usage to help make up for holdouts in the meter replacement program, lowering the included water leaves some residents with room to save on their sewer bill by more carefully monitoring their usage.

A copy of the Affordability Assessment for the Cairo Water District, NY has been provided as a supplementary document to this report.



## 10. ACKNOWLEDGEMENTS

The contributions of the Town of Cairo officials and staff merit a special thank you for their invitation and welcome, and for their contributed time and resources towards this study, especially: Jason Watts, Supervisor; Debra Bogins, Deputy Supervisor; Johanna Halvorsen, Bookkeeper; Mike Lamencac, Water/Sewer Administrator; and Marianne Baldwin, Water/Sewer Clerk.

An additional thanks to Glenn Barnes of Water Finance Assistance for his excellent affordability assessment of the Cairo Water District.

A final thanks to Becky Sims and Candace Balmer for their contributions of perspective, examples, and edits for this report.

Resources used included:

*The RCAP Formulate Great Rates Guide and Toolkit*

*Affordability Assessment for Cairo water District, NY* as prepared by Glenn Barnes of Water Finance Assistance January 2025

*Economic Development Corridor Study: Opportunities & Constraints* as prepared by Delaware Engineering July 2021

*Town of Cairo Water System Improvements: Preliminary engineering report in support of DWSRF application* as prepared by Delaware Engineering September 2015





# Affordability Assessment for Cairo Water District, NY

## Summary

The Cairo Water District serves a community with some less fortunate households. About one in eight households served have annual incomes at or below 200 percent of the federal poverty level. The Median Household Income in the Cairo Water District service territory is below state and national levels, and about 27 percent of households have incomes under \$25,000 a year. Renter households make up half of the customers and are more likely to be low-income. The median income in Cairo has not kept up with inflation since 2010, meaning that residents have less buying power today than they did 15 years ago. The lowest-income households earn less than what is necessary to afford basic necessities.

About half of the people served by Cairo Water District are not working or are working only part-time, and 56 percent receive Social Security. Customers participate in SNAP at higher levels than the state and country as a whole.

Cairo Water District customers do not have access to federal assistance programs currently because the temporary programs set up during the COVID-19 pandemic have expired.

Affordability should be a concern when setting rates for the Cairo Water District. Rates should reflect the total cost of providing water and wastewater service and should not be kept artificially low. The best way to price rates for affordability is to give customers as much control over their bills as possible. Cairo Water District does charge rates based on usage, but a high amount of usage is included in the base charge. It is likely that many small, low-income households do not use all the gallons included in the base charge and therefore have no control over their bills. Cairo Water District may wish to consider lowering the gallon inclusion in future rate changes, perhaps in lieu of raising rates.

## Introduction

Wastewater and drinking water utilities are vital to the health and prosperity of communities. To protect human health and the environment, utilities must comply with federal regulations and state regulations, and they need money in order to meet these regulations. Rates charged to customers are the primary way that Cairo Water District and other utilities generate revenue to pay for daily operations, but rates are only effective if customers pay their bills. Cairo Water District should consider the ability of residential customers to pay when considering rate changes. Residential service disconnections can have significant impacts on a person's health, well-being, and daily life.

There is no generally accepted definition of water and wastewater affordability, nor is there one single metric to represent the affordability of water and wastewater at the household level. Water and wastewater rates throughout the country have been artificially low over the past several decades. The cost of providing service continues to rise due to inflation and increased regulatory compliance. This trend has increased attention around the issue of affordability.

The ideal situation is that utilities charge rates that generate enough revenue to sustain the utility, that most customers are able to pay those rates, and that customer assistance programs exist to help less fortunate customers who struggle to afford utility service to pay their bills.

This residential affordability analysis will consider three broad areas:

- 1 Demographics of Cairo Water District's service territory,
- 2 Rate design, and
- 3 Availability of federal customer assistance programs.

