Asset Management Level 2
Workshop 2B
Cost of Service Delivery

Participant Workbook

This initiative is offered through the Municipal Asset Management Program, which is delivered by the Federation of Canadian Municipalities and funded by the Government of Canada.

fcm.ca/assetmanagementprogram

About FCM

The Federation of Canadian Municipalities (FCM) is the national voice of municipal government. In leading the municipal movement, FCM works to align federal and local priorities, recognizing that strong hometowns make for a strong Canada.

About AUMA

Founded in 1905, the Alberta Urban Municipalities Association (AUMA) represents 269 urban municipalities including cities, towns, villages, summer villages, and specialized municipalities. AUMA works with federal and provincial governments and business and community stakeholders on a broad range of issues to strengthen the economic, social, cultural, and environmental vitality of its member municipalities.

About RMA

The Rural Municipalities of Alberta (RMA) is an independent association representing Alberta's 63 counties and municipal districts, five specialized municipalities, and the Special Areas Board. Since 1909, the RMA has helped rural municipalities achieve strong, effective local government.

About IAMA

Infrastructure Asset Management Alberta (IAMA) represents the greater community of any person, organization or agency engaged in or has an interest in infrastructure asset management.

The 'community' is supported by the IAMA Working Group which is a voluntary group of representatives from associations, local governments, agencies, private industry and/or first nations brought together to recognize and integrate the administrative, technical, operational, financial, and planning aspects of asset management.

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Welcome

Welcome to Workshop 2B – Cost of Service Delivery! Today we will be covering the following:

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Using the Workbook

The following icons will help you to navigate the workbook and presentation and workbook.

Learning Goal

Specific learning outcome to be achieved.

Try it out

Actions, questions, or perspectives to put into practice back at work.

Activity

Individual or group exercises designed to put learning into practice.

Resources

Additional reference materials and tools related to the topic. Web addresses for the resources can be found at the back of the workbook.

Glossary

Definitions of words and phrases used in the course material.

Reflection

A place to write your own reflections and insights on how you might apply a concept or idea to your own municipal circumstances.

Did You Know?

Interesting facts and insights on asset management.

Module 1 – Understanding and Articulating the Cost of Service Delivery

LEARNING GOAL 1: Understand the cost of service delivery in your community's language

Follow along with step 7 for defining level of service in the Alberta Asset Management Handbook & Toolkit: https://open.alberta.ca/publications/getting-started-toolkit-user-guide-for-building-an-asset-management-program

In the process of defining levels of service for your selected service(s), you have:

- Defined service categories and assets
- Defined primary customer groups
- Developed indicators of the community/customer experience
- Determined current level of service
- Collected capital, operational, and maintenance activities that support the current level of service

You have probably collected a lot of information about the cost of service delivery and may be wondering what to do next. We're going to spend some time evaluating and understanding what all of this information tells you about how much it costs to deliver services.

What are the main drivers of cost for this service? Which of these can be controlled?

- Is the delivery of this service regulated? (E.g. Alberta and Environment and Parks for water and wastewater systems)
- Is this an essential service?
- Is the cost of this service dependent on variability in climate and/or weather?
- Is the cost of this service dependent on service demands?
- Does this service have a policy that defines levels of service that are expected by the public?
- Does the level of service impact risks? What are those risks?
- Are the assets that support service delivery performing efficiently?

How do these costs compare to current levels of funding?

- What revenue source(s) fund this service?
- Do you charge for this service? Do you tax this service?
- Which of these revenue source(s) do you have control over?
- If the cost of the service is dependent on demand, does your revenue also fluctuate with demand?

What is the anticipated future of funding sources?

- Do you predict a change in the number of funding sources? Federal/provincial grants, municipal taxes (residential and business), oil/gas revenue, renewables revenues, others?
- Do you predict a change in the magnitude of funding from existing sources?

Remember that you can't predict the exact future of what funding will look like, but you can plan for it!

Evaluating Affordability

The big question: Are your current levels of service affordable based on expected future funding?

