



Alternative Water Source Program Public Service Committee Update

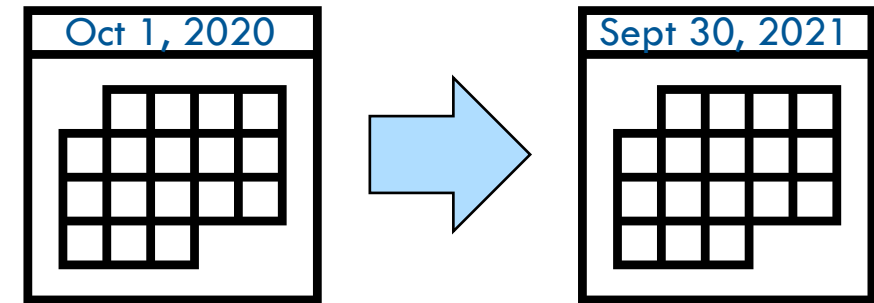
March 14, 2022

2021 WATER AUDIT



- “Water Audit” performed to determine how much of the water input to the City’s water system is used by customers and billed for by the City
- Performance of an annual water audit is a requirement of the City’s new Lake Michigan Water Allocation permit

Water Year 2021



2021 WATER AUDIT REPORTING



IDNR LMO-2

ILLINOIS
DEPARTMENT OF
NATURAL RESOURCES

JB Pritzker, Governor
Colleen Callahan, Director

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www.dnr.illinois.gov

Office of Water Resources, Michael A. Bilandic Building, 160 N. LaSalle St., S-703, Chicago, IL 60601

2021 Annual Water Use Audit Form (LMO-2)

This form must be completed by all Category IA and IB Permittees for the annual water use accounting year running from October 1, 2020 through September 30, 2021. This form must be completed and submitted to the Department by January 7, 2022.

Section I - General Information:

Permittee Contact Information:
Permittee: City of Joliet
Address: 150 W. Jefferson Street
Joliet, IL 60432

County: Will and Kendall Counties
Phone: 815.724.4220
Email: aswisher@joliet.gov

Contact Person Information:
Name: Anthony Anczer, PE, Deputy Director of Public Utilities - Engineering
Address: 150 W. Jefferson Street
Joliet, IL 60432

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AWWA M36 Water Audit

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
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Water Audit Report for: City of Joliet (IL970450)
Reporting Year: 2021 10/2020 - 9/2021

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

Volume from own sources: 5,580.444 MG/Yr
Water imported: 0.000 MG/Yr
Water exported: 50.486 MG/Yr

WATER SUPPLIED: 5,571.901 MG/Yr

AUTHORIZED CONSUMPTION

Billed metered: 3,754.837 MG/Yr
Billed unmetered: 0.000 MG/Yr
Unbilled metered: 0.000 MG/Yr
Unbilled unmetered: 23.989 MG/Yr

AUTHORIZED CONSUMPTION: 3,778.826 MG/Yr

Master Meter and Supply Error Adjustments

Pcnt: -0.83% Value: MG/Yr
-8.51% Value: MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration


Click here: for help using option buttons below

Pcnt: Value: 23.989 MG/Yr

Use buttons to select percentage of water supplied OR value

WATER AUDIT PROCESS



- 
- Completion of the annual water audit requires the compilation and analysis of a large amount of data
 - Joliet staff have worked diligently to provide the Consultant Team with the needed information
 - Joliet staff and members of the Consultant Team meet regularly as a Water Loss Reduction Task Force to improve the accuracy of data used in the audit and advance efforts to reduce Non-Revenue Water