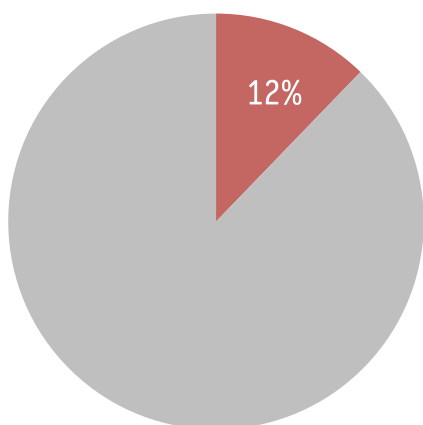
## Demographic Analysis of Cairo Water District's Service Territory

This section of the analysis looks at key demographic measures of affordability for Cairo. It is possible to look at the demographics of the community and to make educated guesses about the likelihood that the utility's customers *in general* will be able to pay their water and wastewater bills because data are publicly available for the community at large. This analysis, however, cannot say if any *individual* customer will be able to pay his or her water and wastewater bills because demographic data are not available at the household level. Census data for this analysis are drawn from the 2022 American Community Survey 5-year estimates for Cairo CDP, NY census tract, the best and most recent available data for Cairo Water District.

### Families Living in Poverty

There are approximately 327 families in the Cairo Water District service territory, and 40 of those families have annual incomes at or below 200 percent of the federal poverty level, or twice the federal poverty level<sup>1</sup>, as seen in the figure below.

Figure 1: About 12% of families served by Cairo Water District are **at or below 200 percent of the federal poverty level**.



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<sup>1</sup> U.S. Census table S1702

The federal poverty level (FPL) is an annual income threshold set by the United States government. The FPL is calculated based on family size and geographic location, and it is updated annually to reflect changes in the cost of living. 200 percent of the federal poverty level is an important number because it is often used as a threshold for determining eligibility for certain government programs and benefits. At 200 percent of the federal poverty level, a household's income would be twice the poverty level. This means that the household would be considered low-income or near-poverty.

Many government programs and benefits, such as the Children's Health Insurance Program (CHIP) and the Supplemental Nutrition Assistance Program (SNAP) use this 200 percent threshold to determine eligibility. By setting the eligibility threshold at 200 percent of the federal poverty level, these programs aim to provide support to individuals and families who may not be living in poverty but are still struggling to make ends meet. This is a useful number for utilities to consider when assessing affordability.

## Household Income

Another useful number for utilities to consider is actual household income. The U.S. Census collects information on "Income in the Past 12 Months" through the American Community Survey. This income is the sum of the amounts reported separately for wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments (including food stamps and cash public assistance); retirement, survivor, or disability pensions; and all other income. "Household Income" includes the income of all individuals 15 years old and over in the household even if they are not related.<sup>2</sup>

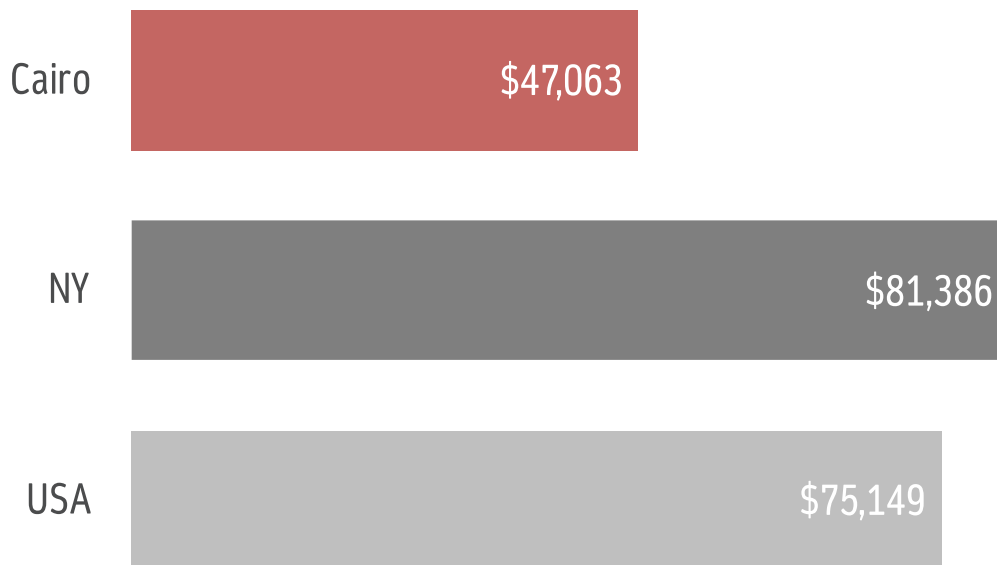
The median household income in Cairo Water District town, NY tract is more than \$25,000 less than the median household income for the United States and is more than \$40,000 less than median household income for New York, as the figure below shows.<sup>3</sup> This lower income level could indicate that many households served by Cairo Water District may struggle to pay their water and wastewater bills along with other necessities.