This may be difficult to evaluate if you're looking at one of your many services. Overall affordability is best assessed by considering the costs of all the services you provide. That said, there is value to understanding the costs associated with each individual service. Using your cost and some asset or usage information, you can develop some metrics to help you assess the affordability of services. For most services, you can:

- Divide the total cost per year by a relevant unit to the service. For example, you can determine a cost per kilometer of road for annual O&M costs. For water, you can determine a cost per cubic meter of water. For a recreation facility, you can determine a cost per user.
- Compare the total cost per year to your average annual revenue. What proportion of your total revenue would be needed to cover the cost of this service? Is this an appropriate proportion?

Remember that these calculations will give you metrics, which are useful, but have use in a specific context. They are useful in reflecting on costs over the past year and identifying trends year over year. They can have some use in budgeting for the next year, however it is important to understand what data was used and what assumptions were made to generate the metric.

Are there any changes in regulations that may affect the affordability of your service? For example, many communities in Alberta had to recently expand their lagoons to be in compliance with changes to Alberta Environment and Parks regulations for lagoon discharge.

Small communities have a unique challenge in the delivery of water service – without a large City-sized infrastructure and user base it can become difficult to define levels of service that are appropriate for your context. Here's an example of water level of service definition for small systems: https://efcnetwork.org/wp-content/uploads/2017/07/Level-of-service-handout.pdf

Evaluating Sustainability

This term is often associated solely with the natural environment. However, in this context of service delivery, it is directly connected with long-term affordability. Considering your anticipated expenses and revenues over time, is your current level of service sustainable in the long term?

Signs of sustainability:

- Your costs to deliver services are less than your revenues
- There are minimal anticipated changes to the cost to deliver service and/or the revenues
- You are aware of the larger risks to service delivery and have a mitigation plan in place
- You receive minimal resident complaints about service delivery

If you have negative answers to any of the questions above, it's worth asking the question: Are there other ways to deliver this service that could be more sustainable for your community?

Looking for a framework for evaluating current and future trends for sustainability of individual services? Check out the Service Sustainability Assessment Tool: https://www.assetmanagementbc.ca/resources/ (Search for "Service Sustainability Assessment Tool")

LEARNING GOAL 2: Identify and articulate assumptions in data

Data is essential to understanding the cost, affordability, and sustainability of services in your community. When using data for evaluation, it is critical to understand the origin of data and what biases it represents. Considering possible biases can guide you in appropriately using the data you have to better understand levels of service and cost.

The following tables summarize how two main categories of data can be considered in the municipal context. Your community likely has context-specific similarities and differences in how you consider data, so use this information a starting point in evaluating what your data is and is not.

Financial Data

How data is tracked	• In a software that is structured for accounting purposes. • Information is usually entered by one or a few identified individuals that are most likely part of the finance department. • Most often this data is not tracked spatially (i.e. you couldn't show where it is on a map).
Who is responsible for tracking data	• Finance/accounting makes sure the data gets in the system, but some data may come from other departments. • Finance/accounting is responsible for tracking down and collecting that data.
How data is organized	• Depending on software, finance/accounting can decide how to structure data hierarchy and categories.
Where inputs come from	• Accounting processes (accounts receivable, accounts payable, invoices, bills, taxes, payroll).
What data is intended to be used for	• Accounting requirements (financial statements, Tangible Capital Asset reporting, enabling the flow of money in and out of a municipality's possession). • There are many defined and mandated uses for this data that guide how it should be collected, used, and reported on.
Level of accuracy	• Very accurate – financial data needs to reconcile and add up!

Physical Service Delivery Data

How data is tracked	• Several different processes: some ad-hoc processes that vary between departments and individuals, some highly regulated and reported (like water quality testing). • Some of this data may also be spatially tracked, as location of effort is a key piece of information to support decision-making
Who is responsible for tracking data	• For regulated services, operators are required to track data. • For other services, responsibility may be assigned to operators or managers, or not assigned at all.
How data is organized	• For regulated services, the regulator defines how data is organized. • For unregulated services, data organization may vary across departments.
Where inputs come from	• Data is collected from monitoring processes that identify specific technical measurements (like specific water quality tests that identify the presence of organic chemicals and pesticides). • For services that are not regulated, these inputs can take the form of customer feedback/complaints, operator observations, responses to emergency/reactive repairs and maintenance.
What data is intended to be used for	• For regulated services, meeting regulatory requirements for reporting. • For unregulated services, the intent of this information may be less clear. Uses could include service performance measurement against levels of service, risk assessments, streamlining operations, etc.
Level of accuracy	• Variable. For regulated services, the accuracy required is specified. • For unregulated services, the level of accuracy can depend on the service and on the individuals charged with recording information.

