

Asset Management: Amherstburg's Past, Present, and Future

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PSD



The Town of
Amherstburg
ONTARIO

Agenda

- Case Study: Canadian Infrastructure (**15 min**)
- Case Study: State of Amherstburg 2016 (**45 min**)

Break (15 min)

- Overview of Asset Management (**90 min**)

Break (15 min)

- Developing the Asset Management Plan (**15min**)
- Roles and Responsibilities (**15min**)

Learning Objectives

- Aging infrastructure is an international risk, not just local
- Amherstburg faces similar challenges to many municipalities in Canada
- 2016 Asset Management Plan (AMP) indicated a large backlog of work, and fiscal challenges to ensure sustainable services
- Asset Management, as a practice, can provide a way forward
 - Understand trade-offs between costs, risks, and quality of Town services
 - Optimize limited funds by being proactive
 - Forecast long-term needs to ensure Town services are sustainable
- Updating the AMP, and developing an overall program, is key to success
 - This requires roles of council, executive lead, senior management team, and staff

Case Study: Canadian Infrastructure

Context: Canada

60%

of Canada's public infrastructure is owned by municipal governments.

\$1.1

Trillion. The total value of core municipal infrastructure assets.

\$80K

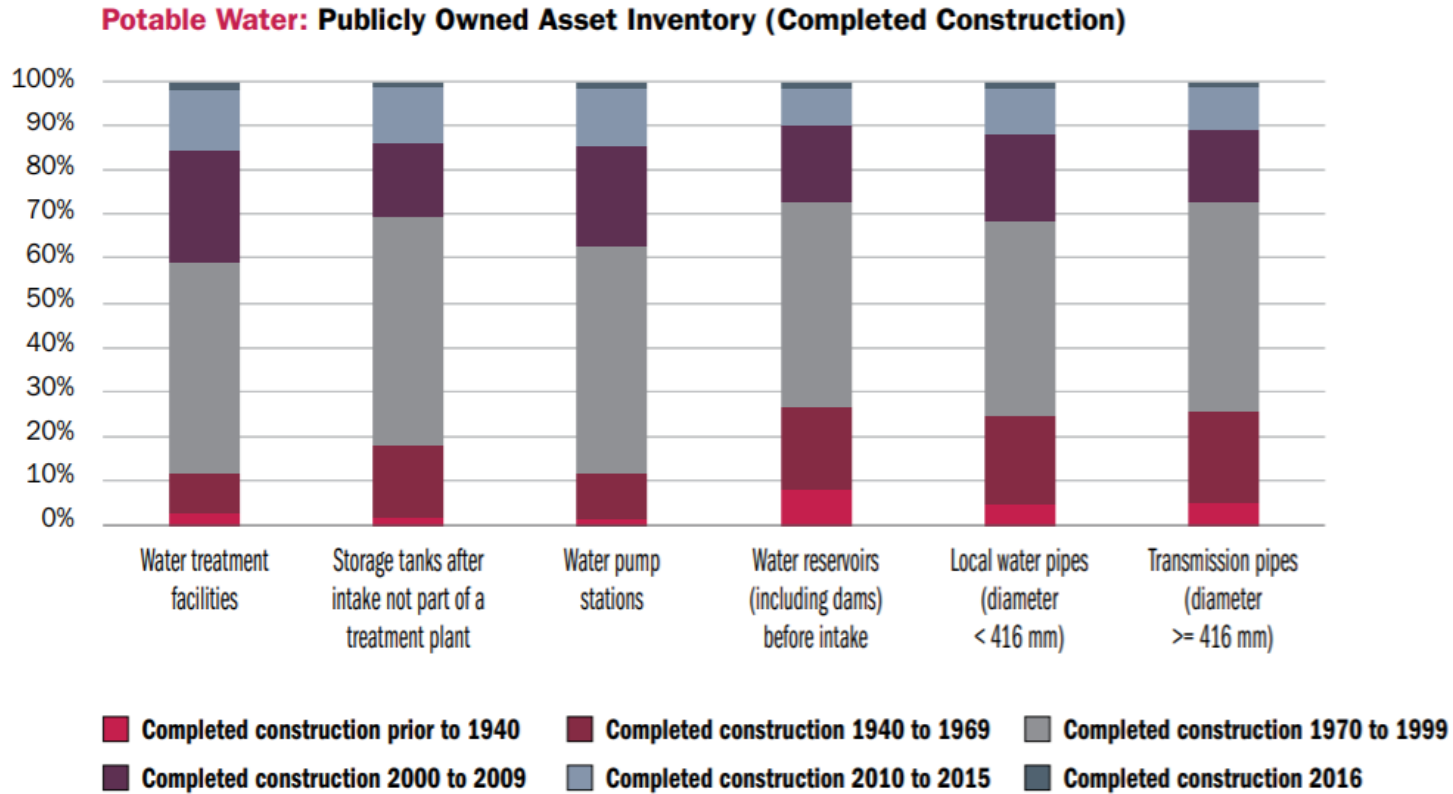
That's the shared value of the same assets between households.

35%

of municipal assets are in need of attention.

Water – Not of This Millennium

- Over 60% water infrastructure constructed prior to year 2000
- Nearly 30% of water reservoirs constructed before 1970



Roads and Bridges – Poor to the Moon

- There are nearly enough Canadian roads in poor or very poor condition to get us half-way to the moon

ASSET CATEGORY	SUBCATEGORY	POOR / VERY POOR	FAIR
ROADS, BRIDGES AND TUNNELS	Roads	146,255 km (16.4%)	201,283 km (22.6%)
	Bridges and Tunnels	9,661 Structures (12.4%)	20,502 Structures (26.3%)

