



Challenges and Solutions for Aging Water Infrastructure

2024 Water for All Summit
Catawba-Wateree Water Management Group

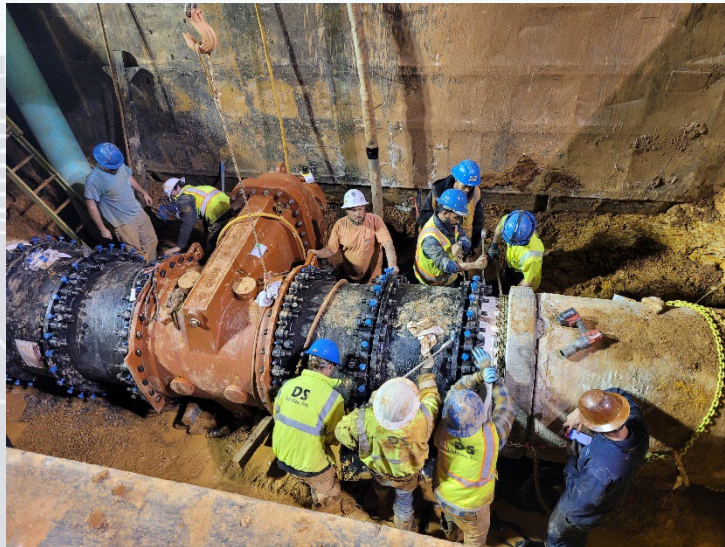
March 28, 2024



We Are Columbia

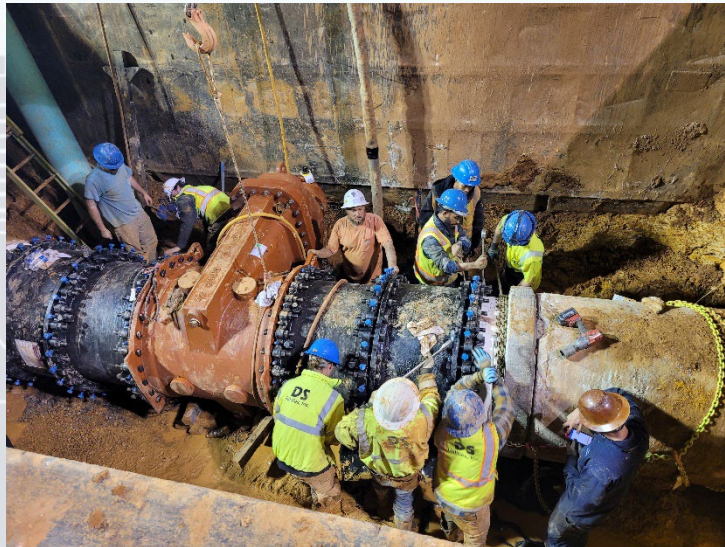
Agenda

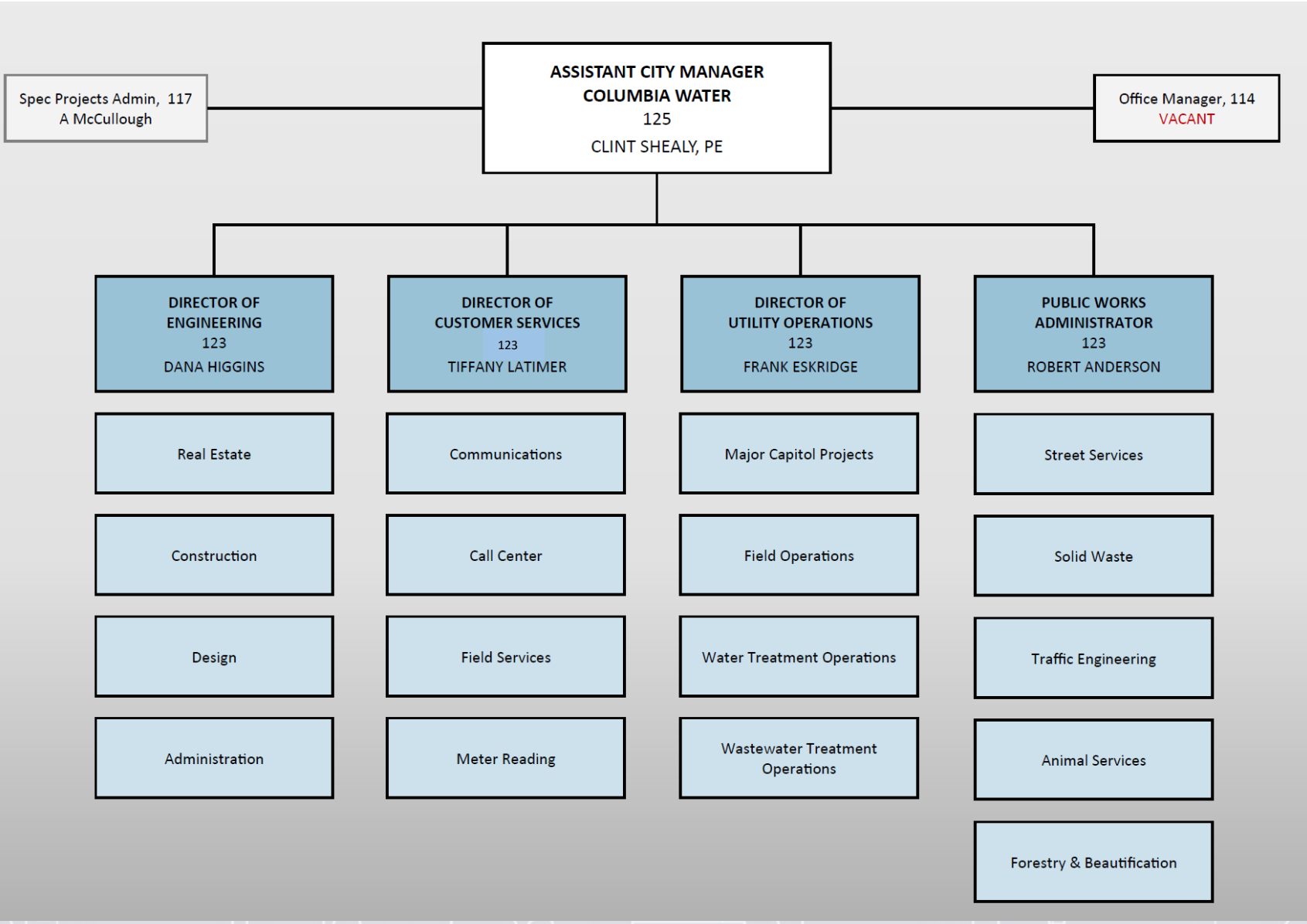
- Overview of Columbia Water
- Issue of Aging Infrastructure
- Problems
- Additional Considerations
- Strategies and Experiences
- Looking Forward



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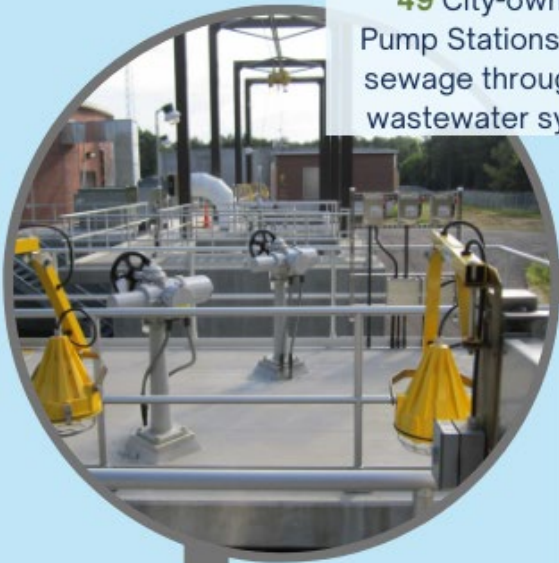
27 Booster Pump Stations & 24 Water Storage Tanks help serve the drinking water system

