

AM Ontario Working Group Dec 2017

Halton Presentation – Applying Risk to
Investment Planning

Agenda

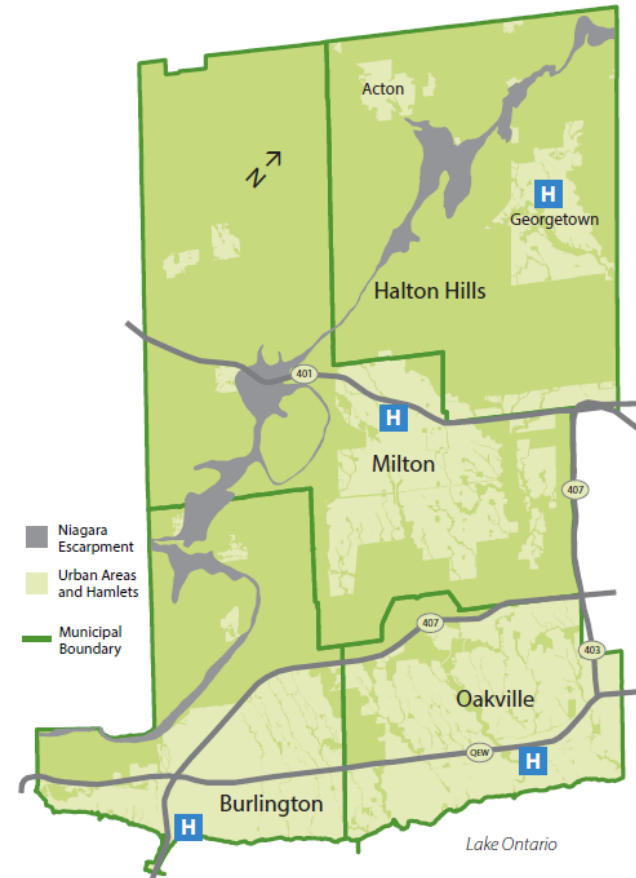
- Overview of Halton Region
- Halton Region Risk framework
- Application of Risk Framework
- Future Application of Risk

Overview of Halton Region



Our Customers

Public Works delivers water, wastewater, waste, and road services to 530,000 customers across 4 municipalities



Our Assets

To deliver services to customers, Halton Region Public Works owns and operates:



Water

- 12 water purification plants
- 15 booster stations
- 22 reservoirs
- 2,218 km of water main



