

July 17, 2015

The Honorable Richard Beach
President, Village of North Adams
P O Box 291
Village of North Adams, MI 49262

Subject: User Charge Analysis Report

Dear Mr. Beach:

Attached is your sewer rate analysis report package. Before I address that, I want to say this to you and all others who will read this.

Cary Addleman got the project started off on the right foot. He turned it over to Kathy Cooley to help me with data acquisition. Kathy has also been wonderful to work with. She gathered data and information quickly and accurately and gave me good guidance as I built your rate analysis model. Due largely to the combined efforts of these two, and probably a few others behind the scenes, the following analysis report should be very accurate and serve you well.

As for the report package itself, it is somewhat long and parts of it are complex, but the report should be fairly self-explanatory. Some things may be a bit difficult to interpret. You selected at the beginning of the project to have me meet with you and the board to explain my findings and recommendations. Assuming we keep that meeting, I can explain everything then. If you decide to forgo that meeting, just give your questions to Ms. Cooley and she and I will discuss them and get answers back to you.

Finally, I am sure you and the other board members know of other villages, cities and districts that also need rate setting help. As you run into these folks, I hope you will tell them about me. I get almost all of my business by referrals from past clients and I hope to be able to trace several future clients back to my work with North Adams.

Best regards,
GettingGreatRates.com



Carl E. Brown
President

Enclosures

Sewer Rate Analysis Report Village of North Adams, Michigan

Prepared July 16, 2015

Carl Brown, President
GettingGreatRates.com, LLC

Initial Actions

This section of the full report can serve as stand-alone guidance on what I recommend you do first. (This section also makes a good handout for the public and media.) The remainder of the report and the analysis modeling will further explain the initial action recommendations as well as follow up actions I recommend.

Summary

Not having metered water use upon which to base sewer rates, you assess sewer rates on a flat rate basis for each equivalent dwelling unit (EDU). Metered water use is the fairest basis for assessing sewer rates, but the EDU basis is as fair as you can get otherwise. Regarding cost of capacity to serve, the EDU basis is even fairer than the way most metered rate structures are currently set up.

Your sewer rates are, at least temporarily, adequate to pay current and near-term operating costs, including escalating equipment repair, maintenance and replacement costs. That is largely due to the fact that you finished paying off a loan with a \$27,000 annual payment. And, fortunately, you have strong reserves. However, your system will require more maintenance and replacement over time. Therefore, calculations show that your rates need to go up by 22.4 percent initially and 4.0 percent in the future to match expected system inflation costs.

For your information, most of my clients end up raising overall rates by 20 to 45 percent initially so your rates will be on the low side of that range. Other than having flat rates, your situation is rather usual and your rates do not need to go up much.

Initial Action Recommendations

- 1. You should assess the rate shown as the “minimum charge” that appears in Table 1 of the model. This fee, with future inflationary increases, covers the cost of operating, maintaining and administering the system. It also covers the cost of infrastructure built in order to have the capacity to serve the customers.**
- 2. The rate calculation assumed you will make this rate in place early enough to enable you to collect at this rate for the September 1, 2015, billing (you would pass a revised ordinance at least one billing cycle before that). These changes will be further described in the full report.**
- 3. Rates are modeled to continue billing on a monthly cycle.**
- 4. Continue assessing the current new sewer connection (tap-on) fee per EDU as shown in Table 9 for in-service area customers. If you make any out of service area connections I recommend you set those fees at 50 percent more than those for in-service area connections. These also are shown in Table 9.**

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Names Used in This Report

The Village of North Adams, Michigan and its sewer utility will later be called “the Village” or “you.”

GettingGreatRates.com, will later be called “me” or “I.”

This narrative report and the accompanying analysis model will later be called collectively the “report.”

The analysis model named “Village of North Adams, MI, Sewer Rates Scenario 2015-1” will later be called “Scenario 1.” The model is simply the set of calculations used to determine the rates needed to fully fund the utility’s anticipated needs.

Disclaimers

Please keep this in mind. This report does not *direct* the Village to do anything. Actions you take or do not take are strictly up to you. The report is meant to inform and educate so you can then make well-informed decisions about actions to take.

The report and model are not legal recommendations. For legal issues consult your attorney.

Purpose of the Full Report

This report is intended to help you to better understand the utility's situation and what should be done, and to help staff to prepare recommended rate and fee revisions.

The report package includes:

- A cover letter,
- An initial actions section that summarizes the initial recommended rates,
- A full narrative report covering the analysis, findings and recommendations in detail, and
- The analysis model itself which depicts what will happen if you adjust rates and fees in the ways depicted in the model.

Unlike many reports, this one starts with action items and progresses to the reasons I recommend those actions and then to more general issues and background information.

Note that, even though the table numbering is not continuous, the model has the full complement of tables needed for your analysis.

Sewer System; Current Status and Things to Come

Summary

If circumstances develop as modeled, overall rate revenues would need to go up by 22.4 percent initially and 4.0 percent incrementally in future years. In my experience, that is a mild initial rate increase. In your case the increase is needed due mainly to aging infrastructure that needs more repair and maintenance work than in the past.

The monthly equivalent bill for a 5,000 gallon residential sewer customer (the standard for calculating the affordability index) would go up by \$5.60 initially (top of Table 6). The affordability index would rise from 0.76 percent to 0.93 percent initially (Table 6). By comparison, the national average affordability index is around 1.0 percent, so even after a 22 percent increase, your rates will still be more affordable than most. That is excellent.

For modeling purposes, it does not matter whether funds are held in the general system account, a debt service sinking fund, debt coverage reserve fund, etc. Therefore, the model accounts for funds in a more simplified way than you do. When it comes to segregating funds, staff knows best how to do that so the model does little in this regard and leaves the segregating up to staff.

The model template I use for rate calculations is large and robust. Your rate calculation needs are simple. Therefore, to reduce report volume, some of the tables of the model were not used for your calculations. That is why there are gaps in table numbering.

Several line graph charts in the analysis model graphically depict some things which would be difficult to pick out of the tables. In all the charts the **blue line** represents what would happen under the **recommended** rates and the **red line** under the **current** rates. Trends for the red lines are (generally) bad. Those for the blue lines are (generally) good. Review the definitions section of the model to learn the meaning of terms used in the charts.

As you set and later reset rates I suggest you follow the guidance I give in my book, "How to Get Great Rates." I gave a copy to Cary Addleman so check with him about reviewing it. I suggest you also use the "Replacement Scheduler[®]" spreadsheet, available for free download from gettinggreatrates.com and use it for future equipment replacement scheduling.

Future Sewer System Action Recommendations

(This is a continuation of the action items included in the Initial Actions section.)

5. **Modify your current late payment/non-payment ordinance language so that it effectively accomplishes what is described in the following bullet points:**
 - **If payment is insufficient to cover all amounts billed, a late payment penalty of 10 percent of the outstanding balance or \$10.00, whichever is greater, will be applied to the customer's account each month.**
 - **Service will be shut off in accordance with, and at the earliest time allowed by State law.**
 - **Reconnection after non-payment will only be done after the customer has paid all fees and penalties owed, plus a reconnection fee that is 50 percent higher than your usual reconnection fee after shutoff to make repairs, transfer property to a new owner, change tenants and similar events not related to non-payment.**
 - **If a customer is disconnected for non-payment a second time in a one-year period, in addition to the above fees and penalties, you should collect an additional deposit from that customer in an amount you deem appropriate. Such deposit should only be expended to pay the customer's outstanding bill, fees and penalties in the case where the outstanding bill, fees and penalties cannot be collected. The customer moving away without paying is such a circumstance this deposit is meant to guard against.**

6. **If all goes as modeled, on the one-year anniversary of making the rate adjustments called for above, and for several years thereafter, raise all rates and fees across the board as shown near the top of Table 2 of the analysis model, attached, on the line called, “Weighted-average Rate Increases Started During This & Future Years.” That is 4.0 percent.**
 - a) Important Note: The first percentage shown on this line is the effective system-wide weighted average rate increase of all initial rate adjustments that have been recommended. You will not increase all current rates by this percentage. Instead, the actual rate to adopt is shown in Table 1. Also note that this rates is on an equivalent dwelling unit (EDU) basis. Customers with connections rated at greater than one EDU would pay a commensurately higher fee.
7. **You should examine your shut off and reconnection and similar fees to determine if they are high enough to recover the related costs. Revenue generation is not the goal for such programs. It is a fairness issue because if these fees do not recover their related full costs, regular customers will have to make up the difference in the form of higher user fees.**

Discussion of Significant Issues

User Charges Based Upon Equivalent Dwelling Units (EDUs)

Customarily, a typical single family home is classified as one EDU. All other types and sizes of customers are then classified in proportion to how many EDUs they account for. Thus, it is critical that you assess EDUs accurately so that each customer will be billed fairly and so that the utility will receive adequate income to pay for the service provided.

From my review of your EDU table I have concluded that your rates are laid upon a good basis. Continue with that structure unless someday your customers go on metered water. In that case, you should switch to metered sewer rates.

Debt and Tap-on Fees

Debt was incurred to build system improvements not too long ago. Because you have been diligent in pre-paying on that loan, you paid off the loan last year. That is very significant because those debt payments accounted for approximately one-third of your operating costs.

I was told that in the future the Village will probably add few if any new connections in most years. Therefore, I modeled new connection fees for one EDU but I assumed no such fees will actually be collected for the next 10 years. Also, I modeled the fee for a one EDU new connection to be the same as your current fee, \$2,700 and the fee for one EDU connected outside of the Village at 50 percent higher. These are shown in Table 9 of the model. Connections rated at higher than one EDU should be assessed a commensurately higher fee. Thus, an in-Village new connection rated at 2.0 EDUs would pay a fee of \$5,400.