Approximately **2,400** miles of pipe carry fresh drinking water to City customers



The City's 2 water treatment plants can produce up to **159 Million** gallons of drinking water each day

In 2022, the City produced **25 Billion** gallons of drinking water and treated **11 Billion** gallons of sewage



49 City-owned Pump Stations move sewage through the wastewater system



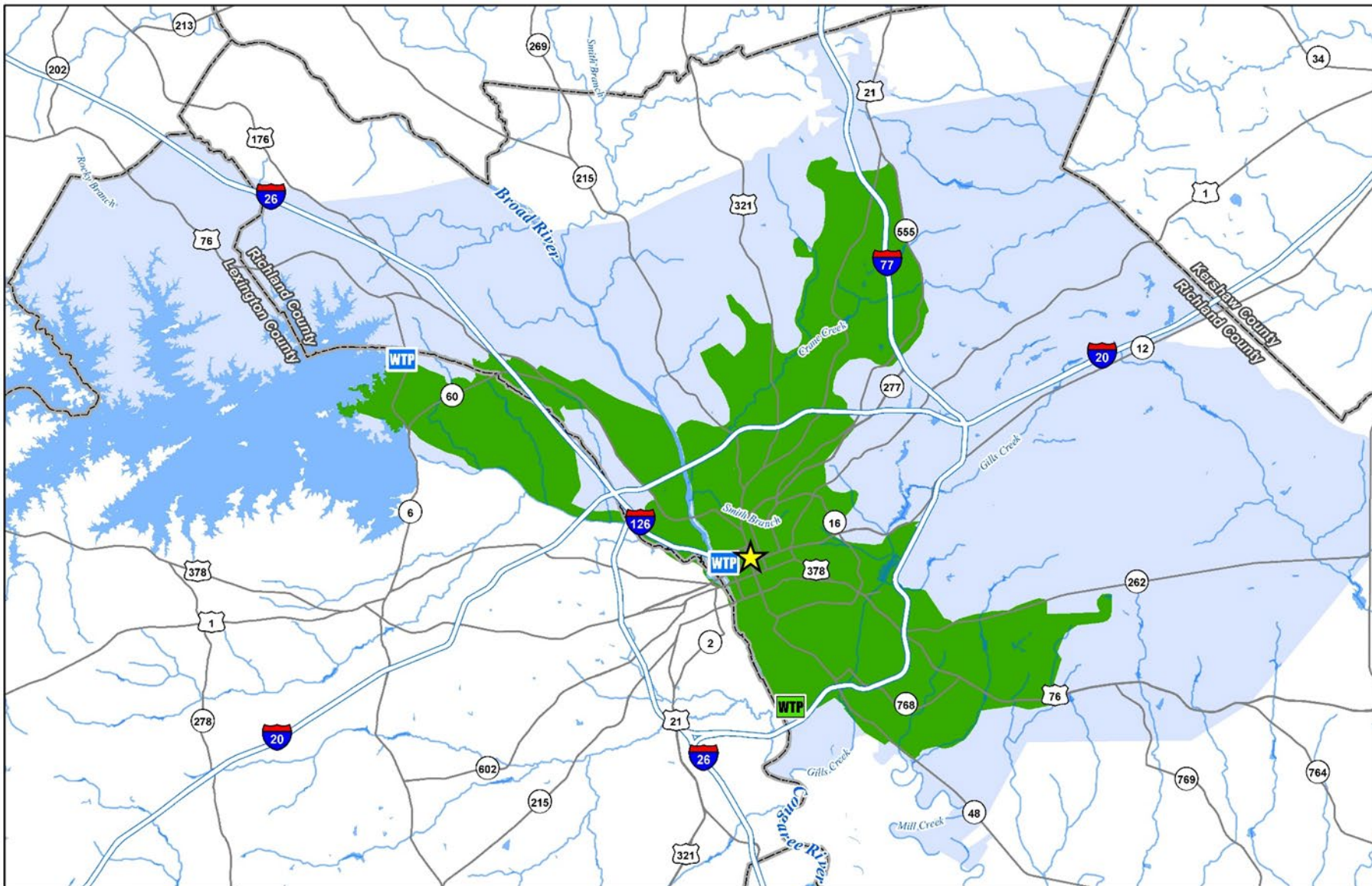
With approximately **140,000** water customers & **60,000** sewer customers, Columbia Water serves about **400,000** people in the Midlands



The City's Metro Wastewater Treatment Plant can treat up to **60 Million** gallons of sewage each day

Over **1,000** miles of pipe carry sewage to the City's wastewater treatment plant