2019 Canadian Infrastructure Report Card

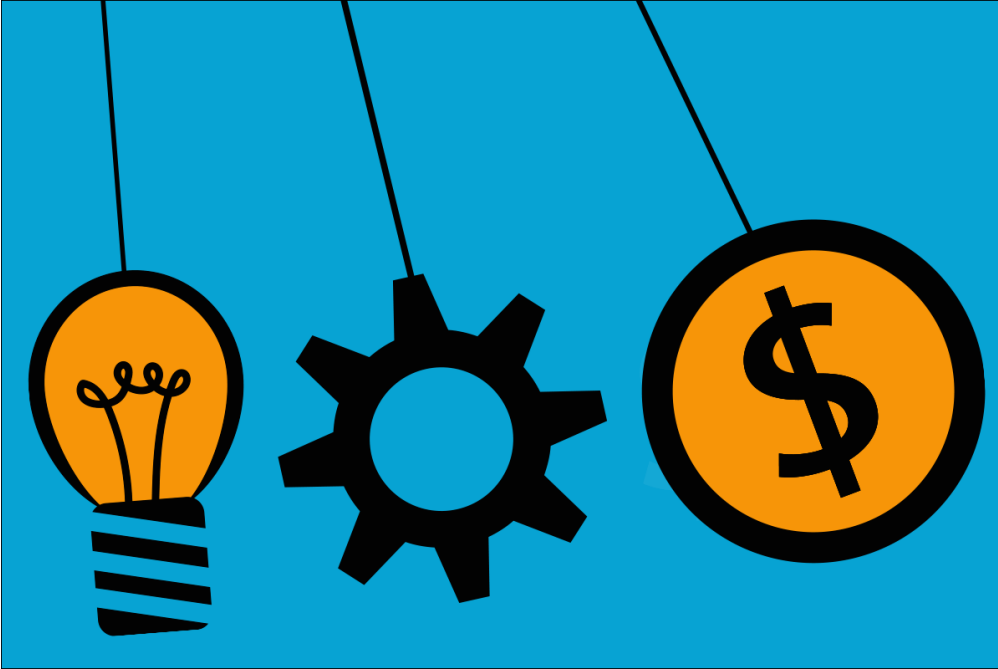


Recreation Facilities – Investments this Decade

- One in three recreation facilities will require a significant capital investment to address deteriorating conditions

ASSET CATEGORY	SUBCATEGORY	POOR / VERY POOR	FAIR
CULTURE AND RECREATION	Ice Arenas/Pools	564 Facilities (12.7%)	883 Facilities (19.8%)
	Arts and Culture Facilities	380 Facilities (8.6%)	721 Facilities (16%)
	Other Facilities	1,886 Facilities (8.6%)	4,972 Facilities (22.7%)

2019 Canadian Infrastructure Report Card



Underground Infrastructure – An Unseen Problem

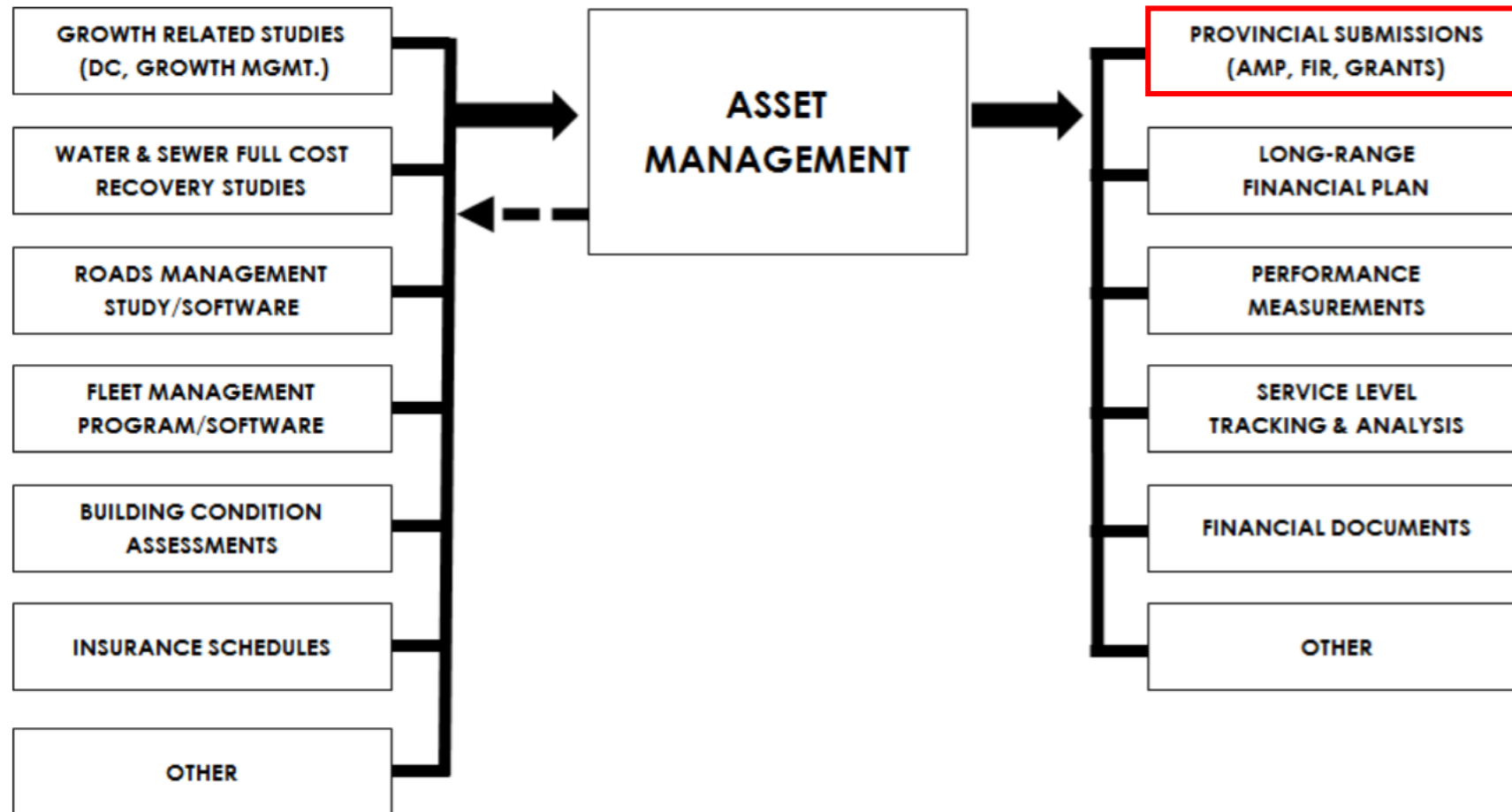
- Nearly 30% of water, storm and sewer mains are in fair or worse condition
- Extreme weather may place additional constraints on these hidden systems