2021 WATER BALANCE

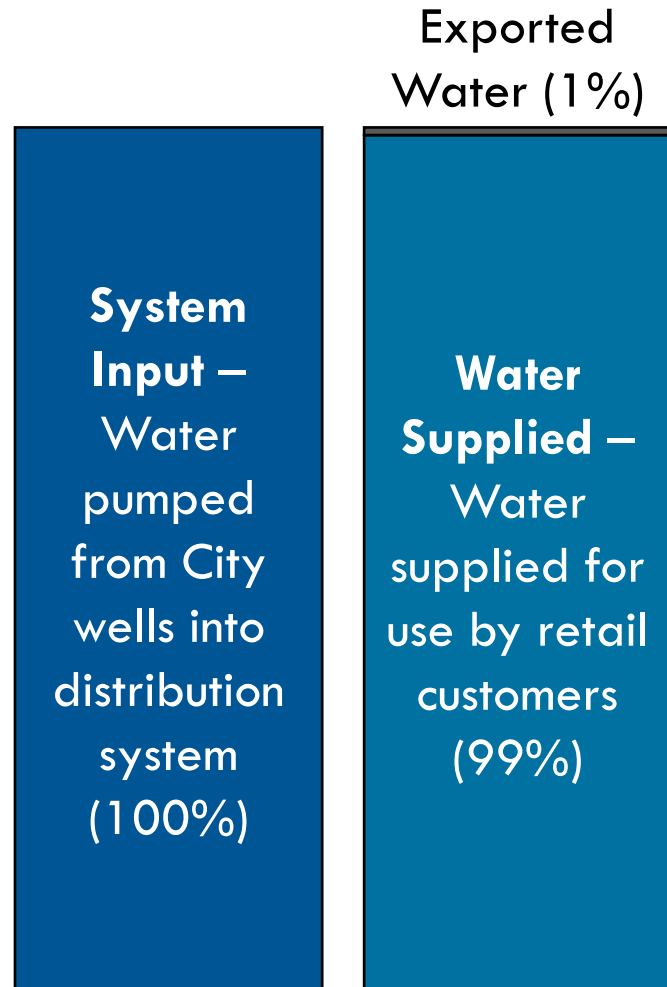


**System
Input –
Water
pumped
from City
wells into
distribution
system
(100%)**

The total volume of water supplied to the Joliet water system is determined from meters at the City's wells and water treatment plants.

In Water Year 2021, Joliet pumped 5.6 billion gallons (or about 15.4 million gallons per day) of water from its wells and water treatment facilities.