Clean Water 2020
2019 Clean Water Act



We Are Columbia



City Hall



Wastewater Treatment Plant



Water Treatment Plant



Wastewater Basin Boundary



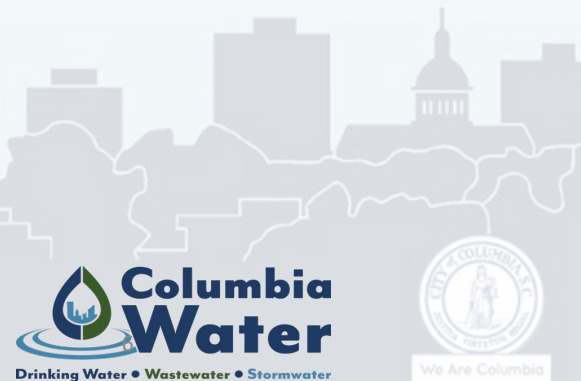
Water District Boundary



1 inch = 4 miles

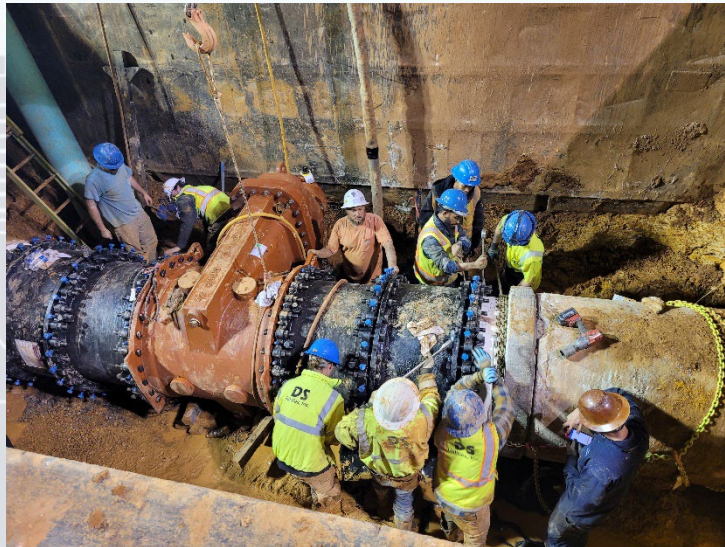


SS7236-21
Clean Water 2020
Program Management



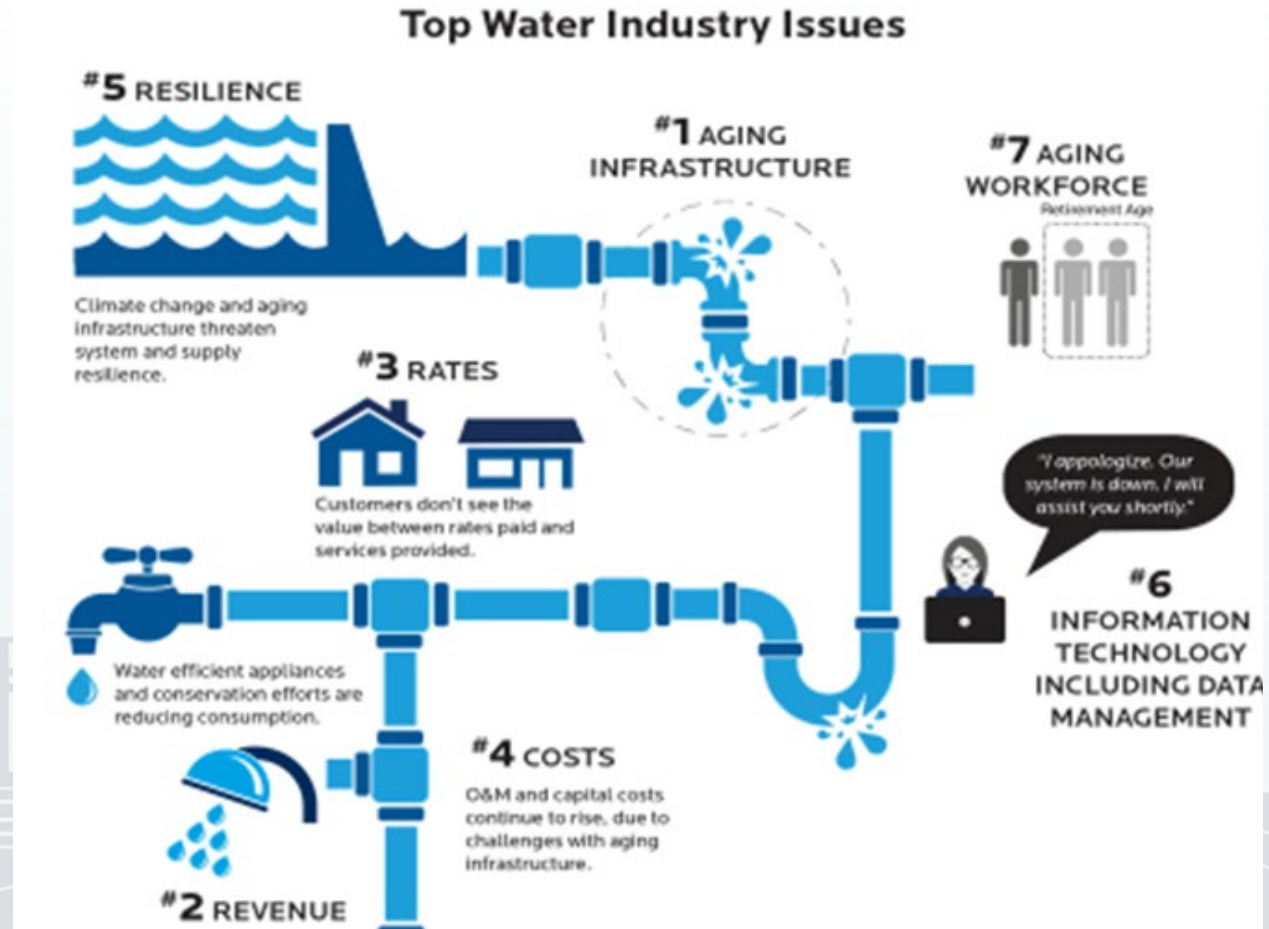
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Top 7 Water Industry Issues

1. Aging Infrastructure
2. Revenue
3. Rates
4. Costs
5. Resilience
6. Information Technology
7. Aging Workforce



Issue of Aging Infrastructure

2021

REPORT CARD FOR AMERICA'S INFRASTRUCTURE



There is a water main break every two minutes, and an estimated 6 billion gallons of treated water lost each day in the U.S.

Between 2016 and 2026, an estimated 10.6% of water sector workers will retire or transfer each year, with some utilities expecting as much as half of their staff to retire in the next five to 10 years.

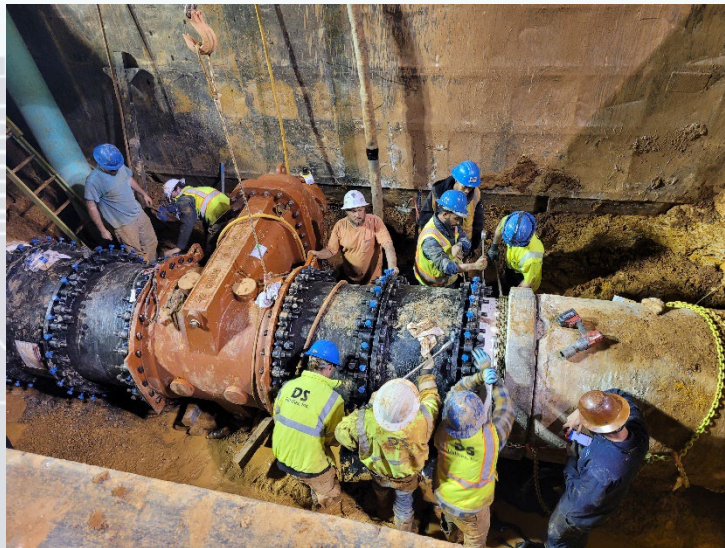
...annual drinking water and wastewater investment gap will grow to \$434 billion by 2029.

