

# Great Lakes Water Authority

*Key Performance Indicators and  
Effective Utility Management (EUM) Metrics  
August 14, 2019*



# Ten Attributes of Effectively Managed Water Sector Utilities (EUM)



Attribute	Attribute Components
<b>Employee and Leadership Development</b>	Recruits and retains a workforce that is competent, motivated, adaptive, and safety-focused. Establishes a participatory, collaborative organization dedicated to continual learning, improvement, and innovation. Ensures employee institutional knowledge is retained, transferred, and improved upon over time. Provides a focus on and emphasizes opportunities for professional and leadership development, taking into account the differing needs and expectations of a multi-generational workforce and for resource recovery facilities. Establishes an integrated and well-coordinated senior leadership team.
<b>Operational Optimization</b>	Ensures ongoing, timely, cost-effective, reliable, and sustainable performance improvements in all facets of its operations in service to public health and environmental protection. Makes effective use of data from automated and smart systems, and learns from performance monitoring. Minimizes resource use, loss, and impacts from day-to-day operations, and reduces all forms of waste. Maintains awareness of information and operational technology developments to anticipate and support timely adoption of improvements.
<b>Financial Viability</b>	Understands the full life-cycle cost of utility operations and value of water resources. Establishes and maintains an effective balance between long-term debt, asset values, operations and maintenance expenditures, and operating revenues. Establishes predictable rates—consistent with community expectations and acceptability—adequate to recover costs, provide for reserves, maintain support from bond rating agencies, plan and invest for future needs, and taking into account the needs of disadvantaged households. Implements sound strategies for collecting customer payments. Understands the opportunities available to diversify revenues and raise capital through adoption of new business models.
<b>Infrastructure Strategy and Performance</b>	Understands the condition of and costs associated with critical infrastructure assets. Plans infrastructure investments consistent with anticipated growth, system reliability goals, and relevant community priorities, building in flexibility for evolution in technology and materials, and uncertainty in the overall future operating context (e.g., climate impacts, customer base). Maintains and enhances the condition of all assets over the long-term at the lowest possible life-cycle cost and acceptable risk consistent with customer, community, and regulator-supported service levels. Assures asset repair, rehabilitation, and replacement efforts are coordinated within the community to minimize disruptions and other negative consequences.
<b>Enterprise Resiliency</b>	Ensures utility leadership and staff work together internally, and with external partners, to anticipate, respond to, and avoid problems. Proactively identifies, assesses, establishes tolerance levels for, and effectively manages a full range of business risks (including interdependencies with other services and utilities, legal, regulatory, financial, environmental, safety, physical and cyber security, knowledge loss, and natural disaster-related) in a proactive way consistent with industry trends and system reliability goals.

# Ten Attributes of Effectively Managed Water Sector Utilities (EUM)



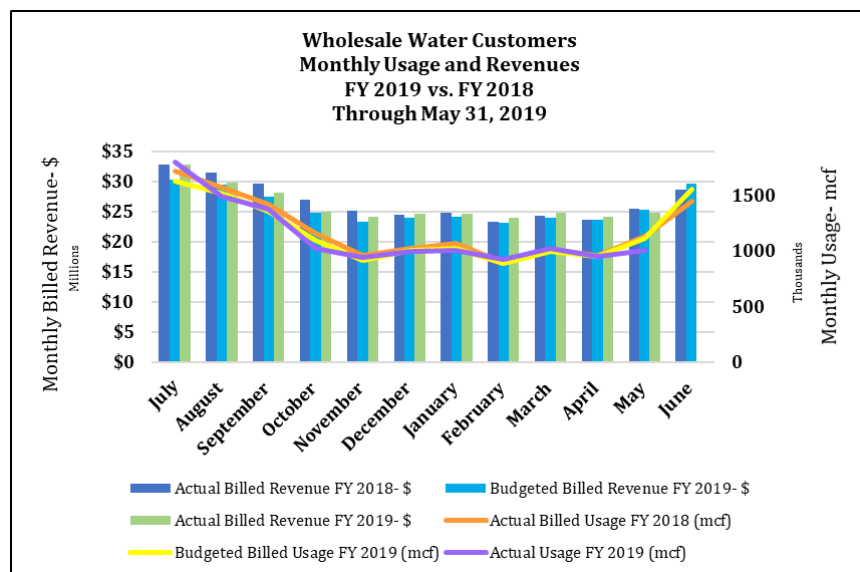
Attribute	Attribute Components
<b>Product Quality</b>	Produces “fit for purpose” water that meets or exceeds full compliance with regulatory and reliability requirements and consistent with customer, public health, ecological, and economic needs. Products include treated drinking water, treated wastewater effluent, recycled water, stormwater discharge, and recovered resources.
<b>Customer Satisfaction</b>	Provides reliable, responsive, and affordable services in line with explicit, customer-derived service levels. Utilizes a mix of evolving communication technologies to understand and respond to customer needs and expectations, including receiving timely customer feedback and communicating during emergencies. Provides tailored customer service and outreach to traditional residential, commercial, and industrial customers, and understands and exercises as appropriate the opportunities presented by emergent customer groups (e.g., high strength waste producers, power companies).
<b>Community Sustainability</b>	Takes an active leadership role in promoting and organizing community sustainability improvements through collaboration with local partners (e.g., transportation departments, electrical utilities, planning departments, economic development organizations, watershed and source water protection groups). Manages operations, infrastructure, and investments to support the economic, environmental, and social health of its community. Integrates water resource management with other critical community infrastructure, social, and economic development planning to support community-wide resilience, sustainability, and livability to enhance overall water resource sustainability.
<b>Water Resource Sustainability</b>	Ensures the availability and sustainable management of water for its community and watershed, including water resource recovery. Understands its role in the complete water cycle, understands fit for purpose water reuse options, and integrates utility objectives and activities with other watershed managers and partners. Understands and plans for the potential for water resource variability (e.g., extreme events, such as drought and flooding), and utilizes as appropriate a full range of watershed investment and engagement strategies (e.g., Integrated Planning). Engages in long-term integrated water resource management, and ensures that current and future customer, community, and ecological water-related needs are met.
<b>Stakeholder Understanding and Support</b>	Engenders understanding and support from stakeholders (anyone who can affect or be affected by the utility), including customers, oversight bodies, community and watershed interests, and regulatory bodies for service levels, rate structures, operating budgets, capital improvement programs, and risk management decisions. Actively promotes an appreciation of the true value of water and water services, and water’s role in the social, economic, public, and environmental health of the community. Involves stakeholders in the decisions that will affect them, understands what it takes to operate as a “good neighbor,” and positions the utility as a critical asset to the community.



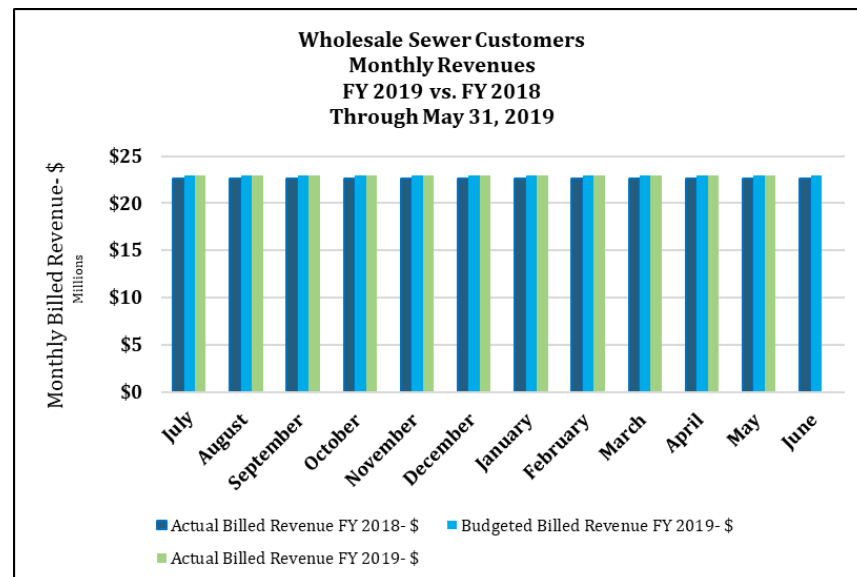
**EUM Attribute:**

**Financial Viability**

# Financial Viability – Reliability of Wholesale Water and Sewer Revenue Projections



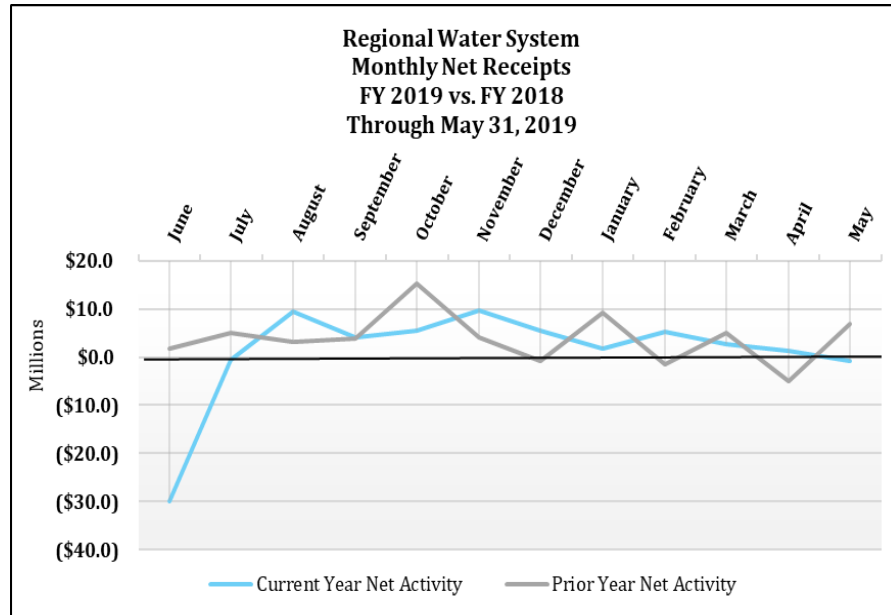
Wholesale Water System billed revenues for FY 2019 are stable with actual billings at 102.64% of budget and actual usage at 100.54% of budget through May 2019. Billed revenue for FY 2019 was 1.9% lower compared to the same period in FY 2018. Looking ahead, despite reduced estimates for June due to higher than usual rainfall the Water System is still expected to close at budget due to strong performance throughout the year.



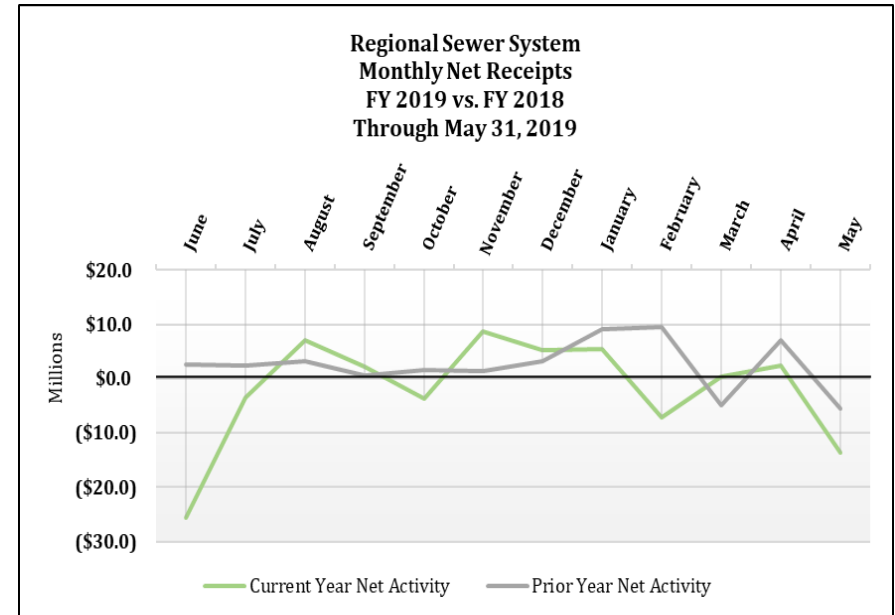
Wholesale Sewer System billed revenues for FY 2019 are stable with actual billings at 100% of budget (based on the full fixed monthly charge) through May 2019. Billed revenue for FY 2019 was 1.3% higher compared to the same period in FY 2018.

# Financial Viability – GLWA Regional System Net Receipts

*For the purposes of this reporting, Net Receipts equals actual cash collections for the period less Master Bond Ordinance (MBO) disbursements. The black line in the charts below at the zero highlights the minimum goal for net receipts.*

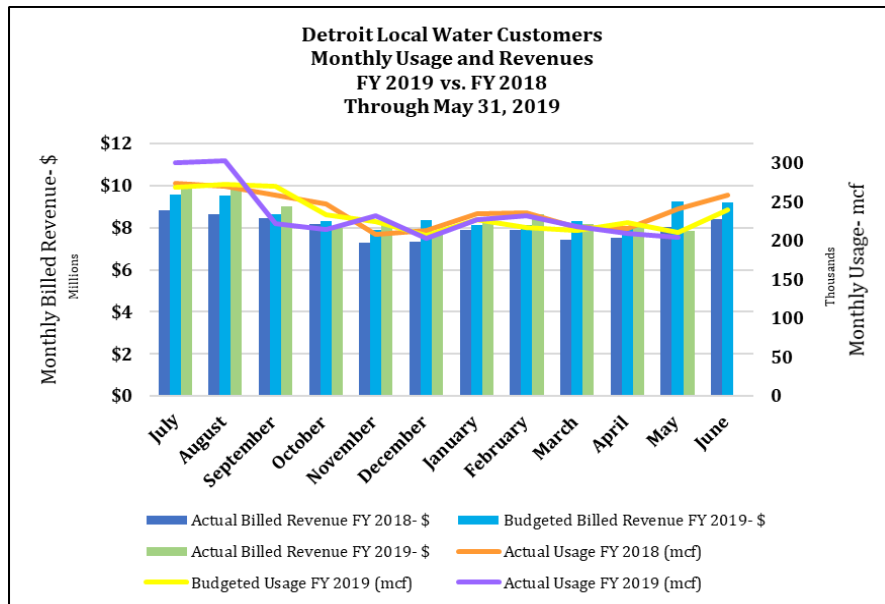


Regional Water System net receipts for the month of May 2019 fell slightly short of MBO disbursements by \$0.8 million resulting in a year-to-date net receipts over disbursements ratio of 17% for FY 2019 which supports long-term financial sustainability. This metric does vary monthly based on collection activity.

