Village of Cass City, Michigan

User Fee *Water* Rate Calculation

Executive Summary

December 4, 2020

The asset management / rate calculation team consisted of the following people

Name	Position	Employer
Mike Engels	Circuit Rider	Michigan Rural Water Association
Robin Wallace	Billing Clerk	Village or Cass City
Nanette Walsh	Treasurer	Village or Cass City
Debbie Powell	Village Manager	Village or Cass City
Dennis McCabe	Director of Public Works	Village or Cass City

Village of Cass City Utility Committee

Village Manager **Water Superintendent**

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Mission Statement

We commit to improving and maintaining the public health protection and performance of our wastewater treatment facility and collection system utility assets, while minimizing the long-term cost of operating those assets. We strive to make the most cost-effective renewal and replacement investments and provide the highest-quality customer service possible.

Village of Cass City Water Rate Calculation Report Index

This report assembles information based on the water system asset management plan as well as the budget adopted by decision makers. It uses this information to develop an appropriate reserve budget that will ensure the long-term sustainability and financial health of the water system. All of this is done for the benefit of the customers connected to the system.

The contents of this report and all information contained within were provided by the Village, then assembled by and approved by the team individuals listed on the previous page.

Once all budget items are set, especially the reserve funding and capital improvement budget, determining the correct water rate charges are simply nothing more than a mathematical calculation. The assembled budget is totaled, then a portion of this budget is divided by the anticipated gallons of water invoiced to customers, this generates the cost per unit of water. The remaining portion of the budget is divided by the number of meter equivalents (customers) to generate the Ready to Serve (RTS) / OMR charge.

This rate evaluation is based on the following data

1. Annual water budget adopted by the Village, including O&M and labor
2. Debt requirements, including principal and interest payments
3. Capital improvement plan, based on the results of the AMP - projected out 20 years
4. Equipment replacement program for assets with a life expectancy of 20 years or less
5. Number of customers connected to the system,
6. Gallons of water invoiced to customers

All this information is put into Michigan Rural Water Association's rate making program which does the mathematical calculation to calculate the cost per unit of water and the Ready to Serve charge. Michigan Rural Water Association does not recommend or suggest a rate increase, but rather lets the mathematical rate calculation speak for itself.

This rate report changes the rate structure in the following manner based on the request of the Village Staff.

Current rate structure

Customers currently have a minimum monthly charge of $21.44 which includes 1,667 gallons.

The current rates are not influenced by the size of a customer's water meter.

As indicated in the table below the Village has a four-tier system of rate charges per 1,000 gallons of water.

Water Department

Adopted

	2019 Current	2020 Proposed
Water Rates		
0 - 1,667	21.44	21.44
1,668 – 5,000	3.7626	3.7626
5,001 – 8,333	3.4441	3.4441
8,334 – 66,667	3.4003	3.4003
over 66,667	2.7540	2.7540

NOTE: Currently all customers pay the same $21.44 per month regardless of meter size, which includes 1,667 gallons. Once customers exceed 1,600 gallons per month they are charged for each 1,000 gallons of water based on the following table.

Gallons	**Cost per 1,000 gallons**
1,668 – 5,000	$3.7626
5,001 – 8,333	$3.4410
8,334 – 66,667	$3.4003
Over 66,667	$2.7540

New Proposed Rate Structure

The new structure sets up a "Ready To Serve" (RTS) charge based on the size of the customers water meter. Basing the RTS on the size of the customer's water meter (meter equivalency) is an industry standard and is commonplace throughout the country.

The Village has chosen to call the RTS charge an "OMR" charge (Operation, Maintenance and Repair). What ever it is called this charge is intended to cover "fixed expense" including debt, operations, maintenance, and repair expenses.

This is the meter equivalency table that was chosen by the Village. It matches the AWWA M-22 Manual, which is one of the industry standards. It also matches the sewer meter equivalent table that the Village has been using for years.

Pipe Diameter Meter Size	AWWA M-22 MANUAL METER EQUIVALENTS
3/4	1.00
1	1.67
1 1/2	3.33
2	5.33
3	10.00
4	16.67

Notice the ¾ inch meter has a meter equivalent of 1.00. Notice that the meter equivalent increases as the water meter increases in size.

The meter ratios are used to calculate the monthly RTS charge for each meter size.

The meter equivalent for each meter size is multiplied by the monthly RTS $ charge for a 3/4-inch meter to calculate the monthly RTS charge for each size meter.