South Carolina 2021 Report

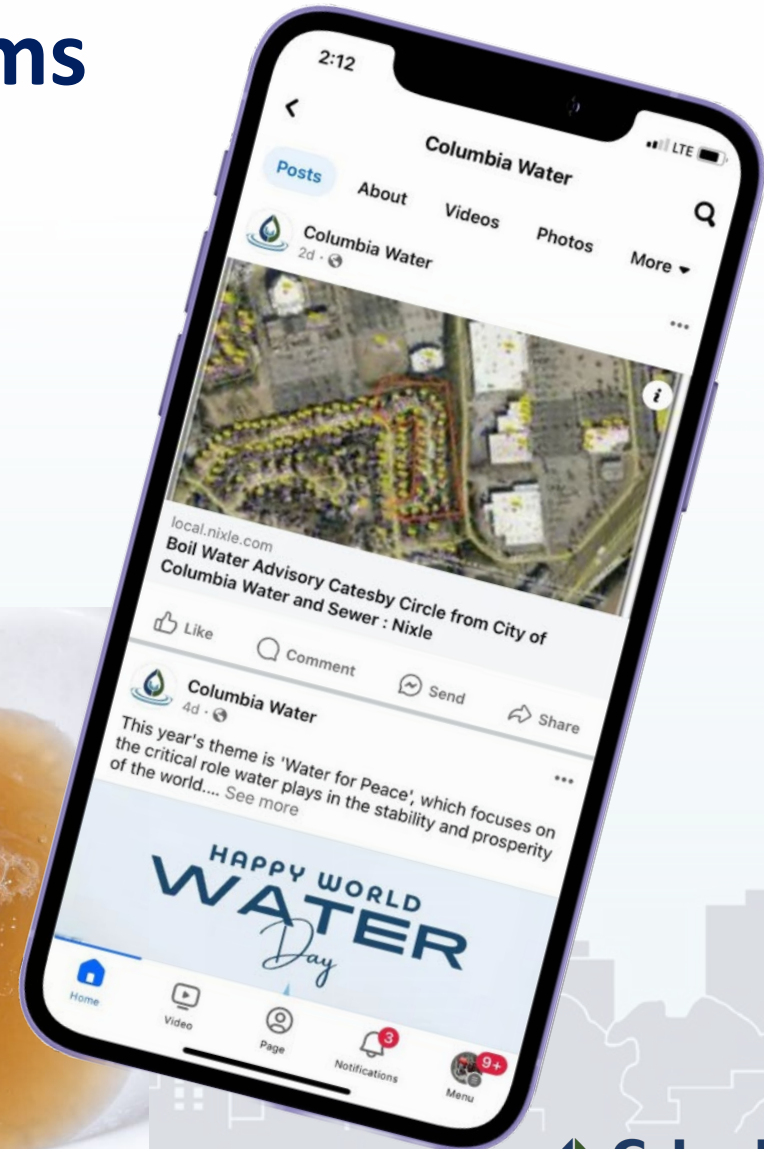


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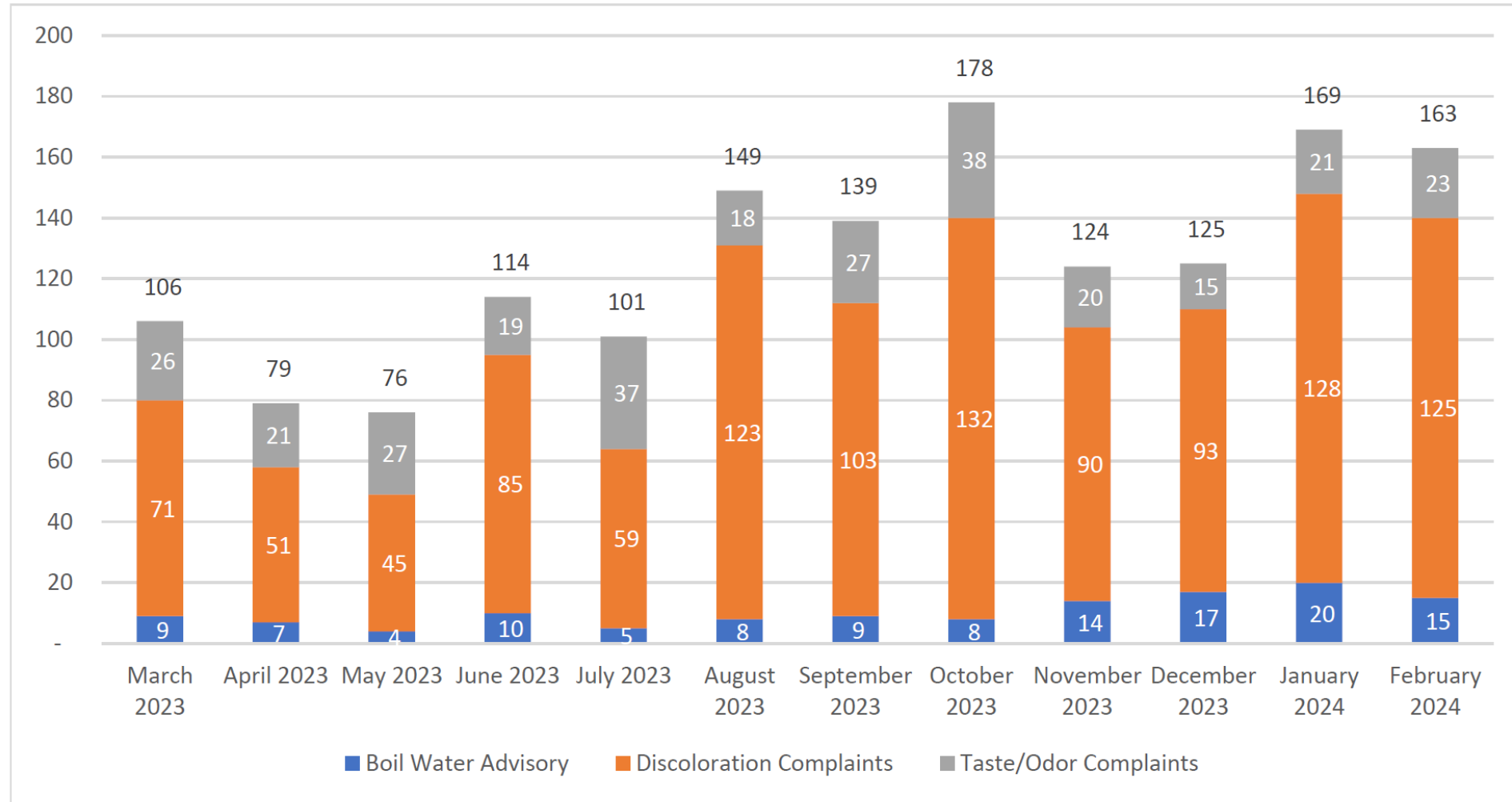


Leaks and Water Quality Problems



Metrics

SERVICE CONCERNS FOR TRAILING 12-MONTH PERIOD



Consumer Confidence



Large water main break in heart of Columbia causes road closures, boil water advisory

West Columbia woman facing \$2,570 water bill

The resident said her bill was suddenly 48 times higher than normal.



As their water bills skyrocket, some Columbia Water customers blame their new meters

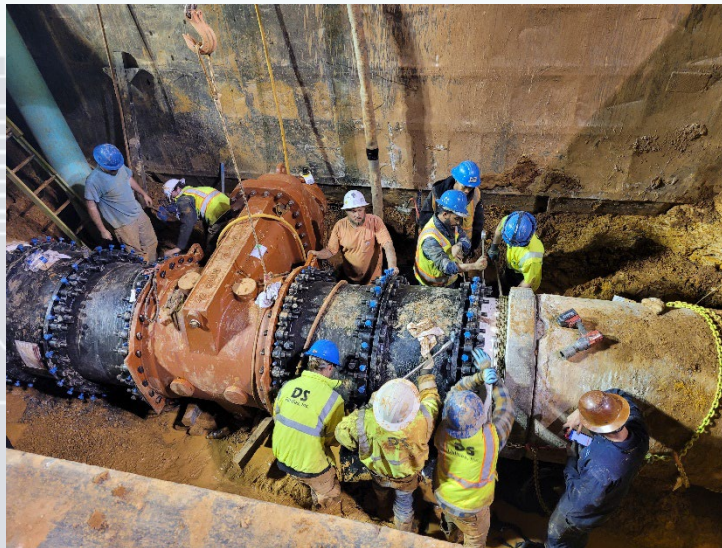
'Rosewood tea' leaves residents weary of using water