ASSET CATEGORY	SUBCATEGORY	POOR / VERY POOR	FAIR
POTABLE WATER	Linear	17,788 km (9.6%)	32,641 km (17.7%)
	Non-Linear	573 Facilities (6.4%)	1,333 Facilities (15%)
WASTEWATER	Linear	16,350 km (10.8%)	26,211 km (17.3%)
	Non-Linear	1,386 Facilities (10%)	2,896 Facilities (20.6%)
STORMWATER	Linear	50,251 km (11.3%)	84,614 km (19%)
	Non-Linear	700 Facilities (4.4%)	1,866 Facilities (11.8%)

2019 Canadian Infrastructure Report Card



Asset Management Planning: Importance



Asset Management in Ontario: Past, Present, and Future

AM in Ontario: History

(2001-2007) InfraGuide

- A partnership between the Federation of Canadian Municipalities, the National Research Council and Infrastructure Canada produced best practice reports and e-learning tools for sustainable municipal infrastructure
- In 2003 the National Guide to Sustainable Municipal Infrastructure: Innovations and Best Practices (InfraGuide) was published

(2009) PSAB 3150

- Public Sector Accounting Board Handbook: Section 3150 – Tangible Capital Assets was published establishing standards on how to account for and report tangible capital assets in government financial statements

(2012) Municipal Infrastructure Strategy and Building Together Guide

- Required municipalities requesting infrastructure funding to show how projects fit within their asset management plans
- The Building Together: Guide for Municipal Asset Management Plans was published to help municipalities develop their plan

(2014) Federal Gas Tax Agreement

- The Administrative Agreement on the Federal Gas Tax Fund was developed to provide terms and conditions for the distribution of the Gas Tax Fund to municipalities in Ontario
- Municipalities were required to develop and implement an Asset Management Plan, prior to December 31, 2016

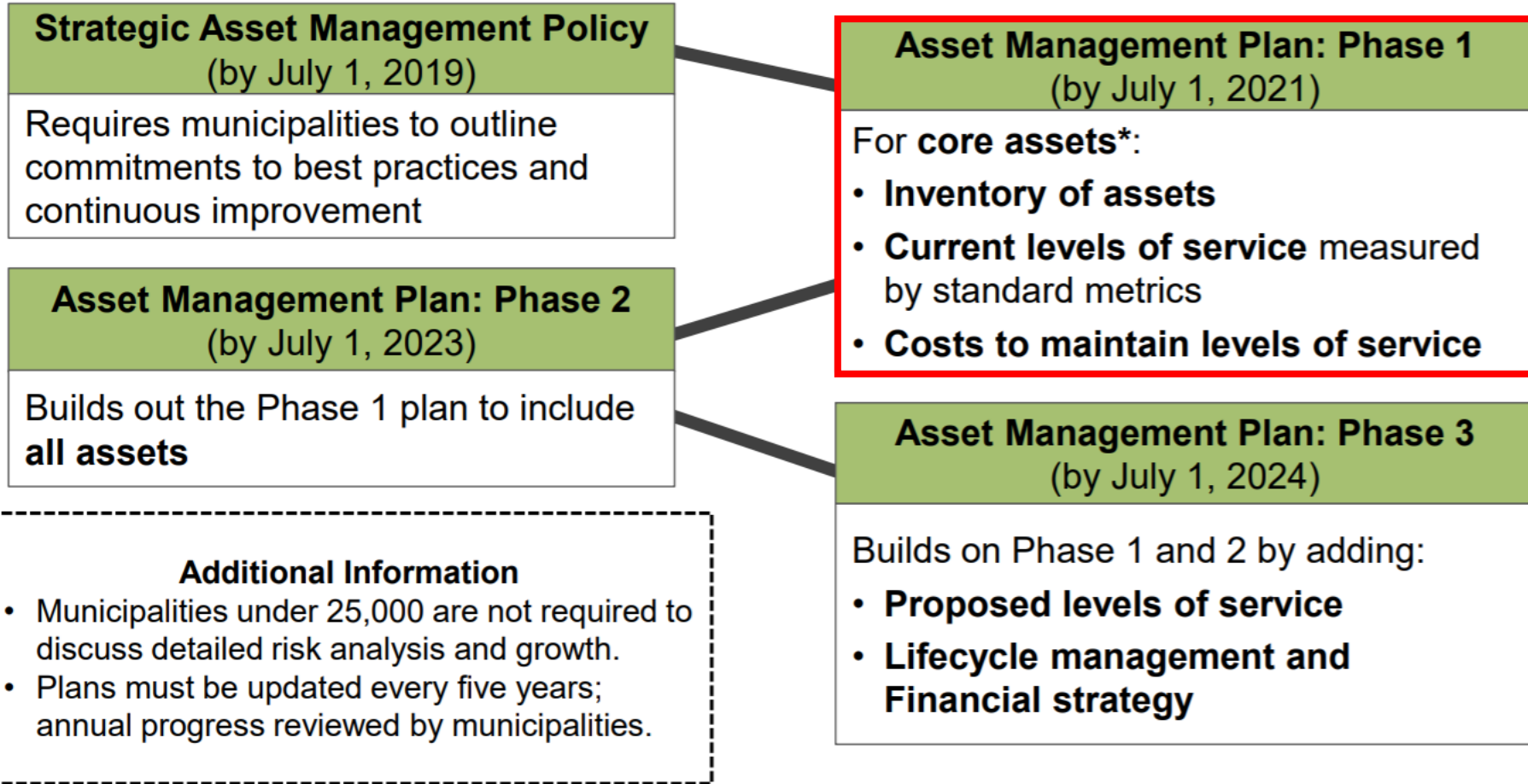
(2016) Infrastructure for Jobs and Prosperity Act - Ontario

- Provided the planning framework for the delivery of \$130 billion of infrastructure projects across the province over the next 10 years
- Outlined requirements for municipal asset management plans across three phases completed by January 1, 2022