LEARNING GOAL 3: Understand the Difference Between Cost and Rate

What is cost?

In its simplest terms, cost is what you actually spend on delivering a service to a specific level. Having a good understanding of your current level of service is important to help you correlate cost information with what service the public experiences. Since levels of service can vary widely, so can the cost!

Cost includes all activities and materials required to successfully deliver the service. This includes consumables, time, and resources. As many municipal services overlap, the cost of one service requires some scope definition. For example, many small communities have one or a few operators that are responsible for the operations and maintenance of both water and wastewater infrastructure. How do you determine how much time they spend on water vs. wastewater infrastructure? For communities that track operations efforts through a mechanism like timesheets, this may be easier to answer than for those that don't.

What is rate?

Rates are the charges placed on the users of a service. The rate may or may not equal the cost of service delivery. Rate is based on a decision as to what to charge for a service. Not all services have set rates – some services are funded through general revenue rather than service-specific charges. In Alberta, many communities charge rates for water services, and some may charge rates for wastewater and drainage services. Most communities do not charge rates for roads, sidewalks, bridges, or other transportation services.

The relationship between cost and rate

Rates are often quantified for services that can be directly tied to consumption. For example, a cost per cubic metre can be applied to each household or business for water consumption. We establish a rate for solid waste consumption based on the size of the container that you use. In some instances, we can establish a charge (in the form of a toll) for using a specific road, or segment of a road.

While it may seem simple to establish a rate based on consumption, how are we establishing the rate? Do we know how much it costs us to deliver the service? Or are we simply establishing a comparison with what another municipality is charging?

What about services that do not directly relate to consumption? Although we do not charge a specific rate for these (e.g. roads, parks, protective services, etc.), it is important to understand how much it costs to deliver these services as part of understanding the relationship among costs, revenues, and levels of service.

The complexity of cost recovery

In a simple scenario, a municipality would determine how much it costs to deliver each service to their desired level and then charge the users an equivalent rate to cover these costs. This is known as full cost recovery. However, local government does not operate within this simple scenario and determining the relationship between level of service and cost recovery is far more complex.

While we can establish user pay systems for some services, many will be covered through revenue collected from taxes across the municipality. How do we decide how much of the costs to recover for each service (i.e. full-cost recovery, a portion of the costs, or fully subsidized)?

There is no singular formula or answer to this question, other than "it depends". Local context plays a critical role in informing how you think about and determine your strategy for cost recovery. However, a consistent factor across municipalities when determining either rates or a cost recovery strategy, is the importance of understanding how much it costs to deliver the service.

WHAT THE MUNICIPAL GOVERNMENT ACT SAYS ABOUT SERVICE DELIVERY AND COST RECOVERY

When we think about local government's role in delivering services, the Municipal Government Act is often referenced as the guide directing the municipal mandate for service delivery. However, Section 3, which outlines the purposes of a municipality, states in 3 b) that one of the purposes is "to provide services, facilities, or other things that, in the opinion of council, are necessary or desirable for all or a part of the municipality." This provides great flexibility for council in determining which services to provide, though begs the difficult follow-up questions:

- How do we determine what is necessary vs. what is desirable?
- Is this service universal for all the municipality or just a part? Which part? Why?

Beyond answering those questions around which services to provide, it also opens the door to examine whether the municipality has the capacity to provide those services (i.e. staff, equipment, expertise, money, etc.). Is the delivery of these services considered in the public good and, therefore paid for through tax revenue, or should these be covered through a user-pay system and defined rates or fees? The Municipal Government Act does not provide specific direction as to what you should charge for services – it is up to your organization to understand your context and develop an approach to charging for service that aligns with your goals and financial capacity.