By Kourtney Vermillion and Peter Vance Smith | Apr 9, 2021



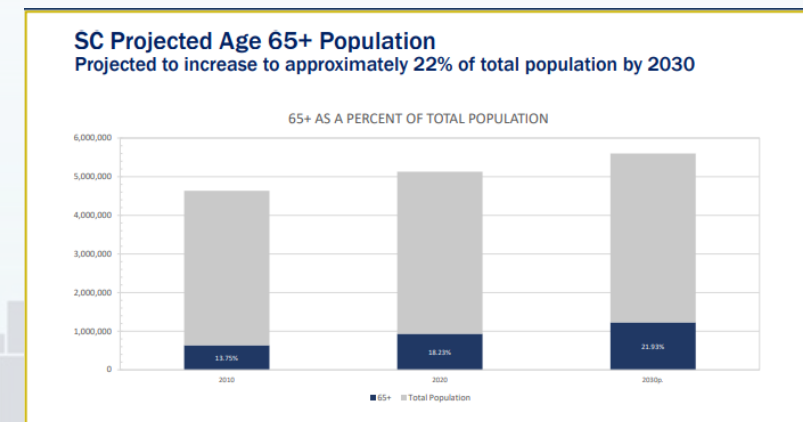
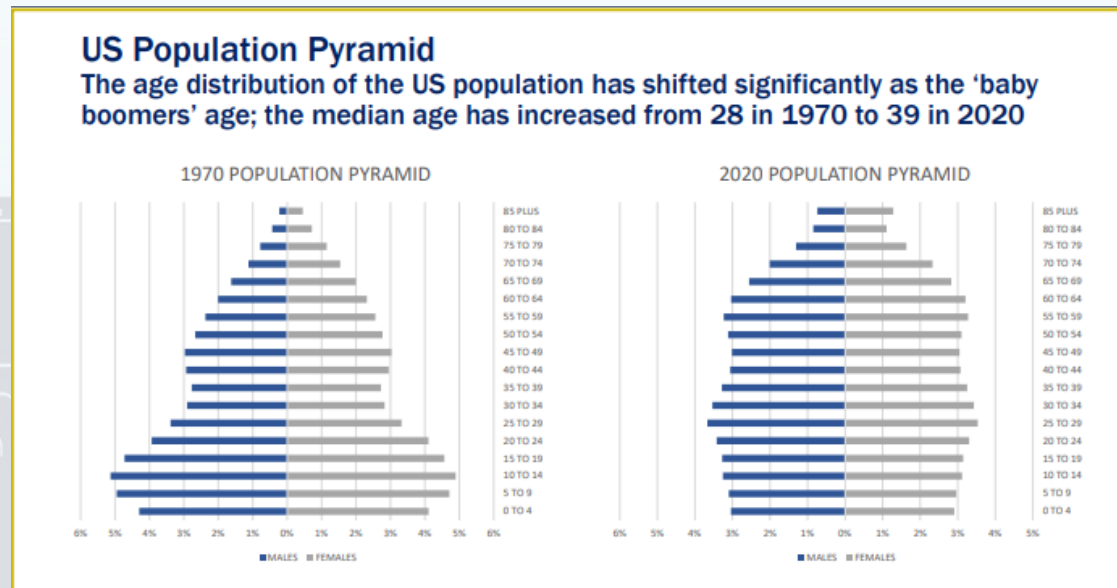
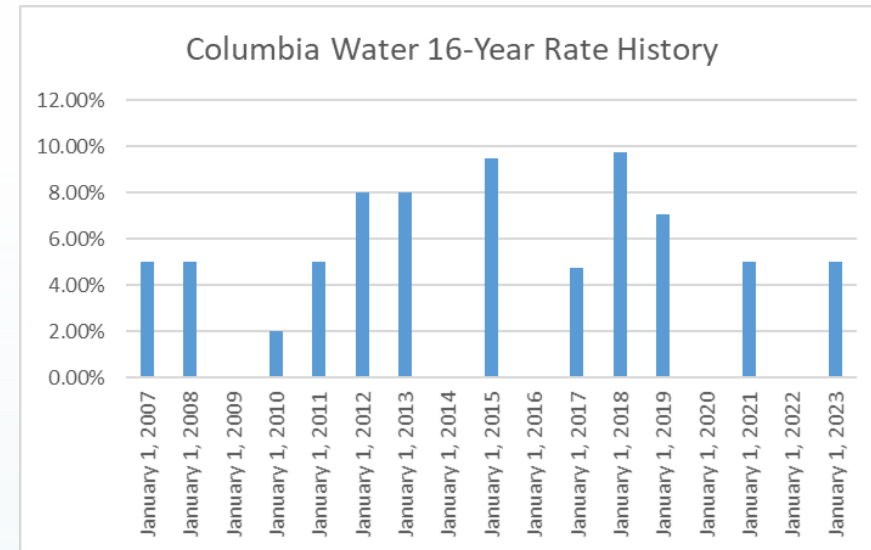
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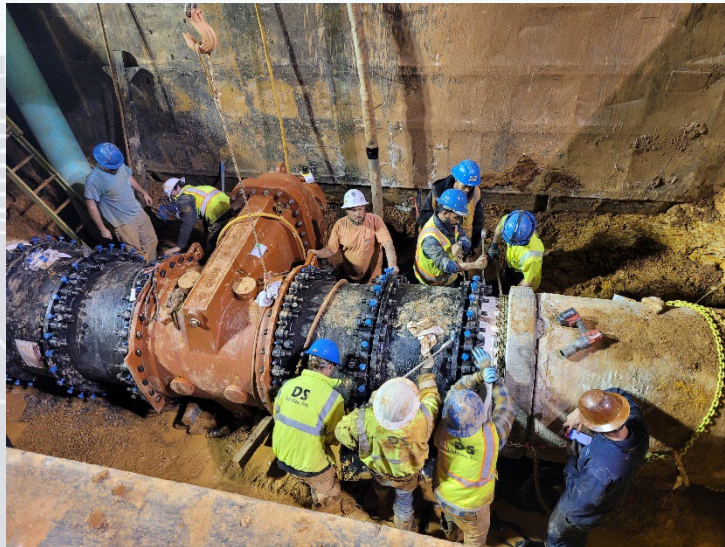
Additional Considerations

- Lack of Funding for Infrastructure Replacement
- Aging Workforce Issues
- Regulatory Pressures – EPA Consent Decree for Wastewater System, Lead and Copper Rule Modifications
- Economic Development and Growth



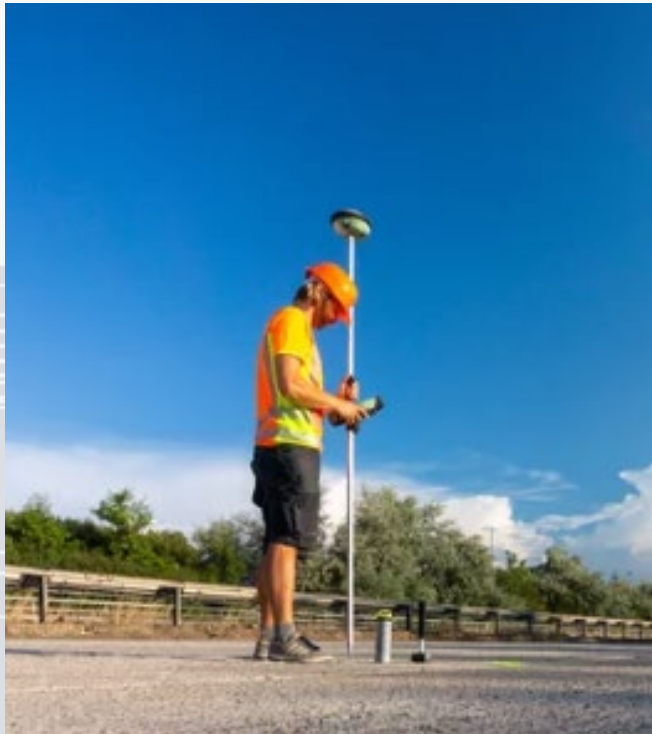
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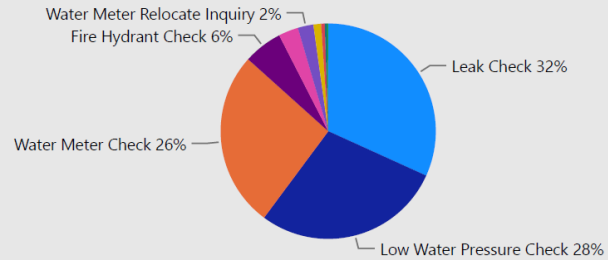
Data Gathering and Analysis

- Water System Mapping – GIS
- Asset Data Collection
- Cityworks Work Order Management System
- Heat Mapping of Leaks and Water Quality Issues



Work Order Tracking

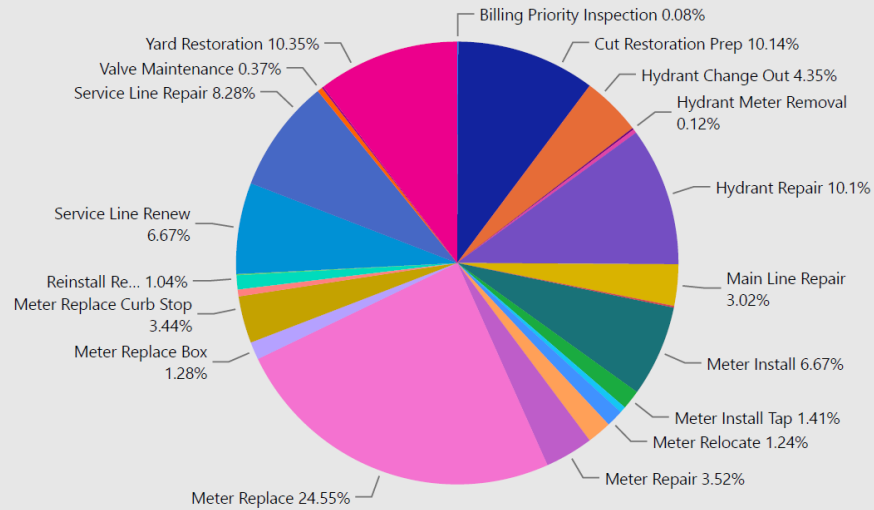
Water Open Service Requests



Water Open Service Requests

Request	Count
Leak Check	245
Low Water Pressure Check	219
Water Meter Check	204
Fire Hydrant Check	45
Water Property Disturbance Inquiry	23
Water Meter Relocate Inquiry	18
Valve Box Check	9
Water Plate Request	4
Emergency Water Shutoff	3
No Water Investigation	1
Total	771

