

Water-Wastewater Services State of Repair

September 5, 2024

Terry Ricketts Commissioner Public Works

Purpose

Water and Wastewater Services

To provide Council with up-to-date information about condition of assets and top priorities to help inform upcoming budget discussions.

Niagara Falls Wastewater Treatment Plant



What we're going to cover

- What we do and how
- How we compare
- Key strategic challenges
- What's happening now
- Where to go from here

What We Do – Water & Wastewater

Niagara Region provides safe drinking water and effective wastewater management

Water:

- 6 water treatment plants (WTP)
- 38 water reservoirs / elevated tanks
- 23 booster / chlorine stations
- 312 km of trunk water mains
- 153M litres per day of safe and reliable drinking water

Wastewater:

- 11 wastewater treatment plants (WWTP)
- 1 biosolids storage facility
- 112 pump stations
- 303 km of forcemains and gravity sewers
- 212M litres per day of sewage treatment to protect the Great Lakes from pollution

Welland Water Treatment Plant



How We Do It - Governing Legislation

Municipal governments are responsible for providing water & sewer services. Acts & regulations prescribe how.



Safe Drinking
Water Act



Clean Water Act



Environmental
Protection Act



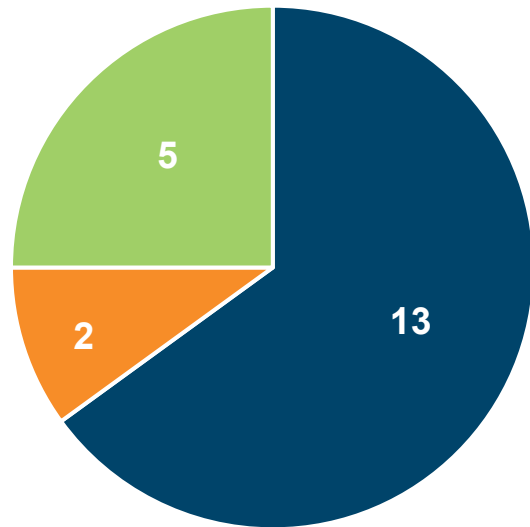
Other legislative
requirements

Council's obligations are to meet the required standards for water and wastewater quality, and to ensure systems are maintained in a fit state of repair.

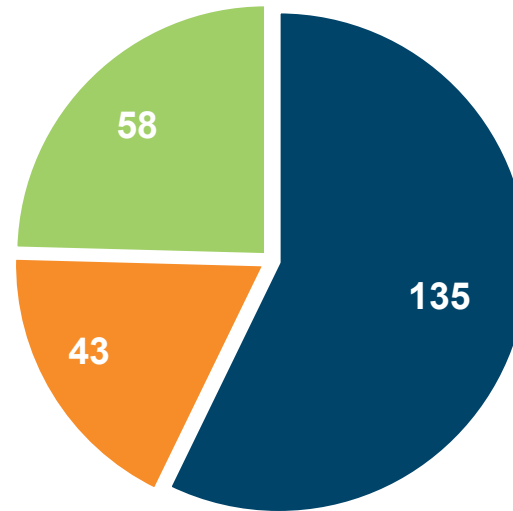
How We Compare – Water & Wastewater

- Niagara Region has significantly more vertical infrastructure than its comparators
- Niagara Region has a smaller population, resulting in a heavier per capita burden

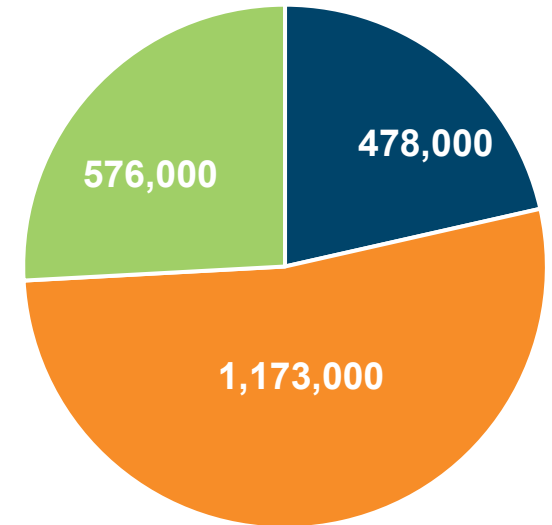
Large Plants (>10MLD)