FOR INSTANCE, HERE IS AN EXAMPLE OF HOW THE CALCUALTION TAKES PLACE

IF, the RTS ready to serve charge for a ¾ inch meter is $10.00 per month.

A customer with a 2-inch meter has a meter equivalency of 5.33.

5.33 x $10.00 = $53.30 RTS monthly charge for a customer with a 2-inch meter

Based on this table the Village has chosen to implement the meter equivalents over a four-year period.

Thus, the meter equivalents will look like this.

	METER EQUIVALENT INCREASE DONE OVER A ***FOUR*** YEAR PERIOD			
SELECTED METER EQUIVALENT	25% STARTING APRIL 1ST	50% YEAR 2	75% YEAR 3	100% YEAR 4
1.00	1.00	1.00	1.00	1.00
1.67	1.17	1.33	1.50	1.67
3.33	1.58	2.17	2.75	3.33
5.33	2.08	3.17	4.25	5.33
10.00	3.25	5.50	7.75	10.00
16.67	4.92	8.83	12.75	16.67

The yellow column contains the meter equivalents that will be adopted.

It will be implemented over a four-year period, increasing by 25% each year, until year four when it reaches the full 100%

New Cost per Unit of Water

- The new rate calculation removes the 1,667 gallons, currently included in the monthly bill.
- Customers pay for gallons of water based on actual usage.
- The current five tier system is removed and replaced with a two-tier system.

The cost per unit of water invoiced is set on a two-tier system. It is invoiced on a per 1,000-gallon unit. Below are the two tiers as directed by the Utility committee.

- Tier 1) = 0 – 65,000 gallons
- Tier 2) = 65,000+ gallons –All gallons invoiced over 65,000 gallons are invoiced at 80 percent of the tier one rate.

In Summary, the new rate charges will be as follows.

- **Remove the 1,667 gallons currently included in the monthly bill for all customers.**
- **Develop a "RTS" or "OMR" charge that increases for each meter size without including any gallons as part of the charge, this charge which is based on meter equivalents will be implemented over a four-year period.**
- **All customers pay for water used starting at gallon "0"**
- **The cost per 1,000 gallons of water is set with a two-tier system.**
- **(***Per the request of Village staff and Utility committee.)*
- **Tier 1 = 0 – 65,000 gallons**
- **Tier 2 = 65,000 gallons and over at 80% of the tier 1 rate.**

The two-tier system and the 65,000 break was developed by the utility committee after researching the typical / average use of customers over the last three years.

Details of Water Rate Evaluation

The Village used Michigan Rural Water Association Rate Making Program to determine the appropriate user rates.

Number of Customers and Current Rates

These tables represent the current number or accounts / meters being invoiced for each meter size. Irrigation meters are not included in this count as they are not invoiced a RTS charge, but only for gallons used.

WATER METER SIZE BY INCHES	CURRENT "BASE RATE" CHARGE	NUMBER OF BILLED METERS
3/4	$21.44	1001
1	$21.44	31
1 1/2	$21.44	5
2	$21.44	16
3	$21.44	3
4	$21.44	6
6	$21.44	0
	TOTALS	1062

Gallons of Water Invoiced to Customers

The Village invoices water by the 1,000-gallon units.

The table below list the gallons of water usage by customers, for each of the two tiers over the last two years. As can be seen in the table, water usage in 2019 was less than the 2018 numbers.

For purposes of the rate calculation, we anticipated a two percent reduction in usage. This water rate calculation will be based on an anticipated usage (highlighted in the red circle) by water customers.

	2018	2019	PERCENT OF TOTAL	ANTICIPATED PERCENT REDUCTION NEXT YEAR	UNITS USED IN RATE EVALUATION
CASS CITY WATER 0-65,000	58,527,704	55,481,377	56.5%	2.0%	54,371,749
TIER 2 = OVER 65,000 GALLONS	42,244,100	42,788,700	43.5%	2.0%	41,399,218
TOTALS	100,771,804	98,270,077			95,770,967
WHO PROVIDED UNITS SOLD REPORT	ROBIN				
NAME OF REPORT	RATESTUDY INFO 2018 & 2019			GALLONS OF REDUCTION	1,954,510
WAS AN ELECTRONIC COPY KEPT	YES			GALLONS / VOLUME USED FOR EVALUATION	95,770,967

The Budget

This water rate evaluation was completed using the budget for the 2021/2022 fiscal year.

Note the total administration fiscal year expenses in the red circle.