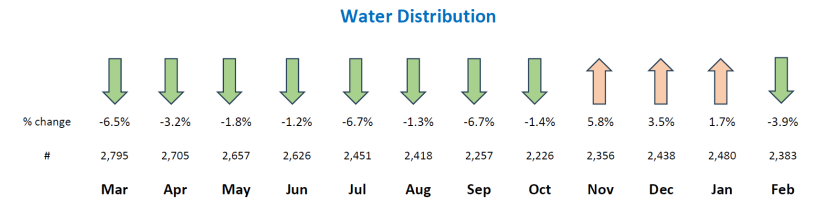
Water Open Work Orders



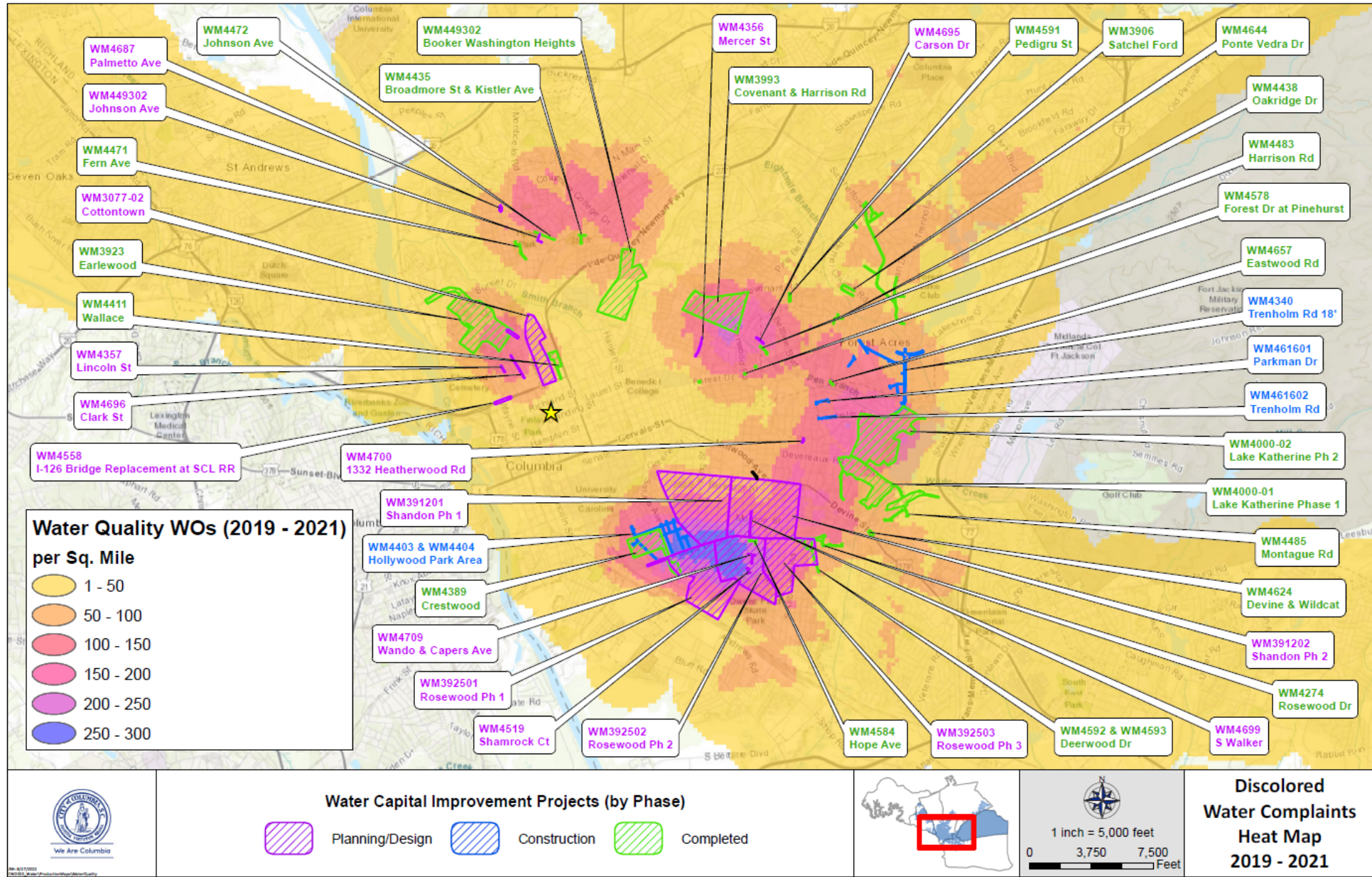
Water Open Work Orders

Work Order	Count
Meter Replace	593
Yard Restoration	250
Cut Restoration Prep	245
Hydrant Repair	244
Service Line Repair	200
Meter Install	161
Service Line Renew	161
Hydrant Change Out	105
Meter Repair	85
Meter Replace Curb Stop	83
Main Line Repair	73
Meter Removal	43
Meter Install Tap	34
Total	2418

Work Order Backlog Month-to-Month Change



Water Quality - Discoloration



WM-2023-002

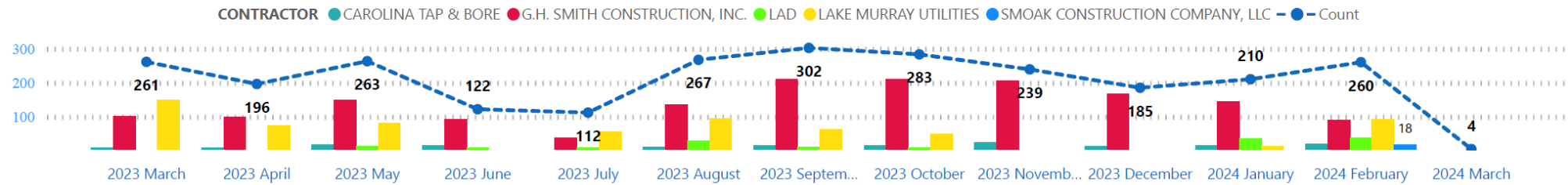


We Are Columbia

Indefinite Delivery Contracts

Water Contractor Overview

Contractor Completions Trend



Total Contractor Pending

Work Order	Count
WA_Meter Replace	153
WA_Cut Restoration Prep	138
WA_Hydrant Change Out	63
WA_Service Line Renew	56
WA_Meter Install	22
WA_Hydrant Repair	9
WA_Main Line Repair	7
WW_Cut Restoration Prep	6
WA_Service Line Repair	5
WA_Hydrant Relocate	4
WA_Meter Install Tap	2
Total	467

Assigned to Contractor from Total

Contractor	Count
CAROLINA TAP & BORE	25
G.H. SMITH CONSTRUCTION, INC.	94
LAD	9
LAKE MURRAY UTILITIES	20
SMOAK CONSTRUCTION COMPANY, LLC	126
Total	274