O. Reg. 588/17

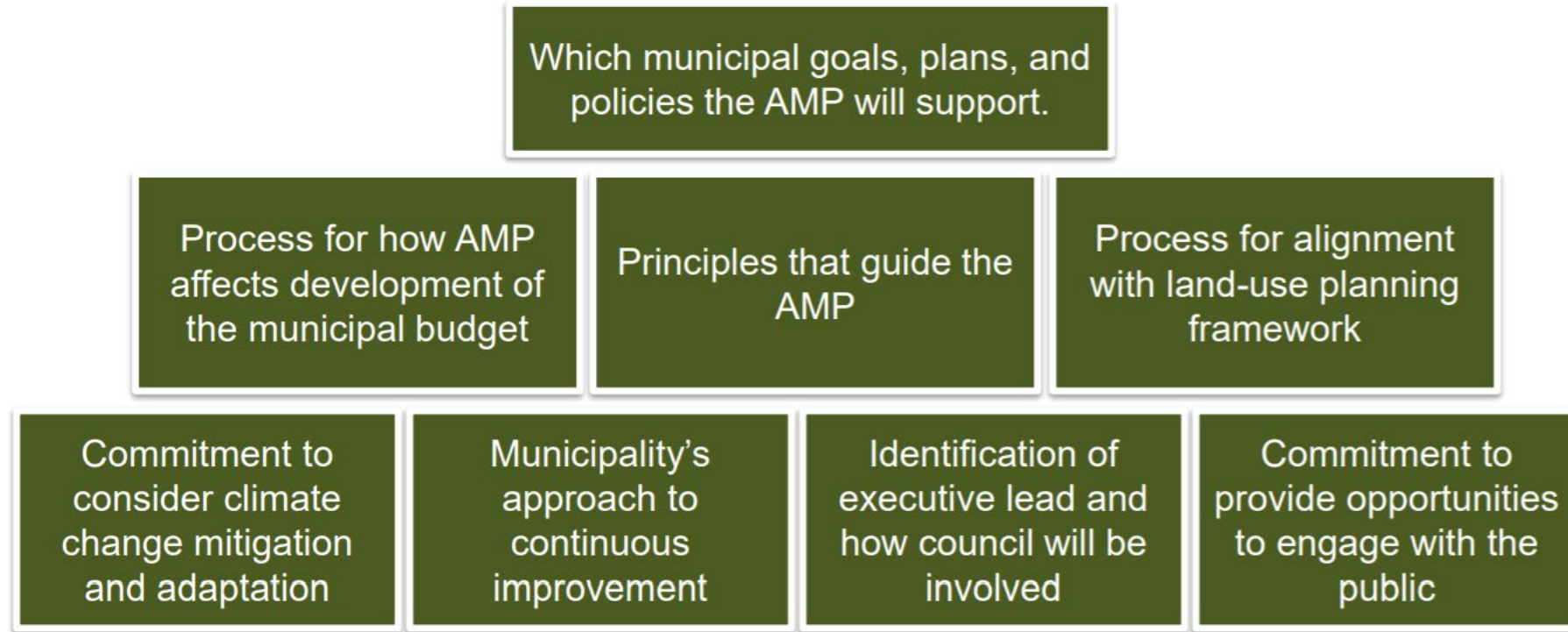
- First Strategic AM Policy by July 1, 2019
- **AM Plan for core assets by July 1, 2021**
- AM Plan for all municipal assets by Jul 1, 2023
- AM Plans must consider the state of assets, level of service requirements, lifecycle activities, managing growth and demand

O. Reg. 588/17 At a Glance



2019: Strategic Asset Management Policy

- The regulation requires all municipalities to develop and adopt a strategic asset management policy by July 1, 2019. The policy must include:



Strategic Asset Management Policy


- AM Policy should serve as the framework to implement your asset management program
- It defines:
 - What should be done?
 - How should it be done?
 - Who should be responsible?
- Must be communicated to all relevant stakeholders and reviewed regularly
- The commitment to the development and implementation of an asset management program
- A consistent approach to the long term management of municipal infrastructure assets



Amherstburg's AM Policy

- Approved November 2019
- Key Foundational Document for the Town's AM Planning
- Defines commitment to AM Planning
- Defines roles and responsibilities

POLICY

	Policy:	Asset Management Policy		
	Department:	Corporate Services		
	Division:	Finance	By-law No:	N/A
	Administered by:	Treasurer	Approval Date:	November 12, 2019
	Replaces:	Asset Management Policy – February 13, 2013		
	Attachment(s):	N/A		

1. POLICY STATEMENT

The Corporation of the Town of Amherstburg (Town) is committed to protecting and enhancing the quality of life of its residents by making the best possible decisions regarding Town assets in a way that provides targeted levels of service and manages risk in a cost effective manner. As such, all asset related decisions are anchored in the Town of Amherstburg's strategic plans and studies and in accordance with legislation that support the Town's long term economic growth and prosperity.

2. PURPOSE

- 2.1. This policy supports the Town in focusing its infrastructure efforts on managing risks, addressing priorities and meeting short and long term needs within the constraints of funding.
- 2.2. This policy describes the Town's objective to provide levels of service for present and future ratepayers and the community in the most effective and efficient manner, through the planning, design, construction, acquisition, operation and maintenance, renewal and disposal of assets.
- 2.3. This policy ensures the commitment and intention of the Town to plan, design, construct, acquire, operate, maintain, renew, replace and dispose of the Town's infrastructure assets in a way that ensures sound stewardship of public assets while balancing levels of service delivery and risk.
- 2.4. This policy ensures compliance required under Provincial regulation (O.Reg. 588/17 - Asset Management Planning for Municipal Infrastructure) that the Town prepare and adopt an Asset Management Policy.

3. SCOPE

- 3.1. This policy applies to all Town staff involved in Asset Management.
- 3.2. This policy applies to all Tangible (physical) Capital Assets of the town including but not limited to roads, sidewalks, bridges, water mains, sanitary and storm sewers, storm-water ponds, pumping stations, reservoirs, treatment plants, fleet, equipment, buildings and parks.
- 3.3. This policy shall be reviewed every five (5) years from the date it becomes effective, and/or sooner at the discretion of the CAO (or designate).

Ontario Municipalities Required to Develop AMPs

- Asset Management Plans (AMPs) Critical to ensure infrastructure sustainability
- Includes the current state of infrastructure, strategies to manage infrastructure, and the financial strategy to ensure sustainability



Municipal Asset Management Plans

All municipalities will be required to prepare an asset management plan in three phases:

1. Phase I would address core infrastructure assets and would be required to be completed by JULY 1, 2021.
2. Phase II would expand on Phase I by including all infrastructure assets in the plan by JULY 1, 2023.
3. Phase III would require further details to be provided for all infrastructure assets by JULY 1, 2024.