Although not shown in the above table, to represent what is likely to occur, the budget is projected out for the next five years with a 2% increase each year for each line-item expense.

ACCT #	591-001 ADMINISTRATION	2021
591-001-706.000	SALARIES & WAGES	$55,662
591-001-708.000	SALARIES-SAMPLES	$3,000
591-001-714.000	FRINGE BENFITS	$23,937
591-001-715.000	FICA/MEDICARE	$5,064
591-001-722.000	RETIREMENT	$6,619
591-001-726.000	CAR/VEHICLE ALLOWANCE	$4,200
591-001-740.000	OPERATING SUPPLIES	$2,000
591-001-803.000	FEES	$3,605
591-001-807.000	MEMBERSHIP & DUES	$503
591-001-826.000	LEGAL EXPENSES	$3,000
591-001-826.100	LEGAL FEES, USDA BOND PROJECT	$2,000
591-001-827.000	INSURANCE & BONDS	$3,700
591-001-853.000	COMMUNICATIONS	$1,800
591-001-860.000	TRAVEL/MEALS/LODGING	$1,030
591-001-933.000	EQUIPMENT	$4,000
591-001-943.000	EQUIPMENT RENTAL	$3,705
591-001-960.000	PROFESSIONAL DEVELOPMENT	$6,695
591-001-963.000	ADMIN. CHARGE G.F.	$53,748
591-001-977.000	EQUIPMENT UNDER $5000	$3,200
	TOTAL	$187,468

ACCT #	591.002 TREATMENT & PUMPING	2021
591-002-706.000	SALARIES & WAGES	$17,389
591-002-714.000	FRINGE BENFITS	$12,617
591-002-715.000	FICA/MEDICARE	$1,565
591-002-722.000	RETIREMENT	$1,739
591-002-740.000	OPERATING SUPPLIES	$7,139
591-002-743.000	CHEMICALS	$16,332
591-002-800.000	CONTRACTED SERVICES	$5,300
591-002-802.000	WATER QUALITY TESTING FEES	$1,650
591-002-853.000	TELEPHONE EXPENSE	$3,104
591-002-920.000	UTILITIES	$51,758
591-002-933.000	REPAIR AND MAINTENANCE	$7,500
591-002-943.000	EQUIPMENT RENTAL	$1,926
591-002-965.000	ATRP INTEREST EXPENSE $ 88,161 THIS IS THE LOAN PAYMENT	
591-002-975.000	RESERVE EXP, MAJOR CAPITAL IMPROVEMENT $ 25000	$0
591-002-976.000	RESERVE EXP, REPAIR/REPLACEMENT	$3,484
591-002-977.000	EQUIPMENT UNDER $5000	$1,000
	591.002 TREATMENT & PUMPING	$132,503

Note the total fiscal year treatment and pumping expenses in the red circle.

Again, to project out what is likely to occur, the budget is projected out for the next five years with a 2% increase each year for each line-item expense.

ACCOUNT #	591.003 COLLECTIONS & DISTRIBUTION	2021
591-003-706.000	SALARIES & WAGES	$30,598
591-003-707.000	SALARIES & WAGES - PART-TIME	$1,000
591-003-714.000	FRINGE BENFITS	$12,392
591-003-715.000	FICA/MEDICARE	$2,486
591-003-722.000	RETIREMENT	$3,060
591-003-740.000	OPERATING SUPPLIES	$8,650
591-003-800.000	CONTRACTED SERVICES	$19,640
591-003-943.000	EQUIPMENT RENTAL	$27,123
591-003-965.000	SSP LOAN INTEREST PAYMENT - $34,422 - NEW LOAN - LISTED ON LOAN PAGE WITH PRINCIPAL	
591-003-970.000	CAPITAL OUTLAY BUDGETED $ 90,000 - REDUCED TO $50,0000 TO KEEP RATES DOWN LISTED ON FINAL ANALYSIS PAGE	**$50,000**
	FOOTNOTE AMOUNTS:	
	3 REPLACEMENT FIRE HYDRANTS $15,000	
	WOODLAND ST. WATERMAIN REPLACEMENT $55,000	
NOTE:	*REPLACE WINDOWS AND DOORS AT WELLHOUSE #1 AND #2 $20,000*	
$0	**591.003 COLLECTIONS & DISTRIBUTION**	**$154,949**

Note the total fiscal year Collection and Distribution expenses in the red circle.