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<sup>2</sup> <https://www.census.gov/programs-surveys/acs/technical-documentation/code-lists.html>

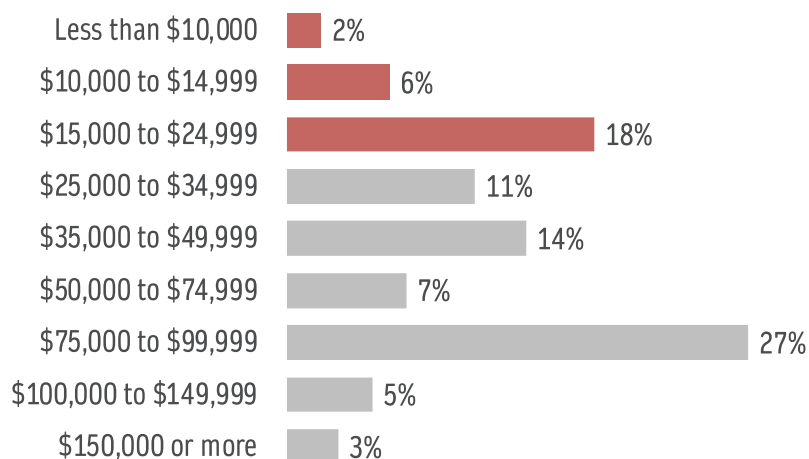
<sup>3</sup> U.S. Census table DP03

Figure 2: The Median Household Income in Cairo Water District service territory is **below state and national levels.**



The median household income only tells us what the household in the middle earned in 2022. It does not tell us anything about the spread of household incomes above and below that level. The figure below shows what percentage of households fall into different income buckets for Cairo Water District service territory. About 27 percent of the service population has a household income under \$25,000 a year.<sup>4</sup>