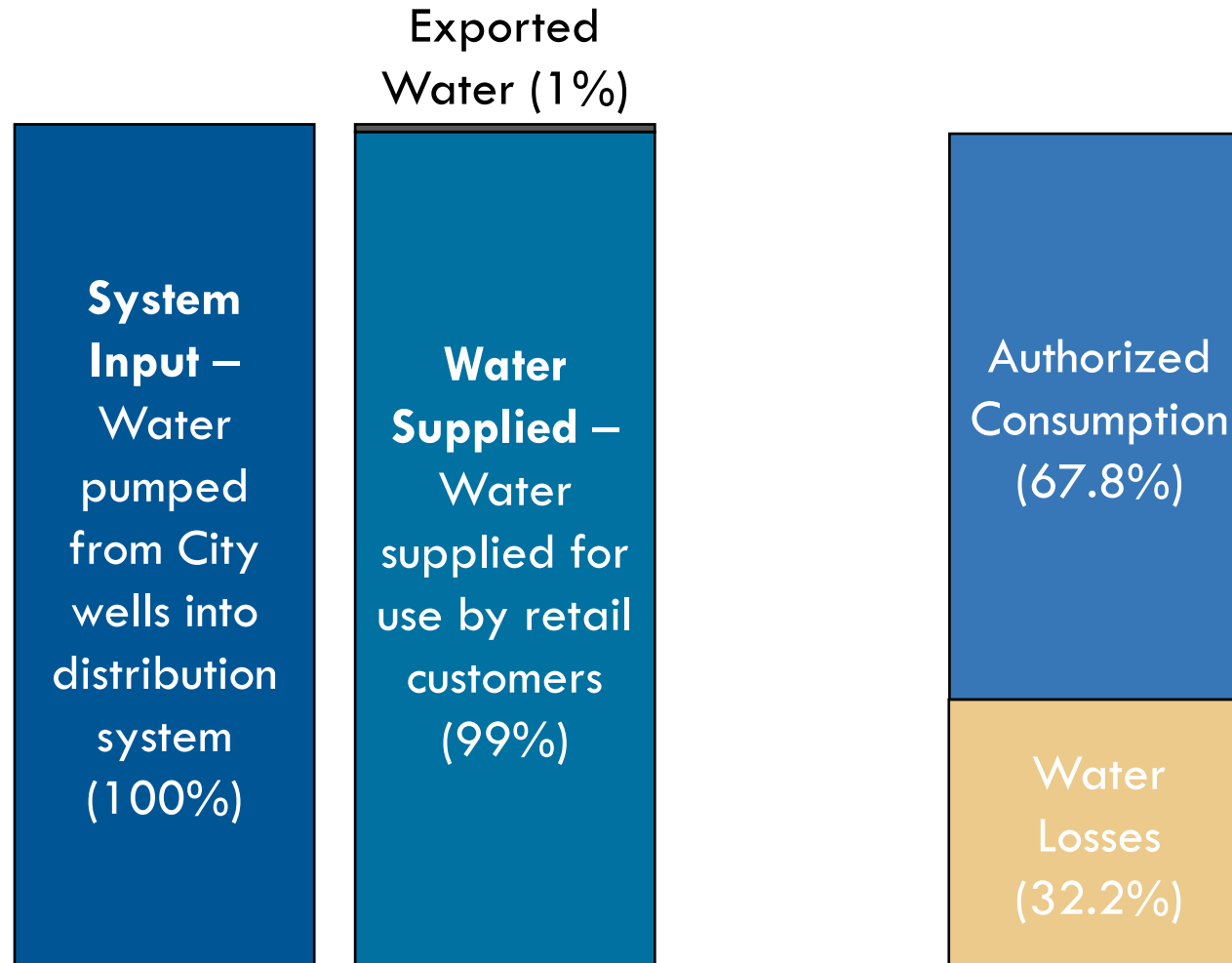
2021 WATER BALANCE



In Water Year 2021, about 1% of the water pumped by Joliet was exported to other utilities (Channahon, Aqua Illinois, Illinois American).

The remaining 99% of the water was supplied to Joliet's retail water customers.