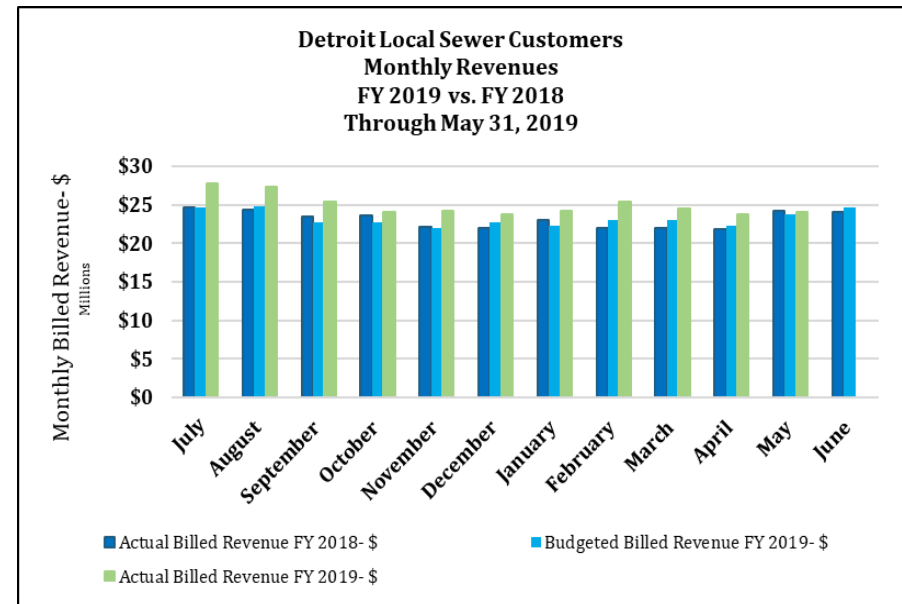


Regional Sewer System net receipts for the month of May 2019 fell short of MBO disbursements by \$13.7 million resulting in a year-to-date net receipts over disbursements ratio of 1% for FY 2019. This was due to a late payment from a large member partner that was resolved in June to end the fiscal year in their standard, current status.

# Financial Viability – Reliability of Detroit Local Water and Sewer Revenue Projections



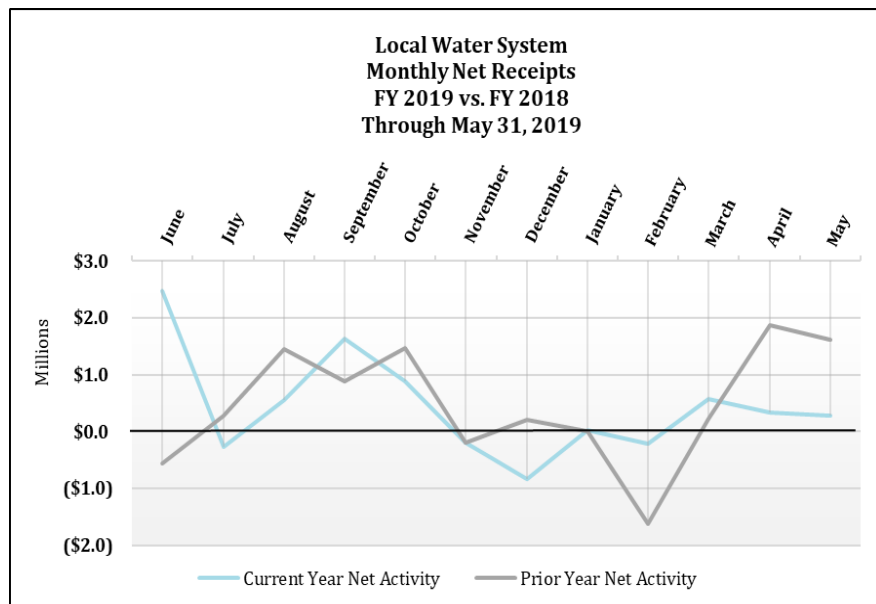
Detroit Local Water System billed revenues for FY 2019 are stable with actual billings at 101.57% of budget and actual usage at 99.96% of budget through May 2019. Billed revenue for FY 2019 was 7.5% higher compared to the same period in FY 2018.



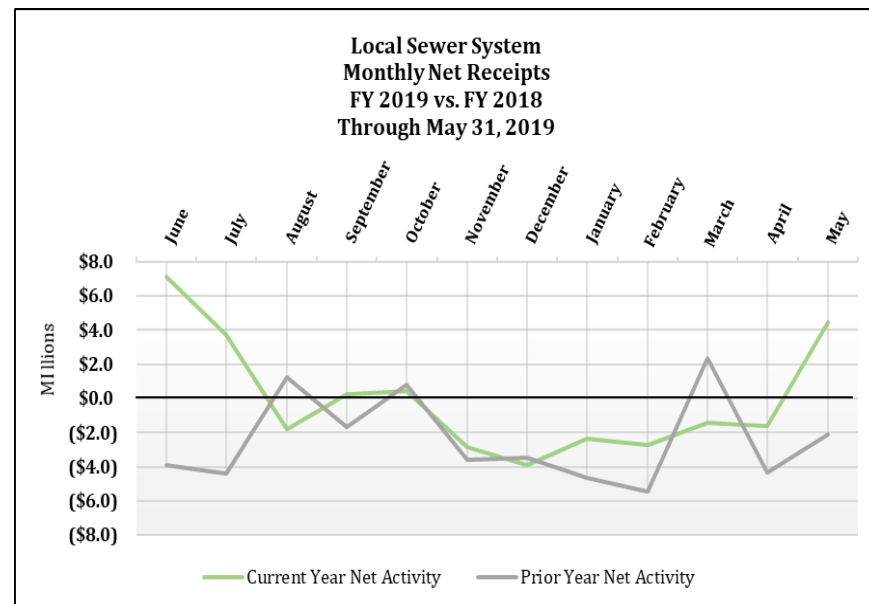
Detroit Local Sewer System billed revenues for FY 2019 are stable with actual billings at 97.66% of budget and actual usage at 104.30% of budget through May 2019. Billed revenue for FY 2019 was 8.43% higher compared to the same period in FY 2018.

# Financial Viability – DWSD Local System Net Receipts

*For the purposes of this reporting, **Net Receipts equals actual cash collections for the period less Master Bond Ordinance (MBO) disbursements**. The black line in the charts below at the zero highlights the minimum goal for net receipts.*



Local Water System net receipts for the month of May 2019 exceeded MBO disbursements by \$278 thousand resulting in a year-to-date net receipts over disbursements ratio of 3% for FY 2019. This metric does vary monthly based on collection activity.

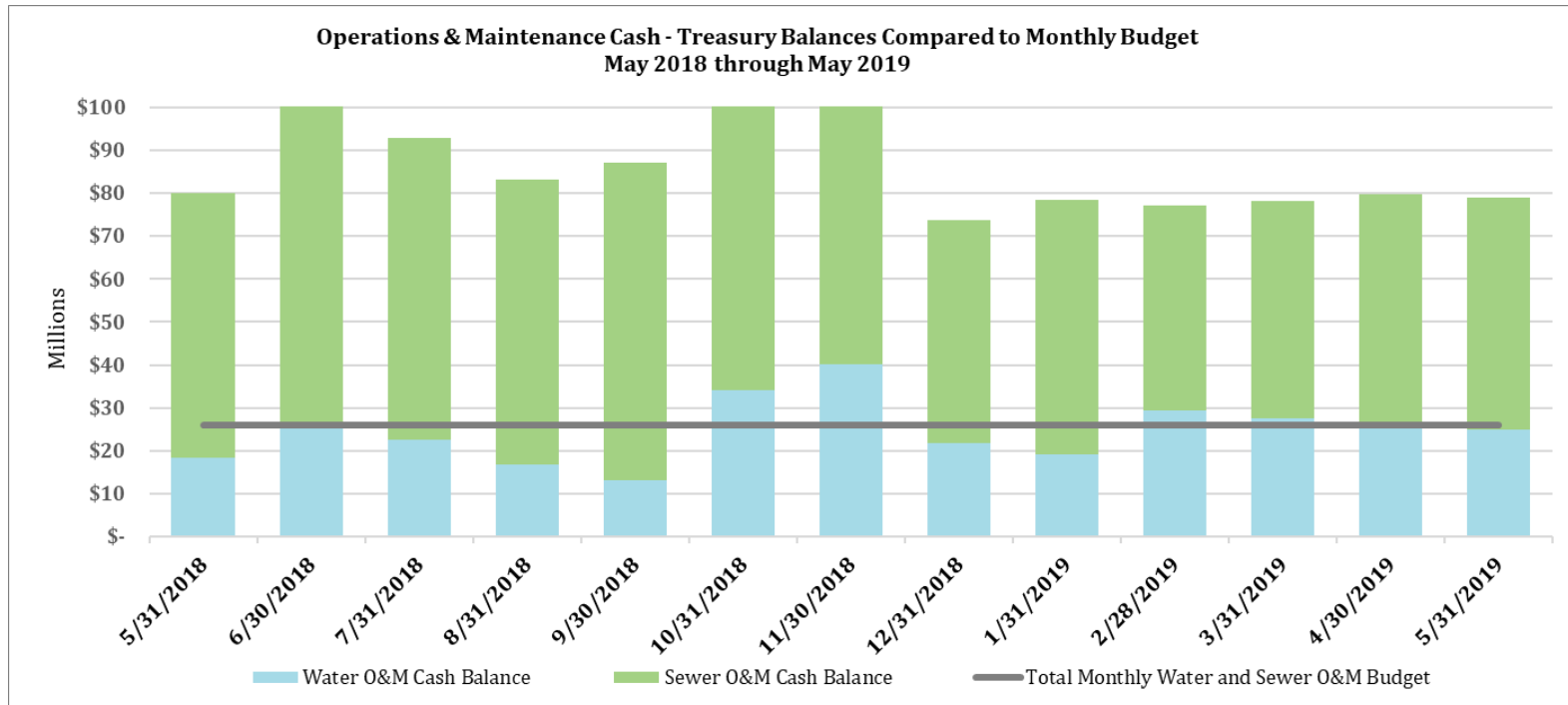


Local Sewer System net receipts for the month of May 2019 exceeded MBO disbursements by \$4.5 million resulting in a breakeven status for year-to-date net receipts over disbursements. It should be noted that DWSD reduced the Operations & Maintenance (O&M) transfers in May and June to achieve a goal of a positive net cash flow for FY 2019 and appear to be on track to meet that goal.



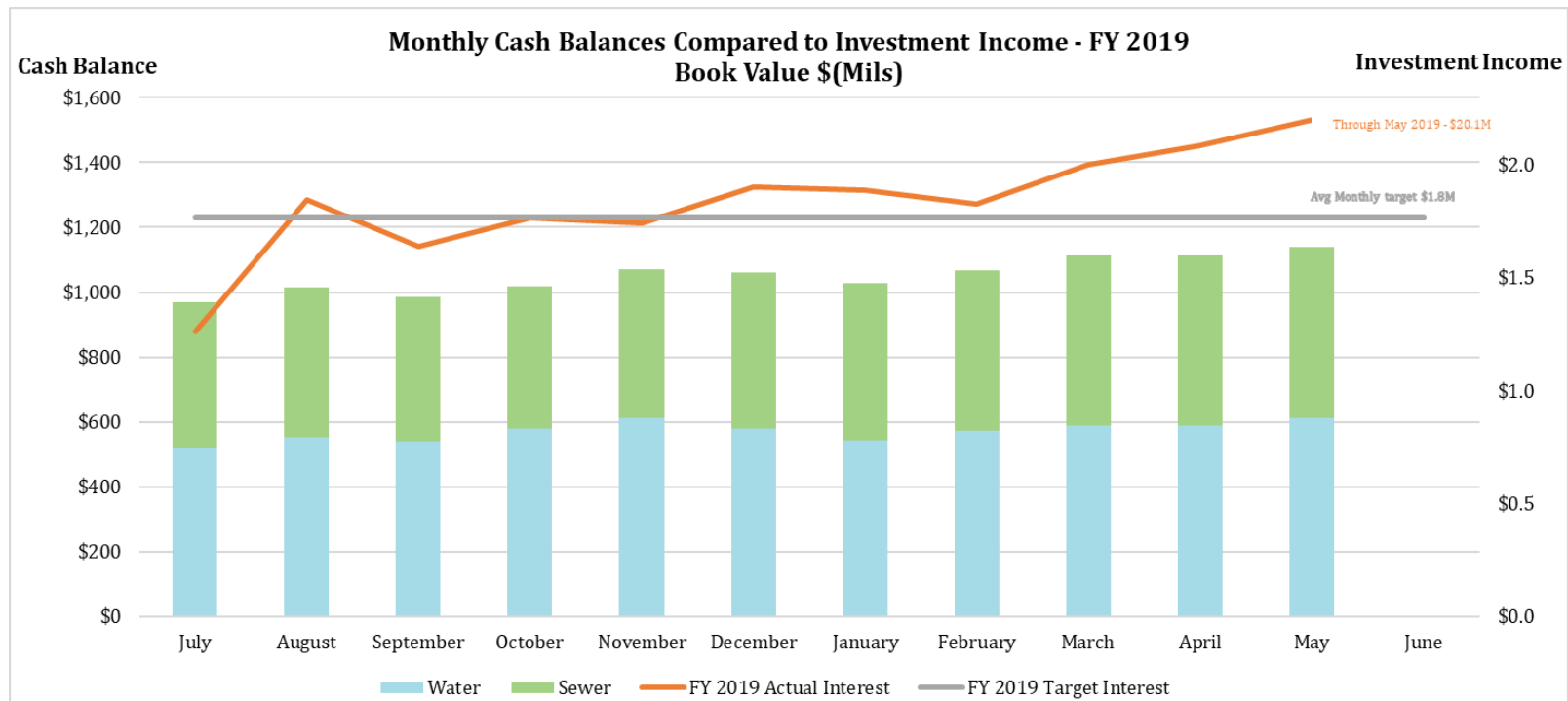
# Financial Viability – Revenue Stability and Appropriate O&M Cash Reserves

*Maintaining a sufficient level of operating cash provides for system stability.*



- Cash balances are appropriate to fund monthly budgeted Operations & Maintenance (O&M) with an average ratio of O&M cash to budget of 2.44x for water and 3.84x for sewer.
- Variability in cash balances are due to timing differences related to interfund transfers settled in the following month.