Target Reserve Levels

Your current total reserves are slightly higher than the reserve levels I usually recommend for system that have inadequate reserves – congratulations. I want you to continue with those reserve levels. Therefore, I have modeled rates and fees that will enable you to maintain your current level of total reserves, indexed for inflation in the future. In the tenth year your reserves should total approximately \$190,000, as shown at the bottom of Table 6.

In addition, I recommend you continue segregating reserves into the several “pots” that you currently maintain because that helps to put into perspective for everyone that each reserve has a purpose. It is not just extra cash sitting around looking for a home.

How Rate Adjustments Will Affect Customers

Unfortunately, high volume and low volume customers with the same EDU rating pay the same bill amount as the average volume customer. Without water meter readings to use for billing, there is no good way around this situation. However, fortunately, the affordability index shown near the top of Table 6 will be 0.93 percent after the initial rate adjustments. That is just below the national average so your rates will need to be considered affordable on that basis.

Unfortunately, if the Census data used to project your customers’ future income levels is correct, and your rates actually need to go up by 4.0 percent per year in the out years, your rates will become

progressively less affordable over time. Of course, you should make all possible efforts to control costs but in the end, whatever the costs are, they will have to be paid. I build some conservative factors into my model and I assumed an additional \$45,000 in system improvements each year so hopefully, your costs will not rise as rapidly as projected, enabling you to hold down future increases.

Affordability Index: The monthly charge for (typically) 5,000 gallons of residential service divided by the median monthly household income for the area served by the system. An index of 1.0, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable. Affordability index is a primary factor in determining grant and loan eligibility and grant amount.

Equipment Repair, Maintenance and Replacement (R&R)

Your system is aging. It is costing more to maintain as time passes. That is the nature of water based utilities. While you can and should be assessing the nature of your R&R expenses to determine if and when you can do upgrades at less net expenses, over the short-term, you simply must pay what it costs to maintain the system.

Nearly half of your operating costs involve R&R. While you cannot do much about this in the short-term, longer-term you may be able to bring down some of your R&R costs. For example, I read in the notes attached to a listing of costs sent to me that between \$10,000 and \$15,000 in system repairs was due to one or several customers flushing so-called “flushable wipes” and clogging the collection system. This problem is almost always preventable. You need to have a policy that such wipes (and similar problem items) are not allowed to be flushed. You also need to do a good education initiative to inform your customers not to flush them and why – it causes plugging and breakdowns, and those cost everyone in higher rates. They can save themselves important money by NOT flushing those items. If you can reduce the R&R annual cost by \$10,000 to \$20,000 with measures like that, you can save your customers serious user fee money.

The “repair and maintenance” cost item in Table 3 was, in fact, reduced by \$15,000 for 2015-16, assuming the “flushables” problem will not recur.

Closing

I modeled rates that will enable you to maintain appropriately strong reserves while covering increasing costs. Consequently, rates need to go up mildly on a percentage basis, \$5.60 per month in real terms. That is not bad when you consider that it will enable customers to get high quality, dependable service and allow the utility to maintain strong reserves with which it can cover emergencies and many operating cost saving improvements.

You now should do those things listed in the Initial Actions and Future Actions sections of the report.

Finally, as you address issues raised in this report and the analyses, you will have questions. Ask them. My goal is to help you set and keep adequate, fair and appropriately simple or complex rates. That takes time and effort and it may stretch out beyond the “conclusion” of the project. I’m in it for the long haul with you. Unless you ask for something that takes substantial or very different work, you will owe me no extra fees for that help.

General Decision Criteria

Several key criteria impact this analysis and include the following:

- The analyses used the test year of March 1, 2014 through the last day of February, 2015. This is the one-year period from which actual cost, revenue, usage and other data were gathered. The test year is the starting point for the analysis. Costs, revenues and all other data have been modeled to change in future years based upon inflation, growth, the recommended rates and fees and many other things. Essentially the analysis seeks “best fit” rates to satisfy many issues facing the system.

- The rate structure that is modeled uses the projected costs for the period March 1, 2017 through the last day of February, 2018. This is depicted in Table 19 of the analysis model. This year was judged to be a “normal” cost year.
- I assumed that future operating costs will rise, usually by 4.0 percent, as shown in Table 3 of the model.

Basic and Policy Action Items

Use the following as a checklist of “to-do” tasks. Many if not all of these things you are already doing but they bear repeating.

1. Before you officially propose or adopt new rate language, you may mail or e-mail the rate tables, ordinances or agreements to me and, as a part of this project, I will verify that your language will effectuate the intended rate and policy adjustments.
2. Determine how long, on average, it takes to perform the various services you provide in the field, such as after-hours service, meter disconnects and reconnects, special meter readings, etc. Be sure to include all the time you actually pay staff for performing these services. Then determine how much it costs the utility per hour, on average, to have staff perform these services. This includes benefits, taxes, use of utility vehicles, tools and minor equipment, etc. It should also include a fair amount to cover the time that office staff devotes to working on these services to track them, bill for them, etc. This should be the hourly rate you will charge for these services. In addition, set a minimum that you will charge for showing up, whether the service takes an hour to perform or 10 minutes. In essence, set your fees in the same way plumbers and similar technicians do – a set fee for showing up, which buys the customer a set amount of time, and an hourly rate if the job takes longer than the show up charge will cover. While accounting for time and other investments in the various functions is important, do not make the process burdensome. For many functions you likely can just estimate your time occasionally and charge fees based upon those estimates.
3. Retain required funds in interest bearing debt service and debt reserve accounts when required by your lender(s).
4. Have me conduct a full rate analysis again when your actual financial performance and my projections diverge significantly. That may be about five years from now or whenever a new, large financial upset or change, like a capital improvement, is looming.
5. Start adopting management strategies that are included in what is most commonly called, “advanced asset management.” These strategies can yield better service and reduced costs for utilities, especially those looking to build new facilities or replace existing facilities soon. Visit gettinggreatrates.com/ for more information on asset management or call me to discuss how the utility can move into asset management.
6. Continue to track your incomes, expenses and other financial impacts on a regular basis so the data and information you generate will support future rate adjustments.

7. As a reminder, check with your attorney for language and legality of all charges and issues discussed.

Principles

I use several guiding principles when I help systems set their utility rates, fees and policies. As you read the report and the analysis models, keep in mind that my recommendations have been weighed against these principles:

1. Sewer, sewer and all other utilities are businesses, regardless of who owns them. Businesses must cash flow properly.
2. In addition to functioning in a business-like manner, a utility has a responsibility to its customers to nearly guarantee its long-term prosperity for their benefit. The customers expect the service to be there whenever they want to use it. Thus, a utility must err on the conservative side by maintaining strong reserves that will enable it to weather financial storms.
3. If a service costs the utility money, the utility should recover that cost from the most logical "person" if that makes good business and community administration sense. For example, generally "growth should pay for growth." Developers should fairly pay for their consumption of utility capacity by paying commensurate tap fees. Likewise, service users should pay for their use. Each user or class of users should pay their fair share of service costs.
4. If adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, consider the necessity of the change carefully before making it. For example, while it may be warranted, raising the minimum charge markedly to your residential customers may make it very difficult for fixed, low-income customers to pay their sewer bills. That may cause more of them to pay late or not pay at all. That may trigger the utility's processes of having the utility attorney write threatening letters to those customers and eventually require shutoff of service. Thus, in the attempt to generate more net revenue by raising rates, net revenues may actually go down.

Village of North Adams, MI, Sewer Rates Scenario 2015-1 Modeling Results

This document contains the calculations that were performed to arrive at new user rates and fees for the next 10 years. These calculations are complex so key issues are also described in a narrative report that accompanies this model.

This analysis was conducted so as to establish user rates that are adequate to pay all reasonably expectable costs while charging rates that are fairly structured and appropriately simple or complex.

Scenario Description: No metered water readings are available for pricing of these sewer services. Therefore, pricing is now, and is recommended to remain, on an equivalent dwelling unit (EDU) basis.

For most, the best way to read and understand what this model means is this. Scan the "Index of Tables, Charts and Other Results" to see how the model is laid out. Scan the "Definitions" for any terms you are not already familiar with. Read and even ponder Table 1 and the line graph charts. These will show you how the proposed rate adjustments will affect ratepayers and the system. If you need more detail than that, review the entire model. Finally, rate setting involves much more than just rates so you need to read the accompanying narrative report to understand what you need to do and why.

Several tables in this model depict volume usage and user rates for the various customer classes. The model includes a continuum of volumes but many volume categories had no users. Most of these lines have been hidden simply to make the tables less voluminous. However, all volume classes that had use or that are break points for rate blocks are shown. For volume classes that are not shown, rates will be the same as the previous rate that is shown.

July 16, 2015

This rate analysis scenario was produced by
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Village of North Adams, MI, Sewer Rates Scenario 2015-1 Modeling Results

Index of Tables, Charts and Other Results

Note: When a numbered table or chart is missing from the list below and this model package, that was not a mistake. It simply means that table or chart from our master program was not needed in this situation.