Factors to consider in decisions about what to charge

With no direct answer for what to charge, this raises a series of questions requiring multiple perspectives for consideration in understanding the trade-offs required as part of cost recovery analysis for each type of service. The following perspectives, while not exhaustive, illustrate the multiple factors that will be considered as part of understanding how to consider cost recovery through your own context.

While these are presented as individual factors, it is important to understand the interconnections among all of them, which helps to illustrate the challenge in making decisions around levels of service and the expected level of cost recovery through user fees and rates.

- **Our collective social contract:** When we consider specific services through the lens of the broader public good, inevitably some form of subsidization occurs through tax revenues that is meant to decrease any direct user fee. These can come in the form of services/facilities that provide a broader societal benefit, like parks, recreation, or community facilities. This can also include services important to the broader community that are difficult to quantify through a consumption/use-based rate or fee, like roads or protective services. In these instances, the municipality may fully cover these types of services through tax revenue.
- **Fairness:** While you may have determined the different services that are considered part of the broader public good and worthy of subsidy, this introduces the question of what is fair. Depending on the service, you may need to consider whether it makes sense to deliver the same level to all areas of the community or to all users of the services. Your definition of level of service and user groups is an important part of understanding what is fair to charge different groups for service. Beyond services that are subsidized through tax revenue, this also applies to services that apply user fees as well. Looking at the concept of fairness through a different lens, the local government may determine that a particular service should no longer be subsidized and now be fully user-pay. How will this impact those individuals or families that do not have the means to afford those rates, yet rely on the facility/service? How are we thinking about and informing these decisions around establish these rates and/or subsidies through the lens of what is fair?

Fairness Example:

Does it make sense for a citizen living in a mature neighbourhood/established hamlet to pay the same for water/wastewater as it does for someone in a new neighbourhood that required significant investment to extend new infrastructure?

- **Affordability:** One of the important aspects of the relationship among the level of service, the cost of delivery, and revenue is evaluating if you can afford to continue delivering the service to the expected level or, in some cases, if you can afford to deliver it at all. Beyond the existing services, this also applies to the constant demand for new or better facilities/services. It is reasonable to assume that nearly every citizen in nearly every community wants access to as many amenities as possible, while paying as little as possible. There are many examples of local governments making decisions around investments that assume if we only build/establish this new facility/service then that will be the catalyst we need to incentivize growth and development, which will translate to additional revenue. While this may work as a local catalyst, have you fully understood the financial consequences if it does not work? Even if it does work, do you have the revenue generation needed to effectively operate and maintain the facility over the short and long-term?

Affordability Example:

You may determine that you can only afford to keep your pool open on weekends or in some cases you may determine that you can no longer afford to operate your pool.

- **Sustainability:** In service delivery, sustainability is directly connected to long-term affordability. If your municipality provides a service to an expected level without an understanding of costs and the fluctuations in revenue, the municipality becomes vulnerable to any disruptions to the costs or revenues. These disruptions could include things like decreases in provincial funding or tax revenue, requiring trade-off decisions the municipality has not faced before. When the relationship between cost and revenue becomes unbalanced, then continuing to provide that service at the expected level becomes unsustainable, requiring difficult decisions as part of a reactionary response. Do we lower and/or eliminate the service? Do we establish a new user fee/rate? Do we raise taxes across the board to maintain the same level of service?
- **Priorities:** When considering priorities through the lens of cost recovery it is important to understand who established these priorities and how they were established. For example, are these priorities defined through a Council strategic plan or are these priorities defined through a significant community engagement exercise as part of a Municipal Development Plan or Community Visioning exercise? Once we know who directed the creation of these priorities, the next important question to ask is how were they developed? Were these priorities developed with consideration to the financial implications of reality?

Adjusting charges to reflect a changing reality

Decisions about how to approach cost recovery should not be a one-time event, but rather a recurring process as part of implementing your asset management strategy. There are many situations that may prompt you to revisit your evaluation of service affordability and charges – some of these are listed below.