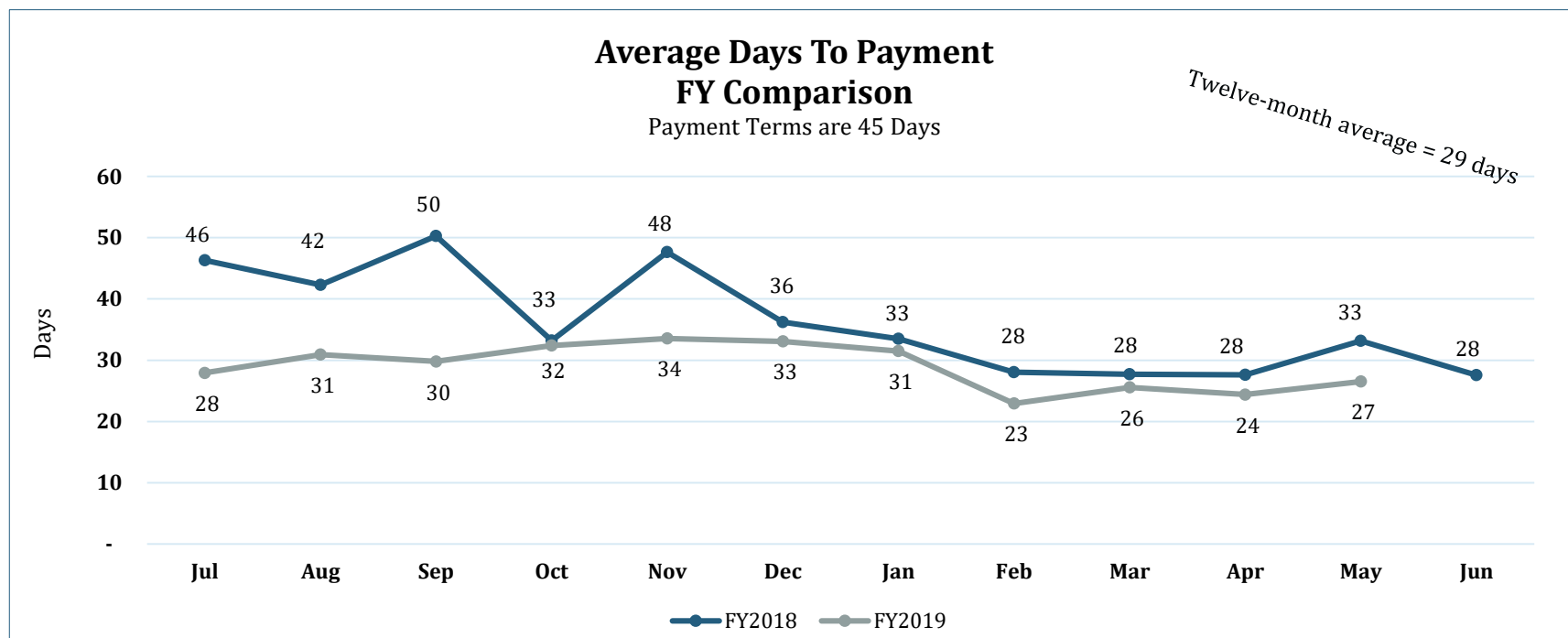
# Financial Viability – Optimizing Cash Balances



- Cash & investment balances for the water and sewer funds change each month based on Master Bond Ordinance funding, operational requirements, capital funding, and debt payments.
- Investment income fluctuates monthly with the cash & investment balances as well as market conditions and investment strategy.
- GLWA continues to refine cash flow forecasting and work with its investment advisor to identify strategies to maximize future investment income while meeting the objectives of safety and liquidity.
- The cumulative investment earnings through May 2019 of \$20.1 million is 95% of the 21.2 million projection for FY 2019 investment income.

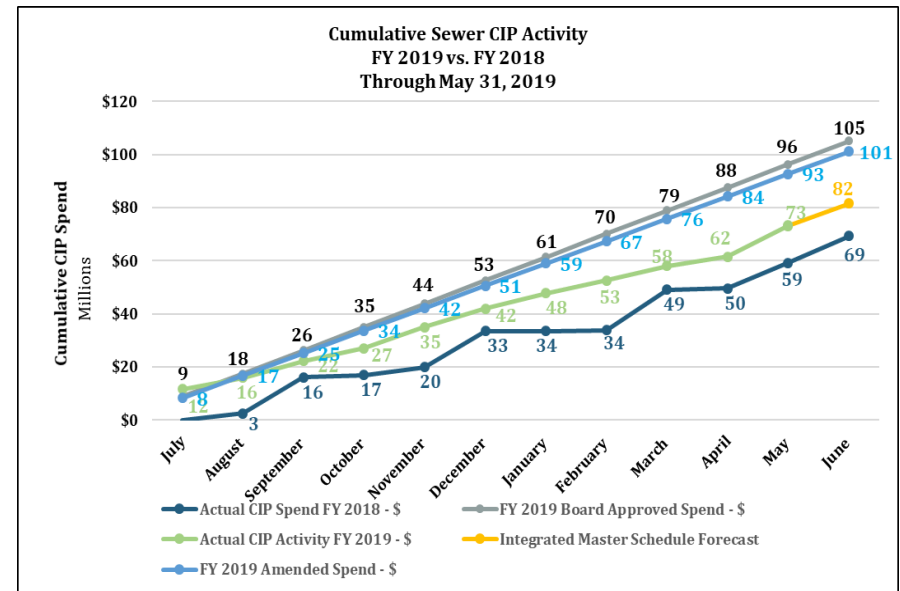
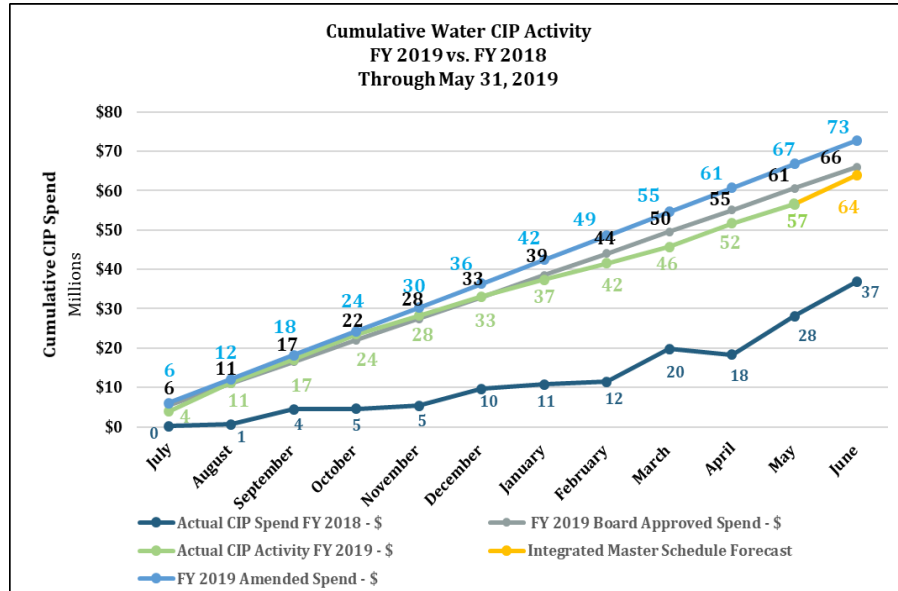
# Financial Viability – Days to Pay an Invoice

*The goal is a twelve-month average of < 30 days to support vendor relations and expand the early payment discount program. The number of days is calculated as the days between invoice and payment date.*



- Timely vendor payment supports supplier relations and operations.
- It also can be a means to leverage early payment discounts, timely financial reporting, and cashflow projection and is the outcome of a collaborative workflow from requisition to payment.
- FY 2019 continues to demonstrate improvement over FY 2018 average days to pay and is consistent with the overall performance goal.

# Financial Viability- FY 2019 Total CIP Spend



**Water System Capital Improvement Plan Spend:** As of May 2019, the Water system incurred nearly \$57 million of CIP costs to date. This is 93% of the total prorated Board-approved spend and 85% of the total prorated amended spend and continues to trend on target as demonstrated by the integrated master schedule forecast.

**Sewer System Capital Improvement Plan Spend:** As of May 2019, the Sewer system incurred over \$73 million of CIP costs to date. This is 76% of the total prorated Board-approved spend and 79% of the total prorated amended spend. Based upon the integrated master schedule forecast it appears that FY 2019 spend will be approximately 81%.

**Integrated Master Schedule Forecast:** The comprehensive schedule of all CIP projects with start and finish forecast of dates and dollars based on most current project execution logic, data and other assumptions. This new data is the result of a FY 2019 initiative to produce monthly financial forecasts utilizing Primavera P6. GLWA engineers and construction contractors are actively engaged in the forecasting process.

**Prorated Board Approved Spend:** Calculated by dividing 100% of the total FY 2019 board-approved Capital Improvement Plan by twelve equal months.

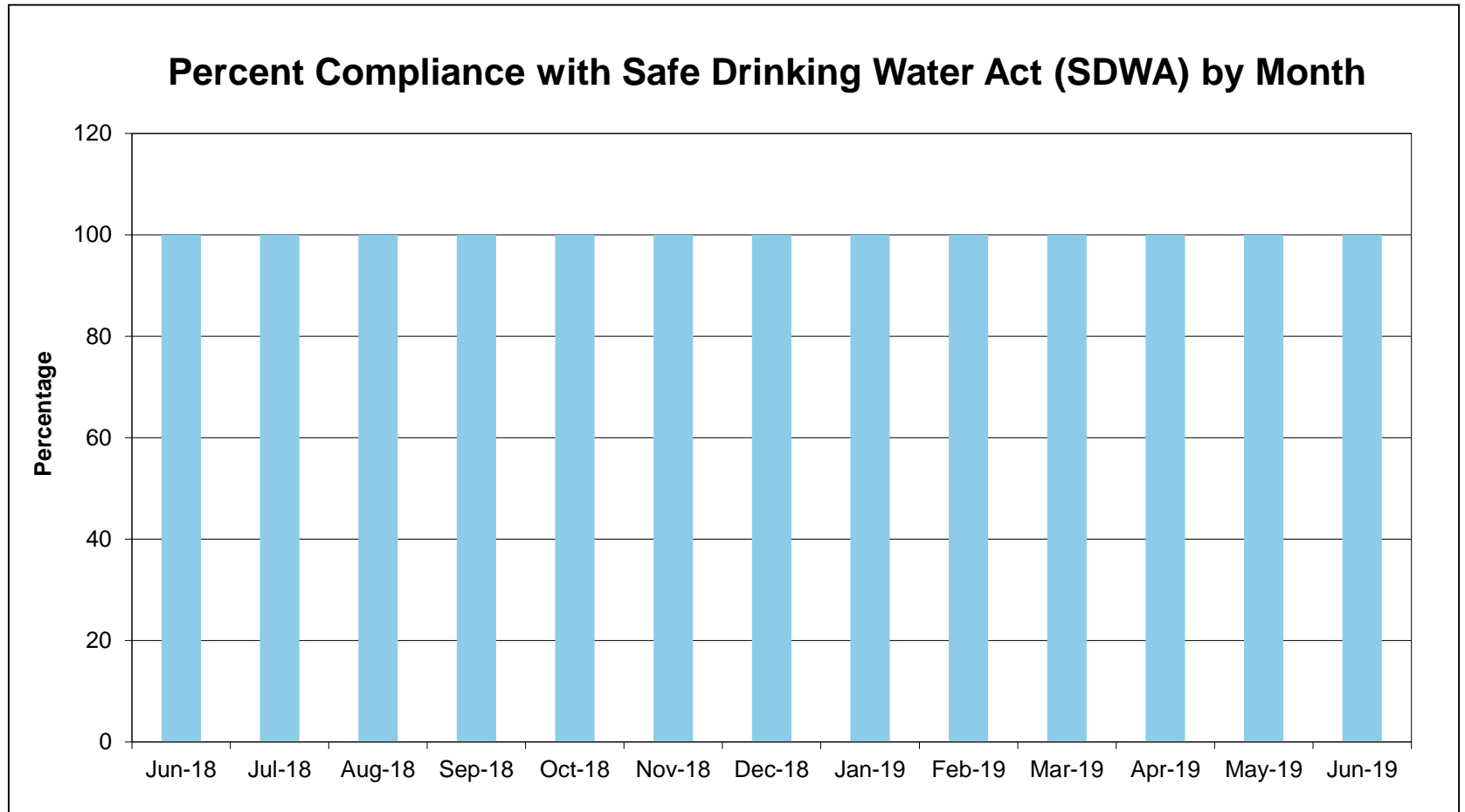
**Prorated Amended Spend:** Generally represents amendments to the plan based on award of contracts, change orders or cancelled projects resulting in variances to plan.



# EUM Attribute:

## Product Quality

# Product Quality – SWDA Compliance

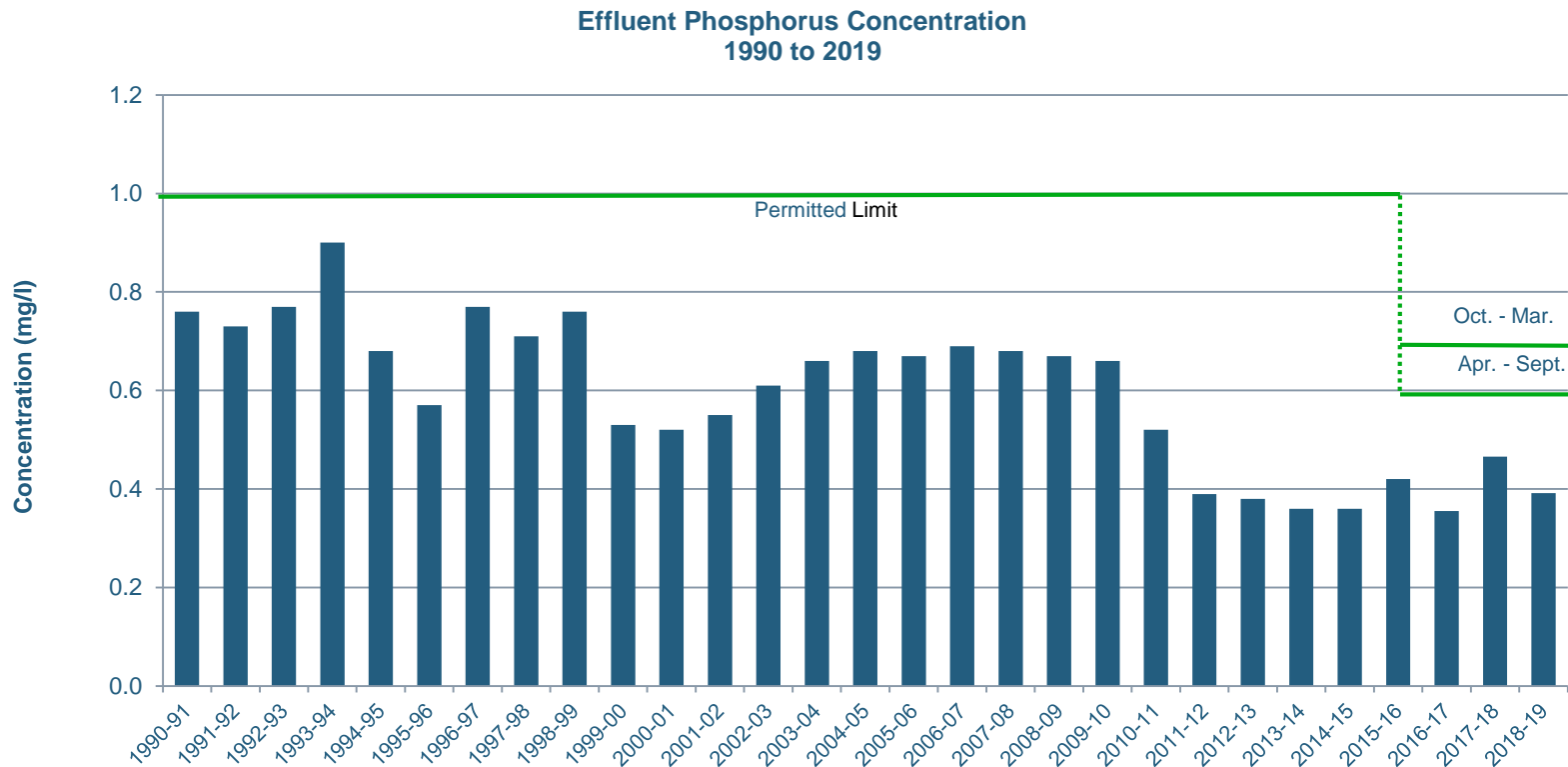


**Product Quality:** GLWA's goal is to surpass Safe Drinking Water Act requirements and this slide indicates compliance for the month.