Today: O. Reg. 2021 Requirement

- Update Amherstburg's AMP
- Include the following for roads, bridges & culverts, water, wastewater, and stormwater:
 - Summary of asset portfolios
 - **Current** service provision
 - Strategies to maintain **current** service provision
 - Cost to maintain **current** service provision
 - Employment and population forecast



The 2016 Asset Management Plan for the

Town of Amherstburg

The Future: 2023 & 2024

2023

- Same as 2021, but extended to **all assets**
- **Updated** asset summary, costs, and forecasts

2024

- **Proposed** service provision
- Strategies to achieve **proposed** service provisions
- Costs to achieve **proposed** service provisions
- Risk and mitigation strategies of funding shortfalls



Case Study: Amherstburg's Position 2016

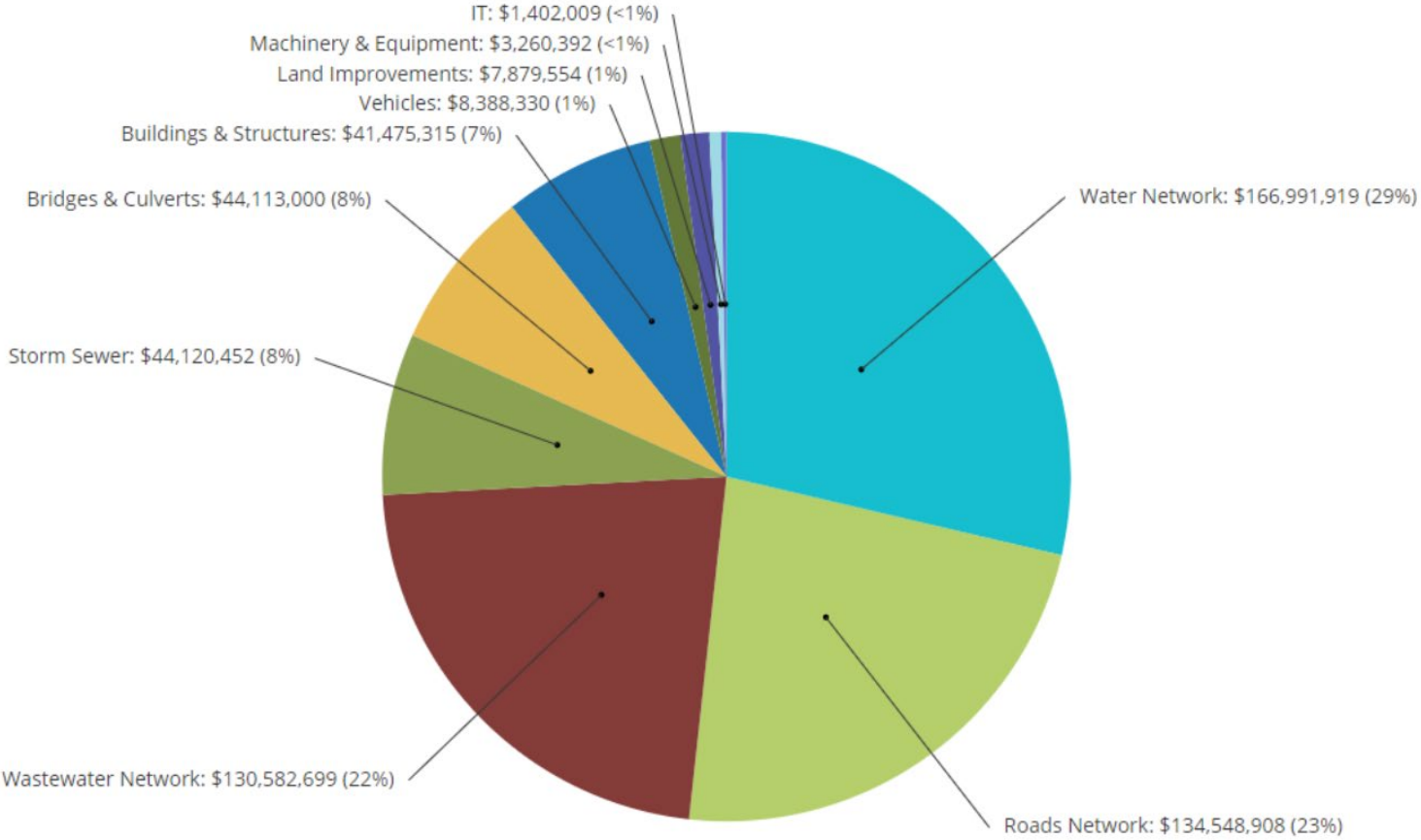
Amherstburg's Infrastructure Services

- Transportation network of roads and bridges to move people and goods
- Water distribution network to provide safe, quality drinking water
- Parks and recreation facilities to enhance quality of life
- Vehicles and equipment that support service delivery, including Fire and Police