Pumping Stations



Population

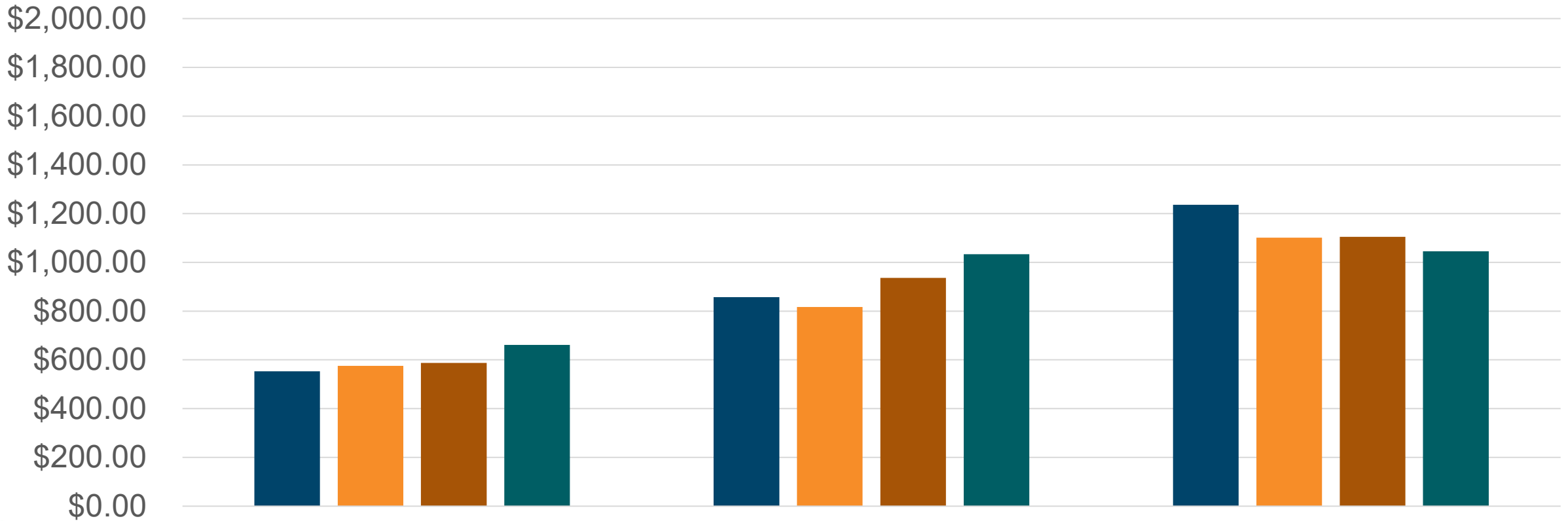


- Niagara Region
- York Region
- Waterloo Region

Water Cost of Service

Municipal Benchmarking Network of Canada (MBNC) Report

Water - Total Cost per ML Treated

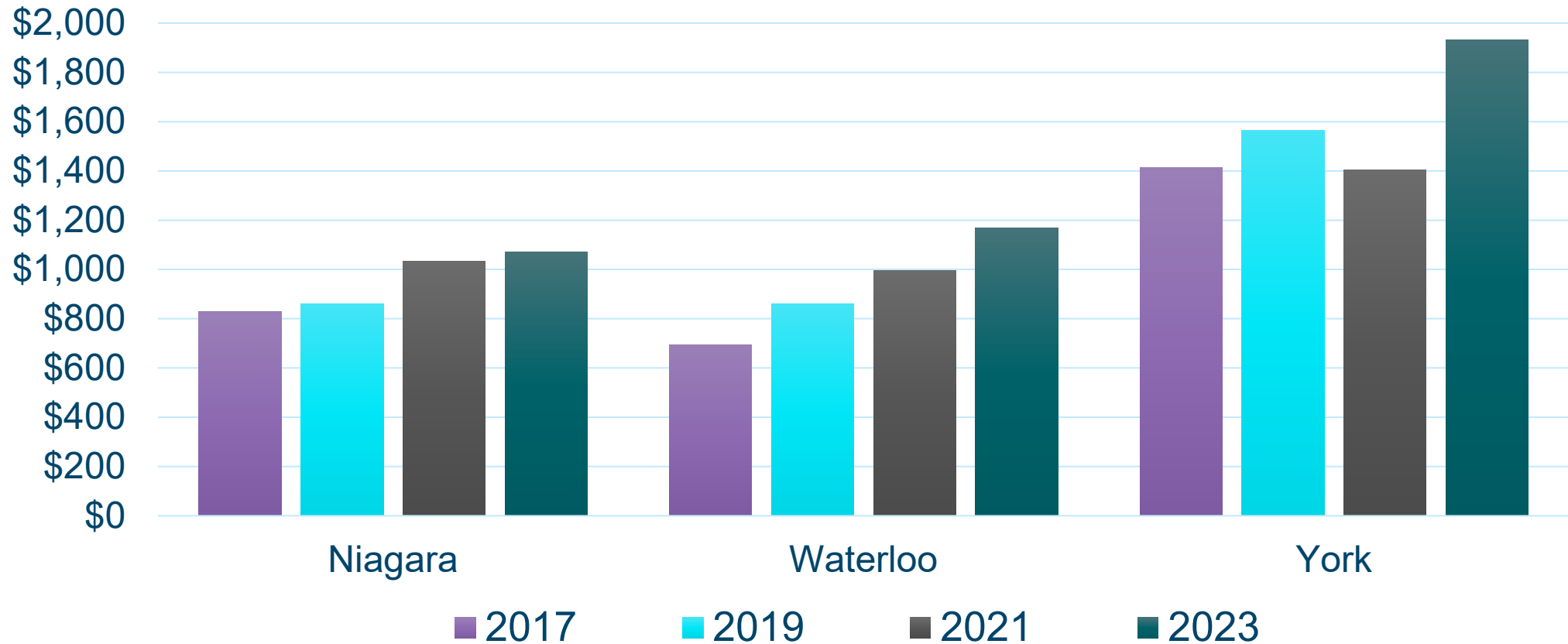


■ 2017 ■ 2019 ■ 2021 ■ 2023