# Product Quality

## Regulatory Compliance – Effluent Phosphorous Concentration

- Significant progress has been made in the reduction of effluent phosphorus.
- GLWA strives to surpass Federal and State requirements.





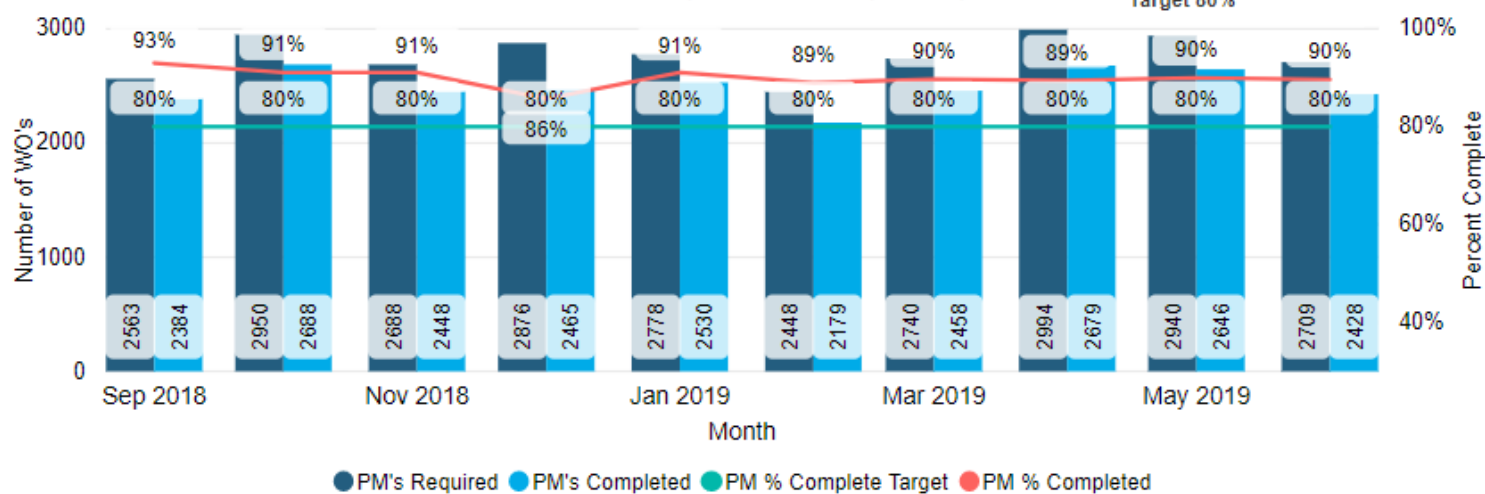
**EUM Attribute:**

**Infrastructure  
Strategy and  
Performance**

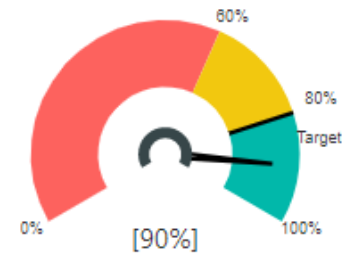


# Infrastructure Strategy and Performance – Wastewater and Water Preventative Maintenance (PM) Management June 2019

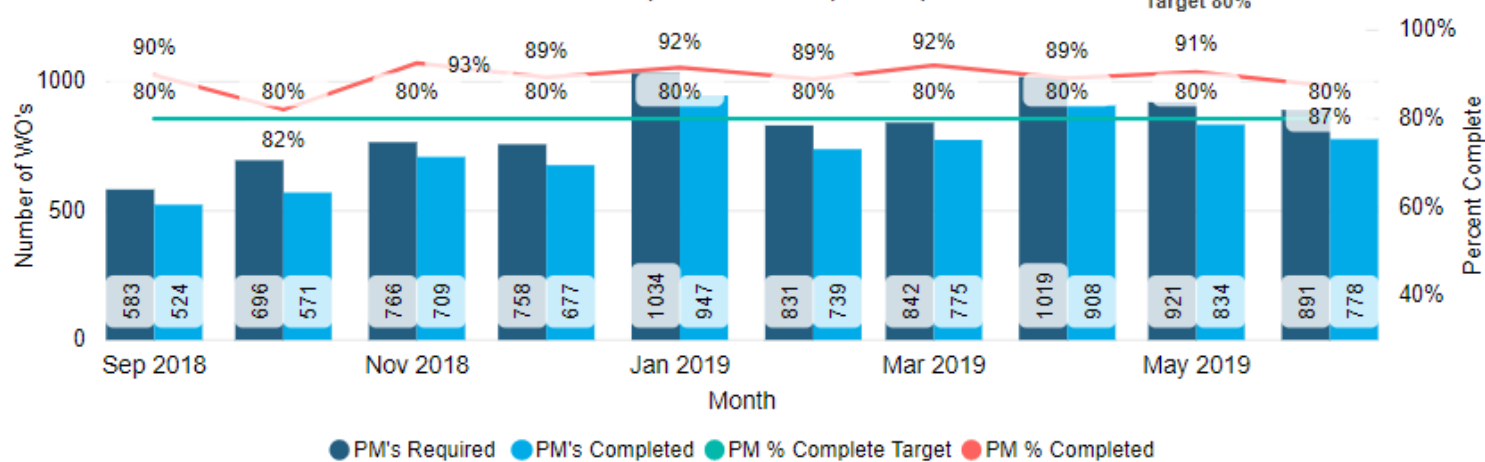
Wastewater PM's Required vs Completed per Month



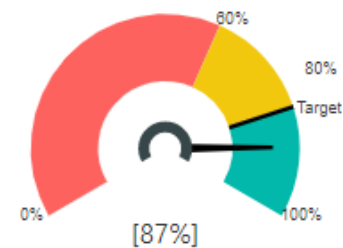
Wastewater PM % Complete



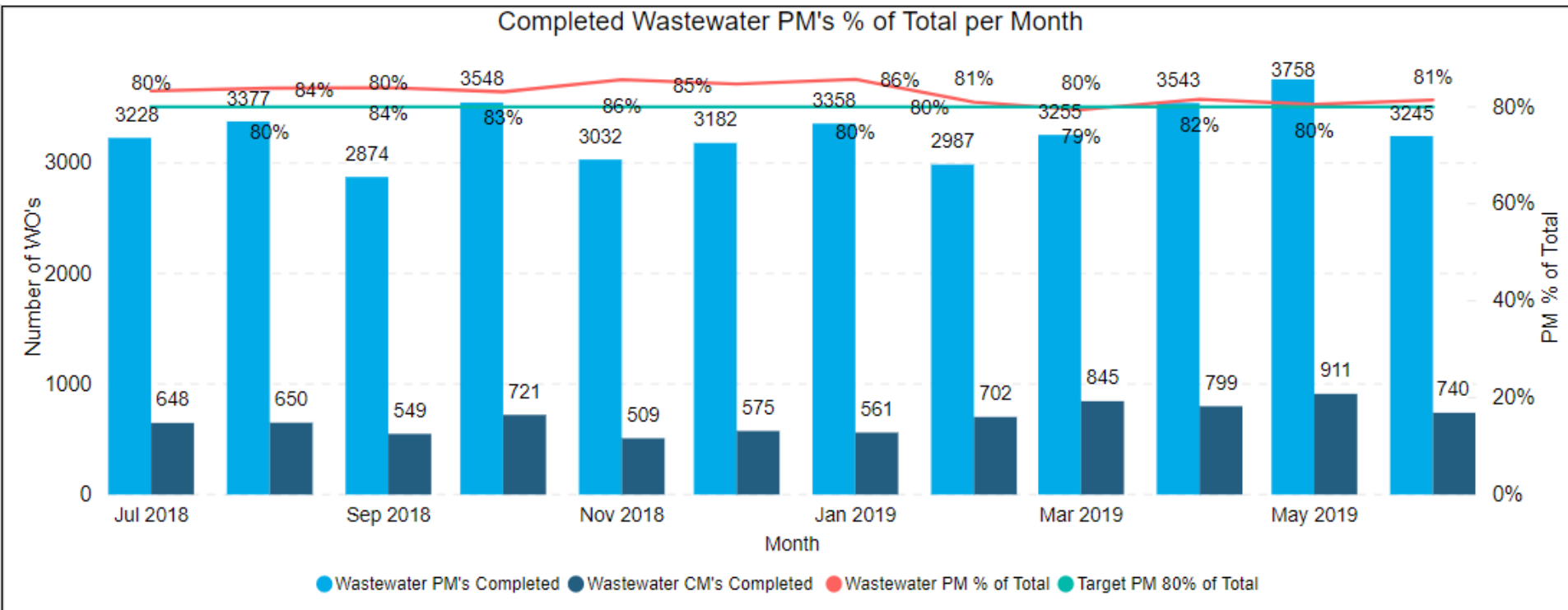
Water PM's Required vs Completed per Month



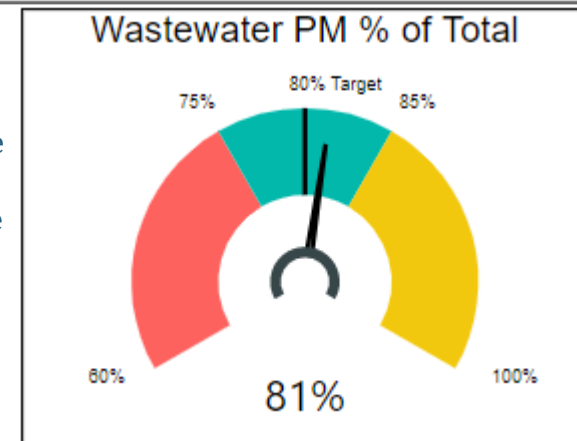
Water PM % Complete



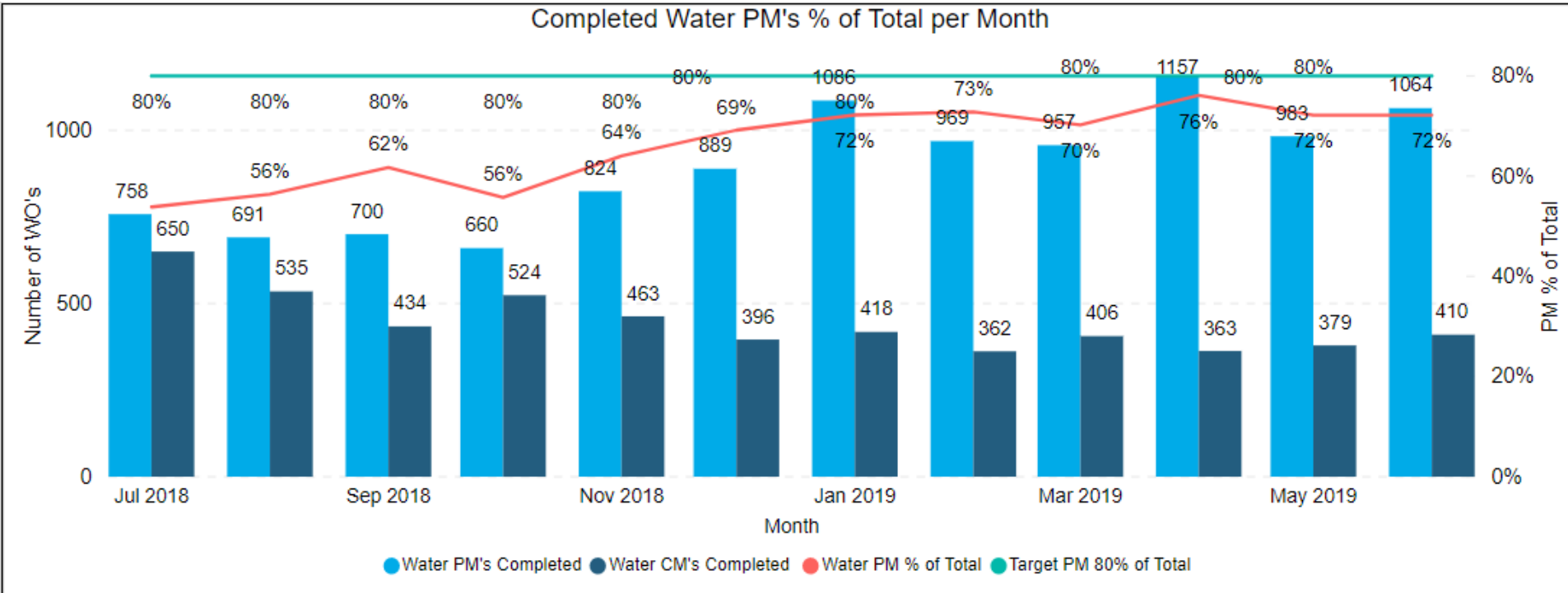
# Infrastructure Strategy and Performance – Wastewater Preventative & Corrective Maintenance Management June 2019



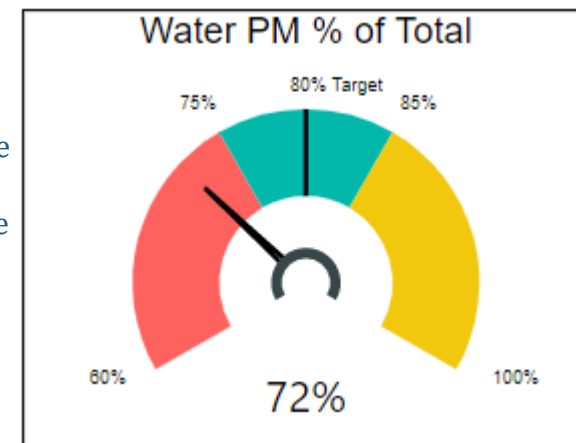
\*The Target is derived from the 2017 American Water Works Association Utility Benchmarking program that indicates that an appropriate level of PM activities can be identified by the PM percentage of total maintenance work performed. If the percentage is significantly lower than the target (red) it is a warning of possible increase in unplanned, emergency type work (CM). If the percentage is significantly higher than the target (yellow) it is a warning that PMs can be reduced, and resources can be better directed to other system needs.