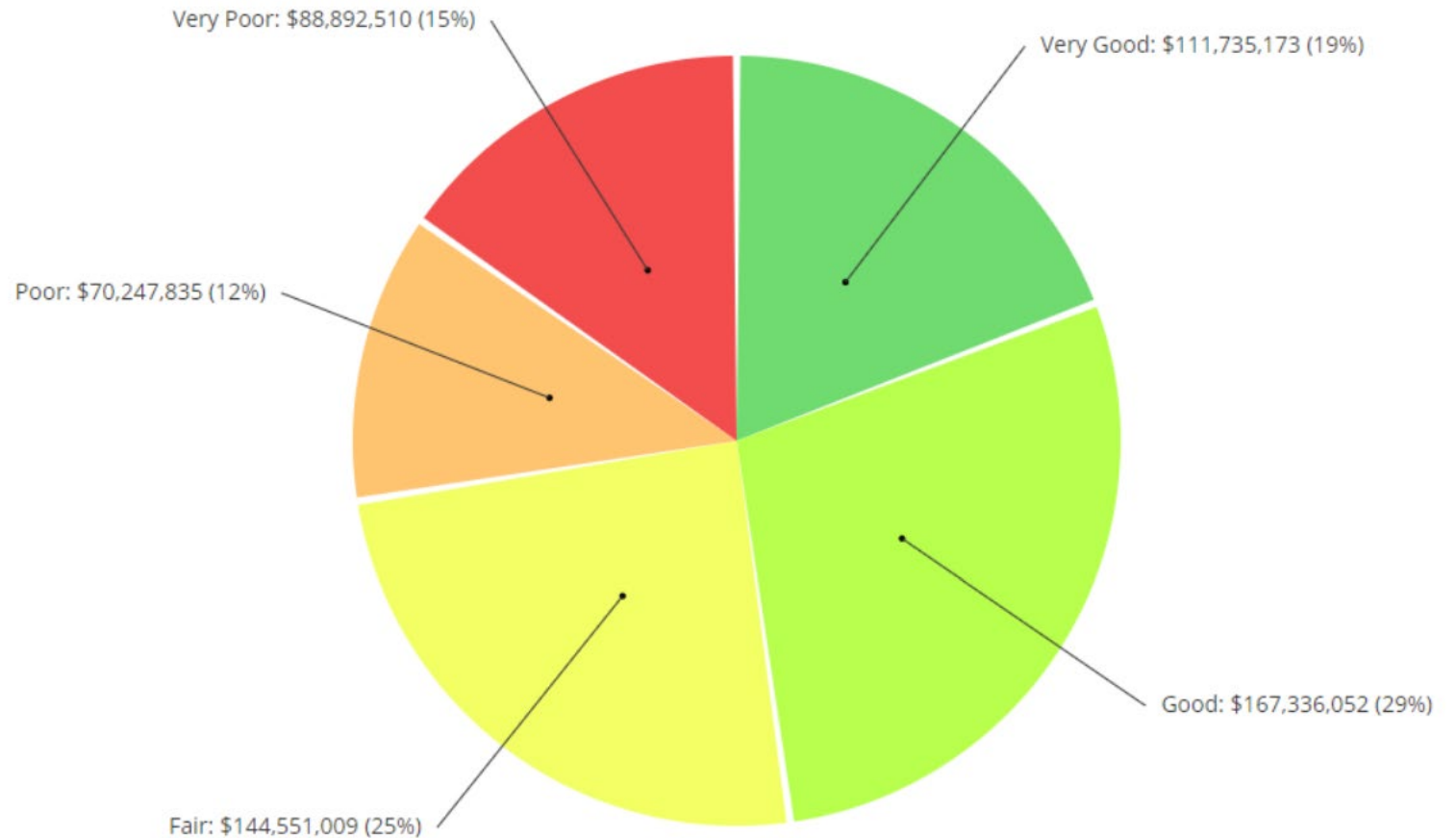
Replacement Cost: 2016

- Replacement Cost of \$583 million
- Equivalent to \$81k per household



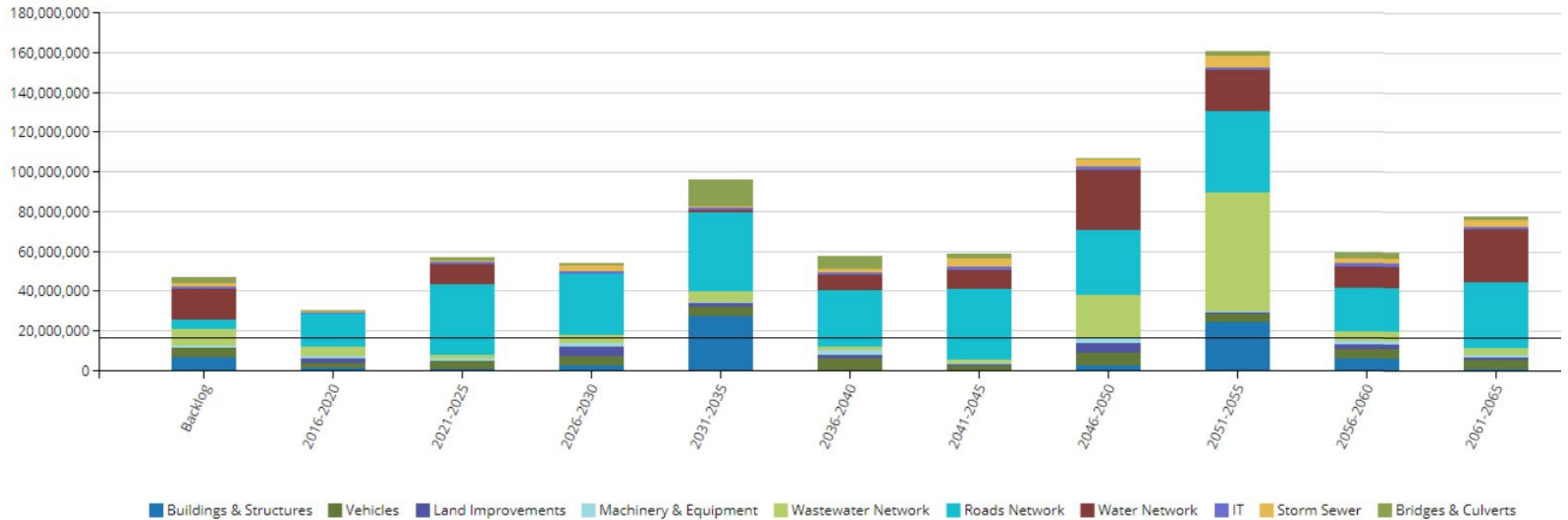
Overall Condition: 2016

- Nearly \$160 million in poor or very poor condition
- Significant capital requirements may be expected