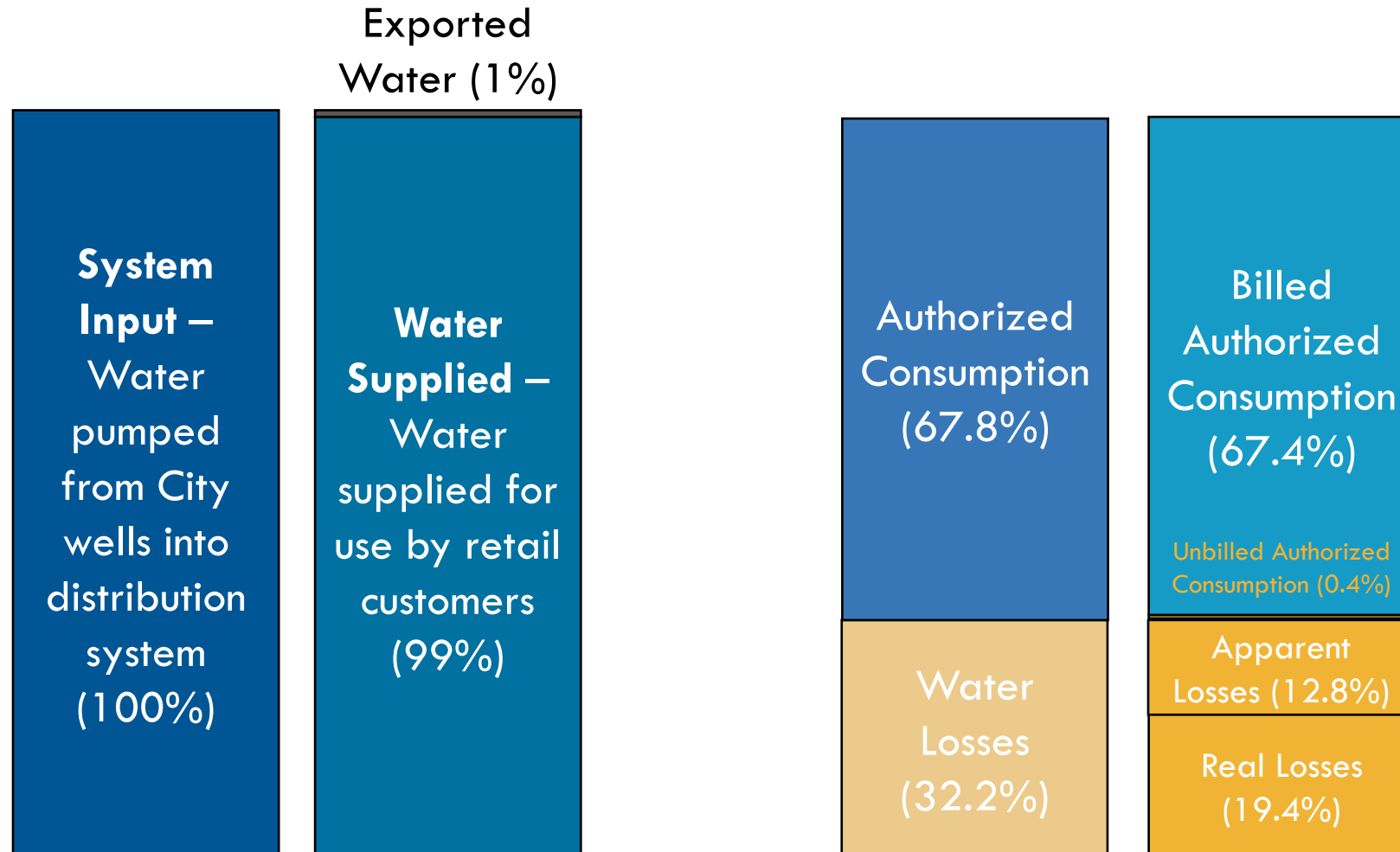
2021 WATER BALANCE



Of the water supplied to Joliet's retail customers, authorized consumption accounts for about 67.8%.

Authorized consumption is water use that is measured through customer water meters or accounted for through other methods (estimates of hydrant use for construction, fire fighting, sewer jetting, etc.)