The new loan payment shown above is listed on the loan page and on the final rate calculation page. (it includes interest and principal)

The Capital fund for this fiscal year was budgeted at $90,000 as shown here, however it was reduced to $50,000 to keep the rates lower. It is anticipated that an average of $50,000 will be budgeted each year for capital items. Note that some years more than $50,000 is needed and some years less than $50,000 is needed. However, it is anticipated that on average, $50,000 will be needed each year.

Debt Expenses

The Village of Cass City has one existing water system loan. The loan was initiated in 2007. It is a forty-year USDA loan. The Village paid an extra $200,000 in 2020 on the loan. This payment schedule reflects the extra payment.

This table also reflects the new loan payment starting in 2021/2022 for needed system improvements.

As shown in the table below each loan payment is through USDA Rural Development and has reserve requirements that has been accounted for in the calculation.

One hundred percent of the debt charges are collected through the OMR monthly charge.

DEBT SCHEDULE - AMORTIZATION SCHEDULE PAYMENTS							
FISCAL YEAR STARTING		2021	2022	2023	2024	2025	2026
2007 WATER BOND USDA - ANNUAL PRINCIPAL & INTEREST PAYMENT		$88,161	$88,161	$88,161	$88,161	$88,161	$88,161
THE VILLAGE PUT $200,000 ON PRINCIPAL OF EXISTING LOAN PAYMENT IN 2020 -							
DATE OF ISSUE	2007						
PAID BY RATES	**YES**						
RESERVE REQUIREMENT	YES						
USDA RESERVE REQUIREMENTS		$12,560	$12,560	$12,560	$12,560	$12,560	$12,560
***NEW* ANTICIPATED CAPITAL LOAN**		2021	2022	2023	2024	2025	2026
2021 & 2022 USDA ESTIMATED WATER LOAN ANNUAL PRINCIPAL & INTEREST ANNUAL PAYMENT		$43,372	$43,372	$43,372	$43,372	$43,372	$43,372
DATE OF ISSUE	2021						
DATE OF MATURITY	2061						
PAID BY RATES	**YES**						
RESERVE REQUIREMENT	YES						
USDA RESERVE REQUIREMENTS		$8,847	$8,847	$8,847	$8,847	$8,847	$8,847
TOTAL PRINCIPAL AND INTEREST ANNUAL PAYMENT FOR EXISTING & NEW LOAN		**$152,940**	**$152,940**	**$152,940**	**$152,940**	**$152,940**	**$152,940**

Current Available Cash in Bank

Name of Account / Description	Balance
GENERAL CHECKING BALANCE	$950,910
Minus 200k paid on existing water l	($200,000)
	$750,910

Name of Account / Description	Balance
RRI REQUIRED RESERVE ACCOUNT	$67,680
	$67,680

Name of Account / Description	Balance
BOND RESERVE ACCOUNT	$ 95,600
	$95,600

How much money a community water system has in reserve is typically dependent on the following;

- **Age and condition of system**
- Upcoming capital projects (Paying Cash VS Financing)
- Upcoming major equipment replacement and rehabilitation expenses
- Debt requirements
- Time cycle between cash received from customers VS bills paid, especially debt payments

Because the water fund is an enterprise fund it is common to have at a minimum, three to six months of expenses available as cash, although many communities have significantly more, and some have significantly less.

The budget used in this water rate evaluation is $647,000 dollars, divided by 12 months of the year, then times three months would equal approximately $161,000. The available cash in the bank does exceed this.

Six months of the budget would equal $323,000 dollars. The available cash in the bank does exceed this.

Equipment Replacement

An equipment replacement fund was developed as part of the user fee rate analysis. The replacement money reserved annually is calculated using the replacement cost divided by the life of the equipment. The current reserve funds are enough to make up the difference between life of the equipment and years remaining. The anticipated annual replacement and rehabilitation expenditures have a two percent cost of living added in for each year.

The replacement schedule was developed to replace assets with a life span of 20 years or less, (short lived assets) that will be funded from system revenues. The schedule will typically contain assets with a value of greater than $1,000 dollars, or routinely recurring maintenance items.

NOTE: The program will set an average annual annuity payment to cover the Repair and Replacement Schedule expenses over the long term. Some years, the annual funding amount will be greater than the year's expenses, so money would go into the Repair and Replacement Reserve. Other years, the amount collected will be less than the expenses incurred, and the additional funding needed would come from the reserve account. The amount of the annual annuity set would have to be enough to cover all the expenses over the 15 /20-year period.

Larger more long-term items like water distribution piping, or items with a longer life expectancy of greater than 15 years, are typically included in a Capital Improvements program.