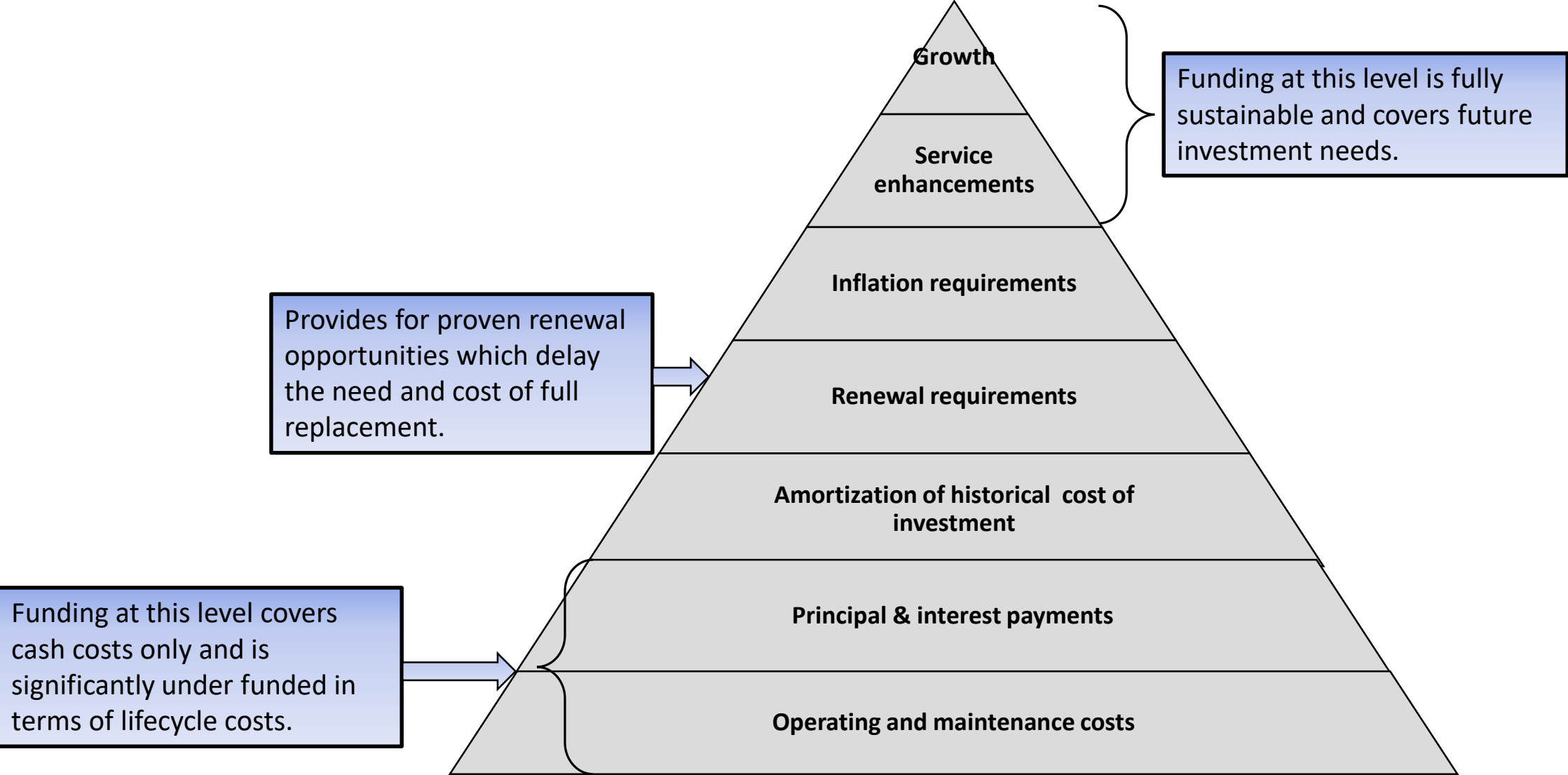


Replacement Profile

- As of 2016 Amherstburg had a backlog of \$47 million
- Estimated \$58 million will be needed between 2021 and 2025



Understanding Funding Levels



Tax Funded Assets: Recommendations 2016

- As of 2016, a tax deficit of \$5.6 million was observed
- A tax increase of 29.2% will be required over 20 years if no other revenue sources are considered

	Without capturing changes				With capturing changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	8,359,000	8,359,000	8,359,000	8,359,000	8,359,000	8,359,000	8,359,000	8,359,000
Change in OCIF Grant	N/A	N/A	N/A	N/A	-1,273,000	-1,273,000	-1,273,000	-1,273,000
Changes in Debt Costs	N/A	N/A	N/A	N/A	-1,112,000	-1,130,000	-1,133,000	-1,422,000
Resulting Infrastructure Deficit	8,359,000	8,359,000	8,359,000	8,359,000	5,974,000	5,956,000	5,953,000	5,664,000
Resulting Tax Increase Required:								
Total Over Time	43.0%	43.0%	43.0%	43.0%	30.8%	30.7%	30.6%	29.2%
Annually	8.6%	4.3%	2.9%	2.2%	6.2%	3.1%	2.0%	1.5%

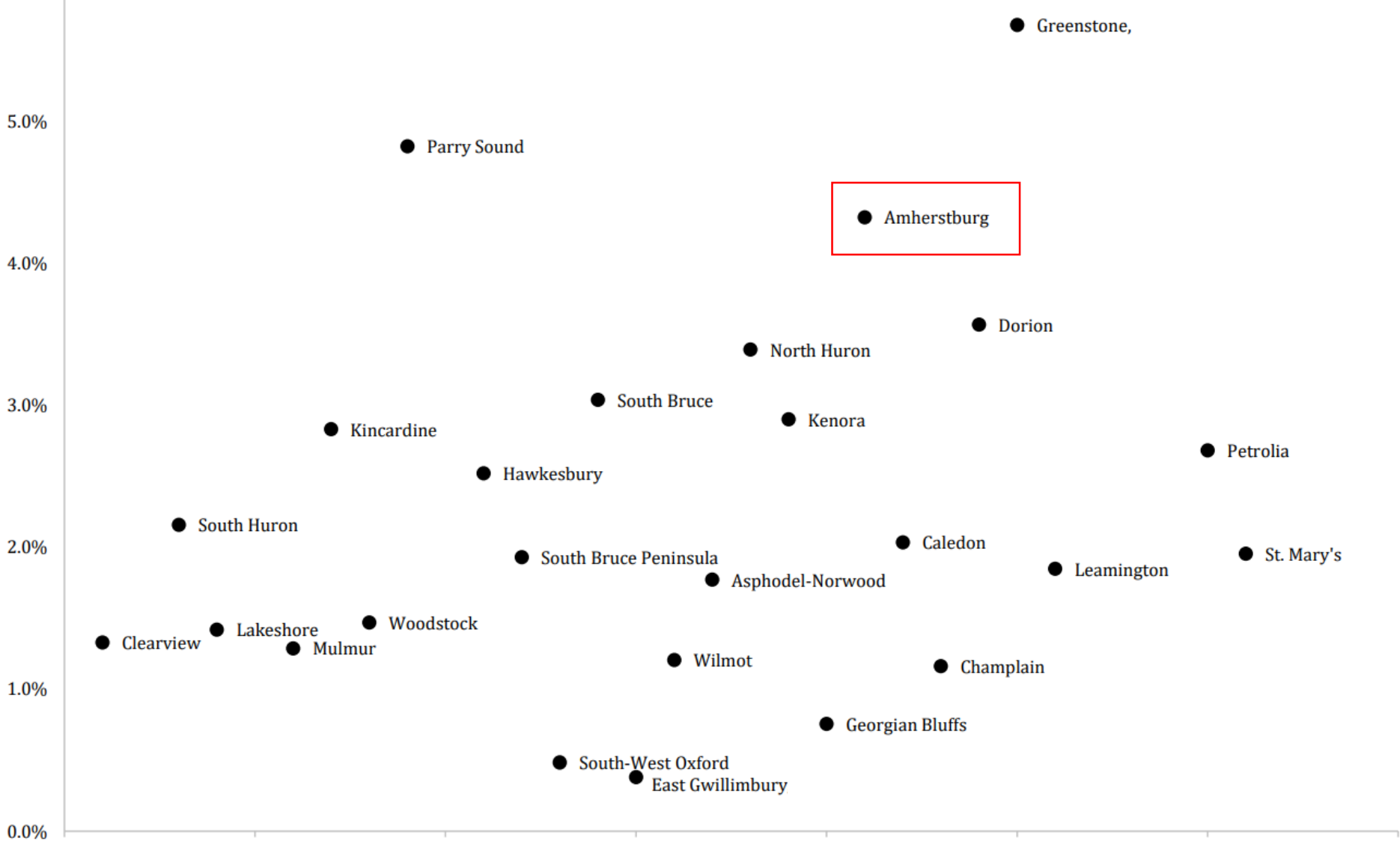
Rate Funded Assets: Recommendations 2016