Wastewater Cost of Service

Municipal Benchmarking Network of Canada (MBNC) Report

Wastewater - Total Cost per ML Treated

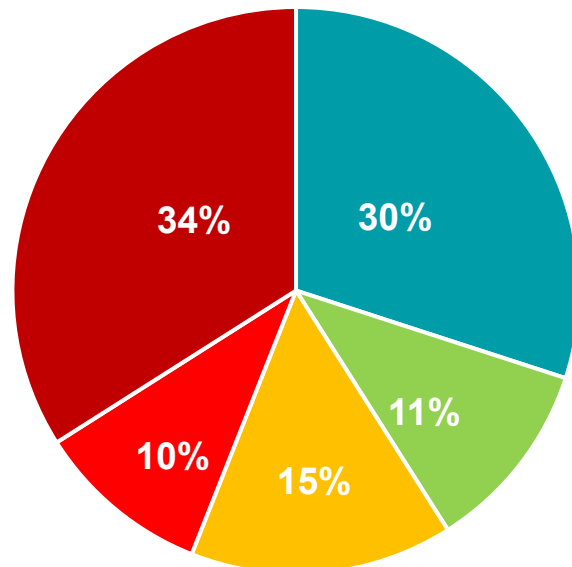


Strategic Challenge – Water Assets

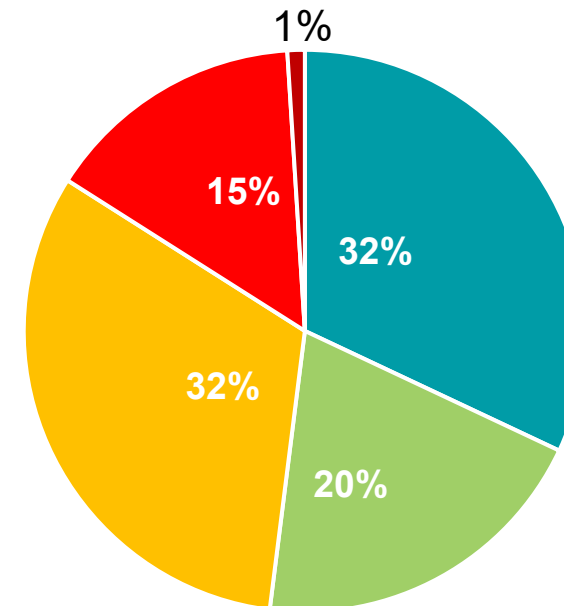
Water – 44% of facility assets in Poor to Very Poor Condition and Declining