The Villages' equipment replacement program is currently funded with a $10,000 reoccurring budget line item, and the USDA loan RRI reserve requirements.

This tables below contain data from the "Water Asset Management Plan Executive Summary" prepared by Townley Engineering, LLC, Dated December 2017
See tables below for details on each item tracked.

FIXED ASSET INVENTORY	ASSET REPLACEMENT SCHEDULE							
EQUIPMENT LIST / MAINTENANCE ACTIVITY	ESTIMATED INSTALLATION YEAR OR LAST REHAB YEAR	ESTIMATED NORMAL INTENDED USEFUL LIFE	CURRENT AGE	NEXT ANTICIPATED REPLACEMENT YEAR	**REMAINING LIFE - YEARS BEFORE REPLACEMENT**	TOTAL REPLACEMENT COST	PERCENT OF ASSET LEFT	PERCENT CONSUMED
Well #1 Vertical Pump/Motor	2009	25	11	2034	**14**	$25,000	56%	44%
Well #1 Starter/VFD	2000	30	20	2030	**10**	$20,000	33%	67%
Well #1 Piping/Meter	1946	75	74	2021	**1**	$16,000	1%	99%
Well #2 Submersible Pump/Motor	2007	15	13	2022	**2**	$14,000	13%	87%
Well #2 Starter/VFD	2000	30	20	2030	**10**	$20,000	33%	67%
Well #2 Piping/Meter	1946	75	74	2021	**1**	$16,000	1%	99%
Well #3 Vertical Pump/Motor	2012	25	8	2037	**17**	$25,000	68%	32%
Well #3 Starter/VFD	1997	30	23	2027	**7**	$20,000	23%	77%
TREAATMENT PLANT								
TREATMENT CONTROL PANEL MAIN	2007	30	13	2037	**17**	$30,000	57%	43%
Filter Media	2007	20	13	2027	**7**	$25,000	35%	65%
Pneumatic Valves Large (11-8")	2007	20	13	2027	**7**	$22,000	35%	65%
Pneumatic Valves Medium (12-4")	2007	20	13	2027	**7**	$18,000	35%	65%
Pneumatic Valves Small (5-3")	2007	20	13	2027	**7**	$6,000	35%	65%
Raw Magmeter 6"	2007	30	13	2037	**17**	$3,000	57%	43%
Compressor	2007	30	13	2037	**17**	$8,000	57%	43%
Blower	2007	30	13	2037	**17**	$7,500	57%	43%
Drum Scale (2)	2007	20	13	2027	**7**	$1,500	35%	65%
Raw Hypo Pump	2007	5	13	2012	**-8**	$800	-160%	260%
Final Hypo Pump	2007	5	13	2012	**-8**	$2,000	-160%	260%
Final Magmeter 8"	2007	30	13	2037	**17**	$4,000	57%	43%
Heating System	2007	30	13	2037	**17**	$5,000	57%	43%
Dehumidifier	2007	15	13	2022	**2**	$2,000	13%	87%
Eyewash	2007	25	13	2032	**12**	$1,500	48%	52%
Backwash - Pump and Valves	2015	15	5	2030	**10**	$8,000	67%	33%
Backwash - Control Panel	2015	25	5	2040	**20**	$3,000	80%	20%
Chemical Storage	2007	30	13	2037	**17**	$15,000	57%	43%
SCADA - VT SCADA UIS	2017	15	3	2032	**12**	$25,000	80%	20%

Capital Improvement Plan

All capital items are listed on the 591.003 budget page. The annual capital funding is set at $50,000 per year. This funding level will continue for the foreseeable future.

NOTE: The $50,000 will remain constant, even though the capital spending will fluctuate each year.

Explanation of Final Rate Evaluation Calculation

Here is how the rate calculation takes place.

The program takes the annual budget for each line item and assigns a portion of this item as fixed expenses (which are collected through the RTS or OMR charge.)

The remainder of this budget item is assigned as a variable expense, (which are collected through units of water invoiced to customers).

Here is how it works.

CASS CITY WATER RATE CALCULATION	ANNUAL BUDGET	PERCENT FIXED EXPENSES	BASE RATE FIXED EXPENSES	COST METER EQUIVALENT
591-001 ADMINISTRATION	$187,468	25%	$47,026	$3.51

As shown in this table the adopted 591-001 budget is listed at 187,463. The rate calculation is set to collect approximately 25% of this budget as Fixed Expenses. ($47,028) This figure is then divided by the total annual number of meter equivalents to get a cost of $3.51 per meter equivalent per billing cycle. This calculation takes place for each line item in the budget.