Name	What Each is or Does
Definitions	The meaning of terms used in this report and in rate setting generally
Return on Investment	A summary of financial outcomes produced by the proposed rates
Table 1 - Recommended Rates	User rates calculated and recommended in this model for each user class
Table 2 - User Base and Operating Incomes	Basic user base and user rate statistics and operating revenues, projected for next 10 years, based upon adopting modeled rates
Table 3 - Operating Costs and Net Income	Operating costs projected for next 10 years, excluding debt service
Table 4 - Capital Improvement Program	Capital improvements and how they will be paid over next 10 years, including debt service
Table 5 - Capacity Cost Recovery	Costs for making new connections, if applicable
Table 6 - Indicators	Financial results that adopting the modeled rates will cause
Table 7 - Bill Comparisons Before and After Rate Adjustments	Illustrates effects of modeled rates on ratepayers (increases or decreases) at various usage levels
Table 8 - Combined Water and Sewer Bills	When rate classes for water and sewer are structured the same, this table is included. It compares customers' combined bills.
Chart 1 - Operating Ratio	Graph of operating ratio for next 10 years if modeled rates are adopted
Chart 2 - Coverage Ratio	Graph of coverage ratio for next 10 years if modeled rates are adopted
Chart 3 - 5,000 Gallon Residential User's Bill	Graph of bill for a 5,000 gallon per month residential user, with smallest available meter size, for next 10 years at modeled rates (used in grant and loan eligibility determinations)
Chart 4 - Affordability Index	Graph of affordability index of residential user's bill for next 10 years at modeled rates (used in grant and loan eligibility determinations)
Chart 5 - Working Capital vs Goal	Graph of total (unobligated) cash assets for next 10 years at modeled rates compared to the goal for total cash assets
Chart 6 - Value of Cash Assets Before Inflation	Graph of total (unobligated) cash assets NOT adjusted for inflation for next 10 years at modeled rates
Chart 7 - Value of Cash Assets After Inflation	Graph of total (unobligated) cash assets adjusted for inflation for next 10 years at modeled rates
Table 9 - Meter-size Based Tap Fees	Calculation of tap fees based upon meter or connection size and total tap fee revenues for the year following the test year, if applicable
Table 10 - Capacity Charges Based on Meter Size	Calculation of surcharges to apply to minimum charges, based upon meter or connection size, that will recoup part or all of the costs incurred to provide high-flow capacity, if applicable
Table 11 - Unit Charge Conservation or Declining Rate Blocks	Calculates the volume break points (blocks) at which conservation or declining rates should be positioned for each meter size so they will be in proportion to blocks for residential customers
Table 11 - Initial Rate Adjustments and Resulting Revenues	Recitation of current rates, and calculation of recommended (modeled) rates and blended revenues they will produce during the year following the test year (usually this year in real time)
Table 8 - Rate Statistics	Table depicting various effects of modeled rates
Table 12 - Test Year Usage	Compilation of actual volume of service used by customers during the test year
Table 13 - Rates at End of Test Year	The user rate table in effect at the end of the test year
Table 14 - AMHI and Incomes	Annual Median Household Income data and system incomes for the test year
Table 17 - Equipment Replacement Details Chart	Detailed schedule of equipment replacements for next 20 years, if applicable

Index of Tables, Charts and Other Results, Continued

Name	What Each is or Does
Table 18 - Replacement Schedule	Calculation of the annual annuity (yearly savings amount) needed to pay for all equipment replacements as they come due and end with a desired balance
Table 15 - Cost Classification for Test Year	Sumation of the appropriate year's system costs and calculation of "cost of service" basis for recovery of fixed cost and variable costs
Table 16 - Marginal Costs for Test Year	Incremental (marginal) costs that would be incurred if the system produced incrementally more volume of service, the system brought on a new customer or did something similar, if applicable
Table 21 - Wholesale Customers' Share of All Costs	System operating costs attributable to wholesale, very large or very unusual customers, if applicable
Table 22 - Test Year Wholesale Customers' Share of Capital Costs	Incremental capital costs that are attributable to wholesale customers, if applicable
Table 23 - Appendix A to User Charge System for Current Year	Clean Water State Revolving Fund (SRF) loan program compliant rate calculation methodology applied to the current year, if applicable
Table 24 - Appendix A to User Charge System for Target Year	Clean Water State Revolving Fund (SRF) loan program compliant rate calculation methodology applied to the year when loan repayment will commence, or earlier if required by the agency, if applicable

Definitions

Affordability Index	The monthly charge for (typically) 5,000 gallons of residential service divided by the median monthly household income for the area served by the system. An index of 1.0, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable. Affordability index is a primary factor in determining grant and loan eligibility and grant amount.
Capacity Charge, also commonly called an Impact Fee or Availability Charge	A charge that buys a new customer system capacity. This is a charge levied on a new customer that recovers all or part of the capital costs to build capacity to be able to serve that customer's actual or potential demand. This charge may be a few thousand dollars for a residential customer to many thousands of dollars for a large industrial customer.
Capital Improvement Plan or Program (CIP)	A schedule of anticipated capital improvements. These are the more expensive items such as water towers, treatment plants and lines that generally require bond or grant funding. They do not include equipment replacement items.
Capital Improvement Reserves	Cash reserves dedicated to funding the CIP
Comprehensive Rate Analysis	A thorough examination of a system's operating, capital improvement, equipment replacement and all other costs, revenues, current rates, number of users and their use of the system, growth rates and all other issues surrounding the system. This examination will determine how rates and fees should be set in the future to cash-flow the system properly, to build appropriate reserves and to be fair the ratepayers. It also will determine how policies should be adjusted to enable the system to operate well now, operate well in the medium-range future (about 10 years) and prepare for expected and expectable events such as capital improvements and equipment replacement.
Connection Charge	A charge that buys a new customer connection to the system. This charge is levied on a new customer to recover all or part of the costs a system incurs in the course of connecting the new customer to the system. This may include labor costs for staff or others on-site; equipment sold by the system to the new customer for making the connection; equipment, tools and supplies used by system staff for making the connection; and the like. This charge may be a few hundred dollars for a residential customer to thousands of dollars for a large industrial customer.
Conservation (Inclining) Rates	Unit charges that go up as the volume used goes up
Cost to Produce	There are several ways to define cost to produce. Each is acceptable for different purposes. Generally, cost to produce is the total of all variable costs required to get service to a utility's customers during one year divided by the total units of service delivered during that year. In a proportional to use rate structure, this will be the variable cost. See "Cost Calculations" at the bottom of Chart 19.
Cost to Serve Rates	Rates where fixed and variable costs generated by each user class are paid by that class with minimum and unit charges, respectively.
Cost Types; Fixed and Variable	The two main types of costs are fixed - those that are related to the fact that someone is a customer; and variable - those that are related to the volume of the commodity delivered to customers. Generally, fixed costs should be recovered with minimum charges and variable costs with unit charges.

Definitions, Continued

Coverage Ratio (CR)	Incomes available to pay debt divided by the amount of the debt for that year. Most systems should have a CR of 1.25 or higher. Note: the CR in this model also includes reserves available to pay debt in the CR calculation, which is a more realistic approach to debt coverage.
Current Position	For a year, the sum of all incomes and undedicated reserves minus all current financial obligations for that year. Future obligations (next year's loan payments) and depreciation are not included. Current position is a good measure of overall financial health.
Declining Rates	Rates where unit charges go down as the volume used goes up
Flat Rates	Rates where all users pay exactly the same fee regardless of the volume of service they use
Equivalent Dwelling Unit (EDU) or Equivalent Residential Unit (ERU)	Based upon number of water using fixtures, average flow, potential flow or similar criteria; the consumption rate of the average single family home is rated at one EDU. All other types of customers are then compared on this measuring basis and the EDUs are calculated. Generally the purpose of this exercise is to calculate fees that each EDU must pay.
Incremental Rate Adjustments	Rate increases done, generally annually, following the initial rate adjustment. The goal of these rate increases is to keep the system's income and reserve levels on track. Rate structure fairness is a small issue, if it is an issue at all. Such increases are usually small, in the two to five percent per year range.
Initial Rate Adjustments	Rate adjustments done in follow up on the comprehensive rate analysis. Generally, the goal of such adjustments is to establish rates that put the system's income and reserve levels on track with the system's financial needs and do it with a structure that is fair to the ratepayers.
Inflow & Infiltration (I&I)	In a sewer system, water that gets into the collection system by way of illicit connections (inflow) such as gutter downspouts and leaks in manholes and sewer lines (infiltration)
Infrastructure	Hard assets, such as water towers, treatment plants and lines needed to provide service to customers connected to the system
Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of an asset. One asset may cost less to build but be more expensive to operate and maintain, yielding a higher life-cycle cost.
Marginal Costs	The part of fixed and/or variable costs that are unavoidable should use go up marginally for reasons like: a new customer is connected or an existing customer increased use. Generally marginal costs are less than the average fixed and variable costs but when extra use requires a system upsizing, they can be greater. These costs are especially useful when considering selling service at wholesale.
Operating Costs	Definitions vary. For rate setting purposes operating costs are costs incurred because a system is owned and operated. Such costs are generally recovered through user fees.
Operating Revenues	Revenues generated by user fees
Operating Ratio (OR)	Current incomes divided by current expenses, not including debt. An OR of 1.0 is "break even." Most systems should have an OR of 1.25 or higher. Note: the OR calculation in this model also included undedicated reserves, which is a more realistic approach to covering operating costs.
Payback Period	Time required for the investment made to get this analysis to return that investment through increased user and other fees
Potential Demand	The volume of service that a user could demand for a short period of time at full volume use. The potential demand limiting factor is usually the size of the customer's meter or service line.
Proportional to Use Rates	Rates where the minimum charge recovers all fixed costs, the unit charge recovers all variable costs, the unit charge is the same for all volume sold, and there is no usage allowance in the minimum charge.
Replacement Schedule	A timetable that describes equipment replacement and important repairs that are too infrequent and/or too expensive to cover as annual operating costs but not so expensive that they need to be covered as capital improvements.
Replacement Reserves	Cash reserves used to fund the Replacement Schedule
Return on Investment	The dollar amount or percentage of revenue gain enabled by this analysis

Definitions, Continued

Tap Fee, also called a Hook up Fee or Connection Fee	A charge that gives a new customer the <u>right</u> to connect to the system. This fee may include the costs of administering the connection program, such as staff time to 'sign up' new customers, get them into the system's billing program, do an inspection of the service connection to assure that it meets the system's standards and the like. This charge is usually minimal for a residential customer and maybe a few thousand dollars for a large industrial customer. Capacity and connection fees are commonly added to tap fees and the total fee is just called a 'tap' fee.
Test Year	The one year period from which data was gathered to be the basis of the rate analysis
Usage Allowance	The volume, if any, that is "given away" with the minimum charge. Most systems give away no volume. Those that give away an unlimited volume have what are called "flat rates."
User Fee, User Charge, User Rates	Fees assessed to customers for use of the system. Does not include tap, capacity or connection fees, late payment penalties or other types of charges.
Water Loss	Measured by volume or percent, the part of a water system's net water production that does not get to customers. This loss also includes billable volume lost due to under-registering customer meters.
Working Capital, Net Income	The amount left in the operating fund after paying all costs due during that month, year or other time period. Working capital of \$0 is "break even."
Working Capital Goal	The desired percentage in excess of "break even" for the operating fund. Small systems (a few hundred connections) generally should target 35 percent or greater. Larger systems can target less, down to a minimum of about 20 percent for systems with 5,000 or more connections but the goal for each system should be based upon the needs of that system.

