CANADIAN WATER AND WASTEWATER ASSOCIATION
POLICY STATEMENT

Sustainable Water Services

CWWA Utility Leaders Committee | Developed 2018

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A sustainable water service recognizes and incorporates social (service level and affordability), environmental and economic factors while ensuring full cost recovery and intergenerational equity. There are many benefits to communities where utilities provide sustainable water services (water, wastewater and/or stormwater). Over the long-term, there may also be significant risks to public health, local economies and the environment if water services are not truly sustainable. However, there are a number of key challenges or barriers to achieving sustainable water services. Utilities should plan to move closer to sustainable water services, recognizing those challenges, and monitor their progress to that objective. Communication with, and engagement of, the public and elected officials as to the social, environmental and economic value of water services will be essential in that process.

BACKGROUND

Sustainable Water Services Defined

The term "sustainable water service" invokes many different responses from the municipal practitioner, elected official and the public depending on their level of engagement, technical knowledge or practical experience. In its simplest form, a sustainable water service recognizes and incorporates social (service level and affordability), environmental and economic factors while ensuring full cost recovery and intergenerational equity. Many professional organizations and regulators have attempted to define "full cost recovery" but one of the better ones stems from an InfraGuide[1] publication that states:

[1] National Guide to Sustainable Municipal Infrastructure, Water and Sewer Rates: Full Cost Recovery, March, 2006.

"full cost recovery supports a business plan and funding approach that suits local conditions, sustains water and sewage systems in perpetuity and maintains acceptable service levels for the users of the system".

The word perpetuity recognizes water systems are expected to continue indefinitely, serving users with a specific level of service. It acknowledges that, as some assets are retired, more come on board to replace existing ones, in addition to new assets to accommodate growth and complying with the latest standards and regulations.

Sustainable water services must recognize and incorporate social (service level and affordability), environmental and economic (business) principles. All three principles are interrelated and if not in balance, then the service / system cannot be truly sustainable. This approach, commonly referred to as the Triple Bottom Line has been widely adopted in the water profession as well as other industries.

Sustainable water services are made possible through the optimization of asset management plans, a cost of service framework and efficient capital funding. All three aspects are critical in the context of intergenerational equity which ensures that each generation pays their fair share of the full cost of service.

THE BENEFITS OF SUSTAINABLE WATER SERVICES

When conscientiously integrated into business operations there are multiple benefits of being sustainable.

- **Enhanced trust and confidence**

  Trust and confidence with the community can be obtained or enhanced when the organization is acting in the best interest of the community, in a transparent, effective and efficient manner; above all, in a sustainable way, socially, environmentally and financially. Higher levels of trust and confidence lead to

improved relationships with customers, citizens, and stakeholders, improved Council and Board relations as well as higher levels of buy in for tax/utility rate increases or new initiatives.

- **Better access to funds and reduced costs of borrowing and service costs**

  Leverage is a common financial vehicle for a government body to address cash flow gaps caused by misalignment in the timing of funding or revenue inflow. An example would be development charge debt incurred by a municipality to fund future growth. A utility with on-going concerns tends to suffer from limited access to capital funding or higher borrowing costs, which in turn could affect all aspects of service costs to the community, not just water.

  Another typical service cost is the investment made in preventive maintenance, future rehabilitation or replacement of the capital assets. A utility with a long-term sustainability and equity mindset will set aside sufficient amounts of financial reserves now for State of Good Repair (SOGR) work in the future. This is critical in order to maintain the condition and performance of assets while avoiding huge debt burden in the future when infrastructure starts aging. This approach will permit a stable and equitable service cost over the long term, as compared to adopting the same service level now, but without an adequate reserve funding for future SOGR needs.

- **Increased ability to comply with changing business pressures or regulations**

  Water and wastewater services are a unique business where an increasing level of regulatory compliance is the norm, especially in this time of climate change, increasing energy costs and a desire to reduce environmental impacts. Unsurprisingly, regulatory bodies are responding to both emerging science and community engagement in order to protect the environment.

  The regulations on our water and wastewater services will continue to evolve post-Walkerton (and other such events across Canada), while an increased focus on the impacts of nutrients on our source and receiving waters (such as impacts from our wastewater and stormwater services) is a given. Integrating sustainability into its business will position a utility to be responsive and adaptive to changing business pressures without triggering wild swings in rates.

- **Ability to adopt innovative service approach**

In order to improve the overall customer experience, adoption of an innovative service approach is instrumental. Organizations looking for ways to be more environmentally, socially and financially responsible tend to make more efforts to engage with their communities and adopt innovative approaches to service delivery.

- **Improve employee engagement and talent retention**

  Job security and satisfaction are critical factors for employee retention. It is no surprise that employees like to be associated with an organization with a solid financial footing, which acts as a steward for the local and global environment, and which strives to be a leader. Integration of business sustainability and innovation will attract and retain a high caliber of people, hence reducing employee turnover and improving productivity.