- As asset condition decreases, risk of system failure increases
- Niagara Region has multi-barrier protection systems in place to ensure system failures would not affect public safety. However, system failures could lead to service interruptions

Vertical Water Assets - Facilities
(\$1.06 Billion replacement value)



Linear Water Assets - Pipes
(\$966 Million replacement value)



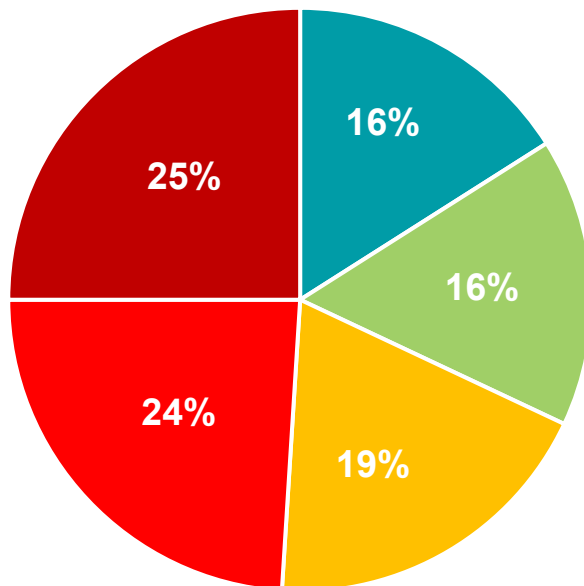
■ Very Good
■ Good
■ Fair
■ Poor
■ Very Poor

Strategic Challenge – Wastewater Assets

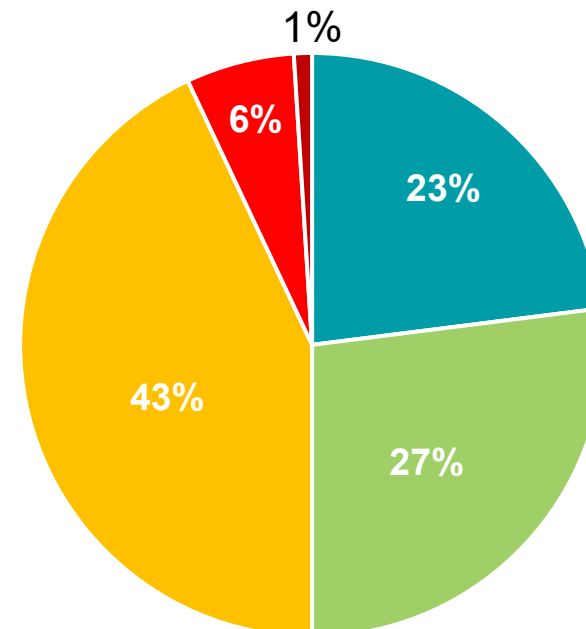
Wastewater – 49% of plant assets in Poor to Very Poor Condition and Declining

- As asset condition decreases, risk of system failure increases
- System failures affect environmental outcomes and risk non-compliance

Vertical Wastewater Assets - Facilities
(\$2.62 Billion Replacement value)



Linear Wastewater Assets – Pipes
(\$1.49 Billion Replacement Value)



■ Very Good
■ Good
■ Fair
■ Poor
■ Very Poor

Water Plants

77 per cent of our Regional water capacity is delivered by plants that are around 100 years old. Collectively, these plants have a backlog of more than \$280M of overdue investment for equipment in very poor condition.