NOTE: One-meter equivalent = one ¾ meter per month

This same calculation takes place for some of the extra revenue that supports the water fund and reduces the rate charge. Such revenue as penalties, bulk water, building lease revenue, etc. (See larger table on next page for more details)

	REVENUE		ASSIGNED AS FIXED / RTS	RATE REDUCTION	ASSIGNED TO VOLUME COST	RATE REDUCTION
REVENUE FROM BLD LEASE, PENNALTIES, & BULK WATER	$45,000		$9,880	0.737	$35,120	0.401

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This calculation takes place for each line item in the budget.

CASS CITY WATER RATE CALCULATION	ANNUAL BUDGET	PERCENT FIXED EXPENSES	BASE RATE FIXED EXPENSES	COST METER EQUIVALENT
591-001 ADMINISTRATION	$187,468	25%	$47,026	$3.51
591.002 TREATMENT & PUMPING	$132,503	25%	$33,238	$2.48
591.003 COLLECTIONS	$154,949	25%	$38,869	$2.90
591.004 MAINTENANCE	$8,291	25%	$2,080	$0.16
OPERATION & MAINTENANCE EXPENSES	$483,211		$121,213	$9.04
2007 WATER BOND USDA	$88,161	100%	$88,161	$6.57
2021 & 2022 ESTIMATED WATER LOAN USDA	$43,372	100%	$43,372	$3.23
ANNUAL DEBT PAYMENTS PRINCIPAL & INTEREST	$131,533		$131,533	$9.81
ANNUAL O & M + DEBT	$614,744		$252,746	$18.84
REVENUE FROM BLD LEASE, PENNALTIES, & BULK WATER	$45,000		$11,288	0.842
USDA RURAL DEVELOPMENT RESERVE FUNDS LOAN 1	$12,560	100%	$12,560	$0.94
USDA RURAL DEVELOPMENT RESERVE FUNDS LOAN 2	$8,847	100%	$8,847	$0.66
EQUIPMENT REPLACEMENT SHORT LIVED ASSETS	$10,000	25%	$2,508	$0.19
ADOPTED BUDGET	$646,151		$276,661	
		25.08%	43%	
REVENUE COLLECTED CALCULATED RATES	$601,151		$265,373	
CALCULATED RATE PER METER EQUIVALENT	PER		MONTH	$19.786

The cost per meter equivalent for each line item is then added together, to generate a total cost per meter equivalent per billing cycle.

The $19.786 would be considered the RTS or OMR monthly charge for a ¾ inch metered customer.

Based on the meter equivalent table discussed earlier the calculated rate for one-meter equivalent (3/4" Meter) of $19.786 is then multiplied by the meter equivalent table to generate the rate charge for larger meters. As mentioned earlier the meter equivalent table will be implemented over a four-year period.

	CASS CITY WATER 0-65,000					
2021	CURRENT			NEW		DIFFERENCE PER MONTH
METER SIZE	READY TO SERVE PER MONTH	CURRENT / OLD METER RATIO REU'S PER METER SIZE		READY TO SERVE PER MONTH	METER RATIO FACTOR - REU'S PER METER SIZE	
3/4	$21.44	1.00		$19.786	1.00	-$1.65
1	$21.44	1.00		$23.08	1.17	$1.64
1 1/2	$21.44	1.00		$31.33	1.58	$9.89
2	$21.44	1.00		$41.22	2.08	$19.78
3	$21.44	1.00		$64.31	3.25	$42.87
4	$21.44	1.00		$97.28	4.92	$75.84

NOTE:

The new rate structure includes a RTS or OMR charge based on the size of the customers water meter. The meter equivalent ratio follows the AWWA M-22 manual. It will be implemented over the next four years by 25% per year, as noted earlier.

These charges do NOT include any gallons of water, unlike the current charge which includes 1,666 gallons.

Customers pay for all gallons of water starting at gallon zero.

Let's look at the cost per unit of water (one thousand gallons)

CASS CITY WATER RATE CALCULATION	ANNUAL BUDGET	PERCENT FIXED EXPENSES	CONSUMPTION VARIABLE EXPENSES	VOLUME COST PER UNIT
591-001 ADMINISTRATION	$187,468	25%	$140,442	$1.605

Looking again at account 591-001-line-item budget we see an annual funding amount of $187,468. As mentioned previously the program is set to collect approximately 25% of this as fixed cost through the RTS /OMR charge. The remainder of this line item will be collected through the cost per unit of water. (volume sales) This equates to $140,442 which is divided by the anticipated units of water invoiced to customers in the upcoming fiscal year, to get a charge of $1.605 dollars per one thousand gallons of water invoiced to customers, for this line item.