Figure 3: About 27 percent of households have **incomes under \$25,000 a year.**

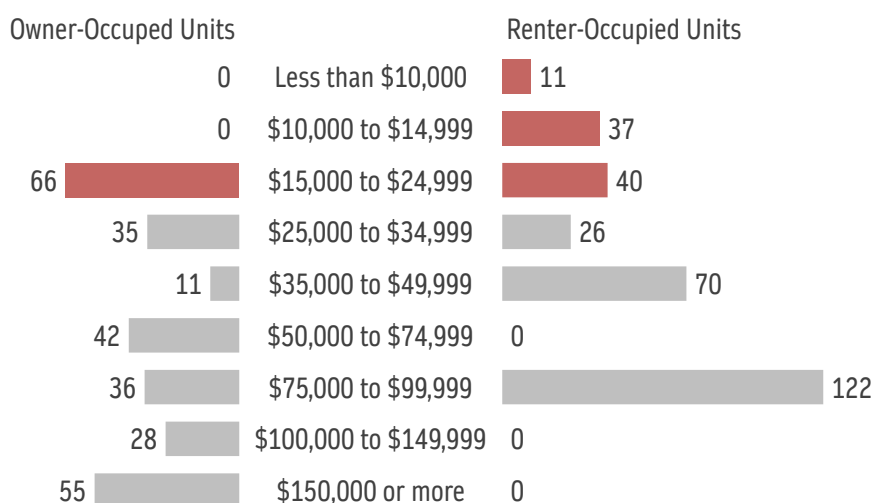


<sup>4</sup> U.S. Census table DP03

About 53 percent of housing units are renter-occupied, and about 47 percent are owner-occupied.<sup>5</sup> There is a significant discrepancy in income between owner-occupied households and renter-occupied households. The median household income for renter-occupied housing units is lower than for owner-occupied units.<sup>6</sup>

About 29 percent of renter-occupied households have annual incomes below \$25,000, compared to just 24 percent of owner-occupied households, as the figure below shows.<sup>7</sup>

Figure 4: Renter-occupied households are more likely than owner-occupied households to have **incomes under \$25,000**.



## Income Trends

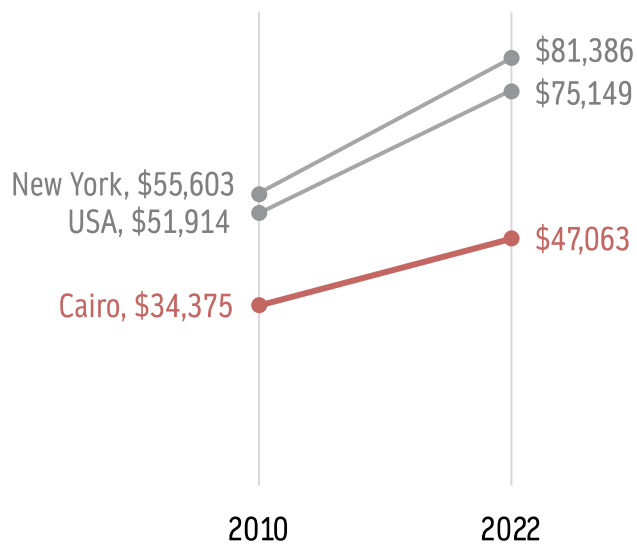
The gap between Cairo Water District's income levels and income levels at state and national levels has been growing. Detailed community-level census data are available going back to 2010. Since 2010, Cairo Water District's median household income has been rising at a lower rate than the MHI for New York and for the country as a whole, as the figure below shows. This means that they are falling farther behind other communities over time.

<sup>5</sup> U.S. Census table B25118

<sup>6</sup> U.S. Census table B25119

<sup>7</sup> U.S. Census table B25118

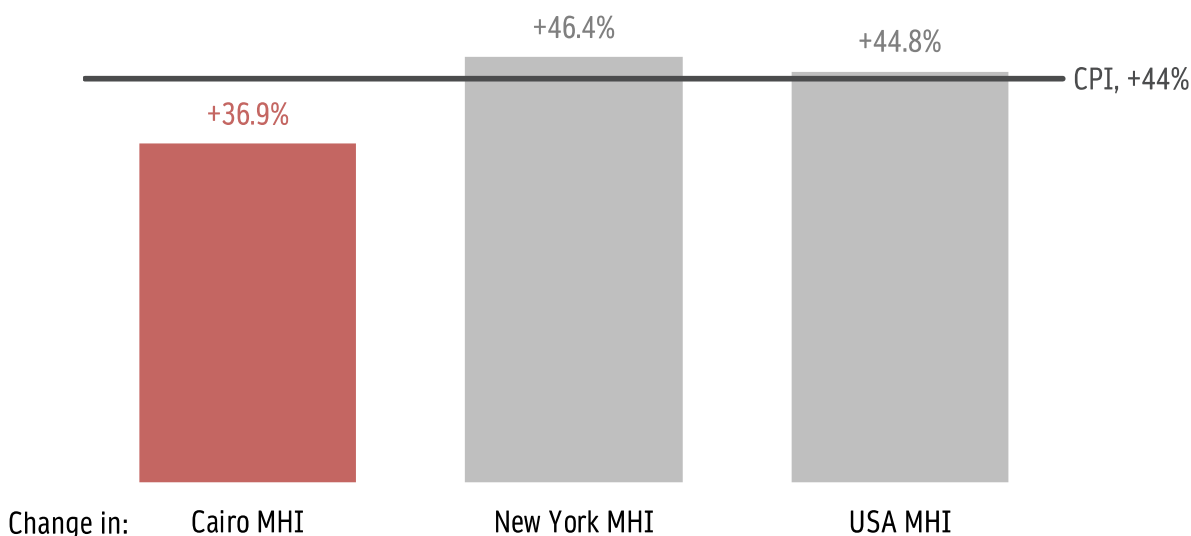
Figure 5: The gap between **Cairo Water District's MHI** and the MHI in New York and the USA as a whole has grown over the past 12 years.