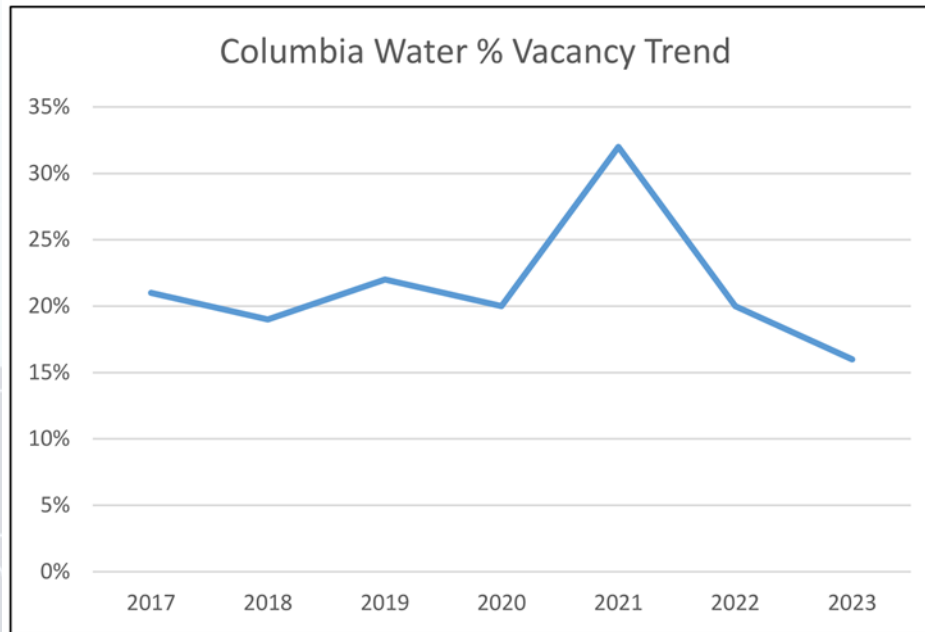
Total Completed by Contractor

Work Order	Count	STATUS
WA_Meter Install	2852	CLOSED
WA_Cut Restoration Prep	945	CLOSED
WA_Meter Replace	270	CLOSED
WA_Service Line Renew	267	CLOSED
WA_Main Line Repair	236	CLOSED
WA_Hydrant Change Out	197	CLOSED
WA_Service Line Repair	196	CLOSED
WA_Meter Install Tap	154	CLOSED
WA_Yard Restoration	90	CLOSED
WA_Meter Install	53	COMPLETED
WA_Hydrant Repair	40	CLOSED
WW_Cut Restoration Prep	20	CLOSED
WA_Meter Repair	15	CLOSED
WA_Meter Replace Box	3	CLOSED
WA_Reinstall Removed Meter	3	CLOSED
WA_Hydrant Relocate	2	CLOSED
Total	5347	



Utility Staffing Challenges

- Post COVID-19 Issues
- High Vacancy Rates
- Customer Service Problems
- New Mayor and Council



Year	% Vacancy
2017	21%
2018	19%
2019	22%
2020	20%
2021	32%
2022	20%
2023	16%

Median Employee Tenure	
2020	7.6 years
2021	4.9 years
2022	4.5 years
2023	4.5 years

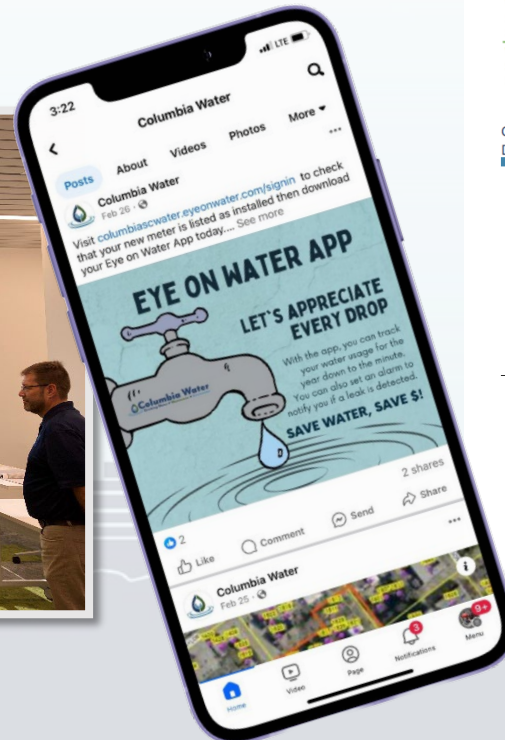
Workforce Development

- Reorganization of Utility Operations and Customer Care
- Increase Recruiting and Retention
 - Job fairs, working with local technical colleges and high schools
 - Flat \$4000 salary increase for operational staff
- Apprenticeship Program Changes
 - Formal training and advancement program
 - Set progressive increases for advancing levels of licensure (8% up to 14% for A level)
- New performance management system – pay increases for performance
- Participation in SC Water Associations collaborative effort for workforce development



Restoring Customer Confidence

- AMI Meters – Major capital investment, transparency
- Educating Elected Officials – Monthly Columbia Water Update
- Communications – Social Media, Newsletter, Website, Advertising, Public Meetings



March 2024 Columbia Water Update



At a Glance

FY 2023-2024 CITY COUNCIL APPROVALS VS. BUDGET

FY 2023-2024 CITY COUNCIL APPROVALS

FY 2023-2024 TO-DATE*

STORMWATER
\$2.8M APPROVED VS.
\$13.1M BUDGET

WATER
\$28.35M APPROVED VS.
\$28.5M BUDGET

WASTEWATER
\$44.2M APPROVED VS.
\$64.5M BUDGET

WASTEWATER GRANTS
\$9.89M APPROVED VS.
\$45M BUDGET



\$85.24M
APPROVED YTD VS. \$161.1M BUDGET

- 26 TOTAL WASTEWATER CIP PROJECTS
\$44,168,966 TOTAL DOLLAR VALUE
\$36,269,747 NEW CONSTRUCTION DOLLAR VALUE
- 2 TOTAL WASTEWATER GRANT PROJECTS
\$9,891,819 TOTAL DOLLAR VALUE
\$9,891,819 NEW CONSTRUCTION DOLLAR VALUE
- 17 TOTAL WATER CIP PROJECTS
\$28,353,792 TOTAL DOLLAR VALUE
\$26,625,972 NEW CONSTRUCTION DOLLAR VALUE
- 3 TOTAL STORMWATER CIP PROJECTS
\$2,800,804 TOTAL DOLLAR VALUE
\$792,554 CONSTRUCTION DOLLAR VALUE

*Values through 2/29/2024 have been rounded to the nearest whole number.

COLUMBIA WATER –

[Drinking Water](#) | [Wastewater](#) | [Stormwater](#) | [Customer Services](#)

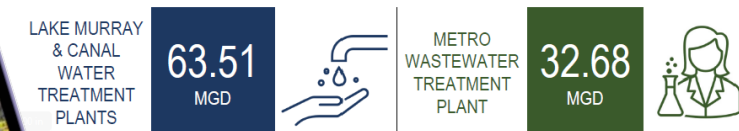
MONTHLY REPORT, MARCH 2024

Customer Touchpoints

TOTAL	Mail	Email	In Person	App	Chat	Fax	Contracts	Phone
29,574	220	3,178	2,284	144	802	46	1,812	21,088