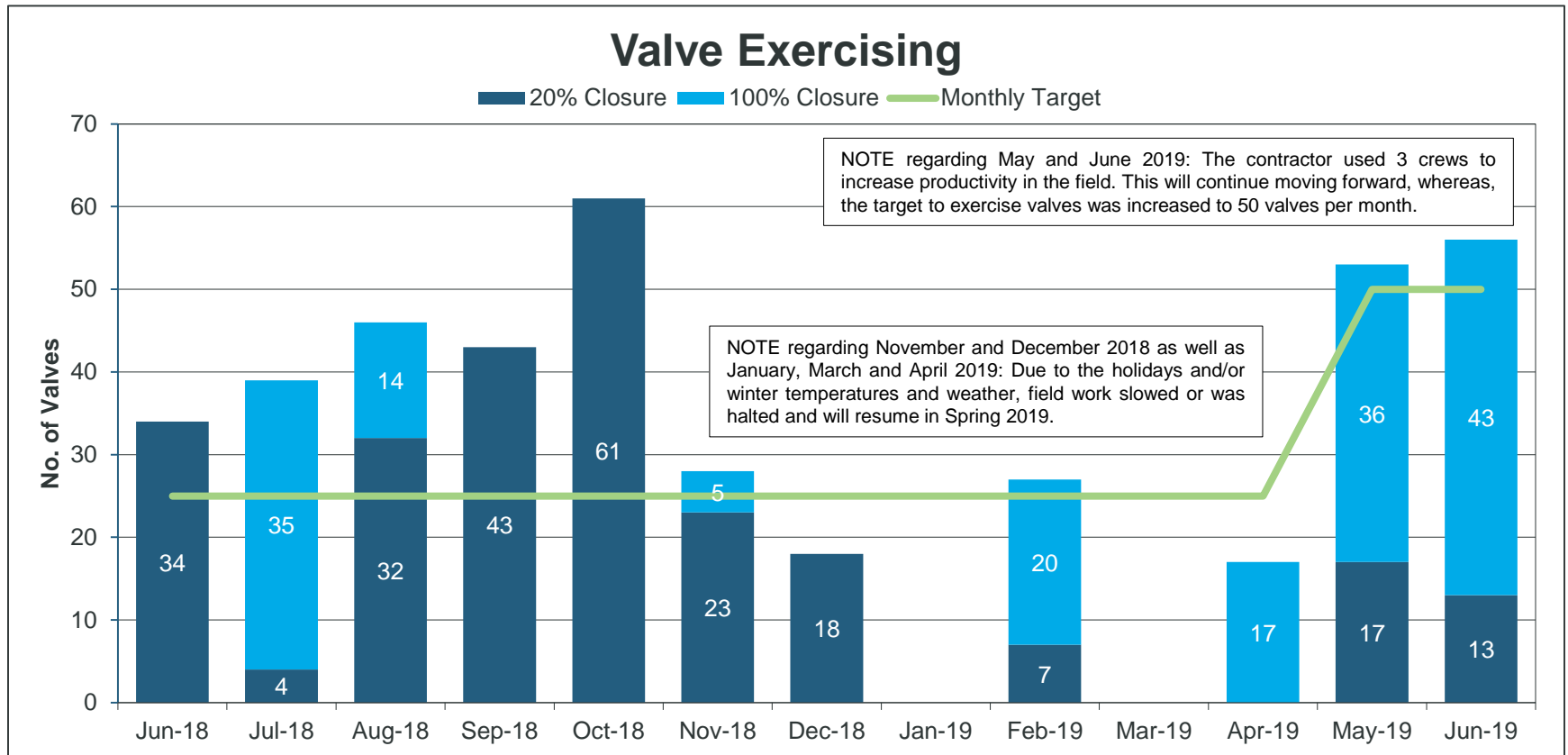
# Infrastructure Strategy and Performance – Water Preventative & Corrective Maintenance Management June 2019



\*The Target is derived from the 2017 American Water Works Association Utility Benchmarking program that indicates that an appropriate level of PM activities can be identified by the PM percentage of total maintenance work performed. If the percentage is significantly lower than the target (red) it is a warning of possible increase in unplanned, emergency type work (CM). If the percentage is significantly higher than the target (yellow) it is a warning that PMs can be reduced, and resources can be better directed to other system needs.



# Infrastructure Strategy and Performance – Water and Field Services Valve Exercising

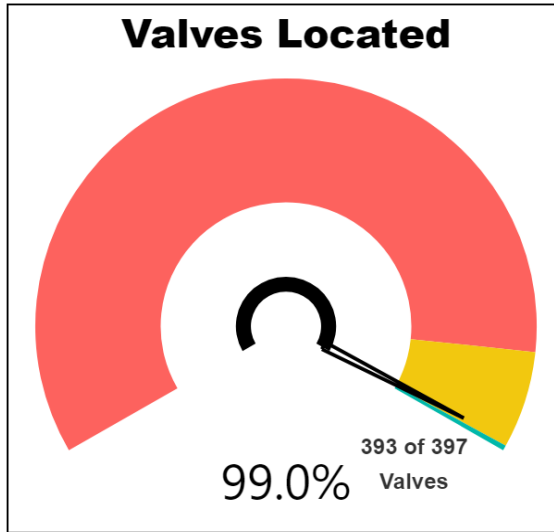


Valves cycled 20% on the initial visit/attempt • Valves cycled 100% on the initial visit/attempt • Target to exercise 50 valves per month

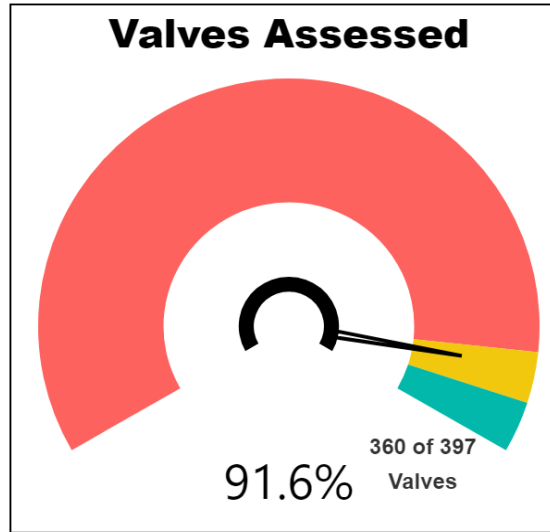
**Infrastructure Strategy and Performance:** GLWA's goal is to determine the status of system valves and prioritize necessary repairs. 450 valves will be evaluated and will be operated from open position to close and back open two times at a minimum.

# Infrastructure Strategy and Performance – Water and Field Services Valve Exercising

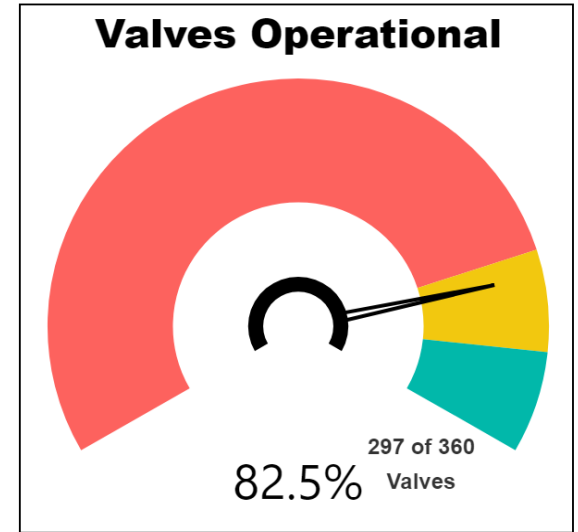
## June 2019 KPIs



Red = <90%, Yellow = 90 to 99.5%, Green =>99.5%



Red = <90%, Yellow = 90 to 95%, Green =>95%



Red = <80%, Yellow = 80 to 90%, Green =>90%

**Reason for yellow on Valves Located (99.0%), Valves Assessed (91.6%), and Valves Operational (82.5%):** Program is still within the first year of starting, problems are being identified and worked through while making adjustments due to weather that are reflective in the KPIs shown below target.

**Infrastructure Strategy and Performance:** GLWA's ultimate goal is 100% operational valves. We are in a transitional phase moving towards that goal and will reassess the red, yellow, green targets on July 1, 2019 and annually thereafter for the next 3 years.