- **Changes to your fiscal reality:** as costs and revenues ebb and flow, you will need to periodically re-evaluate how you are addressing cost recovery.
- **Available tools and charging mechanisms:** as the context of your community changes, you will need to re-evaluate the tools, mechanisms, and policies that you use to address fees and rates associated with service delivery (e.g. increasing permit/application fees, introducing off-site levies, charging for parking, etc.).
- **Changes to risks:** changes to the risks of service delivery can prompt additional spending to maintain risk tolerance or levels of service – this increase in cost to mitigate risk will need to be recovered, or the level of service or risk tolerance may need to change.
- **Changes to risk tolerance:** as elected officials turn over through election cycles the risk tolerance of the local government may change, becoming either more aggressive and willing to make larger-scale investments, or conservative, reducing the amount spent on service delivery.
- **Community changes:** as you experience population growth, decline, or relative stability, the one constant is that things are always changing, which will contribute to the demand for either different services or different levels.

Activity

1. What are the risks of not recovering the cost of services?

2. What are the risks of valuing cost recovery over the social benefit of services?

LEARNING GOAL 4: Practice articulating the cost of services

Many of our day-to-day business and interactions are related to money. Even though we have a lot of practice, it can still be hard to talk about, especially when it comes to what the actual costs of delivering a service. Confronting the affordability and sustainability questions can be challenging to do individually, let alone as a group.

Some tips for approaching the conversation about the cost of services:

- Tell the story of services and why they're important
- Be direct
- Be clear
- Lay out the facts of what is known
- Clearly state assumptions
- Where possible, highlight the difference between cost and rate

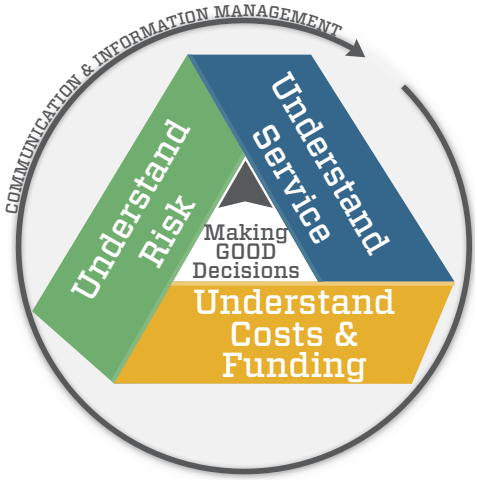
Activity

1. As an asset management team, put together a quick presentation to share the information you've collected about your services so far. The facilitation team will provide you with a PowerPoint template to help you with this.

Module 2 – Connecting Level of Service to Risk

LEARNING GOAL 5: Make direct connections between level of service and risk

To date, most of the content for the Level 2 workshops have been focused on the services a municipality provides and the costs of providing a certain level of service. However, this is not the full picture, as risks and opportunities need to also be considered when making good decisions about the use and care of infrastructure to deliver services. Remember this diagram from the Alberta Asset Management Handbook & Toolkit?



There are always trade-off decisions about service, risk and cost that need to be made. Now that you have a good understanding of the level and cost of service for your selected service(s), we are going to draw some connections to the risk trade-offs of providing that level of service.

Risk Basics

As you'll recall from the Level 1 workshops, risks are events or occurrences that will have undesired impacts on services. When assessing risk, it is important to consider both the impact of the risk and the likelihood of occurrence.

Risk = Impact x likelihood

Understanding where risks may exist is important to maintaining services and managing assets effectively. Risks cannot be eliminated, and sometimes mitigating risks can be expensive. As an organization, you may decide that some risks should be tolerated. Tolerating risks is perfectly acceptable, as long as it is an informed decision to tolerate risk.