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Village of North Adams, MI, Sewer Rates Scenario 2015-1

Table 1 - Recommended Rates

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Customer Class, Rate Class or Meter Size	Bottom of Volume Range in Gallons	Top of Volume Range in Gallons	EDU Charge per Billing Cycle	Usage Allowance in 1,000 Gallons	Unit Charge in 1,000 Gallons
Equivalent Dwelling Unit (EDU)	0	10,000,000	\$30.60	0.000	\$0.00

Village of North Adams, MI, Sewer Rates Scenario 2015-1

Table 2 - User Base and Operating Incomes

This table depicts user statistics and system incomes during the test year and for the next 10 years.

(First year balances and incomes are actual, subsequent years are projected.)

	Infla./De- flation (-) Factor	Test Year Year Starting 3/1/14	This Year Year Starting 3/1/15	2nd Year Year Starting 3/1/16	3rd Year Year Starting 3/1/17	4th Year Year Starting 3/1/18	5th Year Year Starting 3/1/19	6th Year Year Starting 3/1/20	7th Year Year Starting 3/1/21	8th Year Year Starting 3/1/22	9th Year Year Starting 3/1/23	10th Year Year Starting 3/1/24
User Base												
Average Users for the Year	NA	261	261	261	261	261	261	261	261	261	261	261
Users Added/Lost During the Year	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User Growth or Loss Rate	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Weighted-average Rate Increases Started During This & Future Years	NA	NA	22.4%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%

The gray highlighted line above shows the rate revenue increase for "This Year" (heading highlighted blue). However, for "This Year," each customer's bill will go up or down based upon how the new rates apply to their actual use and demand. In future years it is assumed that all rates and fees will go up, either by a simple inflationary factor shown on this line or restructured rates that produce this level of income increases.

In the "This Year" column above (heading highlighted blue), revenues will be collected at the now-current rates for the first part of the year and the modeled rates for the last part of the year starting on the date near the top of Table 12. Thus, the revenues shown in the last column of the table are "blended" revenues; part collected at the old rates and part collected at the new rates. It was then assumed that all rate adjustments made after the initial (major) adjustment will be done in time each year so fees can be collected from the first day of each new year at the (annually) adjusted rates.

Operating Incomes

User Fees	NA	\$68,785	\$76,447	\$85,867	\$89,302	\$92,874	\$96,589	\$100,453	\$104,471	\$108,650	\$112,996	\$117,516
Late Charges	NA	\$4,453	\$4,949	\$5,559	\$5,781	\$6,012	\$6,253	\$6,503	\$6,763	\$7,034	\$7,315	\$7,608
Connection Fees (Current Rate Structure) % Above		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Interest	NA	\$68	\$678	\$613	\$597	\$621	\$689	\$671	\$698	\$774	\$755	\$785
Replacement Fund	NA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Improvement Fund	NA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Connection Fees by Installment Payments	NA	\$24,809	\$23,012	\$21,000	\$19,000	\$17,000	\$15,000	\$13,000	\$11,000	\$9,000	\$7,000	\$5,000
Connection Fees by Installment Payments	NA	\$24,809	\$24,809	\$24,809	\$24,809	\$24,809	\$24,809	\$24,809	\$24,809	\$24,809	\$24,809	\$24,809
Total Regular Income		\$122,924	\$129,742	\$137,849	\$139,489	\$141,317	\$143,340	\$145,436	\$147,741	\$150,266	\$152,875	\$155,718

Village of North Adams, MI, Sewer Rates Scenario 2015-1

Table 3 - Operating Costs and Net Income

This table depicts expenses during the test year, this year and for the next 10 years.

(First year costs and net incomes are actual, subsequent years are projected.)

	Infla./De- flation (-) Factor	Test Year	This Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting
		3/1/14	3/1/15	3/1/16	3/1/17	3/1/18	3/1/19	3/1/20	3/1/21	3/1/22	3/1/23	3/1/24
(Note: Some future costs will experience inflation. Those costs that go up as use goes up are also increased by the growth rate in users and the percentage by which that cost is variable as reported in Chart 4.)												
Employee Wages	4.0%	\$12,696	\$12,696	\$13,204	\$13,732	\$14,281	\$14,853	\$15,447	\$16,064	\$16,707	\$17,375	\$18,070
Supplies and tools	4.0%	\$137	\$313	\$326	\$339	\$352	\$366	\$381	\$396	\$412	\$428	\$445
Repair and Maintenance	4.0%	\$56,757	\$41,151	\$42,797	\$44,509	\$46,289	\$48,141	\$50,066	\$52,069	\$54,152	\$56,318	\$58,571
Utilities (Energy and Phone)	4.0%	\$10,600	\$10,600	\$11,024	\$11,465	\$11,924	\$12,401	\$12,897	\$13,412	\$13,949	\$14,507	\$15,087
Dues and Memberships	4.0%	\$355	\$355	\$369	\$384	\$399	\$415	\$432	\$449	\$467	\$486	\$505
Subscriptions	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Billing Fees	4.0%	\$3,718	\$3,718	\$3,867	\$4,021	\$4,182	\$4,350	\$4,524	\$4,704	\$4,893	\$5,088	\$5,292
Certification	4.0%	\$160	\$160	\$160	\$160	\$160	\$160	\$160	\$160	\$160	\$160	\$160
Mileage	4.0%	\$252	\$252	\$262	\$273	\$283	\$295	\$307	\$319	\$332	\$345	\$359
Tools	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Equipment and Repairs	4.0%	\$669	\$669	\$696	\$724	\$753	\$783	\$814	\$846	\$880	\$916	\$952
Misc	4.0%	\$1,316	\$1,316	\$1,369	\$1,423	\$1,480	\$1,540	\$1,601	\$1,665	\$1,732	\$1,801	\$1,873
Payroll Taxes	4.0%	\$972	\$972	\$1,011	\$1,051	\$1,093	\$1,137	\$1,183	\$1,230	\$1,279	\$1,330	\$1,383
Employee Health Insurance	4.0%	\$4,645	\$4,645	\$4,831	\$5,024	\$5,225	\$5,434	\$5,651	\$5,877	\$6,113	\$6,357	\$6,611
Capitol Outlay	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fuel	4.0%	\$2,470	\$2,470	\$2,569	\$2,672	\$2,778	\$2,890	\$3,005	\$3,125	\$3,250	\$3,380	\$3,516
Attorney	4.0%	\$18	\$18	\$19	\$19	\$20	\$21	\$22	\$23	\$24	\$25	\$26
Accounting	4.0%	\$2,667	\$2,667	\$2,774	\$2,885	\$3,000	\$3,120	\$3,245	\$3,375	\$3,510	\$3,650	\$3,796
Misc	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Employee Help	4.0%	\$503	\$503	\$523	\$544	\$566	\$588	\$612	\$636	\$662	\$688	\$716
Office/Computer	4.0%	\$432	\$432	\$449	\$467	\$486	\$505	\$526	\$547	\$568	\$591	\$615
Improvements	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Workers Compensation	4.0%	\$1,521	\$1,521	\$1,582	\$1,645	\$1,711	\$1,779	\$1,851	\$1,925	\$2,002	\$2,082	\$2,165
Billback Ass.	4.0%	\$596	\$596	\$620	\$645	\$670	\$697	\$725	\$754	\$784	\$816	\$848
User Charge Analysis Services	5.0%	\$0	\$5,810	\$0	\$0	\$6,406	\$0	\$0	\$7,062	\$0	\$0	\$7,786
CIP Spending Plan	N.A.	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4
Total Operating Costs		\$100,484	\$90,864	\$88,450	\$91,981	\$102,060	\$99,474	\$103,447	\$114,640	\$111,875	\$116,343	\$128,777
Net Income (or Loss)		\$22,440	\$38,878	\$49,399	\$47,508	\$39,257	\$43,866	\$41,990	\$33,101	\$38,392	\$36,532	\$26,941
Working Capital Goal: 50%	In Dollars, That is:	\$50,242	\$45,432	\$44,225	\$45,991	\$51,030	\$49,737	\$51,723	\$57,320	\$55,937	\$58,172	\$64,388

Village of North Adams, MI, Sewer Rates Scenario 2015-1

Table 4 - Capital Improvement Program

This table depicts capital improvements and their funding. Costs reflect inflation.