Wastewater

- 7 wastewater treatment plants
- 88 pump stations
- 1,806 km of sewer main



Roads

- 1,013 lane km of roads
- 225 bridges and major culverts



Waste

- 1 open landfill
- 11 closed landfills

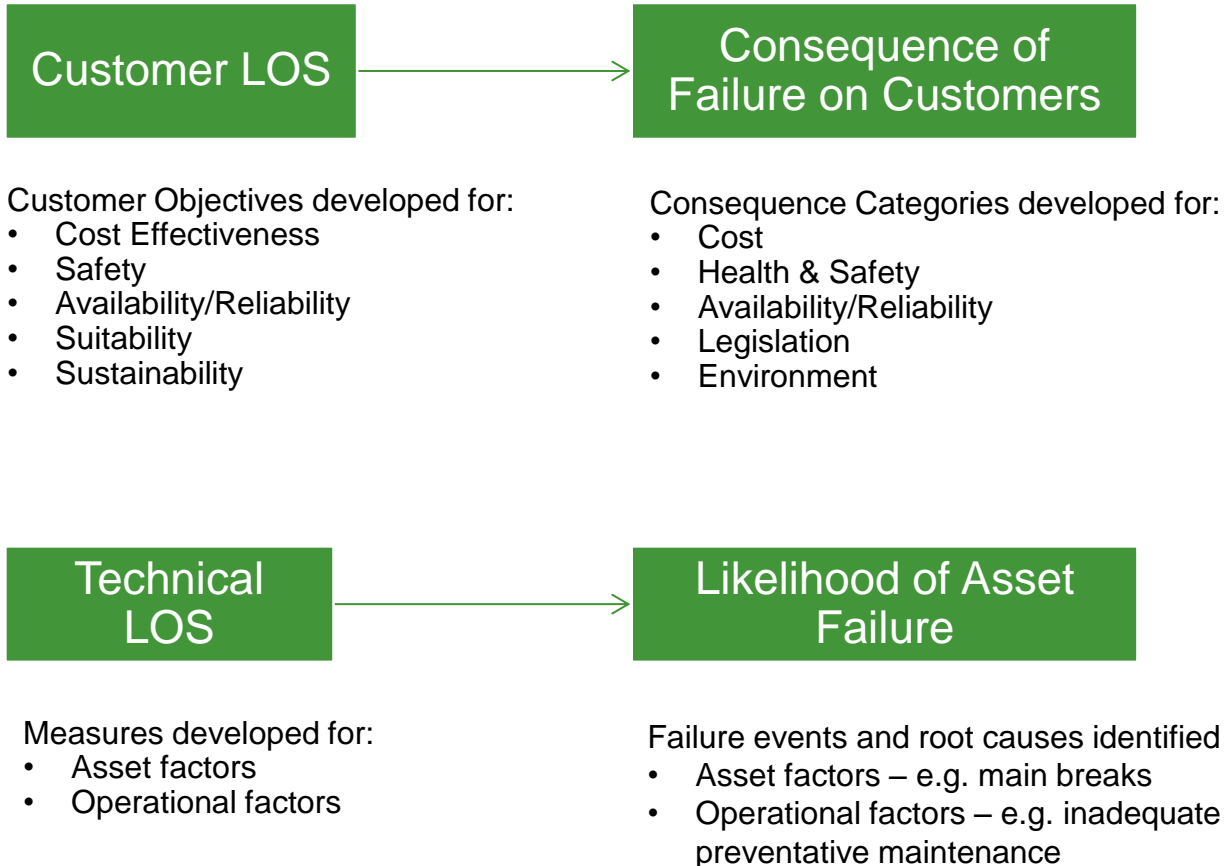
Halton Region Risk Framework



Risk Equation

$$Risk = Likelihood \times \sum Consequences$$

Linkage between LOS and risk



Consequence of Failure – Water Example

Customer Objective

Reliability -
Unplanned service interruptions are minor



Consequence Scale (Availability/Reliability)

C1 Insignificant	C2 Minor	C3 Moderate	C4 Severe	C5 Catastrophic
Small number of customers experiencing disruption to water supply/pressure (less than 100 properties)	Localized service disruption to water supply/pressure (100 to 500 properties)	Significant localized disruption to water supply/pressure (500 to 1,000 properties)	Major service disruption to water supply/pressure (1,000 to 10,000 properties)	Region wide service disruption to water supply/pressure (greater than 10,000 properties or loss of services)