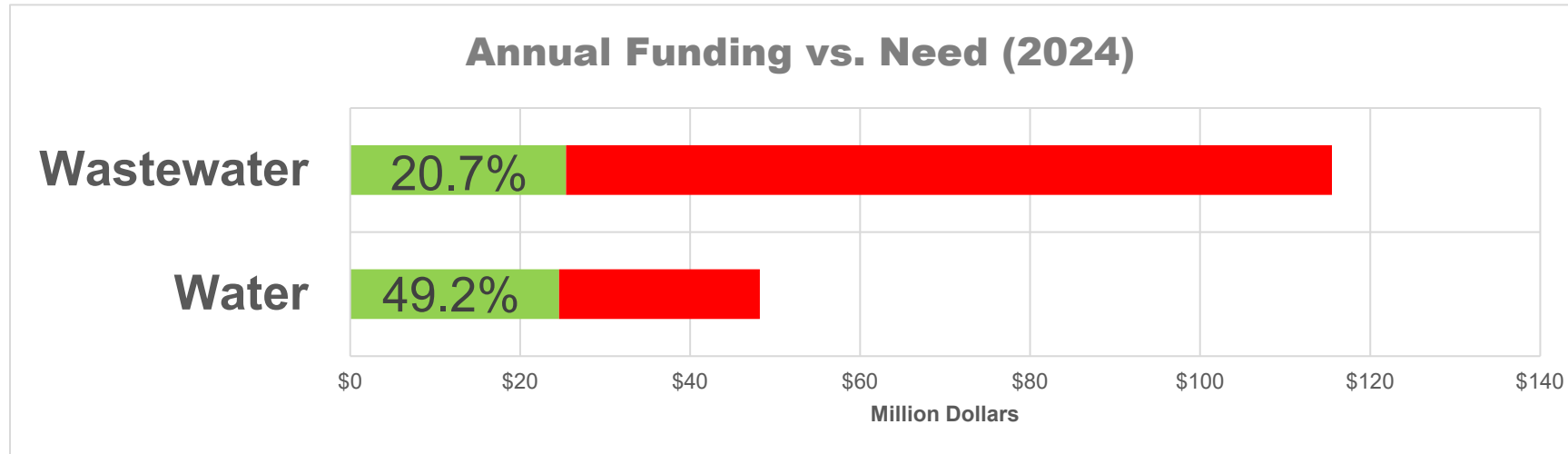
Plant	Built	Age (years)	Capacity	Services	Backlog (Very Poor Condition)
Decew Falls	1923	99	227.3 ml/d	St. Catharines, Lincoln, NOTL, parts of Thorold	\$195.3 M
Niagara Falls	1930	94	145.5 ml/d	Niagara Falls and parts of NOTL	\$43 M
Welland	1911, 1926	113	65 ml/d	Welland, Pelham, and parts of Thorold	\$44.1 M
Rosehill (Fort Erie)	1982	42	50 ml/d	Fort Erie	\$16.5 M
Grimsby	1994	30	44 ml/d	Grimsby, West Lincoln, parts of Lincoln	\$7.2 M
Port Colborne	1980	44	36 ml/d	Port Colborne	\$8.8 M

Wastewater Plants

90 per cent of our Regional wastewater capacity is delivered by plants more than 50 years old. Collectively, these plants have a backlog of more than \$400M.

Plant	Built	Age (years)	Capacity	Services	Backlog (Very Poor Condition)
Niagara Falls	1963	61	68.3 ml/d	Niagara Falls and NOTL	\$90.1 M
Port Dalhousie	1969	55	61.3 ml/d	St. Catharines and Thorold	\$114.1 M
Port Weller	1972	52	56.1 ml/d	St. Catharines and Thorold	\$95.5 M
Welland	1968	56	54.5 ml/d	Welland, Pelham, Thorold	\$121 M
Grimsby (Baker Rd)	1974	50	31.2 ml/d	Grimsby, Lincoln, West Lincoln	\$34.9 M
Fort Erie (Anger Ave)	1962	62	24.5 ml/d	Fort Erie	\$43.4 M
Pt. Colborne-Seaway	1981	43	19.6 ml/d	Port Colborne	\$25.3 M
Crystal Beach	1972	52	9.1 ml/d	Parts of Fort Erie	\$3.7 M
NOTL	2020	4	8 ml/d	NOTL	N/A
S-D Lagoon	1983	41	2.2 ml/d	Stevenville/Douglastown – Fort Erie	\$271 K
Queenston	1990	34	0.5 ml/d	NOTL	\$912 K
Biosolids Facility	10 lagoons, 2 storage tanks, onsite dewatering centrifuges				

Strategic Challenges - Financial



The current financial plan does not fully fund the asset investment need

- Investing at 100 per cent of need (red bars) would stop the decline in asset condition and eliminate backlog in 10 years
- Currently we're investing at about half that rate for water, and 20 per cent of that rate for wastewater
- At this pace, assets will continue to deteriorate and the backlog will grow
- This will increase risk of system failures