The median household income in the Cairo Water District service territory is also not keeping pace with inflation. As the figure below shows, the MHI in the Cairo Water District service territory has gone up about 37 percent since 2010, whilst inflation, as measured by the Bureau of Labor Statistic's Consumer Price Index or CPI, has risen by 44 percent. This means Cairo Water District customers have less purchasing power than they did 12 years ago. The cost of their everyday goods has gone up more than their incomes have increased. Over the same time period, the median household incomes for New York and for the country as a whole have slightly outpaced inflation.

Figure 6: Cairo Water District customers have less purchasing power today than in 2010 because their **median household income** has not kept up with **inflation**.

Incomes statewide for New York and for the country as a whole have kept up with inflation.



### Ability of the Least Fortunate Households to Afford Basic Necessities

The greatest affordability concern is for households with the lowest annual incomes. The ideal way to measure if these customers can afford water and wastewater service would be to gather data on the actual income of each and every less fortunate household in the community and their actual expenditures on housing, food, utilities, and other necessities. That would allow us to see if each household can afford all these essentials with their current funds available. This type of analysis, unfortunately, is not possible. We don't know the income of each individual household, nor do we know their actual expenditures on necessities. We have to use general data on the income and expenditures of less fortunate households instead.

One measure of the income of a less fortunate household is the 20<sup>th</sup> percentile income. Percentiles are a way of measuring where a particular value falls within a set of data. If you were to line up all the household incomes in Cairo Water District's service territory from lowest to highest, the 20<sup>th</sup> percentile income is the one where 80 percent of households have a higher income and 20 percent of households have a lower income. Most households at the 20<sup>th</sup> percentile income either have household members working for low wages or seniors who are on a fixed retirement income such as social security. These two groups are often those that have the most difficulty paying their water and wastewater bills.

It is possible to compare the 20<sup>th</sup> percentile income for the community with the estimated annual costs for housing, food, utilities, health care, and other necessities to see how many of those expenses that level of income can cover. The 20<sup>th</sup> percentile income is available from the U.S. Census and information on typical spending for other necessities by households at that income level is available from United For ALICE.<sup>8</sup>

<sup>8</sup> <https://www.unitedforalice.org/home>

ALICE stands for **A**sset **L**imited, **I**ncome **C**onstrained, **E**mployed. The ALICE research “quantifies and describes the number of households that are struggling financially.”<sup>9</sup> ALICE focuses on low-income, employed consumers and the necessities they require. ALICE refers to these necessities as the ALICE Essentials Index. The ALICE survival budget includes seven essential areas for household expenses: housing, childcare and education, food, transportation, health care, technology, taxes, and miscellaneous.

United for ALICE breaks out expected annual expenses by household size and by the number of adults and children. Most households served by Cairo Water District have 1 or 2 occupants. The average income of nonfamily households in Cairo Water District is \$21,875, while the average income of family households is \$91,250.<sup>10</sup> As a result, this analysis looks at the annual expenses of a low-income household with one adult.