2021 WATER BALANCE

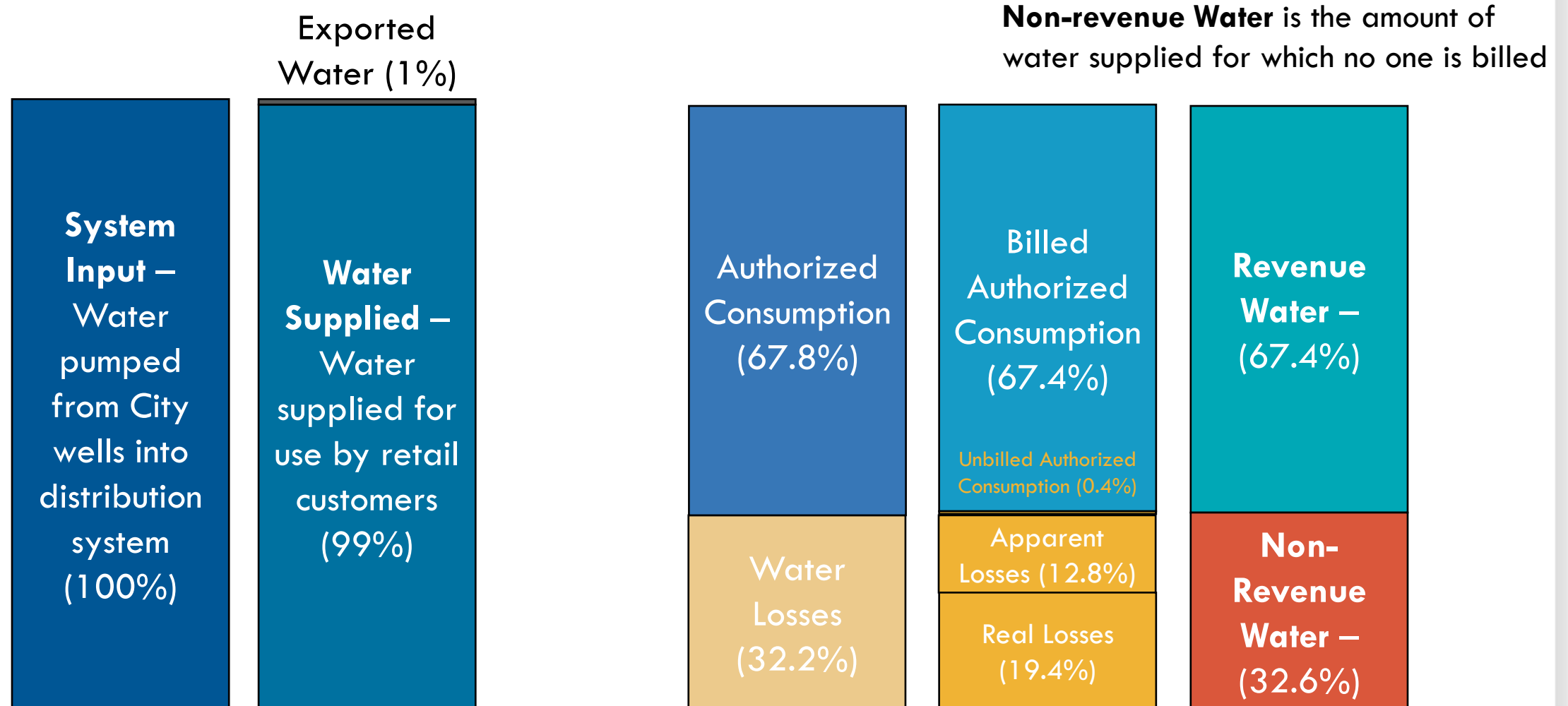


Joliet bills water users for almost all (> 99%) of the authorized water consumption in the system.

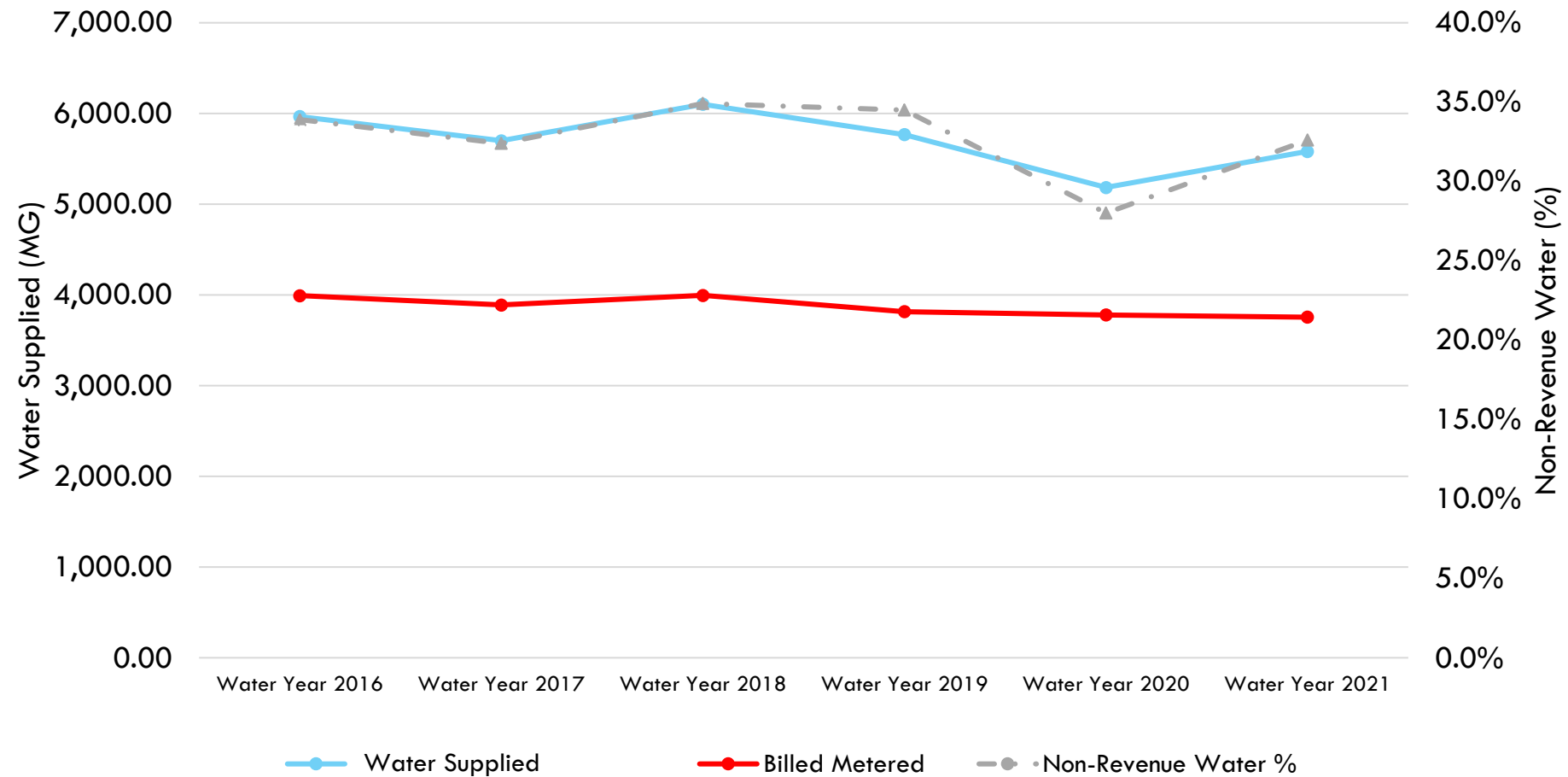
Apparent Losses = theft, metering/billing errors