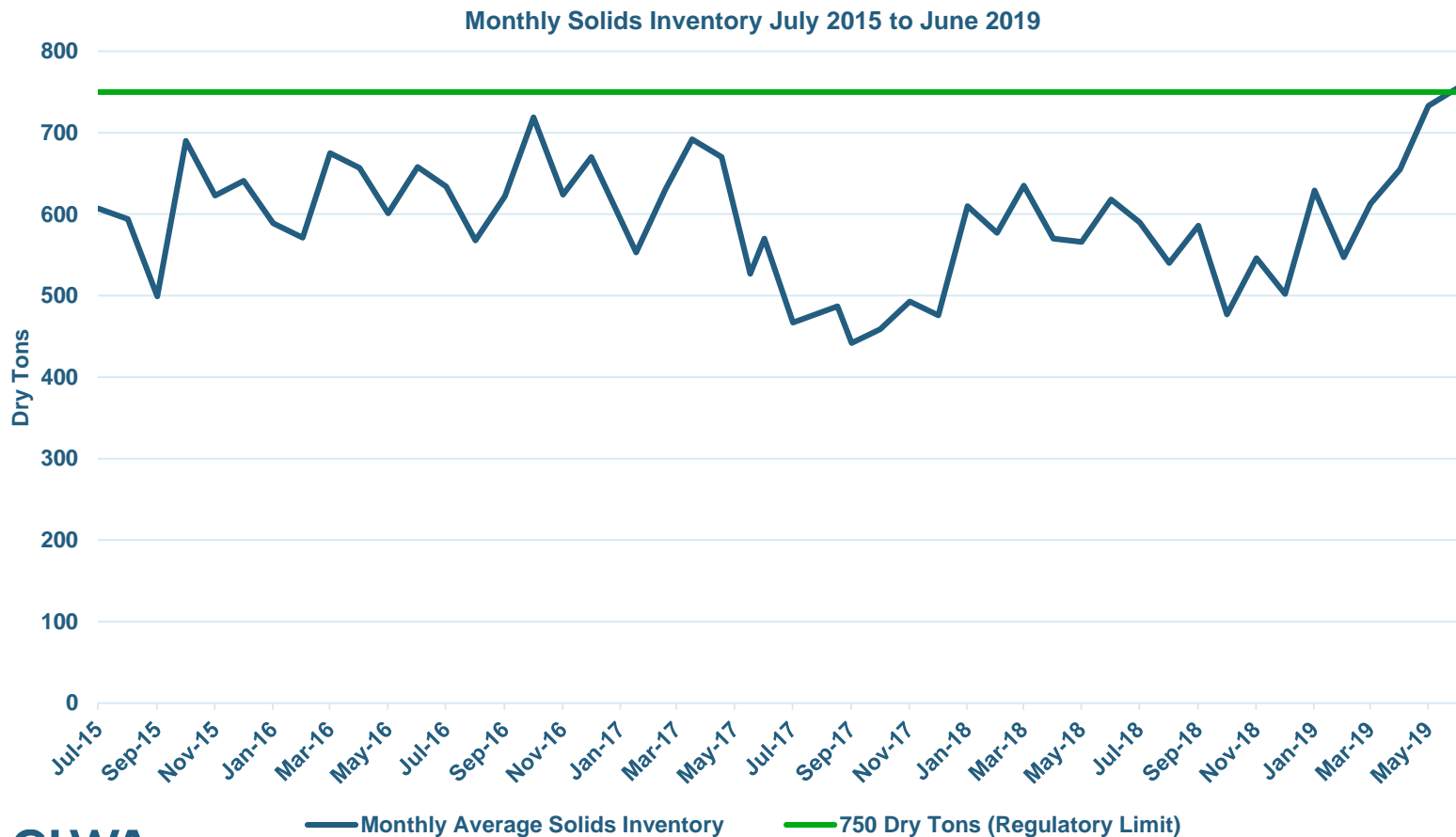
**EUM Attribute:**

**Operational  
Optimization**

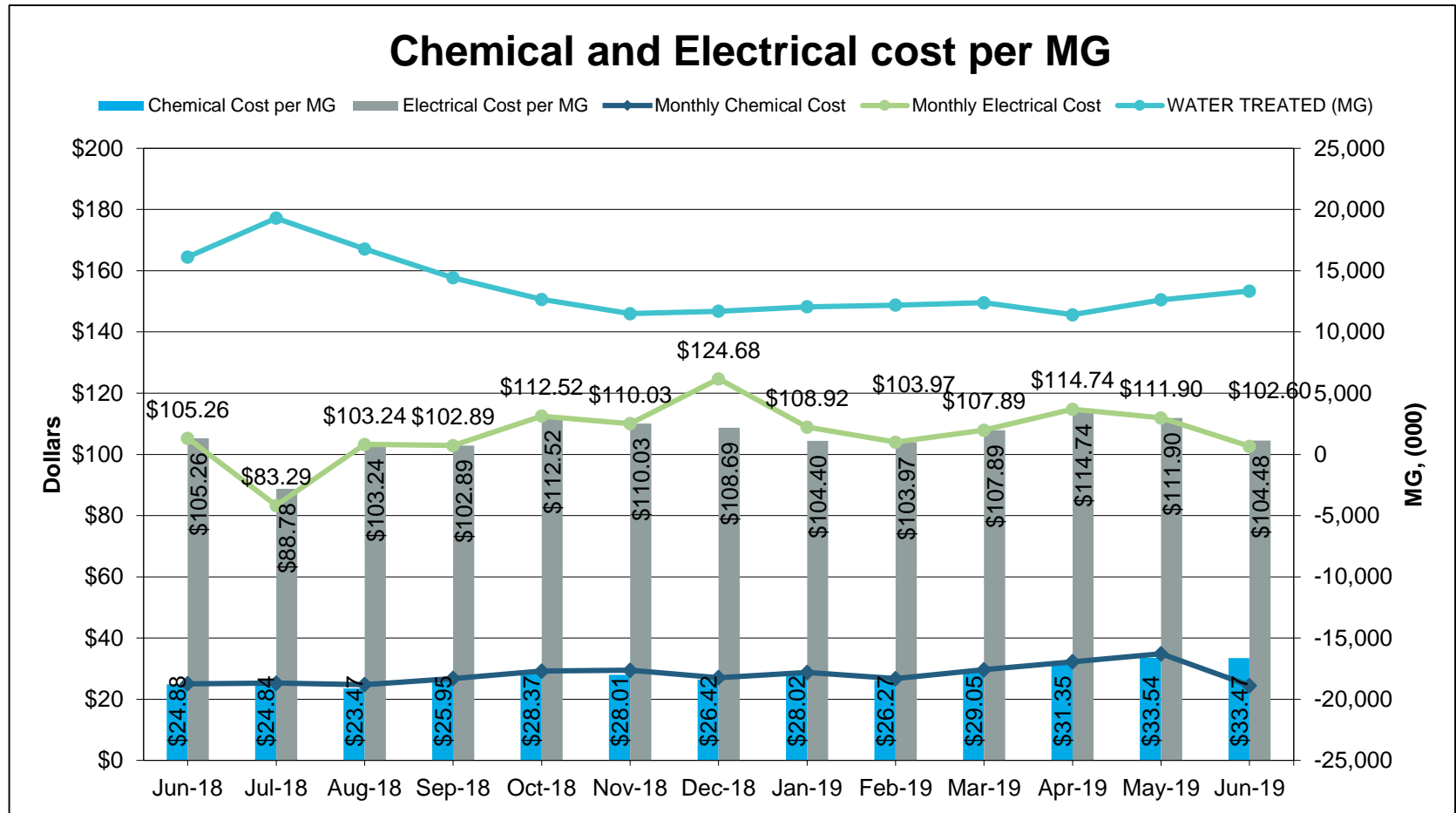
# Operational Optimization

## Regulatory Compliance – Monthly Solids Inventory

- Solids inventory is a measure of process performance and is regulated by the State.
- Having consistently tracked below 750 dry tons since Oct. 2014 is noteworthy.



# Operational Optimization Chemical & Electrical Costs



**Operational Optimization:** Being able to identify ongoing performance improvements for chemical and electrical usage per MG of water pumped is a key metric in managing operational cost. This slide is under development to include tracking of total costs per MG.

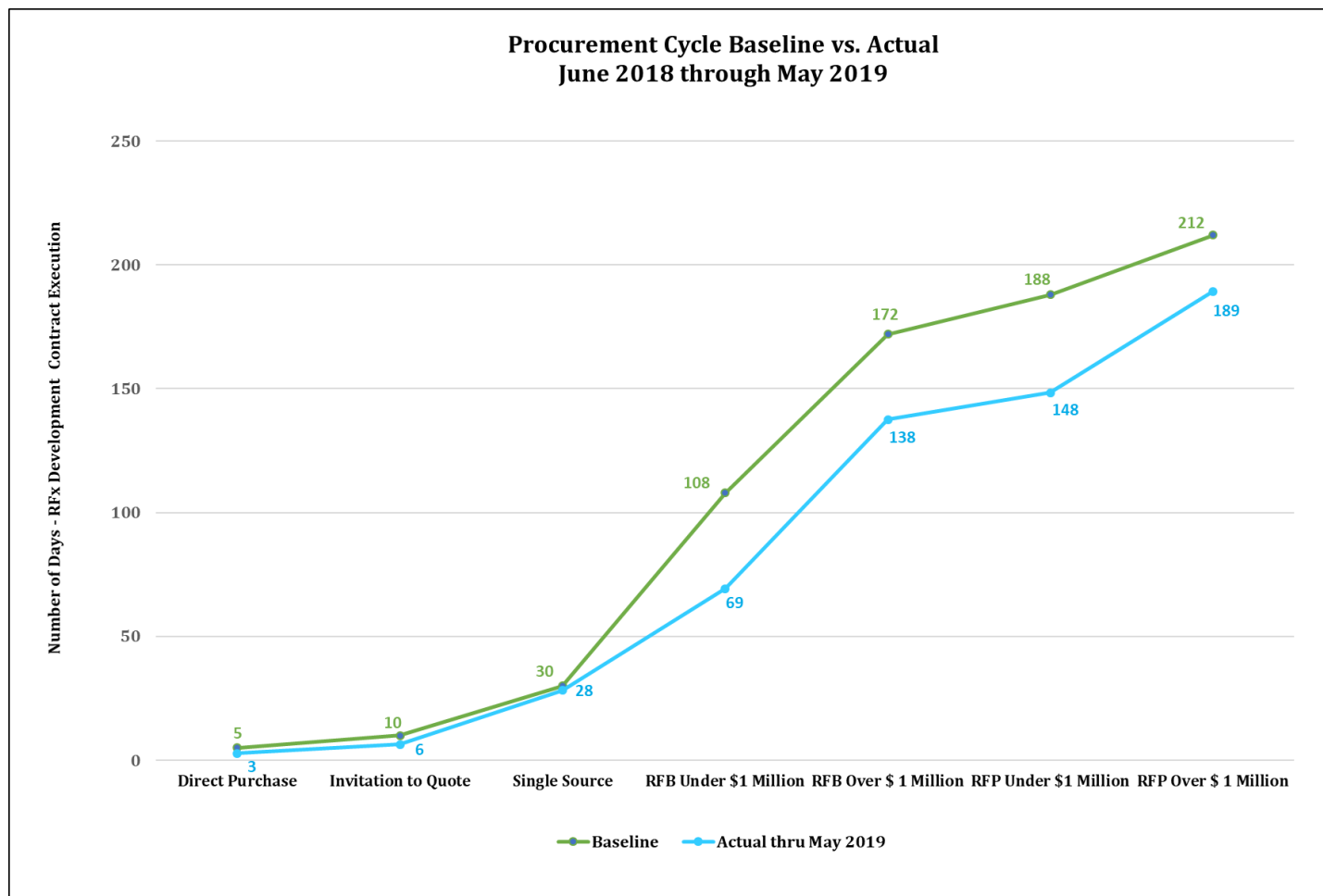




**EUM Attribute:**

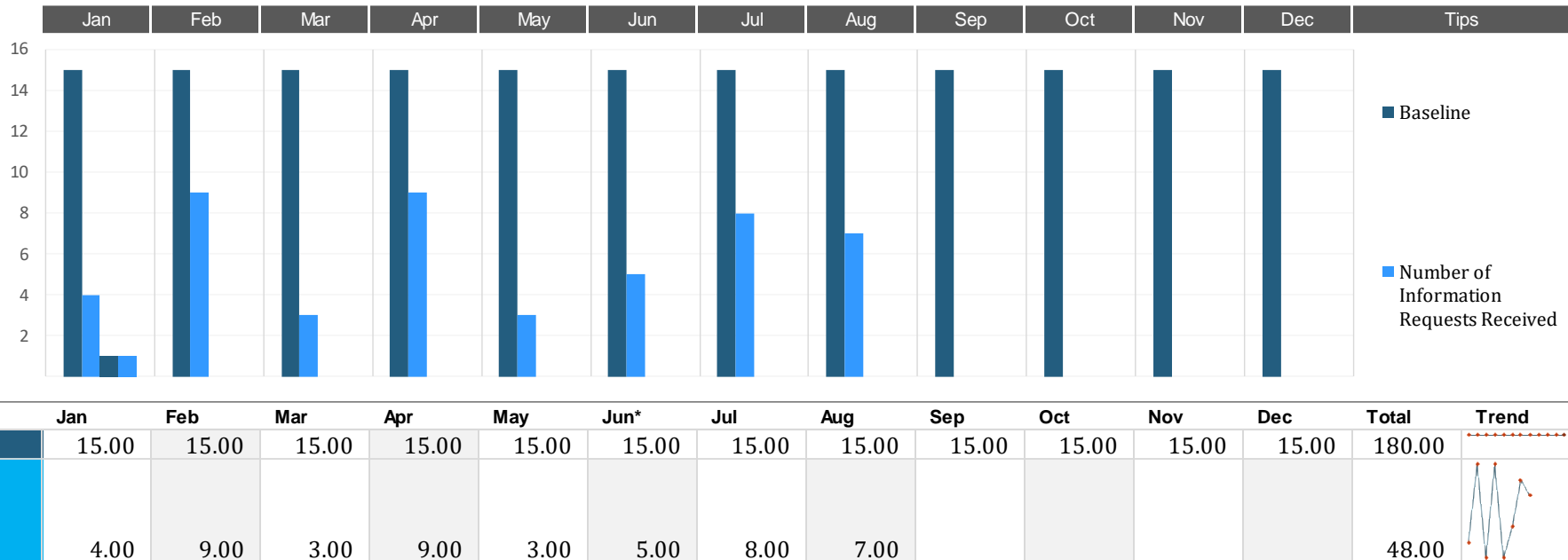
**Enterprise  
Resiliency**

# Enterprise Resiliency - Procurement Cycle Plan vs. Actual Timeline



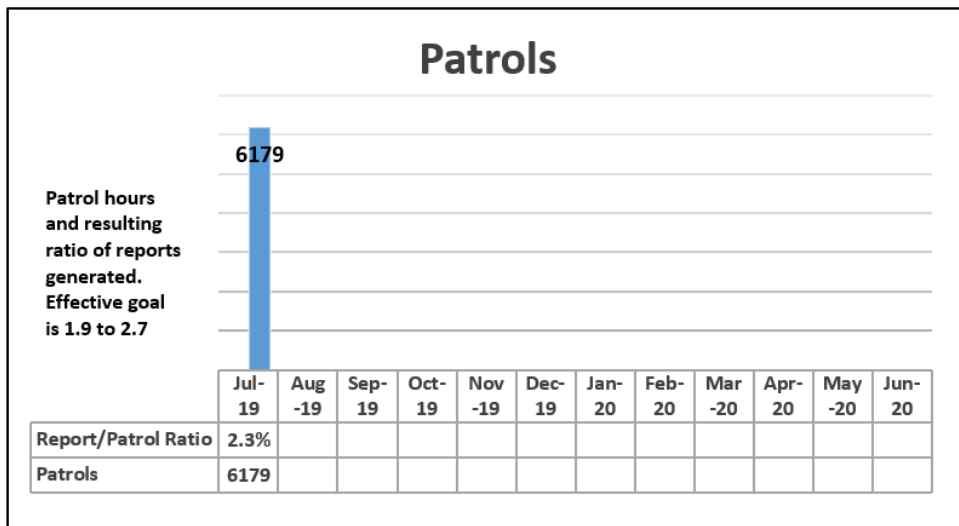
For the twelve-month period ending May 2019, GLWA Procurement exceeded execution goals for all projects.

# Enterprise Resiliency – General Counsel Information Requests Received



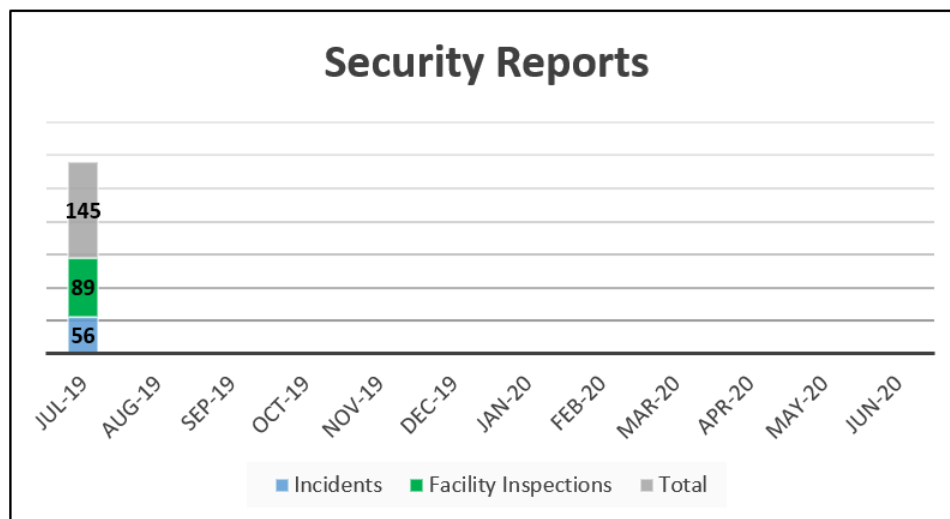
One of the measures of organizational transparency is access to information. GLWA maintains many avenues of informal information access, including through its website. To the extent the information is readily available, the Office of the General Counsel should receive fewer FOIA requests over time.

# Enterprise Resiliency – Security & Integrity

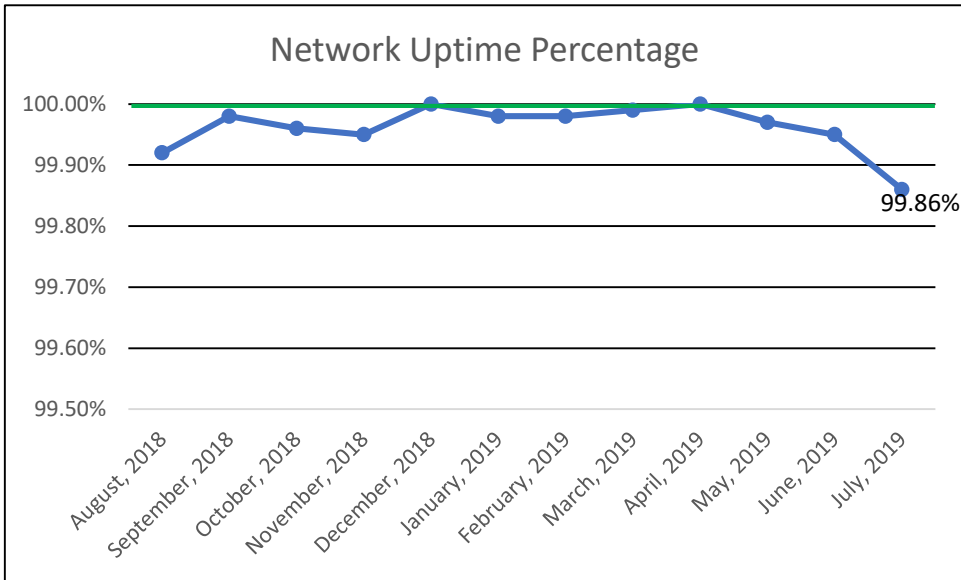


- Patrols are an indication of the level of services rendered by the staff of the Security & Integrity Group.