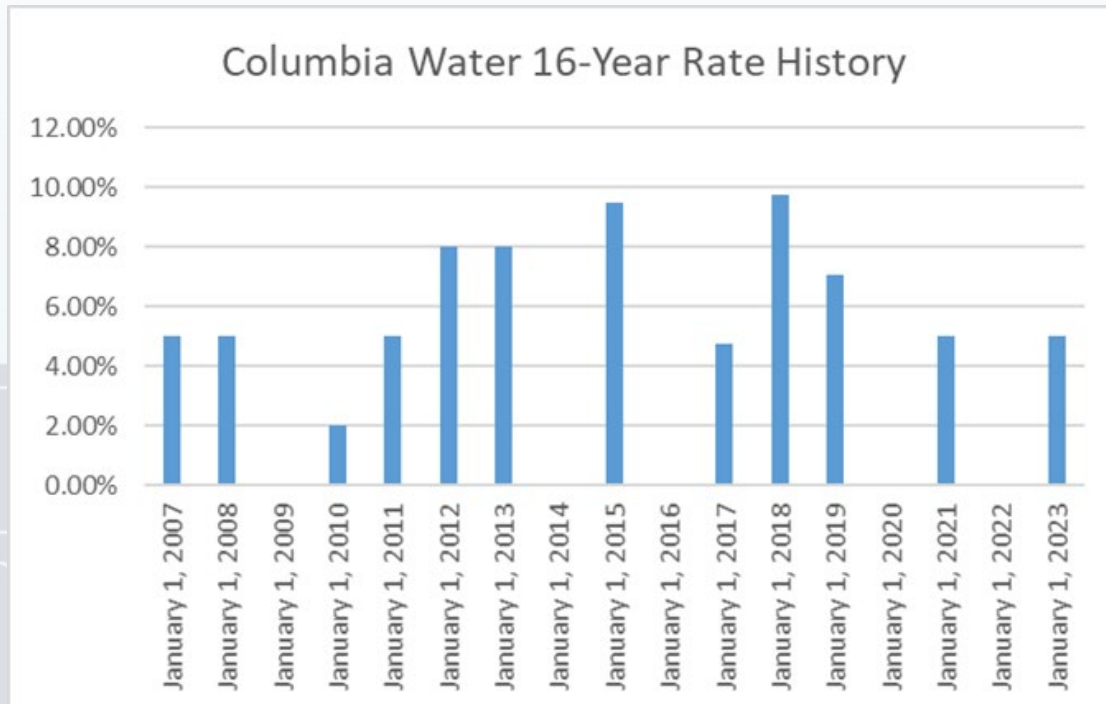
Treated Water & Wastewater

MONTHLY AVERAGE OF TREATED WATER AND WASTEWATER FOR LAST 6 MONTHS IN MILLION GALLONS PER DAY (MGD)



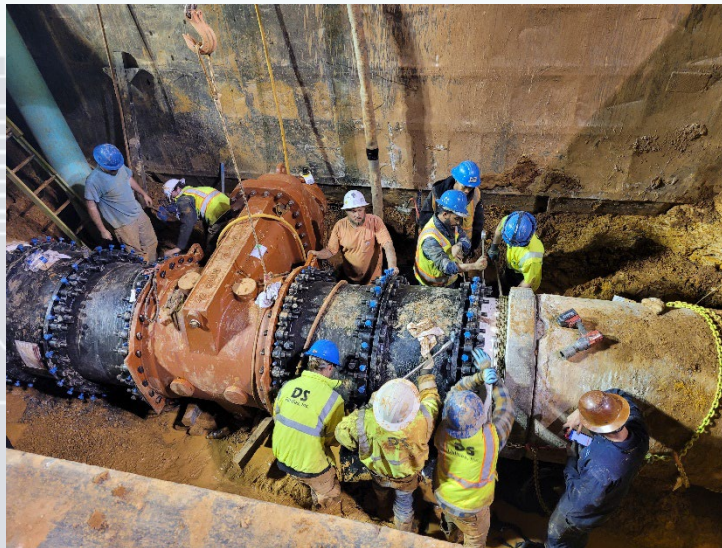
Funding Improvements

- Secure a Stable Rate Adjustment – commitment for 5% per year for 5 years
- Stop Direct Transfers to General Fund
- Maximize Grant Opportunities – Approximately \$120 M of investment in Columbia Canal restoration, with over \$100 M of external funding
- Leverage Economic Development Opportunities – Scout Motors



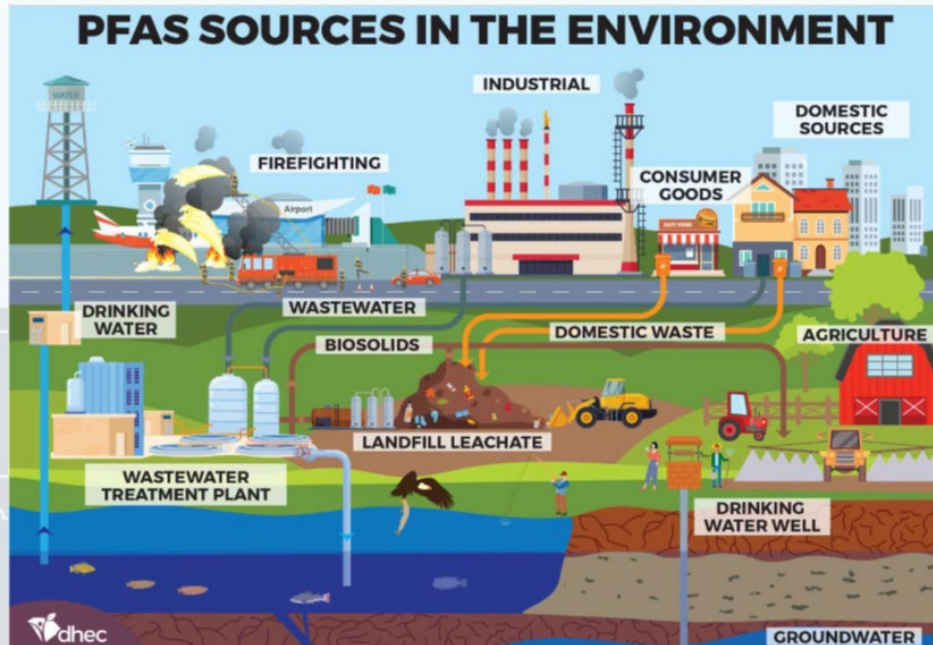
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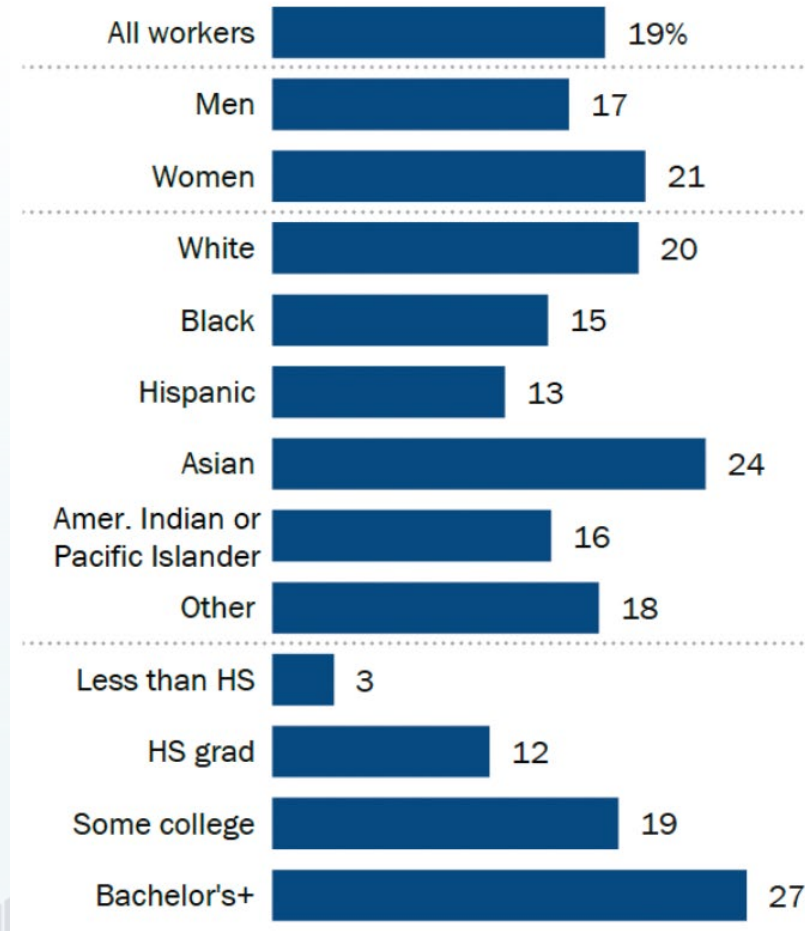
Looking Forward

The World Economic Forum's "[The Future of Jobs Report 2020](#)" predicts 85 million jobs globally will be replaced by AI by 2025. The same report also indicates that AI can potentially generate 97 million new roles.



What shares of workers are most exposed to AI in their jobs?

% of U.S. workers employed in jobs that are the most exposed to AI in 2022



Questions & Discussion



Thank you!