Likelihood of Failure – Water Example

Technical LOS

of breaks per
100 km of
watermain

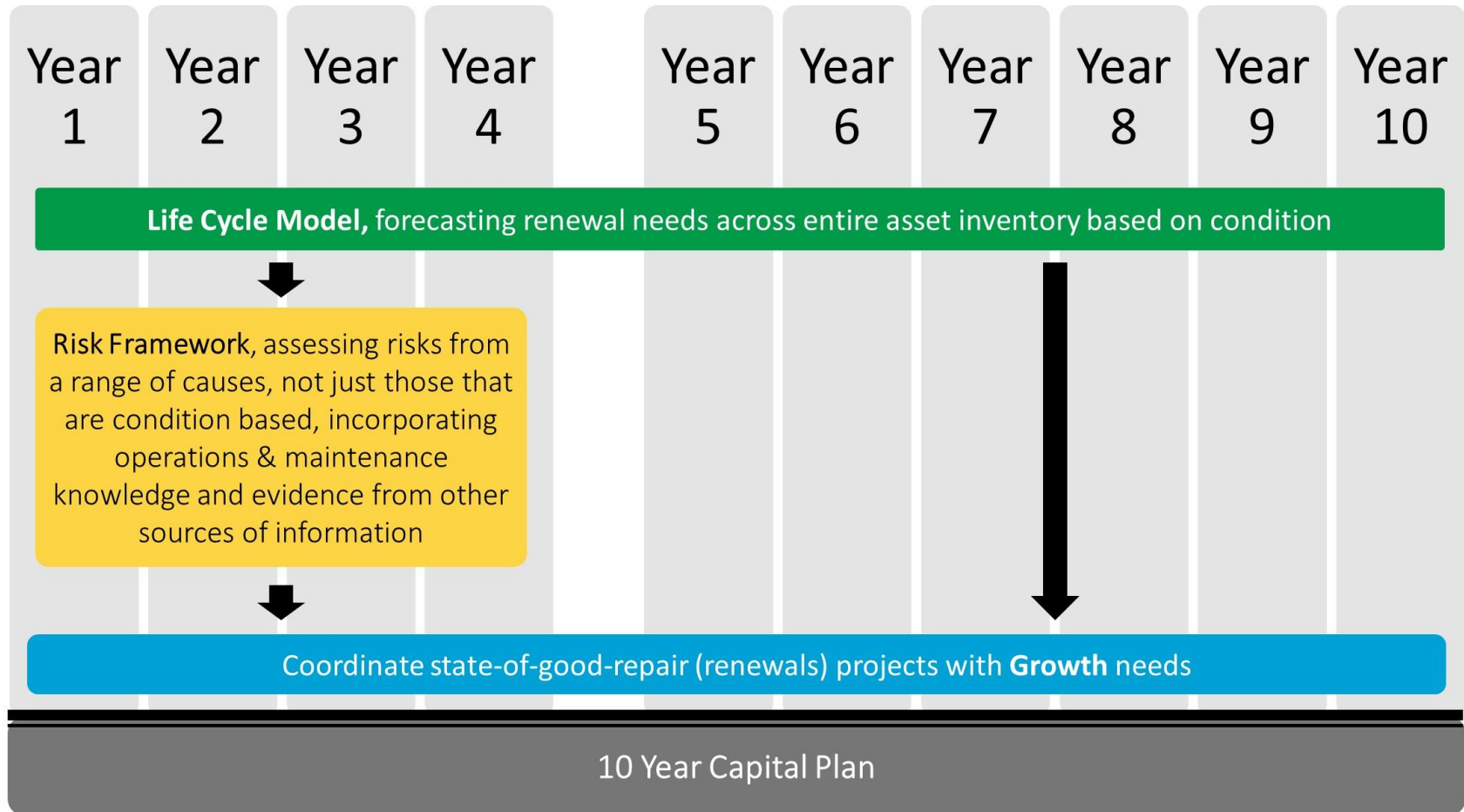


Likelihood Scale

1 - Improbable to Rare	2 - Unlikely	3 - Possible	4 - Likely	5 - Certain
Every 10+ years	Every 5 to 10 years	Every 3 to 5 years	Every 2 to 3 years	Occurs every year

Application of Risk Framework

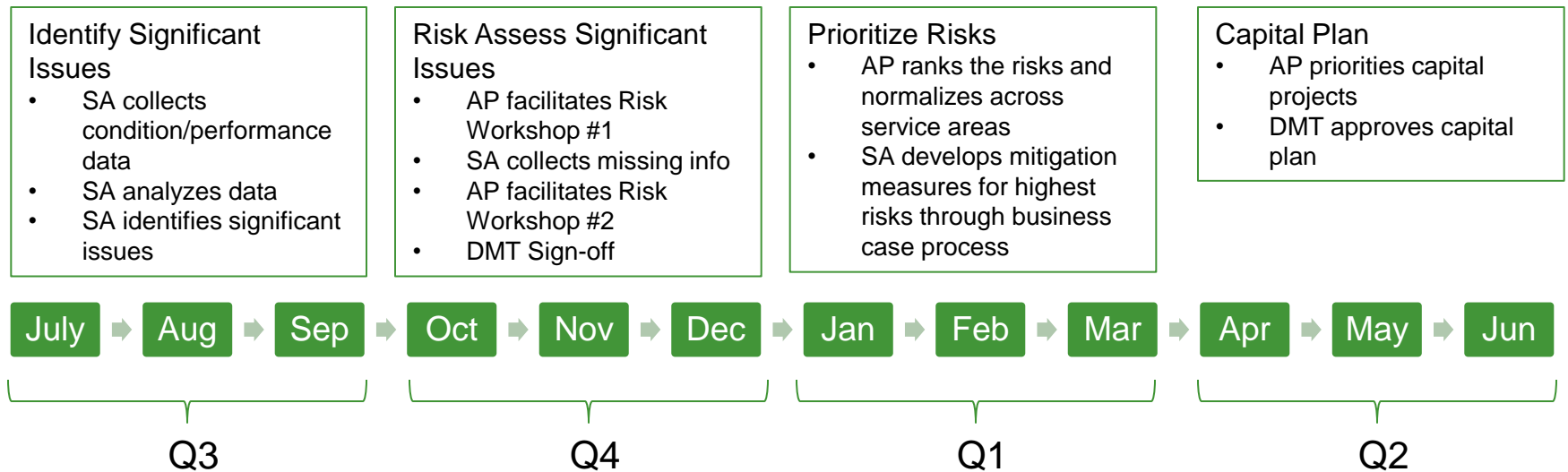
Application of Risk in Capital Planning



Risk Procedure

Public Works Stakeholders

- SA – Service Areas (include planning, operations, maintenance)
- AP – Asset Planning
- DMT – Department Management Team