- Security reports are an indication of the effectiveness of security programs (less is better).

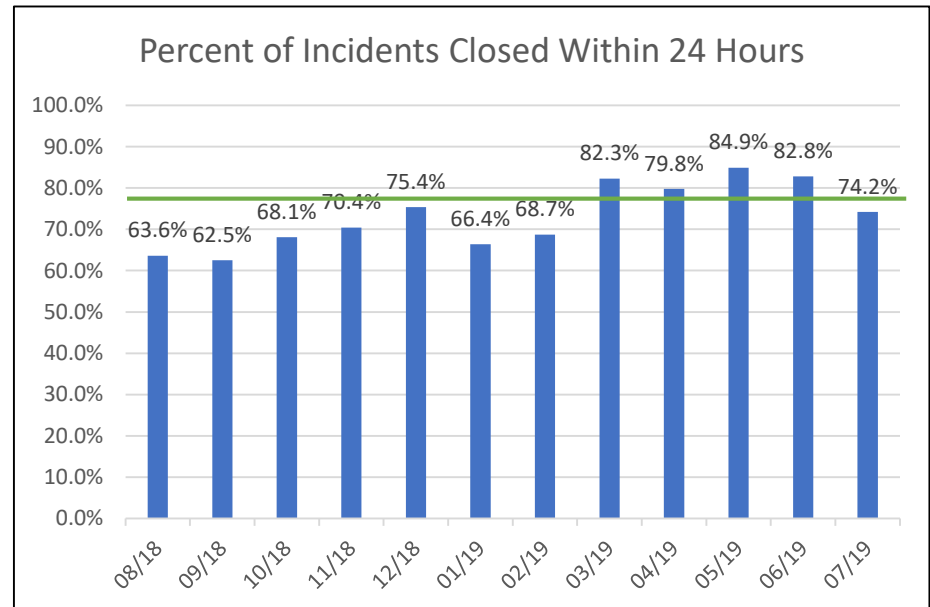


# Enterprise Resiliency – Information Technology



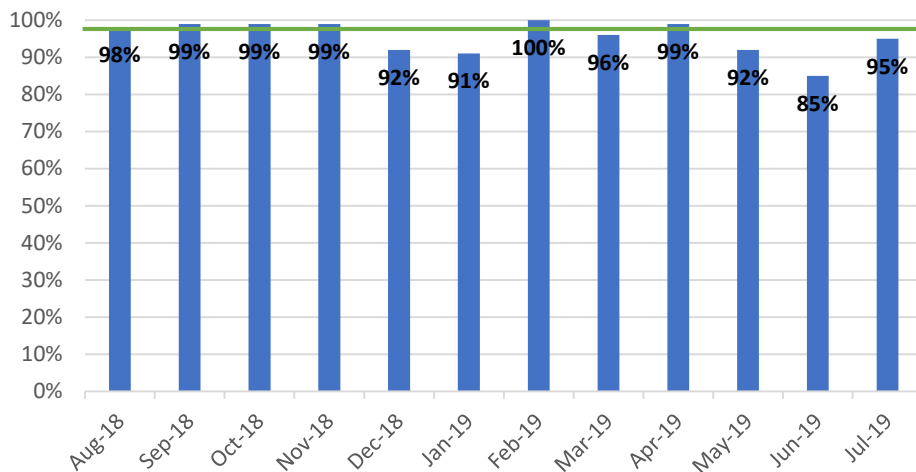
- GLWA has 42 monitored, network-connected sites, including offices, plants, pump stations, and other facilities.
- Network connectivity allows employees to access the applications needed to do their work and connects plants and pump stations to the intranet to report operational data

- An Incident is a technology issue that is preventing an employee from performing some part of their job duties
- Quick resolution of incidents increases employee productivity.
- The industry standard for 24-hour resolution is 68%



# Enterprise Resiliency – Information Technology

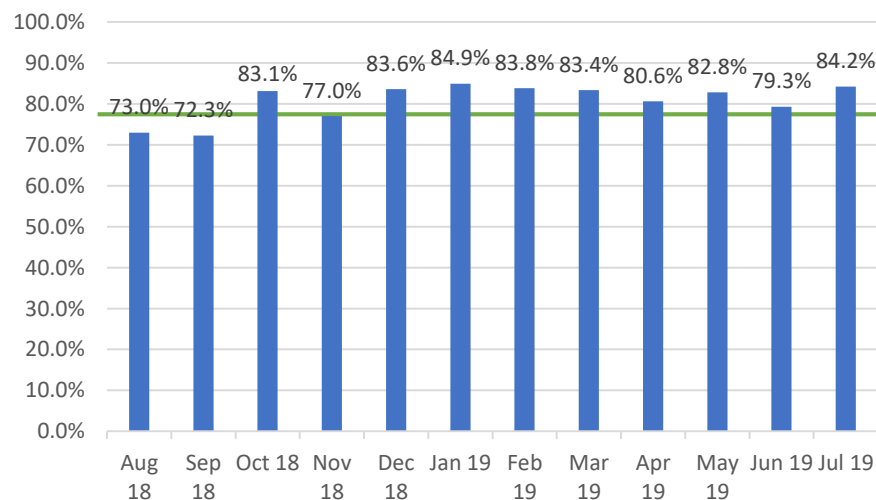
Successful Backups (1st Try)



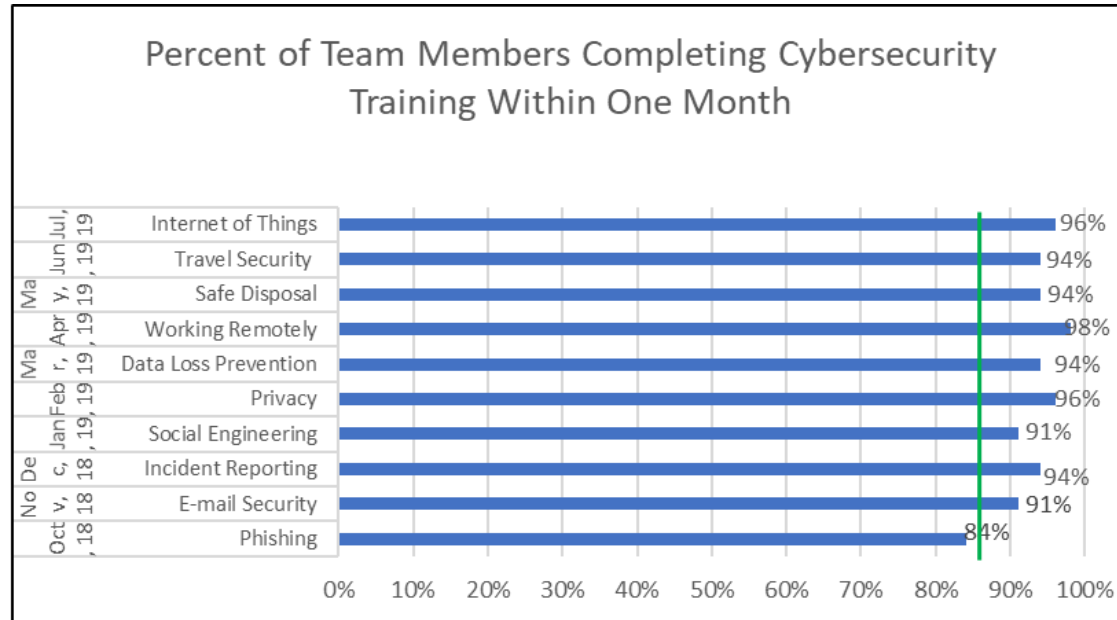
- Backups ensure that GLWA's information is safe in case of unexpected disruptions.
- Successfully backing up on the first try streamlines operations and frees up resources for other tasks.

- A service request is a request for IT work that is not preventing an employee from performing their work.
- Timely fulfilment of service requests ensure that employees have the technology resources needed to do their jobs, and increases job satisfaction.

Percent of Service Requests Closed in 5 Days



# Enterprise Resiliency – Information Technology



- End users are responsible for 80% of cybersecurity breaches.
- Well trained users are less likely to take action that could cause a breach

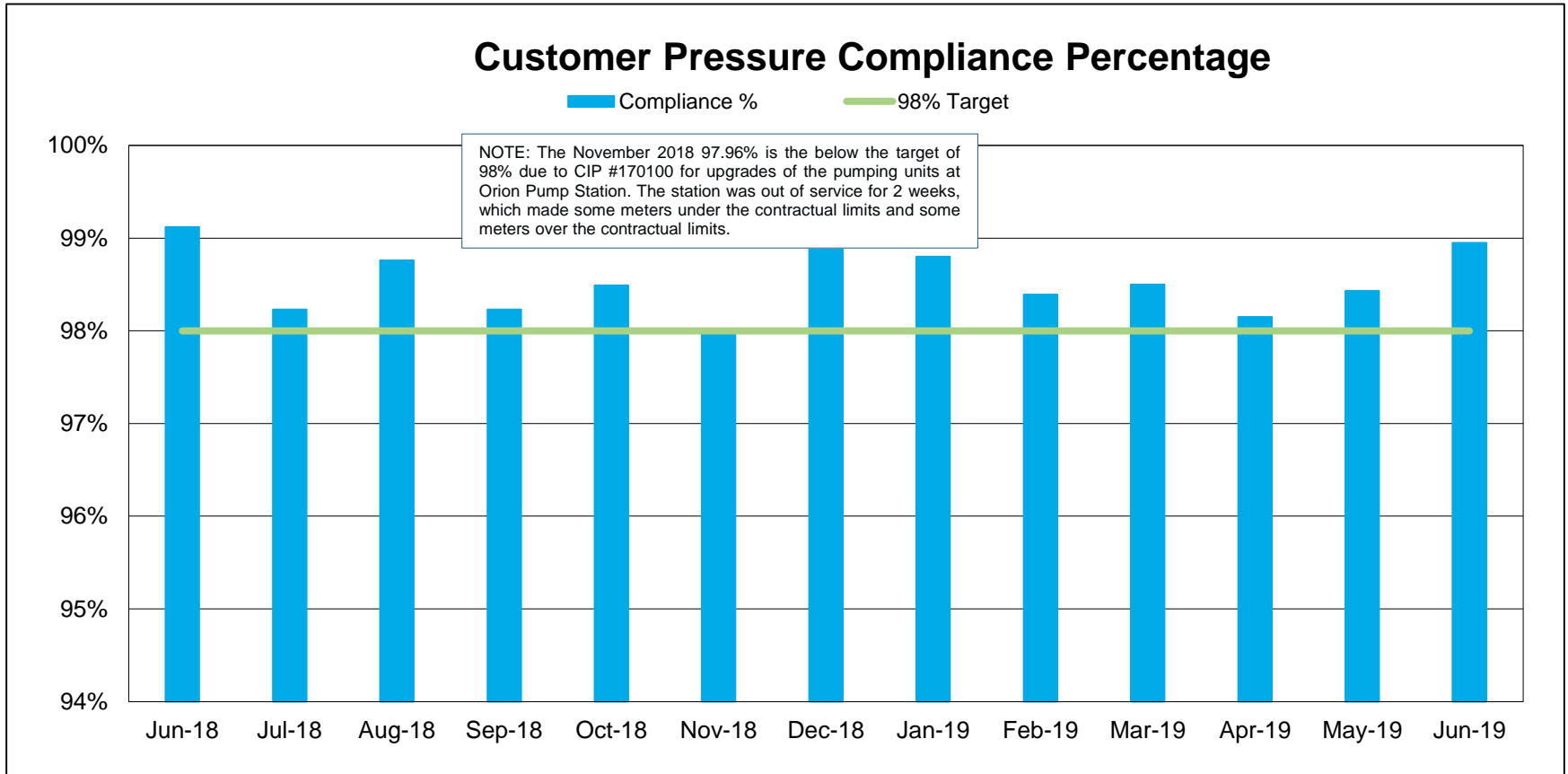


**EUM Attribute:**

**Customer  
Satisfaction**



# Customer Satisfaction – Water & Field Services



**Operational Resiliency:** To exceed customer compliance by being greater than 98% of contractual pressures.



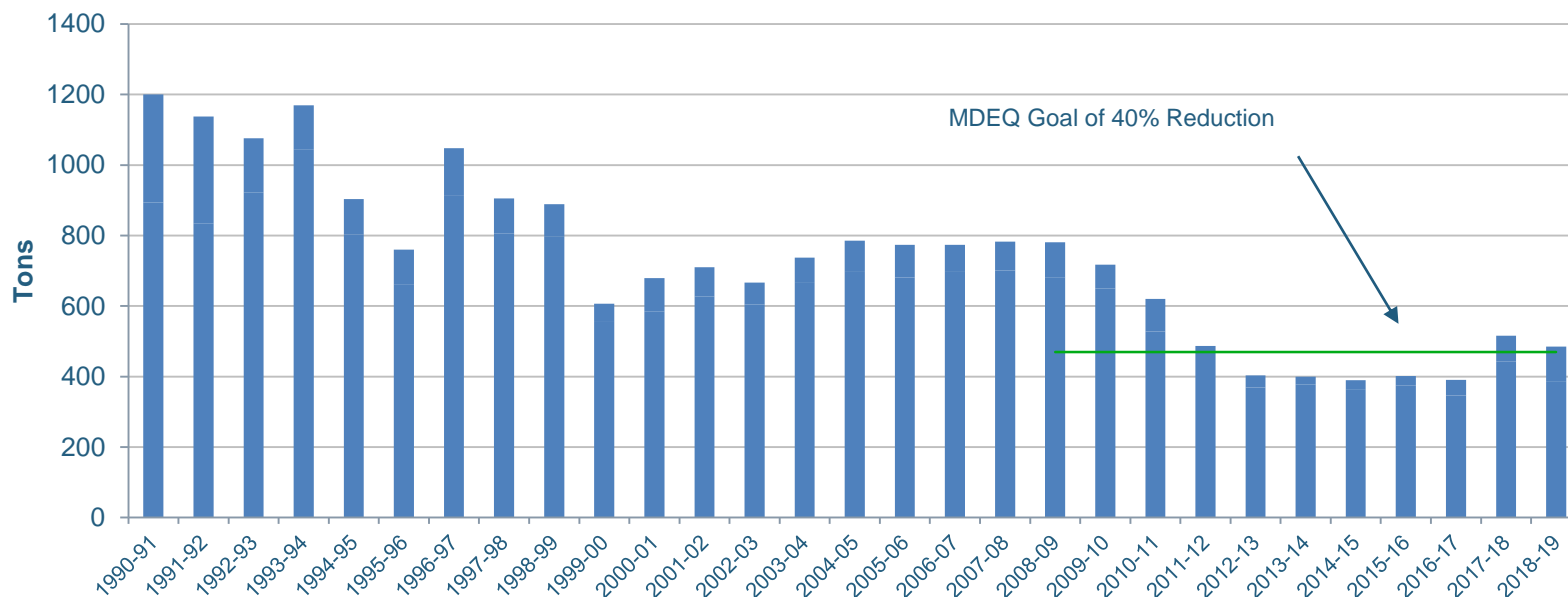
**EUM Attribute:**

**Community  
Sustainability**

# Community Sustainability – Watershed Health

- The State and Federal regulators have a goal of 40 percent reduction in phosphorus loading in the Western Lake Erie Basin.
- GLWA has surpassed the State and Federal goal.