- **Asset risk –** describes the risk of an asset failing to perform the way that is needed to deliver a service (.e.g., a specific roadway may be subject to washout with a certain flood event)
- **Strategic risk –** describes a change that would affect your ability to achieve municipal objectives e.g., flooding can cause a shift in resources away from achieving some of the community's strategic priorities
- **Vulnerability –** the inability to withstand an event. This is related to a community's ability to manage risk

Managing risk is not always as straightforward as eliminating risk, and every community has a different level of risk tolerance. In some cases, a community can mitigate risks but not eliminate them altogether. A road may be at risk of flooding and washout with a certain intensity of storm due to an undersized culvert that allows the local creek to pass under the road. The risk is managed by implementing a program to check and clean the culvert of debris every week to maintain the maximum possible flow capacity. However, the culvert is still a point of vulnerability, because a large event storm can still inundate the culvert and flood the road.

Asset management involves the consideration of a community's risk tolerance: the level of risk the municipality can reasonably handle. Attempting to reduce all risk as much as possible is prohibitively expensive and unnecessary. Municipalities and their constituents understand that things aren't going to be perfect 100% of the time – but the important things need to be pretty good most of the time. Your risk tolerance will be informed not just by the magnitude of the risk (the consequence it will have and the likelihood that it will happen) but also the cost of managing or reducing the risk.

Risk management refers to the process of identifying and assessing risks, identifying and evaluating actions that can be taken to reduce risk, and implementing the appropriate actions. Risk management is an iterative process, meaning that the desired result is achieved through repeated efforts, rather than through a single action.

Connecting Level of Service to Risk

Level of service identifies attributes like reliability, safety, and capacity. Risk articulates what happens when the demands or stresses on a service and its infrastructure impact those attributes in an undesirable way. Connecting level of service to risks can be helpful in articulating not only the importance of the existence of the service to the first place, but also the importance of maintaining or changing the levels of that service.

For example, consider the ongoing COVID-19 pandemic:

Many municipalities have had to manage risks to service delivery related to the global pandemic. Some systems that are demand-based may suddenly become less utilized, like public transit for commuting. Others may suddenly see greater or different use, like roads being shut down to allow for more room for physically distanced foot traffic.

REFLECTION: how has the pandemic affected the demand for some of your municipal services? What has surprised you about this?

Connecting level of service to risk can be done by using level of service language and considerations in evaluating risks and using level of service language to communicate those risks.

- Some examples of consequence in level of service language:
- Will service delivery be interrupted? Will lots of people be impacted?
- Will the level of service be impacted? Will we be able to meet our targets?
- Will there be negative health/safety/environmental impacts?
- Will other services be threatened?

Some examples of likelihood in level of service language:

- Does the condition of required assets indicate that there may be a failure soon?
- Does the historic performance of the asset indicate that the assets are not performing as needed, and are therefore increasing risk?

Roads Examples:

Consider the following characteristics of the service rural roads provide.

- Quality
- Quantity
- Reliability
- Comfort
- Safety
- Convenience
- Sustainability
- Resilience
- Emergency preparedness
- Longevity

Some of these service characteristics are more closely connected to risk than others. The cost of maintaining some of these characteristics to your desired levels may also be more than others. Examining how your community delivers this service and what you're willing to spend money on can provide you with some indicators to your organization's risk tolerance.

For example, many communities spend a lot of time thinking about their road surfaces. They talk about things like potholes in asphalt roads and washboarding on gravel roads. They likely spend a lot of money fixing potholes or re-grading and gravelling their roads. The service the roads provide is to enable transportation from one place to another. In many communities there are other assets that support transportation like bridges and culverts that allow for the road network to cross major drainage courses. While still essential to the overall service of transportation, these other assets may get less airtime and investment than the road surface. In this case, the community implicitly considers the risk of a major flooding to be less than the risk of a rough road surface. While both aspects of the service are important, should one be more important than the other? This is up to the community to decide.

Activity

1. What are the most important risks to your selected service to consider in trade-off conversations between level of service and cost? What is your organizational tolerance for these risks?