The 20th percentile household income for the census area is only \$21,539.<sup>11</sup> That income *includes* any money the household has received through social safety net programs. A household at that income level struggles to pay for basic necessities. According to United for ALICE, a low-income household with two adults has annual expenditures of \$36,792.<sup>12</sup> The chart below shows how far the 20<sup>th</sup> percentile income goes to cover annual expenses.

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<sup>9</sup> <https://www.unitedforalice.org/overview>

<sup>10</sup> U.S. Census table S1903

<sup>11</sup> U.S. Census table B19080

<sup>12</sup> <https://www.unitedforalice.org/county-reports/new-york>



Figure 7: Low-income households in Cairo Water District generate enough annual revenue to **cover about 70% of expected essential expenses.**



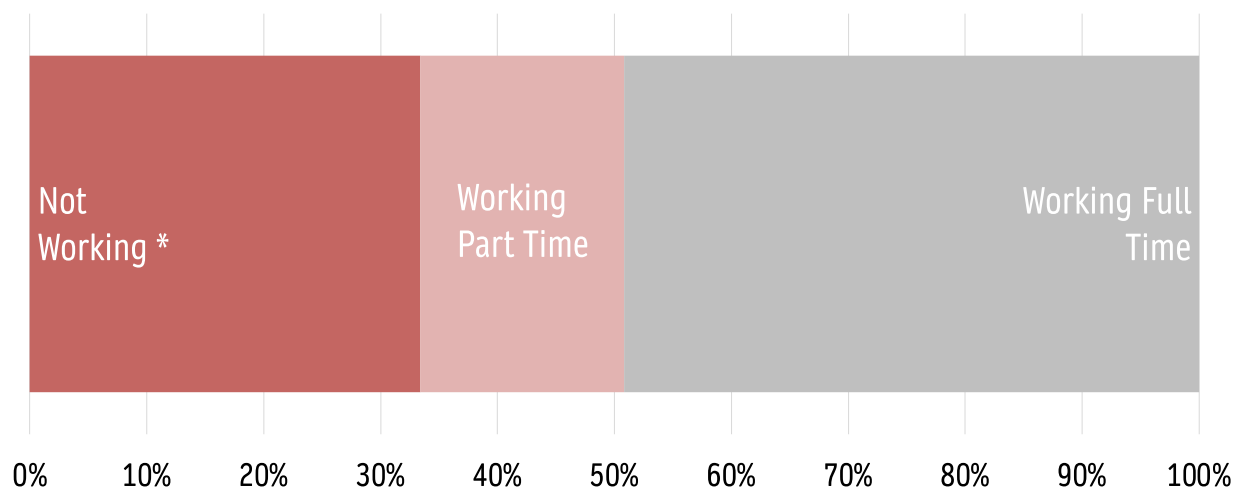
## Employment

Another affordability consideration for utilities is the number of customers who are employed. The Census divides the workforce, which is defined as anyone aged 16 and higher, into a few categories:

- Employed: people who have civilian jobs, either full-time or part-time.
- Unemployed: people who do not have civilian jobs but are actively seeking employment.
- Armed Forces: people serving our country as active-duty military.
- Not in the labor force: people who do not have civilian jobs and are not actively seeking employment. This can include retirees, people still in school, people who are not able to work due to health issues or disabilities, and people who have voluntarily removed themselves from the workforce, perhaps to care for a relative.

The unemployment rate for Cairo Water District's service territory was 0 percent in the 2022 American Community Survey. That rate is much lower than the national rate (3.4 percent) and the rate for the state of New York (3.9 percent). 33.4 percent of the census area residents aged 16 and higher are not in the labor force.<sup>13</sup> An additional 17.4 percent of the population is working part-time.<sup>14</sup>

Figure 8: **About half** of the people served by Cairo Water District are not working or work only part-time.