Effluent Phosphorus Loading  
June 1990 to July 2019





**EUM Attribute:**

**Water Resource  
Sustainability**

# Water Resources Sustainability – Biosolids Handling by Method

- GLWA strives to increase nutrient recovery and beneficial reuse of biosolids.
- Use of the biosolids dryer facility for solids handling is preferred because it uses biosolids for the production of fertilizer pellets.



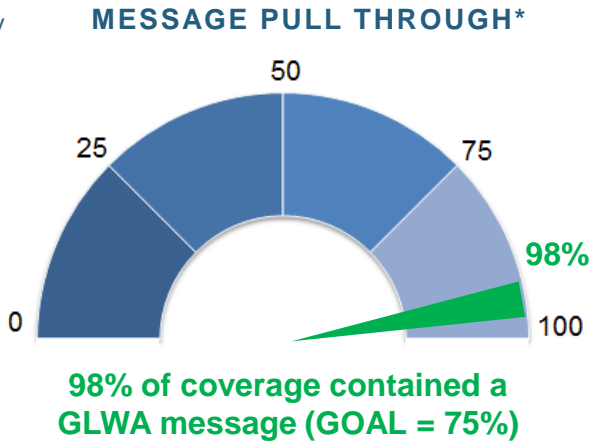
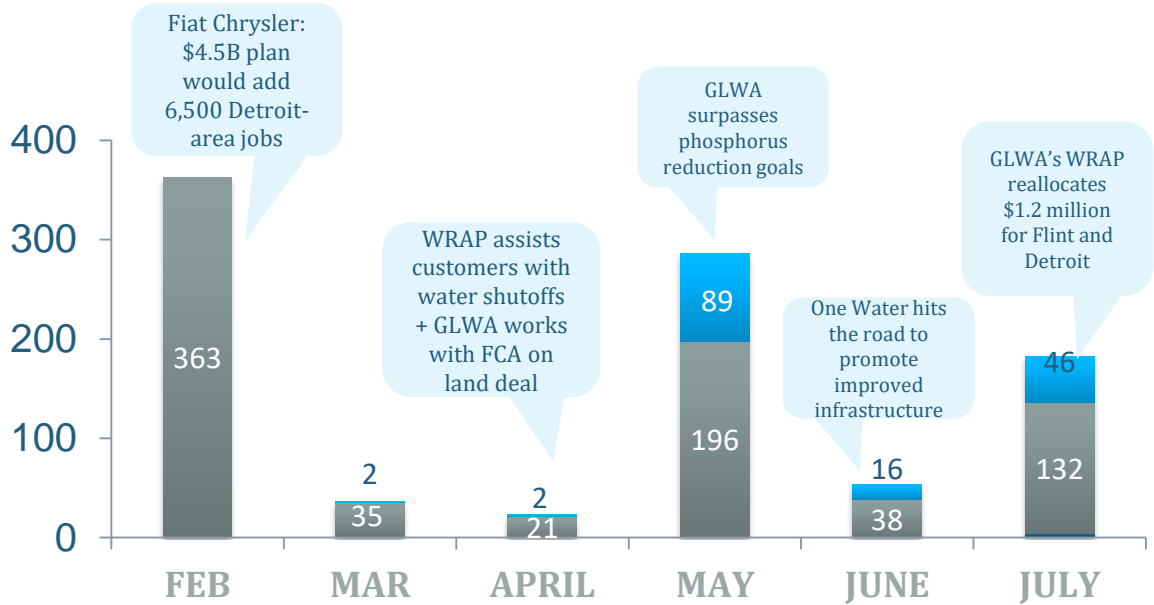
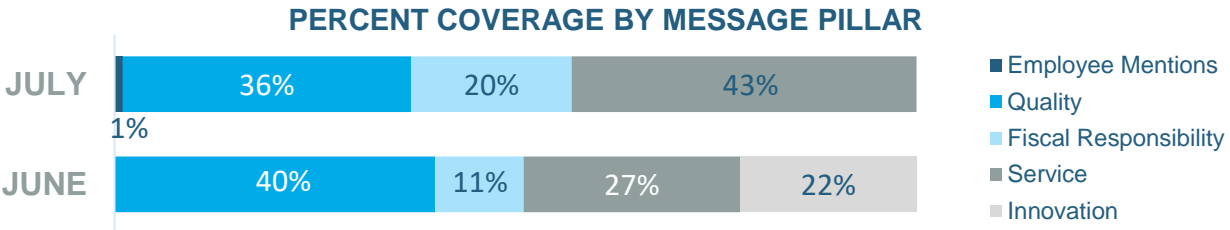


**EUM Attribute:**

**Stakeholder  
Understanding and  
Support**

# Traditional Media Summary

Overall in July, GLWA saw a 237 percent **increase** in mentions compared to June. This increase was mainly due to coverage around GLWA announcing WRAP additional funds being reallocated to Detroit and Flint, as well as the recent ruling on the coalition's LCR complaint. 72 percent of articles were neutral, 25 percent were positive and 3 percent negative. 98 percent of non-cursory articles contained a GLWA message, staying the same month over month.



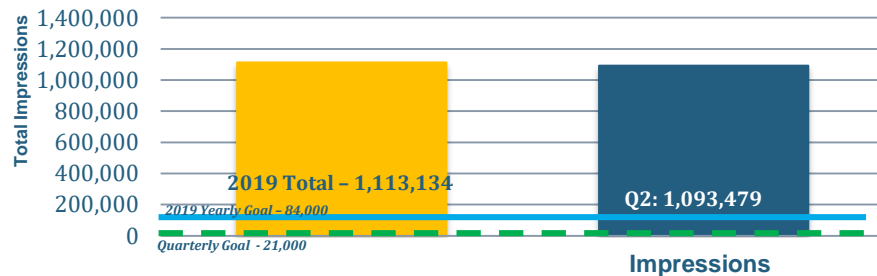
**MEDIA VOLUME: 182**  
**CURSORY OR FLINT MENTIONS: 17**  
**CONTAINED GLWA MESSAGE: 161**

\*\*Message pull through includes quotes or comments from a GLWA spokesperson, a quote from a GLWA press release or underlying theme of GLWA providing safe and clean water.

# Facebook & Twitter Quarterly Review

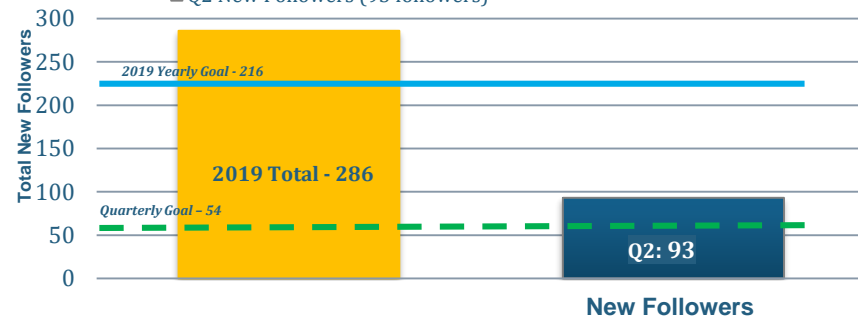
Facebook - Total Impressions Q2 2019

- Sum 2019 Impressions (1,113,134)
- Yearly Goal (84,000 impressions/year)
- Quarterly Goal (21,000 impressions/quarter)
- Total Q2 Impressions (1,093,479 total impressions)



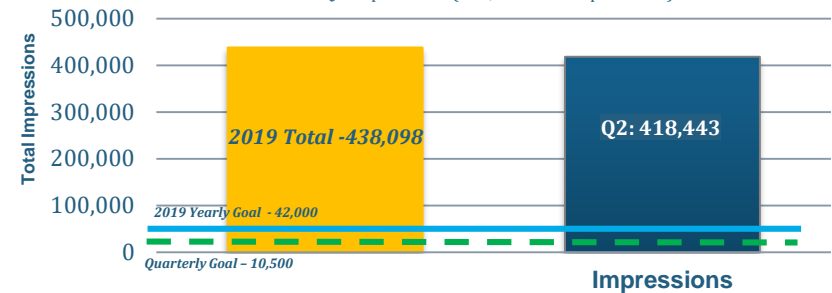
Facebook - Total New Followers Q2 2019

- Sum 2019 Followers (286)
- Yearly Goal (216 new followers/year)
- Quarterly Goal (143 new followers/quarter)
- Q2 New Followers (93 followers)



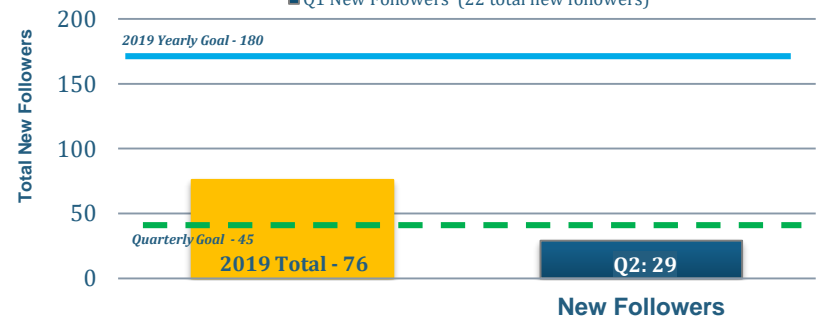
Twitter - Total Impressions by Q2 2019

- Sum 2019 Impressions (438,098)
- Yearly Goal (42,000 impressions/year)
- Quarterly Goal (10,500 impressions/quarter)
- Total Q2 Impressions (418,443 total impressions)



Twitter - Total New Followers Q2 2019

- Sum 2019 Followers (22)
- Yearly Goal (180 new followers/year)
- Quarterly Goal (45 new followers/quarter)
- Q1 New Followers (22 total new followers)



\* Q2: April - June

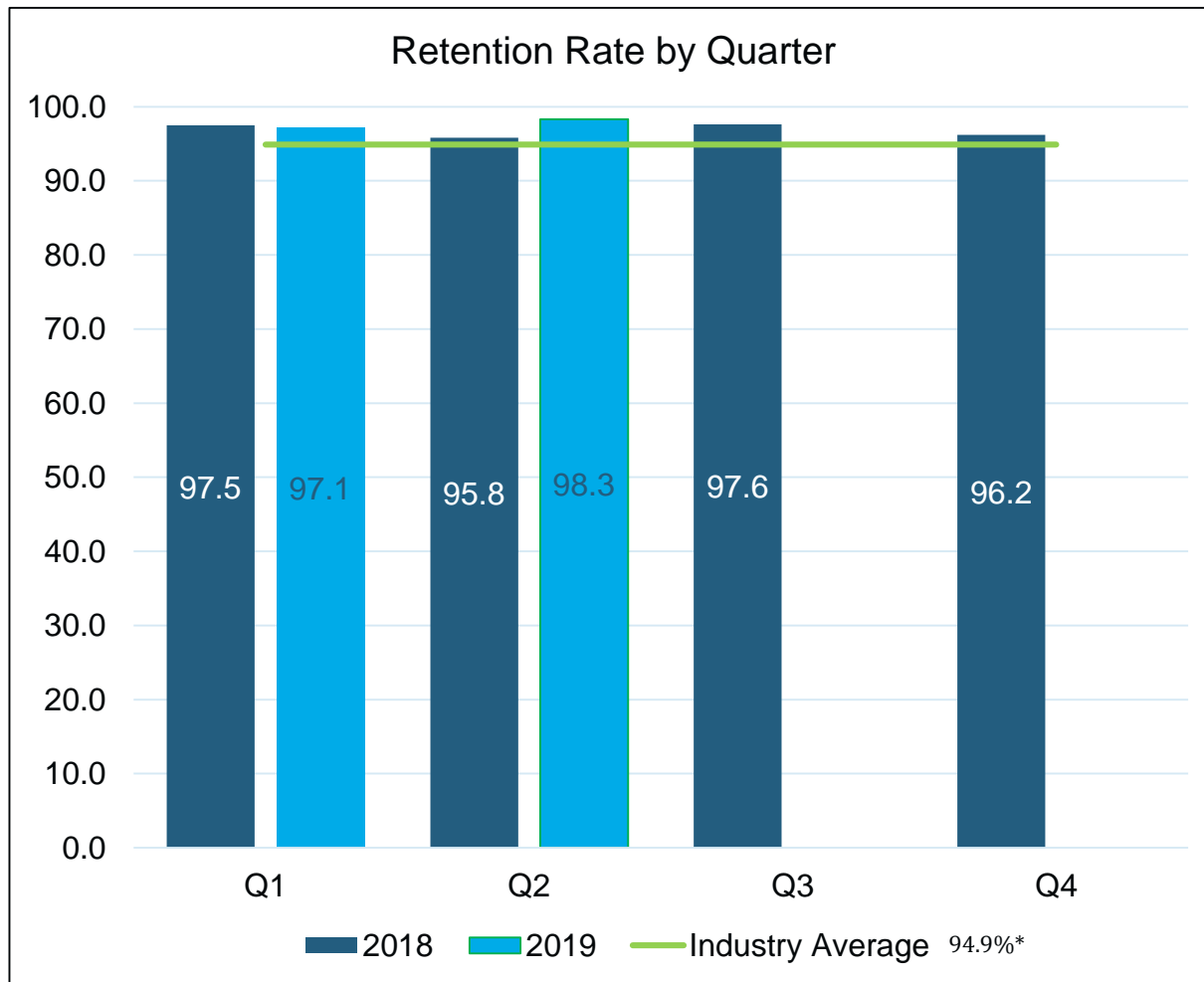




**EUM Attribute:**

**Employee and  
Leadership  
Development**

# Organizational Development



*Above retention rates are reflected in percentages*

- Retention leads to decreased training costs, increased productivity, and cross training and development.

\*From the U.S. Bureau of Labor Statistics 10-Oct-2016 report for the sector "State and Local Government, Excluding Education."