This calculation is done for each line item.

CASS CITY WATER RATE CALCULATION	ANNUAL BUDGET	PERCENT FIXED EXPENSES	CONSUMPTION VARIABLE EXPENSES	VOLUME COST PER UNIT
591-001 ADMINISTRATION	$187,468	22%	$146,307	$1.672
591.002 TREATMENT & PUMPING	$132,503	22%	$103,410	$1.182
591.003 COLLECTIONS	$104,949	22%	$81,906	$0.936
591.004 MAINTENANCE	$8,291	22%	$6,471	$0.074
OPERATION & MAINTENANCE EXPENSES	$433,211		$338,093	$3.864
2007 WATER BOND USDA	$88,161	100%	$0	$0.00
2021 & 2022 ESTIMATED WATER LOAN USDA	$43,372	100%	$0	$0.00
ANNUAL DEBT PAYMENTS PRINCIPAL & INTEREST	$131,533		$0	$0.00
ANNUAL O & M + DEBT	$564,744		$338,093	$3.86
REVENUE FROM BLD LEASE, PENNALTIES, & BULK WATER	$45,000		$35,120	0.401
USDA RURAL DEVELOPMENT RESERVE FUNDS LOAN 1	$12,560	100%	$0	$0.00
USDA RURAL DEVELOPMENT RESERVE FUNDS LOAN 2	$8,847	100%	$0	$0.00
EQUIPMENT REPLACEMENT SHORT LIVED ASSETS	$10,000	22%	$7,804	$0.09
CAPITAL IMPROVEMENT	$50,000	50%	$25,000	$0.29
ADOPTED BUDGET	$646,151		$370,898	
		21.96%	57%	
REVENUE COLLECTED CALCULATED RATES	$601,151		$335,778	
CALCULATED RATE PER METER EQUIVALENT	PER		1,000 GAL.	$3.838

The cost per 1,000 gallons of water for each line item are then added together, to generate a total cost per 1,000 gallons of water invoiced.

The cost per 1,000 gallons of water shown here is for the tier one customers.

All gallons invoiced under 65,000 will be invoiced as tier one customers at the price shown here.

	CASS CITY WATER 0-65,000				TIER 2 = OVER 65,000 GALLONS	
	CURRENT		NEW	DIFFERENCE	CURRENT	NEW
PER 1,000 GAL.	$3.763		$3.838	$0.08	$2.7540	$3.070

Here are the results of a two-tier system for the cost per 1,000 gallons of water.

Note: The first-tier cost of $3.838 is 2% higher than the current charge per 1,000 gallons of water.

The second-tier price is 20 percent lower than the first tier, as requested by the Utility committee.

Currently the gallons invoiced over 66,667 are 37% lower than tier 1.

Here are the current rate charges

Water Department

Adopted

	2019 Current	2020 Proposed
Water Rates		
0 - 1,667	21.44	21.44
1,668 – 5,000	3.7626	3.7626
5,001 – 8,333	3.4441	3.4441
8,334 – 66,667	3.4003	3.4003
over 66,667	2.7540	2.7540

Here is the complete rate calculation in one table.

This table includes the “Non-sales income” that is put back into the water system to help lower the water rates. This comes from penalties and building lease revenue.