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	This Year	Next Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	
CIP Spending Plan	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	
	3/1/14	3/1/15	3/1/16	3/1/17	3/1/18	3/1/19	3/1/20	3/1/21	3/1/22	3/1/23	3/1/24
Capital Improvements to be Paid With Debt											
None	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Capital Improvements to be Paid With Debt	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Improvements to be Paid With Cash											
Unspecified CIP	\$0	\$0	\$45,360	\$45,723	\$46,089	\$46,457	\$46,829	\$47,204	\$47,581	\$47,962	\$48,346
Total Cap Improvements to be Paid With Cash	\$0	\$0	\$45,360	\$45,723	\$46,089	\$46,457	\$46,829	\$47,204	\$47,581	\$47,962	\$48,346
Total CIP Planned Spending	\$0	\$0	\$45,360	\$45,723	\$46,089	\$46,457	\$46,829	\$47,204	\$47,581	\$47,962	\$48,346
CIP Funding Plan											
Improvement and Debt Retirement Funds Starting Balance	\$73,926	\$121,492	\$168,460	\$178,255	\$183,087	\$176,160	\$179,618	\$177,642	\$162,739	\$159,326	\$149,963
Working Capital Transferred to Improvement and Debt Retirement Funds	\$74,748	\$43,688	\$50,606	\$45,742	\$34,218	\$45,159	\$40,004	\$27,505	\$39,774	\$34,297	\$20,724
Improvement and Debt Retirement Funds Interest Earned (or Paid)	\$0	\$3,280	\$4,548	\$4,813	\$4,943	\$4,756	\$4,850	\$4,796	\$4,394	\$4,302	\$4,049
Total CIP Reserve and Income Sources	\$148,673	\$168,460	\$223,615	\$228,810	\$222,248	\$226,075	\$224,471	\$209,943	\$206,907	\$197,925	\$174,737
CIP Debt Payment Plan											
USDA Loan (Paid off in 2014)	\$27,181	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Debt Payments	\$27,181	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CIP Spending Net of Grant/Loan Proceeds and Other External Incomes	\$27,181	\$0	\$45,360	\$45,723	\$46,089	\$46,457	\$46,829	\$47,204	\$47,581	\$47,962	\$48,346
Improvement and Debt Retirement Funds Ending Balance	\$121,492	\$168,460	\$178,255	\$183,087	\$176,160	\$179,618	\$177,642	\$162,739	\$159,326	\$149,963	\$126,391

Notes: The Village makes and will continue to make periodic system improvements and fund through the annual budget.

Village of North Adams, MI, Sewer Rates Scenario 2015-1

Table 5 - Capacity Cost Recovery

(First year figures are actual, subsequent years are projected.)

This table shows tap and capacity fee revenues and costs to expect. From these costs, tap fees and capacity demand charges will be developed in Table 5 and Table 8, respectively.

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Infla./De- flation (-) Factor	Year Starting 3/1/14	Year Starting 3/1/15	Year Starting 3/1/16	Year Starting 3/1/17	Year Starting 3/1/18	Year Starting 3/1/19	Year Starting 3/1/20	Year Starting 3/1/21	Year Starting 3/1/22	Year Starting 3/1/23	Year Starting 3/1/24
Tap Fee Revenues											
Customers (Taps) Added During the Year	0	0	0	0	0	0	0	0	0	0	0
Weighted Average Fee per New Tap	4.0%	\$0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Total Tap Fee Revenues	NA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Operating Costs Associated With Making New Connections

Field Costs for New Connections	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Administration Costs	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Direct Costs for New Connections		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Note: These costs should be recovered by fees charged for making new taps (usually called, "tap fees") regardless of the demand capacity (generally size) of each new tap made.

Net Tap Fee Revenues

Revenues Net of Operating Costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cum Rev Net of Operating Costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Note: Connection charges should almost always cover at least the operating costs to make connections. Thus, cumulative revenues net of operating costs (immediately above) should be positive.

Annualized Capacity Cost (Depreciation)

Total Fixed Assets Book Value	% of Total Attributable to Capacity	Capacity Cost	Annualized Capacity Cost (see Note)
\$2,610,000	25.0%	\$652,500	\$38,027
Totals	25.0%	\$652,500	\$38,027

Capital Costs Attributable to Growth and Capacity Development (Debt Service, Cash-paid Capital Improvements and/or Depreciation)

	% of CIP Attributable to Capacity
Target % to Recover From Tap Fees, (Table 9):	6.9%
Target % to Recover From Capacity Charges, (Table 10):	0%

Note: Capacity and connection costs WILL be recovered in one way by default, or a combination of ways by design: through regular user fees, in which case existing customers pay the costs to bring on new customers; through "tap" or connection fees, in which case new customers pay "up front" for the costs they cause the system to incur; through on-going demand or capacity charges, preferably based upon meter or connection size, in which case all customers pay for the capacity costs they cause over time; or some combination of these.

Village of North Adams, MI, Sewer Rates Scenario 2015-1

Table 6 - Indicators

This table depicts the affordability of future rates, the financial health of the system and the ending balances in various accounts for the test year and the next 10 years.

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Capacity Indicators	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting	Year Starting
	3/1/14	3/1/15	3/1/16	3/1/17	3/1/18	3/1/19	3/1/20	3/1/21	3/1/22	3/1/23	3/1/24	
Equivalent Final Monthly Bill for a 5,000 gal per Month Residential User	\$25.00	\$30.60	\$31.82	\$33.10	\$34.42	\$35.80	\$37.23	\$38.72	\$40.27	\$41.88	\$43.55	
Annual Median Household Income (AMHI)	\$39,568	\$39,657	\$39,747	\$39,837	\$39,927	\$40,017	\$40,108	\$40,198	\$40,289	\$40,380	\$40,472	
Affordability Index for Proposed Rates	0.76%	0.93%	0.96%	1.00%	1.03%	1.07%	1.11%	1.16%	1.20%	1.24%	1.29%	
Affordability Index is the percent of AMHI needed by a 5,000 gallon per month residential user to pay their bill. Rates near 1.0% are common in the U.S. and are generally considered affordable. Federal grant agencies generally will not consider awarding grants if this indicator is less than 2.0%.												
Estimated Operating Ratio for Proposed Rates	2.76	2.89	2.60	2.62	2.55	2.56	2.53	2.42	2.38	2.31	2.18	
1.0 is break even for Operating Ratio. Below 1.0 indicates operating in the "red." Generally, the operating ratio should be at least 1.15 for large systems, 1.30 or more for medium systems and perhaps as high as 2.0 for small systems.												
Estimated Coverage Ratio for Proposed Rates	7.32	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
Coverage Ratio applies only to years with debt service. 1.0 is break even. Generally, the coverage ratio should be at least 1.25.												
Reserves	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance
	Ending on 2/28/14	Ending on 2/28/15	Ending on 2/29/16	Ending on 2/28/17	Ending on 2/28/18	Ending on 2/28/19	Ending on 2/29/20	Ending on 2/28/21	Ending on 2/28/22	Ending on 2/28/23	Ending on 2/29/24	Ending on 2/28/25
Permits, Receiving, Replacement and O&M Funds	\$102,550	\$50,242	\$45,432	\$44,225	\$45,991	\$51,030	\$49,737	\$51,723	\$57,320	\$55,937	\$58,172	\$64,388
Improvement and Debt Retirement Funds	\$73,926	\$121,492	\$168,460	\$178,255	\$183,087	\$176,160	\$179,618	\$177,642	\$162,739	\$159,326	\$149,963	\$126,391
Total Cash Assets (Excluding Dedicated Reserves) Before Inflation	\$176,475	\$171,734	\$213,892	\$222,480	\$229,078	\$227,189	\$229,355	\$229,365	\$220,059	\$215,263	\$208,135	\$190,779
Total Cash Assets (Excluding Dedicated Reserves) Discounted for Inflation (Future Unrestricted Purchasing Power)	\$176,475	\$171,734	\$213,892	\$220,700	\$225,427	\$221,780	\$222,103	\$220,336	\$209,705	\$203,494	\$195,181	\$177,475
Sum of All Reserves	\$176,475	\$171,734	\$213,892	\$222,480	\$229,078	\$227,189	\$229,355	\$229,365	\$220,059	\$215,263	\$208,135	\$190,779