About 56 percent of Cairo Water District residents receive Social Security. This is slightly higher than state (32 percent) and national (31 percent) figures.<sup>15</sup>

## Participation in Social Safety Net Programs

Another indication that customers may have issues affording their water and wastewater bills is if they qualify for and participate in social safety net programs. These programs have income requirements and are an indication that households have difficulty paying for other essential goods and services including food and housing. Some programs include:

<sup>13</sup> U.S. Census table DP03

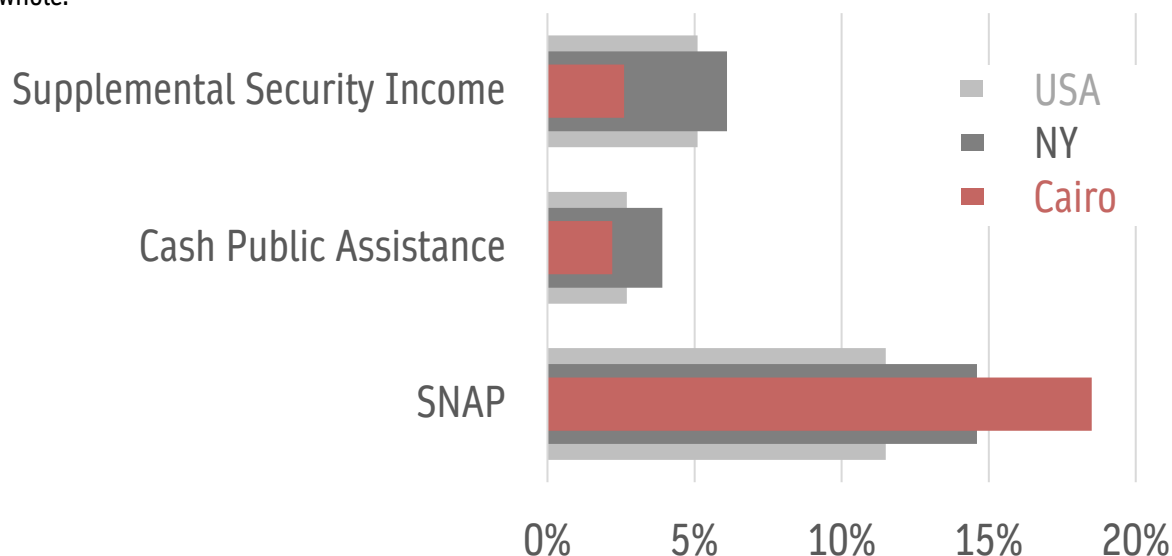
<sup>14</sup> U.S. Census table S2303

<sup>15</sup> U.S. Census tract DP03

- Supplemental Nutrition Assistance Program (SNAP)<sup>16</sup>: commonly known as food stamps, SNAP provides nutrition benefits to supplement the food budget of needy families.
- Supplemental Security Income (SSI)<sup>17</sup>: pays benefits to disabled adults and children who have limited income and resources and pays benefits to people aged 65 and older without disabilities who meet certain financial limits.
- Cash public assistance<sup>18</sup>: a catch-all term for multiple social welfare programs including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Temporary Assistance for Needy Families (TANF), and General Assistance (GA).

Participation in SNAP in the Cairo Water District service area is less than state and national figures. Participation in cash public assistance and SSI, however, is higher in Cairo Water District service area, as the figure below shows.<sup>19</sup>

Figure 9: **Cairo Water District customers** participate in SNAP at higher levels than the state and country as a whole.