2. What are your minimization or mitigation options? Will these options result in a higher cost of service delivery?

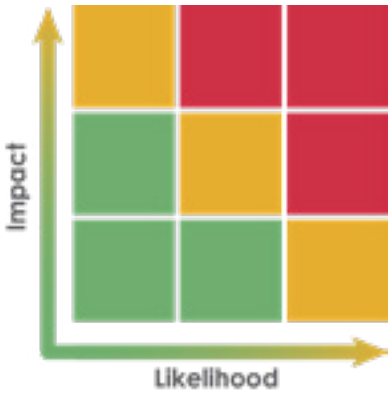
LEARNING GOAL 6: Identify vulnerabilities in infrastructure and risks to service delivery

Climate Change and Risks to Service Delivery

Climate change is affecting our evaluations of the impact and likelihood of certain events. This is causing municipalities to consider natural disasters like flooding and forest fires when planning for the future of services and supporting infrastructure.

Climate change is directly connected to asset management, specifically through risk and level of service, in the following ways:

- Design parameters for which an asset was built may no longer be adequate.
- Increased wear and tear on assets may lead to more imminent investment needs, or higher costs over the long run.
- Extreme weather events (e.g., storms, temperature extremes and fluctuations, floods, etc.) may destroy or damage assets well before they have reached the end of their expected useful life.
- A higher level of service or increased maintenance may need to be provided to deal with the impacts of climate change.



An event that is considered a low risk today (or green in a risk matrix like the one above) may become a medium or high risk due to a changing climate. For example, a road recently constructed outside of a river floodplain may eventually be within the floodplain during a 1:100 year event due to the higher intensity of storms that cause higher flow more quickly in the river. The likelihood of the road being impacted by a flood event increases, increasing the overall risk associated with that event.

Efficiencies can be found by addressing climate change risks with other risks. For example, a municipality may have identified some risks to a few large culverts below major roads. The culverts are aging and the bedding around the culverts are showing signs of erosion. Without considering climate change, the municipality may just replace the culverts with similar culverts. However, if extreme weather events from climate change are considered, the municipality may choose to replace the existing culverts with larger sized culverts to accommodate projected increases in flow. In this case, the municipality has now managed current and future risks with a single project and only incremental additional costs.

Managing asset vulnerabilities is part of planning and making appropriate investments in infrastructure. It requires considering several factors that are part of asset management:

- Understand risks and vulnerabilities and how they impact your ability to deliver services.
- Evaluate the reduction of risk/vulnerability vs. the cost of implementing the adaptation action.
- Consider how some infrastructure also protects other infrastructure
- Consider how some adaptation strategies may have multiple benefits of co-benefits that include adaptation to climate change and achieve other priorities, such as habitat rehabilitation, improved air quality, or attraction of businesses.
- Identify potential adaptation strategies and actions.
- Prioritize activities based on return on investment (e.g., asset management approach), the availability of co-benefits.
- Prioritize investment based on anticipated timing of impacts/risk (additional climate change consideration) and how risks will change over time.
- Incorporate climate change considerations when considering the replacement or renewal of infrastructure for other reasons, or the construction of new assets.
- Strategies for managing risk related to climate change include both capital and operations and maintenance actions. Improved roads and drainage operations and maintenance or water use restrictions are both examples of operations and maintenance adaptations to climate change.

Did you know?

The Municipal Climate Change Action Centre (MCCAC) is a collaborative partnership among AUMA, RMA, and the Government of Alberta. It delivers funding, technical assistance, and education to municipalities and a variety of organizations to reduce the impacts of climate change and enhance climate resilience. https://mccac.ca/

Impacts on service delivery and assets

Asset management keeps the focus on service delivery in changing conditions. It helps you focus on your goals. Rather than getting swept up in how overwhelming climate change may be – especially when there are so many unknowns – asset management keeps the focus on what services your community delivers, and connects how some services (e.g., roads) are dependent on others (e.g., stormwater system capacity).

Below is a summary of events related to climate change and potential impacts to service delivery:

Flooding

Risk to service delivery

- Overwhelm or damage roads, often times preventing access to essential services or preventing the transport of goods and services
- Damage to facilities can minimize or remove the ability to provide services through that facility
- Existing assets such as water, sewer, storm water can be damaged through floods
- A community's ability to provide emergency services could be limited, either due to inability to access equipment, inability to access certain locations or because of overwhelming need for those services
- The ability of a municipality to communicate to the public may be impacted through flooding (i.e. damage to internet, power outages etc.)
- The efforts required to respond and recover from floods can also limit a municipality's capacity and ability to provide other day to day services.