Chart 1 - Operating Ratio

Village of North Adams, MI

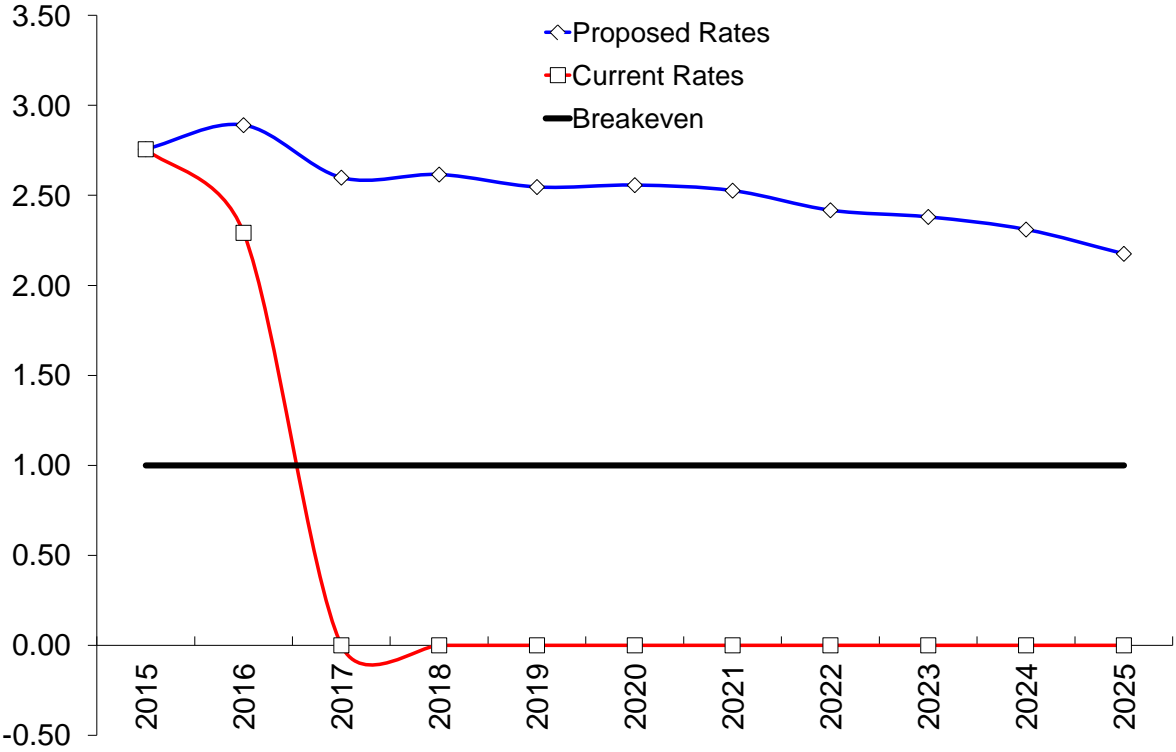


Chart 2 - Coverage Ratio

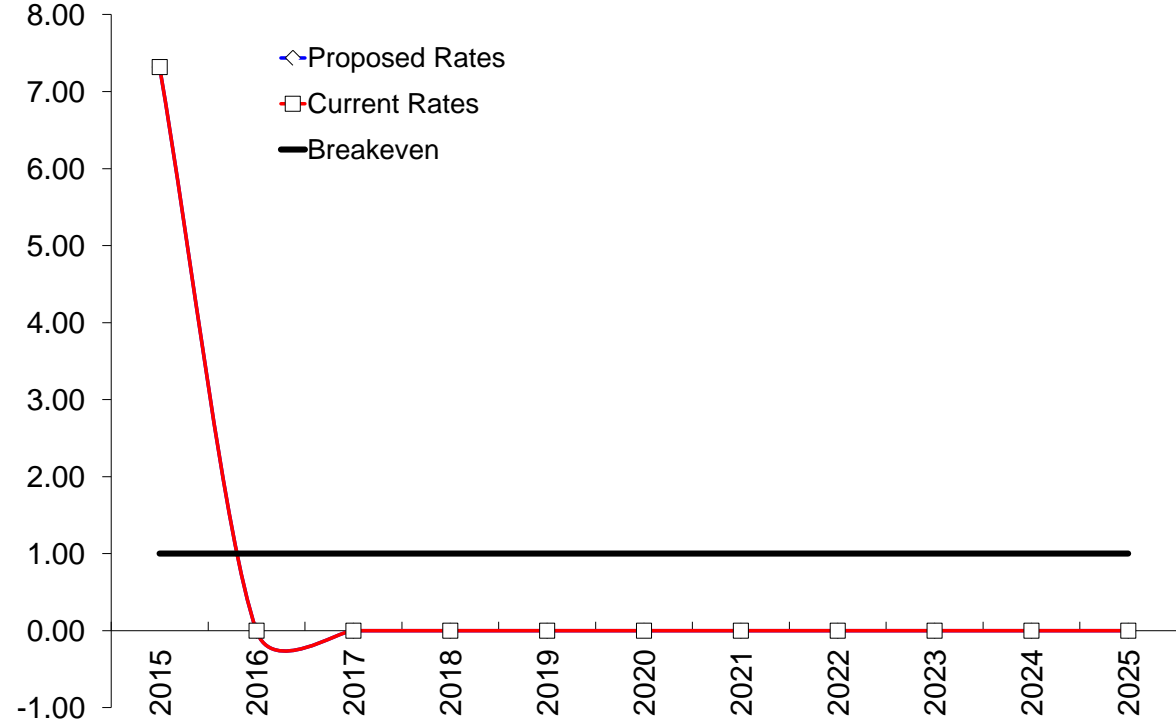


Chart 3 - 5,000 Gal Residential User's Bill

Village of North Adams, MI

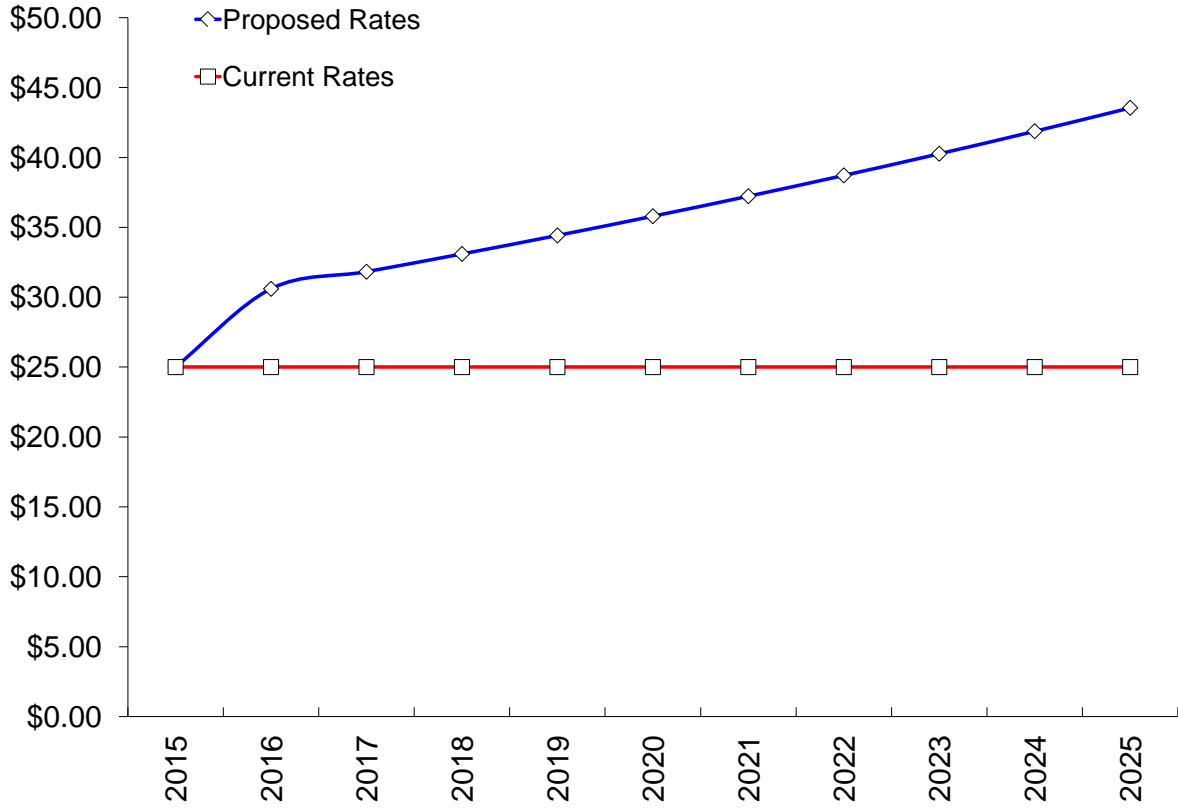


Chart 4 - Affordability Index

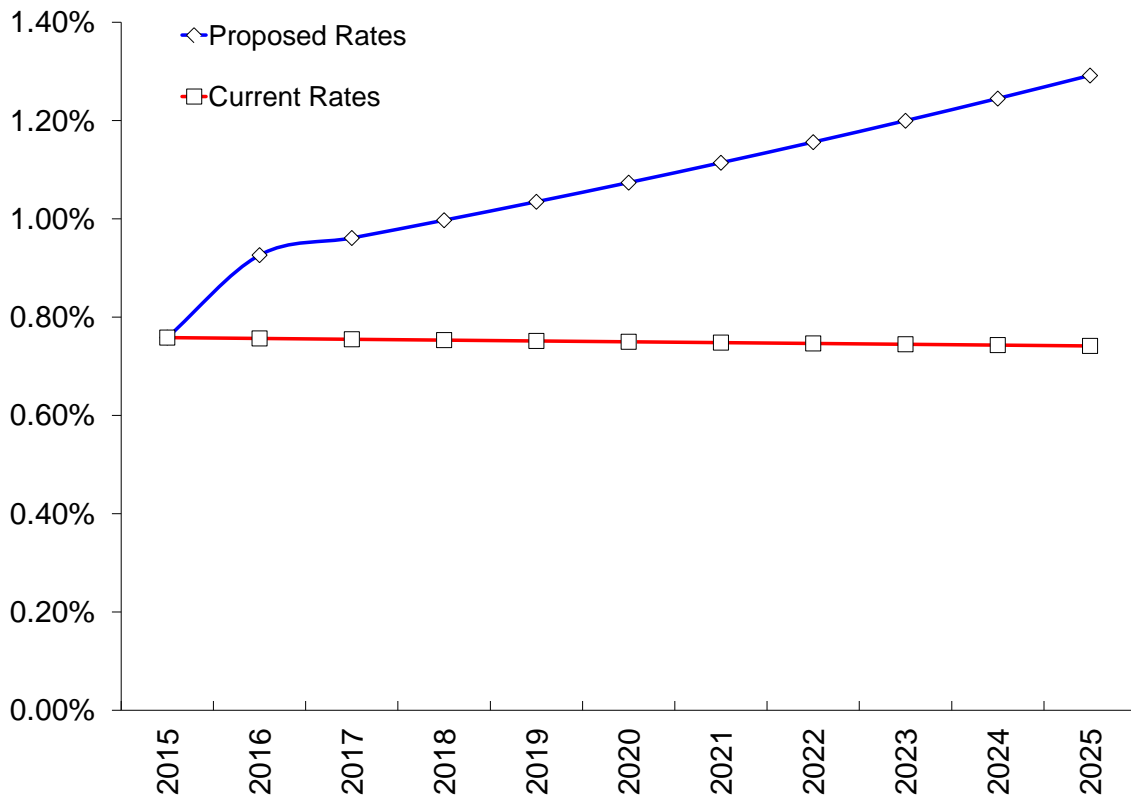


Chart 5 - Working Capital vs Goal

Village of North Adams, MI

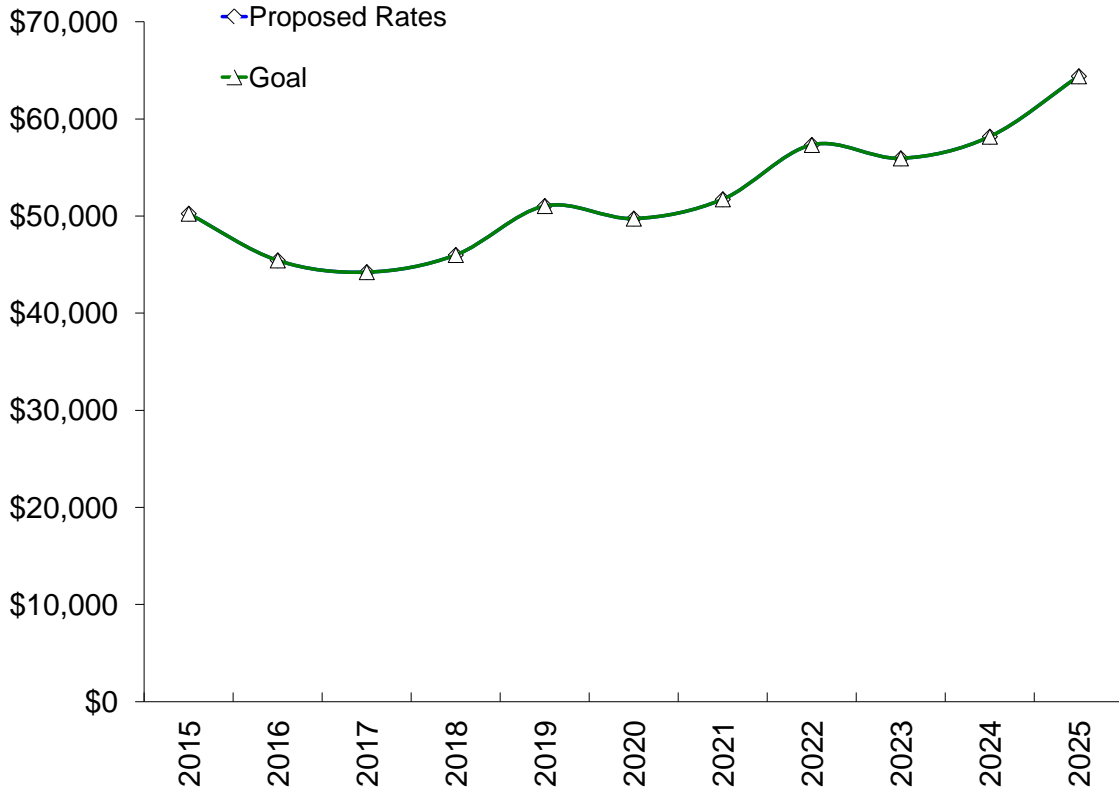


Chart 6 - Value of Cash Assets Before Inflation

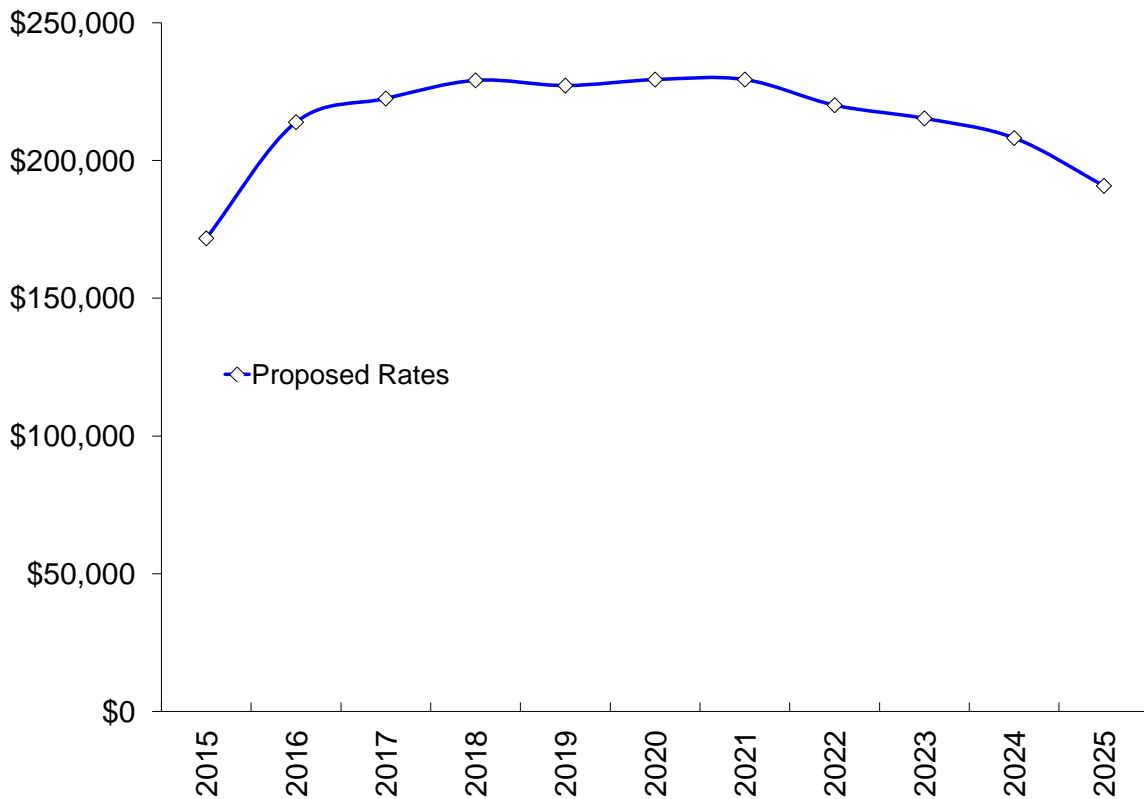
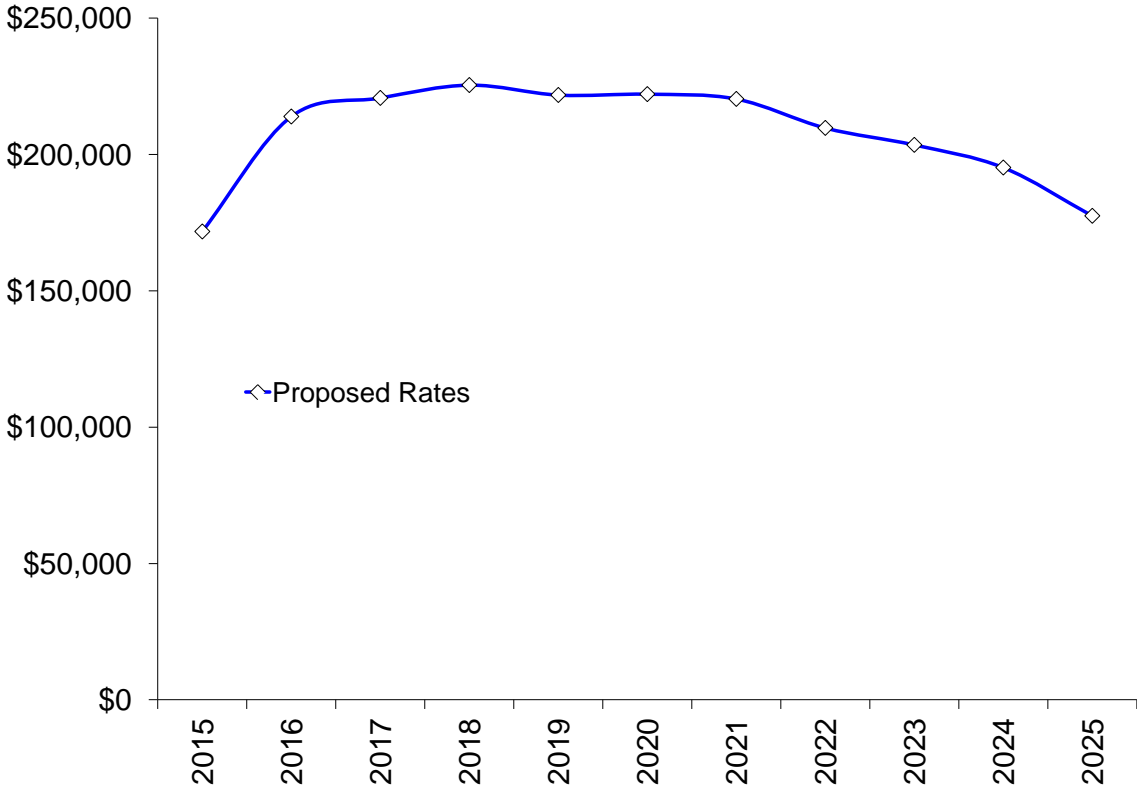


Chart 7 - Value of Cash Assets After Inflation

Village of North Adams, MI



Village of North Adams, MI, Sewer Rates Scenario 2015-1

Table 9 - Meter-size Based Tap Fees

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This table calculates tap fees to charge each meter size and total tap fee revenues that would be generated during one full year following initial adjustment.

In Village

Class Name	Meter Size in Square Inches	Mix of New Taps in a Typical Year With Any Taps	AWWA Capacity Multiplier for Each Meter Size	Total AWWA Capacity "Shares" Attributable to Each Meter Size Group	AWWA-based Capacity Cost Each Meter Size	Economy of Scale Discount Rate	Average Fixed Tap-on Costs	Total New Tap Fees Each Meter Size	Full-year Tap Fee Income From Each Size Class
Five Eighths (1 EDU)	0.31	1.0	1.0	1.0	\$2,624	100%	\$78	\$2,702	\$2,702

Out of Village

Five Eighths (1 EDU)	0.31	0.0	1.0	0.0	\$2,624	100%	\$78	\$4,053	\$0
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Projected Tap Fees for One Full Year Following Initial Adjustment \$2,702

Economy of Scale Factor:	5.0%	Capacity Cost to Recover per AWWA Capacity "Share":	\$2,624	Prorated Tap Fees to Collect This Year	\$1,344
(This is the full-year tap fee total, then adjusted to account for time of year when rates will be adjusted initially. This amount is included in Table 2 and called, "Meter-size Based Tap Fees.")					

Notes:

Because growth rates and meter sizes to be installed in future years cannot be predicted with certainty, tap fee revenues are also uncertain. However, the projections above are based upon historical growth and meter sizes so they should be reasonable estimates. Generally, tap fees should only be used to pay for capital improvements so there is usually time to make adjustments in fee levels.