THE CONSEQUENCES OF UNSUSTAINABLE WATER SERVICES

In contrast to the benefits of a sustainable water services model, there are serious potential consequences or risks in not applying this model.

- Inability to meet regulatory compliance obligations

  Regulatory requirements for drinking water and wastewater have increased and the trend is expected to continue. Unsustainable business practices will make regulatory compliance more difficult to achieve and can result in financial penalties such as those imposed by the federal Fisheries Act.

- Inability to maintain service levels and address evolving community needs

  Unsustainable business practices will ultimately increase infrastructure deficits and saddle future generations with deferred maintenance and capital costs. Unsustainable approaches may also result in poor employee morale and poor customer service. This situation is compounded by higher borrowing costs, which leads to higher tax or utility rates or service level reductions.

- Increased litigation

  Where utilities are not adopting best practices for sustainable service delivery, or ignoring known risks, they will have increased exposure to litigation. Examples include delivery of drinking water below acceptable standards, high leakage levels that transform into unscheduled water main repairs and resulting damages, and flooded basements from ignoring stormwater impacts in relation to climate change, etc.

- Increased reputational risk for the utility and municipality

  In these times of social media, even a relatively small incident can quickly "go viral" and be presented in a negative light, without context to its cause and significance. Should there be a public health risk, then the degree of scrutiny and negative publicity can be extreme. A recent example of this is the drinking water incident in Flint, Michigan. Elected officials can be embarrassed, staff may lose their jobs and the community's profile negatively affected for a number of years. Implementing a sustainable model for the delivery of water services will minimize this "reputational risk".

CHALLENGES AND BARRIERS

A number of key challenges or barriers exist in achieving sustainable infrastructure including: pressure to address infrastructure deficits against declining consumption revenues; regulatory and growth pressures; maturity of asset management systems; responding to emerging funding pressures from climate change; and, balancing existing customer expectations against the cost of services and who should pay.

In order to address an infrastructure deficit for water systems across Canada, estimated to be $60 billion[2], municipalities have begun to raise water rates to generate the necessary revenue to reduce this backlog. However, the increase in water rates, coupled with water efficiency initiatives has resulted in a trend toward declining water consumption. This trend, along with instances of high system leakage, has resulted in lower than forecasted revenues and increased expense.

Despite the fact that the need for infrastructure expansion may have been deferred by the reduction in consumption, utilities are still challenged with rationalizing, to decision-makers and the public, the need for additional rate increases to address historical under-investment in infrastructure. To provide support to address the infrastructure deficit, both the provincial and federal levels of government have created infrastructure funding programs. Challenges arise depending on the extent of conditions placed on municipalities to deliver such programs; as well, the conditions placed on the projects (e.g. completion within a certain date) may result in market conditions that inflate the cost of the work due to resource constraints.

The provision of water services addresses a societal basic need that is governed by expanding regulations at both the federal and provincial levels. It has been conservatively estimated that the cost to address the Federal Wastewater Systems Effluent Regulations is

[2] "2016 Infrastructure Report Card – Key Messages", Infrastructure Report Card, 2016.

$18 billion[3], with $3.5 billion expected to be incurred by 2020. In 2017, Ontario approved the Asset Management Planning for Municipal Infrastructure regulation to ensure consistency amongst the province's 444 municipalities and so facilitate prioritization of the province's infrastructure investments. Complying with these types of changes in regulation places financial and adaptation pressures on water system owners.

Supporting growth is an objective of many municipalities to ensure their economic sustainability. However, growth demand can vary based on market conditions and can place unanticipated pressures on infrastructure, including water services. In greenfield development, growth necessitates the construction of predominantly new linear infrastructure as well as upgrades to existing complex vertical infrastructure. However, in-fill development in high demand areas can exceed planning forecasts and result in the need to prematurely replace and expand existing infrastructure before it has achieved its full service life; this essentially results in net investment losses to the municipality. This, coupled with determining what portion of this cost should be borne by new development versus existing users, can present challenges for municipalities and utilities.

A mature asset management system enables owners to understand the condition and performance of infrastructure, as well as the costs associated with providing services over the life cycle of all of its assets, through the integration of data and systems. One of the key challenges for water infrastructure is that a significant portion of the infrastructure is buried and therefore difficult to access to assess condition. As well, there can be a lack of documentation on the past performance and investment into those assets. As a result, the use of symptomatic indicators and assumptions is necessary to fill these knowledge gaps, which may result in non-optimal infrastructure investment.