Risk Register

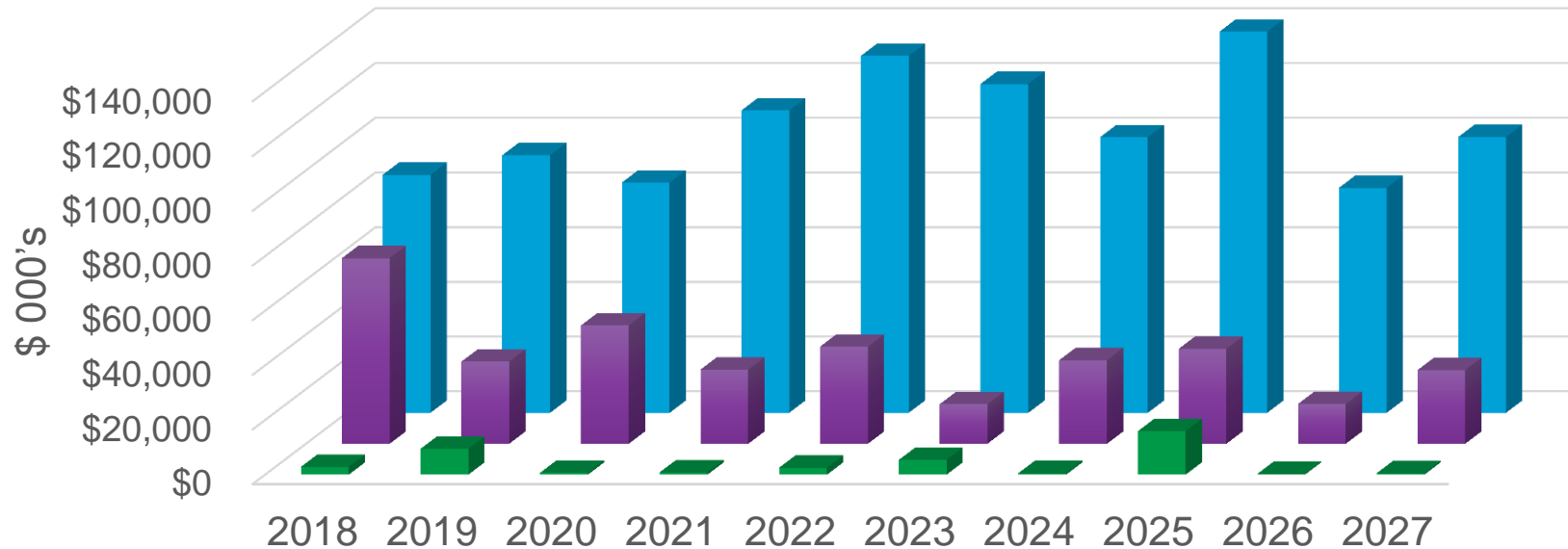
Risks are documented in a risk register for each service area

Municipality	Asset Hierarchy Level 3	Asset Hierarchy Level 4	Failure Mode	Root Cause Category	Consequences	Existing Mitigation	Likelihood 2017	Likelihood Reasoning	Cost	Health & Safety	Availability/Reliability	Extent	Legislation	Environment	Risk Score
OAK	Trunk Main	350mm DI main 407 highway crossing	break in a 350mm DI main	M3: Natural Age Related	Highway could wash out which would have significant repair costs and traffic diversion. Loss of supply to 500 properties and service would be out for 2 months. Some redundancy in system (low pressure and no fire protection). 407 has high volume so potential for serious injury. Large DI pipe has tendency for more severe breaks.	N/A	3 – Possible	50 years old DI pipe (expected useful life for Halton is 60 years)	C3	C4	C3	C5			66

Risk Process - Outcome

“Target 4.5% rate increase is lower than the 5.2% forecast from 2017 largely driven by adjustments to the capital financing based on the Asset Management Plan”

- 2018 Halton Region Budget Direction



■ Waste Management ■ Road Operations ■ Water & Wastewater



Future Application of Risk

Future Potential Risk Initiatives

Corporate Risk

- Aligning service area risk framework to corporate framework

Asset Systems Risk

- **Master Planning Process - Servicing Studies** – assessing system risk using the same risk framework

Asset Risk

- **Capital Planning Process** – continue to implement yearly risk process
- **Maintenance Planning Process** – assess critically using CoF model and develop preventative maintenance/ spares strategy

Project Risk

- **Project Delivery Process** – develop contingency budget across project portfolio based on risk framework