Economy of Scale Discount Rate - Generally the cost of infrastructure to serve a customer does not go up as quickly as their capacity (meter size) goes up. That is called economy of scale. This value is an estimate of the economy of scale the system enjoys as meter size goes up. Generally this factor should be no more than about 7%.

In the interest of simplicity, 3/4 inch meters, which are usually residential meters, may have been calculated at the 5/8 inch meter capacity for tap fee calculation purposes.

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Table 11 - Initial Rate Adjustments and Resulting Revenues

3/1/15 Through 2/29/16

This table depicts how rates would be set and the revenues they would generate.

9/1/15 Date when fees will first be collected at adjusted rates. Actual adjustment should occur one billing period earlier.

After rate adjustments are made, general customers will be billed monthly.

Sales to be billed this year: Sales at the current (Test Year) rates (gray highlighted column) will apply until rates are adjusted. Sales at the modeled rates (yellow highlighted column) would apply if these rates are adopted. The grand total "blended" sales revenues are the totals of the two different sets of rates. Those show in the right-most column.

Customer Class, Rate Class or Meter Size	Bottom of Volume Range in Gallons	Top of Volume Range in Gallons	Sales This Year at Current Rates	Customers (EDUs) With Volume That "Maxed Out" Within Each Range	New Minimum Charge Base Rates ¹	New Usage Allowance in 1,000 Gallons	New Unit Charge in 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year	
	0	999	\$39,296	261	\$30.60	0.000	\$0.00	\$47,576	\$86,872	
	1,000	1,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	2,000	2,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	3,000	3,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	4,000	4,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	5,000	5,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	6,000	6,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	7,000	7,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	8,000	8,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	9,000	9,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	10,000	14,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	15,000	19,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
Equivalent Dwelling Unit (EDU)	20,000	29,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	30,000	39,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	40,000	49,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	50,000	59,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	60,000	69,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	70,000	79,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	80,000	89,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	90,000	99,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	100,000	109,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	110,000	119,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	120,000	129,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	130,000	139,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	140,000	149,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	150,000	159,999	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
	160,000	10,000,000	\$0	0	\$30.60	0.000	\$0.00	\$0	\$0	
Total Rate Rev at Current Rates			\$39,296	Total Rate Rev at Modeled Rates			\$47,576	Total Blended Rate Revenues for the Year ²		\$86,872

Note 1, New Minimum Charge Base Rates: If meter or connection size-based minimum charges are to be used, and the user classes modeled above include meter or connection sizes, the amounts shown in this column include meter or connection size surcharges as calculated in Table 10. Otherwise, use the rates in the "Total Minimum Charge per Billing Period" column of Table 10 when setting minimum charges for each customer when their minimums will be based upon meter or connection size.

Note 2, Blended Rate Revenues: During the year when rates will be adjusted, rate revenues generated will be "blended" revenues - part collected at the current rates and part collected at the adjusted rates. The table above calculates both kinds of revenue and totals them in the right-most column. Therefore, the anticipated timing of rate adjustment shown at the top of this table will cause rates to be charged as follows:

6.0 months at the old user charge rates and 6.0 months at the new user charge rates.

Table 12 - Test Year Usage

Test year, the one-year period being analyzed starts: 3/1/2014

This table shows usage by all customers during the test year.

Date this scenario created: 7/13/2015

Bills sent per year: 12

Customer Class, Rate Class or Meter Size	Bottom of Volume Range in Gallons	Top of Volume Range in Gallons	Conversion Factor for Billable Units	Average Billed Volume Within Each Volume Range in 1,000 Gallons	Count of Bills With ANY Volume in Each Range	Count of Bills Where Volume "Maxed Out" Within Each Range	Customers (EDUs) With Volume That "Maxed Out" Within Each Range	% of Customers That Averaged This Volume Use	% of Total Use at This Average Volume
Equivalent Dwelling Unit (EDU)	0	999	1,000	0.000	3,127	3,127	261	100.0%	100.0%
	160,000	10,000,000	1,000	0.000	0	0	0	0.0%	0.0%
Monthly and Annual Grand Totals:					3,127	3,127	261	100%	100%

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Table 13 - Rates at End of Test Year

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This table shows user rates at the end of the test year.

	Bottom of Volume Range in Gallons	Top of Volume Range in Gallons	Average Billed Volume Within Each Volume Range in 1,000 Gallons	Minimum Charge	Usage Allowance in 1,000 Gallons	Unit Charge in 1,000 Gallons
Equivalent Dwelling Unit (EDU)	0	999	0.000	\$25.00	0.000	\$0.00
	160,000	10,000,000	0.000	\$25.00	0.000	\$0.00

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Table 14 - AMHI and Incomes

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This table shows annual median household income and system incomes for the test year.

Annual Median Household Income (AMHI)

\$39,568	Census Bureau estimate of AMHI for the year:	2012	"AMHI" stands for annual median household income
<u>\$38,523</u>	Census Bureau estimate of AMHI for the year:	2000	
\$1,045 AMHI growth during these years			
0.2% Simple annual income growth rate during these years (used to project incomes into the future)			

System Incomes for 3/1/14 Through 2/28/15

\$68,785	User Fees	Note: Future sales revenues at new rates will be pro-rated to the collection rate of current fees. (If the system under-collected fees before, it is assumed the system will continue to under-collect at that same rate in the future.)
\$4,453	Late Charges	
	0.0 Number New Connections	
	\$0 Average Connection Fee	
\$0	Connection Fees	
\$68	Interest	Actual sales exceeded or fell short of (-) predicted sales by -12.0%
\$0	Replacement Fund	(Current Position, Table 6)
\$0	Improvement Fund	
<u>\$24,809</u>	Connection Fees by Installment Payments	
\$98,115	Total Regular Income	

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Table 15 - Cost Classification for Test Year

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This table distributes costs from a representative year (the "target" year) to fixed and variable categories (see Definitions) in order to calculate the "proportional to use" or "cost of service" rate structure based upon the cost breakdown for that year.

The rate structure target year runs from 3/1/2017 through 2/28/2018

Operating Costs (Note: By definition, in flat rate systems, all costs are classified as "fixed.")	Amount	% of This Cost That is Fixed	% of This Cost That is Variable	Total Costs After Adjustment for Special Costs and Offsets	Fixed Costs After Adjustment for Special Costs	Variable Costs After Adjustment for Special Costs
Employee Wages	\$13,732	100.0%	0.0%	\$13,732	\$13,732	\$0
Cost of sewage treatment	\$0	100.0%	0.0%	\$0	\$0	\$0
Supplies and tools	\$352	100.0%	0.0%	\$352	\$352	\$0
Amortization	\$0	100.0%	0.0%	\$0	\$0	\$0
Repair and Maintenance	\$46,289	100.0%	0.0%	\$46,289	\$46,289	\$0
Utilities (Energy and Phone)	\$11,924	100.0%	0.0%	\$11,924	\$11,924	\$0
Dues and Memberships	\$399	100.0%	0.0%	\$399	\$399	\$0
Subscriptions	\$0	100.0%	0.0%	\$0	\$0	\$0
Billing Fees	\$4,182	100.0%	0.0%	\$4,182	\$4,182	\$0
Certification	\$160	100.0%	0.0%	\$160	\$160	\$0
Mileage	\$283	100.0%	0.0%	\$283	\$283	\$0
Tools	\$0	100.0%	0.0%	\$0	\$0	\$0
Equipment and Repairs	\$753	100.0%	0.0%	\$753	\$753	\$0
Misc	\$1,480	100.0%	0.0%	\$1,480	\$1,480	\$0
Payroll Taxes	\$1,093	100.0%	0.0%	\$1,093	\$1,093	\$0
Employee Health Insurance	\$5,225	100.0%	0.0%	\$5,225	\$5,225	\$0
Capitol Outlay	\$0	100.0%	0.0%	\$0	\$0	\$0
Fuel	\$2,778	100.0%	0.0%	\$2,778	\$2,778	\$0
Attorney	\$20	100.0%	0.0%	\$20	\$20	\$0
Accounting	\$3,000	100.0%	0.0%	\$3,000	\$3,000	\$0
Misc	\$0	100.0%	0.0%	\$0	\$0	\$0
Employee Help	\$566	100.0%	0.0%	\$566	\$566	\$0
Office/Computer	\$486	100.0%	0.0%	\$486	\$486	\$0
Improvements	\$0	100.0%	0.0%	\$0	\$0	\$0
Workers Compensation	\$1,711	100.0%	0.0%	\$1,711	\$1,711	\$0
Billback Ass.	\$670	100.0%	0.0%	\$670	\$670	\$0
Annual Payment to Replacement Fund	\$0	100.0%	0.0%	\$0	\$0	\$0
User Charge Analysis Services	\$0	100.0%	0.0%	\$0	\$0	\$0
CIP Spending Net of Grant/Loan Proceeds and Other External Incomes (Table 4)	\$46,089	100.0%	0.0%	\$46,089	\$46,089	\$0
Offset for Capacity Surcharges (Table 10)	\$0	100.0%	0.0%	\$0	\$0	\$0
Grand Total Costs, Weighted Av Percentages	\$141,194	100.0%	0.0%	\$141,194	\$141,194	\$0
"Proportional to Use" Rate Structure Cost Basis		100%		\$141,194		
Average Fixed Cost/User/Month =	\$45.16	Surchargeable Services are Estimated at		\$0		
Average Variable Cost to Produce/1,000 Gallons =	\$0.00	Inflow and Infiltration is Estimated at		100%		
Gallons/Billing Cycle Used by Average Residential Customer =	0	% of Inflow and Infiltration to Allocate to Fixed Costs is		0%		
		Cost of Inflow and Infiltration is Estimated at		50%		
		Resulting Cost of Inflow and Infiltration		\$0		
Test Year Usage Metered Through Customer Meters (in Gallons)						
						0
+ Test Year Inflow and Infiltration						1
= Total Test Year Volume						1