Real Losses = physical leakage and losses

2021 WATER BALANCE



WATER AUDIT TREND



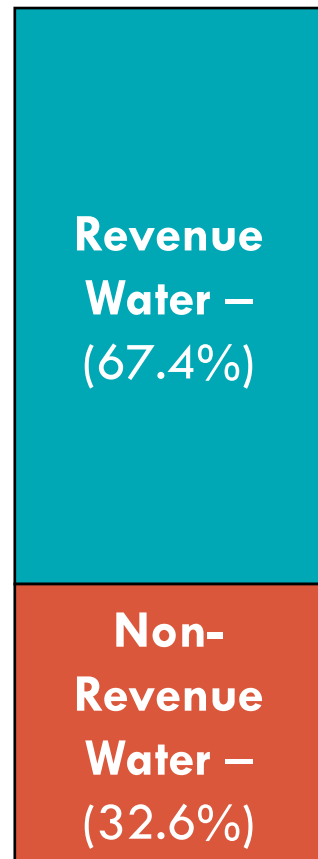
WHY REDUCE NON-REVENUE WATER?



Reducing Joliet's level of Non-Revenue Water is important because the cost of producing and supplying this water is borne by all customers.

In 2021, it is estimated that Joliet spent a little more than \$1 million to produce water for which no revenue was recovered.

If Joliet had to purchase all its current Non-Revenue Water at a wholesale rate (say \$3.38/1000 gallons) the cost would be more than \$6 million per year.

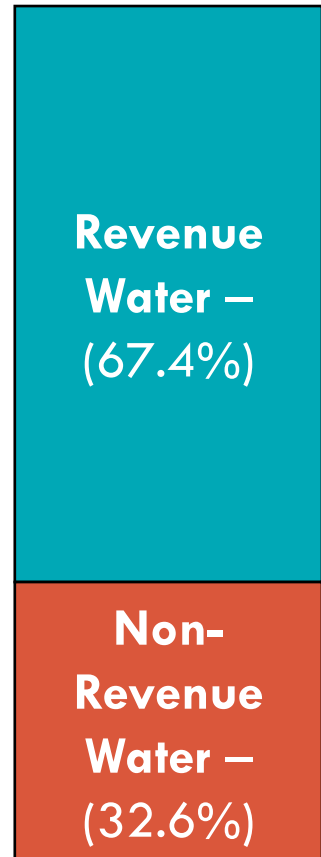


WHY REDUCE NON-REVENUE WATER?