## Hours of Minimum Wage Work

This metric, developed by Manny Teodoro, a professor at University of Wisconsin and a thought leader on water and sewer affordability, measures the number of hours of minimum wage labor required per month to pay for sewer service. This is a measure of the labor burden on the lowest earners in a community. The minimum wage for the Cairo Water District service area is \$15.00 per hour.<sup>20</sup> This metric looks at gross wage, so no income taxes or payroll taxes have been removed. Cairo Water District bills quarterly, and average usage is 13,500 gallons per quarter. Under Cairo Water District's current rates, a customer using the average amount of water pays \$99.16 for drinking water and \$108.00 for

<sup>16</sup> <https://www.fns.usda.gov/snap/supplemental-nutrition-assistance-program>

<sup>17</sup> <https://www.ssa.gov/benefits/ssi/>

<sup>18</sup> <https://www.census.gov/topics/income-poverty/public-assistance/about.html>

<sup>19</sup> U.S. Census table DP03

<sup>20</sup> <https://www.dol.gov/agencies/whd/minimum-wage/state>

wastewater, for a total of \$207.16 per quarter. That household would need to work 13.8 hours per quarter at minimum wage, or 4.6 hours per month, to pay that bill.

## Rate Design

Rates can be designed and priced to achieve certain objectives such as affordability. There are two general types of charges that utilities can levy to generate revenue from customers:

- The base rate that is charged to all customers regardless of usage, and
- The volumetric rate that is charged to customers based on how much water and wastewater they generate.

Designing rates to meet any objective depends on balancing these two types of charges. The base rate can be relatively high and volumetric rate relatively low, or the volumetric rate can be relatively high and the base rate relatively low, or both the base rate and the volumetric rate can be the middle. All combinations generate the same amount of money, but some are better than others at achieving other objectives such as affordability.

The best rate design to meet the objective of affordability is one where customers have the most control over their final bill total. The design that gives customers the most control over the final bill total has a relatively high volumetric rate and a relatively low base rate, as well as one that does not include a high number of gallons in the base rate. Increasing customer control over their bill amounts is seen as an important component of affordability pricing because less fortunate households can conserve water in order to lower their water bill. This is especially true for smaller households that may have low usage. Note, however, that larger families that are less fortunate likely use a higher amount of water (and generate a higher volume of wastewater as a result) because of the number of people in the household can be hurt by this type of rate design.

Cairo Water District's current rates for water and for wastewater has both a base charge and a volumetric charge, but the base charge includes a significant number of gallons (9,000 gallons per quarter for water and 8,000 gallons per quarter for wastewater). The average usage for the utility is about 13,500 gallons per quarter. Customers have some control over their bills because they are charged for usage, but less control than they would if fewer gallons were included in the base charges. Most households served by Cairo Water District have one or two occupants, and the lowest-income households tend to be small, non-family households (households that don't have related people living together). Many smaller households likely do not use all the gallons included in the base charge and are essentially being charged a flat rate for water and wastewater. They have very little control over their bill as a result.

Cairo Water District may wish to consider lowering the gallon inclusion in the base charge in the future in lieu of raising rates if additional revenue is needed for the utility.

## Availability of Federal Customer Assistance Programs

The best practice in the water and wastewater sector around affordability today involves charging what is necessary to run the utility properly for decades to come, identifying customers that may have affordability issues, and designing assistance programs to allow those customers to pay the charges necessary to sustain the utility.

Cairo Water District customers currently do not have access to assistance programs. Funding for the federal Low-Income Household Water Assistance Program (LIHWAP) and Emergency Rental Assistance Program that were started as a response to the economic impact of the COVID-19 pandemic have expired, and there are no immediate plans to continue these programs.

## Residential Affordability Conclusion

Cairo Water District serves a community with many less fortunate households, and no federal customer assistance programs are currently available. Cairo Water District may wish to consider offering customer assistance programs in the future to help other less fortunate customers with their bills, especially if rates need to increase.

Cairo Water District's rates give customers some control over their bills, but many of Cairo Water District's households are one or two people who do not generate a significant amount of water and wastewater, and the base charges for the two utility services include a high number of gallons. This means low-use customers don't have any control over their bills, and the cost of basic necessities like housing, food, other utilities, and health care are greater than most low-income households earn. Because less fortunate households are already overburdened in affording their basic necessities, Cairo Water District may consider asking commercial and industrial customers to bear a greater share of the water and wastewater burden going forward.