Strategic Challenges - Financial

- The 2021 Asset Management Plan recommended an annual increase in contributions to capital of 7.22 per cent
 - At this rate, the Region would be investing at 100 per cent of need (red bars) in 10 years, and could then start to address the backlog
- Given Niagara Region's affordability challenges, the 2023 Financial Plan recommended increasing annual contributions to capital of 5.15 per cent
 - At this rate, the asset base would continue to deteriorate from the current \$1 billion backlog of equipment in very poor condition to nearly \$2 billion in 10 years
- Niagara Region's actual investment rate has fallen short of both the 2021 Asset management plan and the 2023 Financial Plan
 - At the current investment rates, the backlog will grow to \$2 billion significantly faster, and risks of service failure will grow

Year	Increase Approved
2024	4.10%
2023	5.00%
2022	3.15%
2021	1.00%
2020	3.15%

Strategic Challenges – Financial cont'd

Other important considerations:

- The current rate of investment does not provide funds for larger scale projects
- Reserve balances are very low, which poses risk when old infrastructure fails and reserve funds are needed to respond

Current costs to residents:

- The current rate set by Niagara Region to provide regional water and wastewater services is \$2.00 per day per household
- This is significantly lower than comparative municipalities
- By comparison, an annual increase in contribution to capital of 7.22 per cent (2021 AMP) would increase customer cost by \$0.14 per day, or \$4.44 per month per household

Strategic Challenges – Operations & Maintenance

- **Reactive maintenance has outpaced preventative maintenance**
 - Urgent repairs are more costly as compared to preventative maintenance
 - Older equipment means maintenance takes more time and custom-made parts and equipment are necessary
- **Staff time and resources will be necessary to manage growing risk**
 - Capital Program PMs managing roughly double industry standard number of projects – increases risk and potential costs for projects
 - Complex maintenance projects starting to displace regular capital program – will slow delivery of planned capital work
 - A very high percentage of maintenance staff time is diverted to urgent/reactive repairs leaving too little to deliver planned maintenance
 - 24-hour coverage at plants recommended to monitor for unexpected system issues
 - 40 per cent of SCADA Techs currently diverted to cyber security issues (server patching) – reduces capacity to invest in digital supervisory system

What's Happening Now to Respond

Ongoing Continuous Improvement & Risk Mitigation Initiatives

- Maintenance Management Review – will assess the needs and resources necessary to update our preventative maintenance program
- Engineering Services Review – will optimize capital project delivery & adjust to emerging needs
- Condition Assessment Program – will verify equipment condition & priority risks
- Updated Replacement Costs – will provide accurate information for financial planning
- Digesters Consolidation and Optimization Strategy and Fort Erie Wastewater Long Term Servicing Strategy – will reduce number of assets and future costs
- 10-year Capital Planning Tool – will prioritize between growth and asset management projects based on funding projections and risk assessments

Where Do We Go From Here?

Short Term (2024/2025)

- 2025 budget strategy will:
 - Recommend responsible capital contributions
 - Prioritize funds to address high-risk assets
 - Optimize balance between growth and asset renewal investment
- Develop Staffing Strategy
 - Incremental changes will be introduced in the 2025 budget to work towards bringing staff compliment up to minimum levels
- Prioritize ongoing condition assessment work
 - Staff will continue to verify condition of assets and identify critical asset risks; funds for this purpose will be introduced in the 2025 budget

Where Do We Go From Here? Cont'd.

Longer Term (2025+)

- Advocacy – further develop advocacy strategy to seek funding partnership from senior levels of government (Provincial & Federal)
- AMP 2025 – update the Region's WWW Asset Management Plan in 2025 to provide a better understanding of priority investment needs over the next 5 years
- Financial Plan – update the WWW Asset Management Financial Plan to support a more realistic financial strategy in keeping with the updated AMP
- Capital investments and resourcing – continue to build capacity to address present-state risks and to reduce rate of asset degradation

Next Steps

Budget Key Dates

- BRCOTW Capital - Thursday, September 12
- Budget Workshop - Water & Wastewater Rates -Thursday, October 10
- BRCOTW - Water & Wastewater Rates - Thursday, November 7
- Council - Water & Wastewater Rate and Special Levy By-laws, Thursday, November 21

Questions?