Achieving a level of Non-Revenue Water less than 10% by 2030 is a requirement of Joliet's Lake Michigan Allocation Permit.

**Goal: NRW < 10%
by 2030**



NON-REVENUE WATER COMPONENTS



**Non-Revenue
Water
(32.6%)**

- Apparent Losses
 - Unauthorized Consumption
 - Metering Inaccuracies
 - Data Handling Errors
- Real Losses
 - Physical Leakage and Losses



NON-REVENUE WATER COMPONENTS



**Non-Revenue
Water
(32.6%)**

**Goal: NRW < 10%
by 2030**

- Apparent Losses
 - Unauthorized Consumption
 - Metering Inaccuracies
 - Data Handling Errors
- **Fixing Apparent Losses increases revenue**
- Real Losses
 - Physical Leakage and Losses
- **Fixing Real Losses reduces costs**



WATER LOSS REDUCTION STRATEGIES: APPARENT LOSSES



Apparent Losses		
Short-Term	Water Year 2020 Status	Water Year 2021 Progress
Annual water loss audit completion	On-going	On-going
Flowchart the customer billing process for various users (residential, commercial, exported)	2021	Complete
Initiate an Education and Outreach Program to City Staff Regarding Water Efficiency and Water Loss Reduction Strategies for Operations	Complete	Complete
Provide fire hydrant meters to all Public Works staff to better track water used by City Staff	2021	Complete
Implement bulk water stations	2021	Complete
Perform bench testing on customer meters for accuracy	2021	Complete
Audit billing records and visit sites/customers to determine potential missed billings	On-going	On-going
Implement new ordinance/procedures to meter all construction related water use	Complete	Complete
Implement procedures to meter all street sweepers	2023	In-Progress
Implement Sensus Analytics at Joint meeting(s) with Water Staff, Billing, and meter manufacturer	Complete	Complete
Request the third-party contractor who performs customer meter testing to provide a summary spreadsheet in Excel of the meters, size, and meter accuracy	On-going	On-going
Prepare and implement illegal water use policies/ordinances	On-going	Complete
Exported Water Users Improvement		
Install meter(s) for SEJSD	Complete	Complete
Develop a Customer Meter Change-out Program	2021	2021
Develop a Standard billing query in Sensus Analytics to query the AMI billed water use from exactly October 1 through September 30 of any given Water Year	2022	2022
Implement a Customer Meter Change-out Program (Begin - this will be a multi-year program)	2022	In Progress
Long-Term		
Implement improvements based on discovered AMR capabilities	TBD	TBD
Consider simplifying rate structure to minimize potential billing errors	2025	2025
Conduct exported water meter replacement programs	TBD	TBD

Red text indicates a new strategy included in the Water Year 2021 Water System Improvement Plan