Infrastructure vulnerability

Existing drainage and flood protection infrastructure may not be built to withstand more intense and/or frequent flood events. If flood mitigation or protection measures fail, there can be a cascading negative impact. In addition to considering social and environmental impacts, it is important to consider the costs associated with building to higher standards vs. the likelihood of an event and consequences/costs associated with the event (i.e. cost of building a berm a couple of meters higher vs. the costs of replacing infrastructure damaged due to the berm overtopping).

Forest fires

Risk to service delivery

- Cut off road access
- Damage or destroy above ground infrastructure
- Increase or overwhelm the demand on fire protection infrastructure and service.
- Long-term impacts to ecosystem services like natural areas that are enjoyed by the public
- Short-to long-term impacts to soils in the area, potential for increased erosion due to sudden decrease in vegetation
- Long-term impacts to surface and/or groundwater quality that may affect water treatment processes
- Long-term impacts to the physical and mental health of first responders, affecting emergency services

Infrastructure vulnerability

If the fire travels into a community with a high density of services like a city, town, or village, many different services and infrastructure will be immediately and severely impacted. The vulnerability of a community to the impacts of fire depends on the surrounding landscape, climate, and implementation of fire protection measures.

Drought

Risk to service delivery

- Impacts to water supply and/or quality, which may result in not having enough water to meet the public's demand.
- Challenges in treating and distributing water due to changes in usage
- Increases the risk of wildfires
- Negative impacts on natural assets like forests and wetlands – the ecosystems services they provide may no longer exist

Infrastructure vulnerability

Reliance on one water source may leave a community particularly vulnerable to the effects of drought.

Did you know?

You can measure your progress as you develop and implement a climate adaptation plan or incorporate risk planning into your asset management plans using the FCM Climate Adaptation Maturity Scale: https://fcm.ca/en/resources/mcip/tool-climate-adaptation-maturity-scale

Impacts of Climate Change on Chosen Service

How do you consider the impacts of climate on services?

- Start by understanding projected changes to climate using a tool like the Climate Atlas: https://climateatlas.ca/
- Based on projected changes, identify potential impacts to services and infrastructure
- Are there some services or geographical areas that are more vulnerable than others?
- Compare these potential impacts to your current service levels and risk tolerance. Are you going to have to adjust how you deliver service to respond to these changes?
- What might need to be done to mitigate these risks and vulnerabilities?

Activity

1. Review the Climate Atlas data and projections for your community. Discuss the potential impacts to your services using the following guiding questions:
    - What impacts will climate change have on the infrastructure that supports this service?
    - Does climate change affect the delivery of this service? If so, how?
    - Can current asset performance and service levels be sustained if these projected changes come to pass?
    - Where are you most vulnerable to adverse impacts on services resulting from climate change?

Module 3 – Checking in on Asset Management Progress

It's time to review your progress! The FCM Asset Management Readiness Scale is one way to measure and monitor your progress in Asset Management. It is also a requirement of the program as FCM wants to understand how this program is supporting communities in progressing on their asset management journeys

Activity

1. Take some time as an asset management team to review and complete the FCM Asset Management Readiness Scale.

RESOURCES

FCM Asset Management Readiness Scale: https://data.fcm.ca/documents/resources/mamp/asset-management-readiness-scale-mamp.pdf

FCM Building Blocks of Asset Management: https://data.fcm.ca/documents/resources/mamp/building-blocks-of-asset-management-mamp.pdf

What's Next?

In workshop 3, we will explore engaging with the public on levels of service. You have spent a lot of time and effort understanding your current level of service, what it costs, and some of the risks to service delivery, now it's time to get some feedback on whether or not these services are meeting the needs and expectations. Between now and the next workshop we suggest:

1. Share what you've learned and collected about your current level of service and cost of service with decision-makers.
2. Review your public participation policy. Does it provide guidance on how to engage the public in conversations and feedback about services?
3. Collect and review any previous public engagement information you have. If relevant, how does this feedback compare to the current level of service you've defined?