Adapting to climate change is a relatively new pressure on water infrastructure. While annual or historical demands on infrastructure have been predictable (e.g. water usage during summers), individual climate events vary significantly in their intensity, frequency of occurrence and geographical impact. Drought conditions can be sustained over sequential years, and then not reappear for decades. Ice storms or sustained freezing temperatures can be a single rare event, but have devastating impacts on infrastructure and services, necessitate emergency responses and heavy expenditures for reinstatement. Rainfall events have been increasing in intensity and can be localized geographically, but with greater public mobility the impact of these events results in a broader impact. Adopting new strategies and infrastructure plans to address these emerging pressures, as well as implementing solutions rapidly enough to adapt service levels and meet growing public expectations, is a significant challenge.

Generally, the public and elected officials not only have high expectations of service levels at the lowest possible cost (such as safe and available drinking water, the ability to flush

[3] "Federal Wastewater Systems Effluent Regulations", Federation of Canadian Municipalities, 2017

toilets and no flooded basements), but they are also expanding and increasing their expectations of utilities' responses to issues such as climate change. As the majority of water infrastructure is out of site to the public, the ability to convey information about the condition and performance of this infrastructure, as well as construction constraints, is challenging. This leads to concerns as to who benefits, who pays and whether the cost of these services will continue to be affordable to residents, businesses and developers.

THE PATH TO SUSTAINABLE WATER SERVICES

There are many benefits to communities where utilities provide sustainable water services. Over the long-term, there may also be significant risks to public health, the viability of local communities and the environment if water services are not truly sustainable.

While advances have been made towards sustainability by many progressive water utilities, much needs to be done before sustainable water services can be said to be prevalent across Canada. There are also some significant challenges that need to be overcome in achieving that goal, particularly for certain groups; for example, First Nations, small towns, and rural communities.

There are a wide range of communities, in very different geographic locations and environments across Canada, which are serviced by water utilities – from major cities to small, rural or isolated communities, and from temperate climates in coastal regions to extreme cold beyond the Arctic Circle. It is therefore difficult to prescribe a single model as to what constitutes sustainable water services, or even a common route to achieving that goal. There are, however, three general principles which are recommended to form the foundation of sustainable water services:

a) An appropriate **Governance** model which incorporates accountability, transparency, a long-term viewpoint and a mission which reflects the needs of the community which the utility serves. There must be regular, effective and independent oversight as to whether the utility is fulfilling its mandate. The publication Watertight[4] describes models for good governance; for example, for many of smaller towns and communities in more remote areas, a form of regionalization may be appropriate. It also recognizes the need for independent oversight outside the political realm.
b) **Utility Business Planning** is essential. The business plan for a utility must incorporate not just the operational and capital budgets but also how the resources required for execution will be obtained and allocated – whether they be financial, infrastructure or human resources. Business plans also require external

[4] "WATERTIGHT: The case for change in Ontario's water and wastewater sector", Report of the Water Strategy Expert Panel, Ministry of Public Infrastructure Renewal, Government of Ontario, 2005

examination by an oversight body to ensure they are robust and follow a standard approach.

c) **Performance Measurement and Continuous Improvement**. It is a truism that "What is not measured, cannot be improved". A utility should adopt Key Performance Indicators [KPIs] which reflect critical aspects of its mission. Those KPIs must then be regularly monitored to assess progress and allow the utility to adjust its approach so that improvement is ensured. There are many examples of this approach in Canada including those adopted by municipalities and utilities that participate in the National Water and Wastewater Benchmarking Initiative.[5] Other progressive utilities, like EPCOR and Halifax Water, also utilize a corporate balanced scorecard to measure performance. Regular and accessible communication with stakeholders as to the utility's performance will build trust, engagement and support.

Excellent guidance relating to b) and c) can be found in a number of publications[6] [7] [8] [9] from one of which7 the diagram below is extracted.

[5] "National Water and Wastewater Benchmarking Initiative", AECOM & NRC, 2016.
[6] "EFFECTIVE UTILITY MANAGEMENT; A PRIMER FOR WATER AND WASTEWATER UTILITIES", EPA ET AL, 2017
[7] "MOVING TOWARDS SUSTAINABILITY: SUSTAINABLE AND EFFECTIVE PRACTICES FOR CREATING YOUR WATER UTILITY ROADMAP", EPA, 2014
[8] "RURAL AND SMALL SYSTEMS GUIDEBOOK TO SUSTAINABLE UTILITY MANAGEMENT" EPA & USDA, 2013
[9] "ONLY THE PIPES SHOULD BE HIDDEN: BEST PRACTICES FOR PRICING AND IMPROVING MUNICIPAL WATER AND WASTEWATER SERVICES", CANADA'S ECOFISCAL COMMISSION, 2017

Each community has different requirements and constraints, and every utility which services a community will be at a different point in its evolution towards sustainable water services. In every case though, for the utility to move closer to that objective, it must develop and follow a "road map" to get there. Communication with, and engagement with, the public and elected officials as to the current and future value of water services will be essential in that process. This is one of the roles in which CWWA can assist its membership and the water sector in general.