WATER LOSS REDUCTION STRATEGIES: **REAL LOSSES**

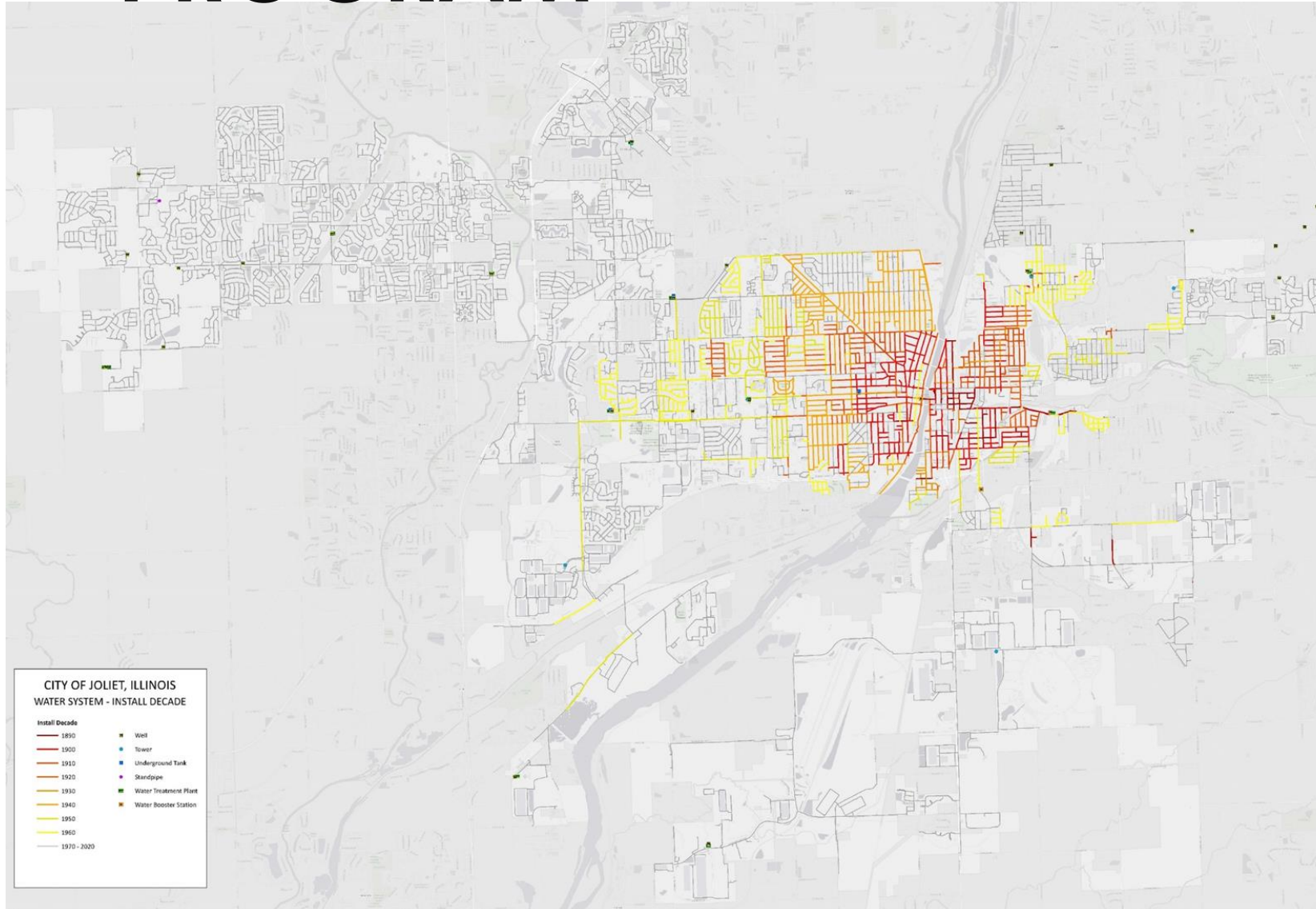


Real Losses		
Short-Term		Anticipated Deadline
	Conduct water main break analysis	Complete, Continue to Monitor
	Hydraulic analysis to review pressures	Complete, Continue to Monitor
	Leak detection (Annual)	On-going
	Increase water main replacement program based on NRW desired goals	2022
	Investigate the Potential of implementing District Metered Areas (DMAs) or, at a minimum, areas that could potentially just be monitored to better narrow down the locations of water loss.	2020
Mid-Term		
	If applicable (once DMAs are reviewed), construct the necessary valves, meters, and distribution improvements to implement smaller metered areas or DMAs to better narrow down the location of the water loss.	2023
Long-Term		
	Monitor water main replacement rate and water reduction to determine impact on NRW and adjust accordingly	On-going

WATER MAIN REPLACEMENT PROGRAM



Replacement of all water mains constructed prior to the 1970s at a rate of 20 miles and a cost of \$34 million annually over the next 8 years (2022 to 2030)



QUESTIONS?



www.RethinkWaterJoliet.org