CASS CITY WATER RATE CALCULATION	ANNUAL BUDGET	BASE RATE FIXED EXPENSES	COST METER EQUIVALENT	CONSUMPTION VARIABLE EXPENSES	VOLUME COST PER UNIT
591-001 ADMINISTRATION	$187,468	$41,161	$3.07	$146,307	$1.672
591.002 TREATMENT & PUMPING	$132,503	$29,093	$2.17	$103,410	$1.182
591.003 COLLECTIONS	$104,949	$23,043	$1.72	$81,906	$0.936
591.004 MAINTENANCE	$8,291	$1,820	$0.14	$6,471	$0.074
OPERATION & MAINTENANCE EXPENSES	$433,211	$95,118	$7.09	$338,093	$3.864
2007 WATER BOND USDA	$88,161	$88,161	$6.57	$0	$0.00
2021 & 2022 ESTIMATED WATER LOAN USDA	$43,372	$43,372	$3.23	$0	$0.00
ANNUAL DEBT PAYMENTS PRINCIPAL & INTEREST	$131,533	$131,533	$9.81	$0	$0.00
ANNUAL O & M + DEBT	$564,744	$226,651	$16.90	$338,093	$3.86
REVENUE FROM BLD LEASE, PENNALTIES, & BULK WATER	$45,000	$9,880	0.737	$35,120	0.401
USDA RURAL DEVELOPMENT RESERVE FUNDS LOAN 1	$12,560	$12,560	$0.94	$0	$0.00
USDA RURAL DEVELOPMENT RESERVE FUNDS LOAN 2	$8,847	$8,847	$0.66	$0	$0.00
EQUIPMENT REPLACEMENT SHORT LIVED ASSETS	$10,000	$2,196	$0.16	$7,804	$0.09
CAPITAL IMPROVEMENT	$50,000	$25,000	$1.86	$25,000	$0.29
ADOPTED BUDGET	$646,151	$275,253		$370,898	
		43%		57%	
REVENUE COLLECTED CALCULATED RATES	$601,151	$265,373		$335,778	
CALCULATED RATE PER METER EQUIVALENT	PER MONTH		$19.786	1,000 GAL	$3.838

Here is a summary of the complete rate charges using the new rate structure.

	CASS CITY WATER 0-65,000					TIER 2 = OVER 65,000 GALLONS	
	CURRENT		NEW		DIFFERENCE	CURRENT	NEW
PER 1,000 GAL.	$3.763		$3.838		$0.08	$2.7540	$3.070
2021	CURRENT		NEW		DIFFERENCE PER MONTH		
METER SIZE	READY TO SERVE PER MONTH	CURRENT / OLD METER RATIO REU'S PER METER SIZE	READY TO SERVE PER MONTH	METER RATIO FACTOR - REU'S PER METER SIZE			
3/4	$21.44	1.00	$19.79	1.00	-$1.65		
1	$21.44	1.00	$23.08	1.17	$1.64		
1 1/2	$21.44	1.00	$31.33	1.58	$9.89		
2	$21.44	1.00	$41.22	2.08	$19.78		
3	$21.44	1.00	$64.31	3.25	$42.87		
4	$21.44	1.00	$97.28	4.92	$75.84		

Here is an explanation of the new structure

- **Removed the 1,667 gallons currently being included for each meter size.**
- **All customers pay for all gallons of water**
- **Develop a RTS / OMR charge that increases for each meter size without including any gallons as part of the charge. It will increase by 25% each year over the next four years, to match the sewer meter ratio.**
- **The cost per 1,000 gallons of water is set with a two-tier system (***Per the request of Village staff, & decision makers.)*
- **Tier 1 = 0 – 65,000 gallons**
- **Tier 2 = 65,000 gallons and over @ 80% of tier one rate**

The table below calculates the new rates per monthly bill for a variety of meter sizes and volumes.

WATER METER SIZE BY INCHES	GALLONS USED	VOLUME CHARGE	NEW RTS CHARGE	TOTAL NEW BILL	CURRENT VOLUME CHARGE	CURRENT RTS CHARGE	CURRENT BILL	CHANGE IN BILL
3/4	2,200	$8.44	$19.79	**$28.23**	**$2.05**	**$21.44**	$23.49	$4.74
3/4	3,000	$11.51	$19.79	**$31.30**	**$5.12**	**$21.44**	$26.56	$4.74
3/4	4,000	$15.35	$19.79	**$35.14**	**$8.95**	**$21.44**	$30.39	$4.74
3/4	6,000	$23.03	$19.79	**$42.81**	**$16.24**	**$21.44**	$37.68	$5.14
3/4	15,000	$57.57	$19.79	**$77.35**	**$46.94**	**$21.44**	$68.38	$8.97
1	50,000	$191.89	$23.08	$214.98	$165.95	$21.44	$187.39	$27.59
1 1/2	110,000	$387.62	$31.33	$418.95	$341.96	$21.44	$363.40	$55.55
2	210,000	$694.65	$41.22	$735.87	$617.36	$21.44	$638.80	$97.07
3	250,000	$817.46	$64.31	$881.77	$727.52	$21.44	$748.96	$132.80
4	2,450,000	$7,572.08	$97.28	$7,669.36	$6,786.32	$21.44	$6,807.76	$861.60

The volume charge uses the two-tier system with the rate indicated in the above table.