- As of 2016, a rate deficit of \$1.4 million was observed
- A rate increase of over 30% will be required over 20 years if no other revenue sources are considered

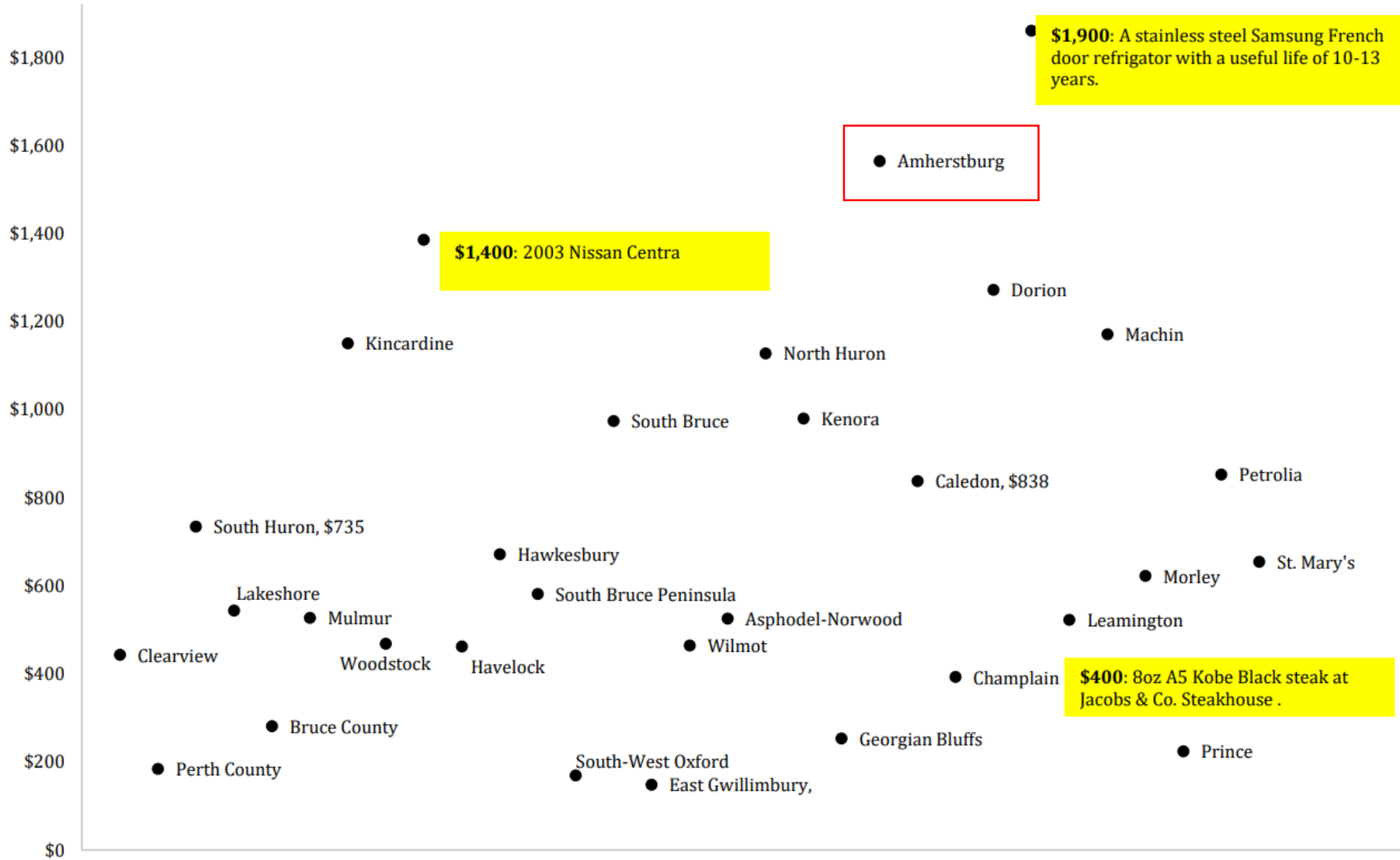
	Wastewater Network			Water Network		
	5 Years	10 Years	15 Years	5 Years	10 Years	15 Years
Infrastructure Deficit	1,531,000	1,531,000	1,531,000	1,846,000	1,846,000	1,846,000
Change in Debt Costs	-86,000	-453,000	-391,000	-376,000	-473,000	-473,000
Resulting Infrastructure Deficit (Surplus)	1,445,000	1,078,000	1,140,000	1,470,000	1,373,000	1,373,000
Resulting Rate Increase Required:						
Total Over Time	25.3%	18.9%	19.9%	32.6%	30.5%	30.5%
Annually	5.1%	1.9%	1.3%	6.5%	3.1%	2.0%

% of After-tax Income Required to Fully Fund

PSD - RESEARCH CONSULTING SOFTWARE

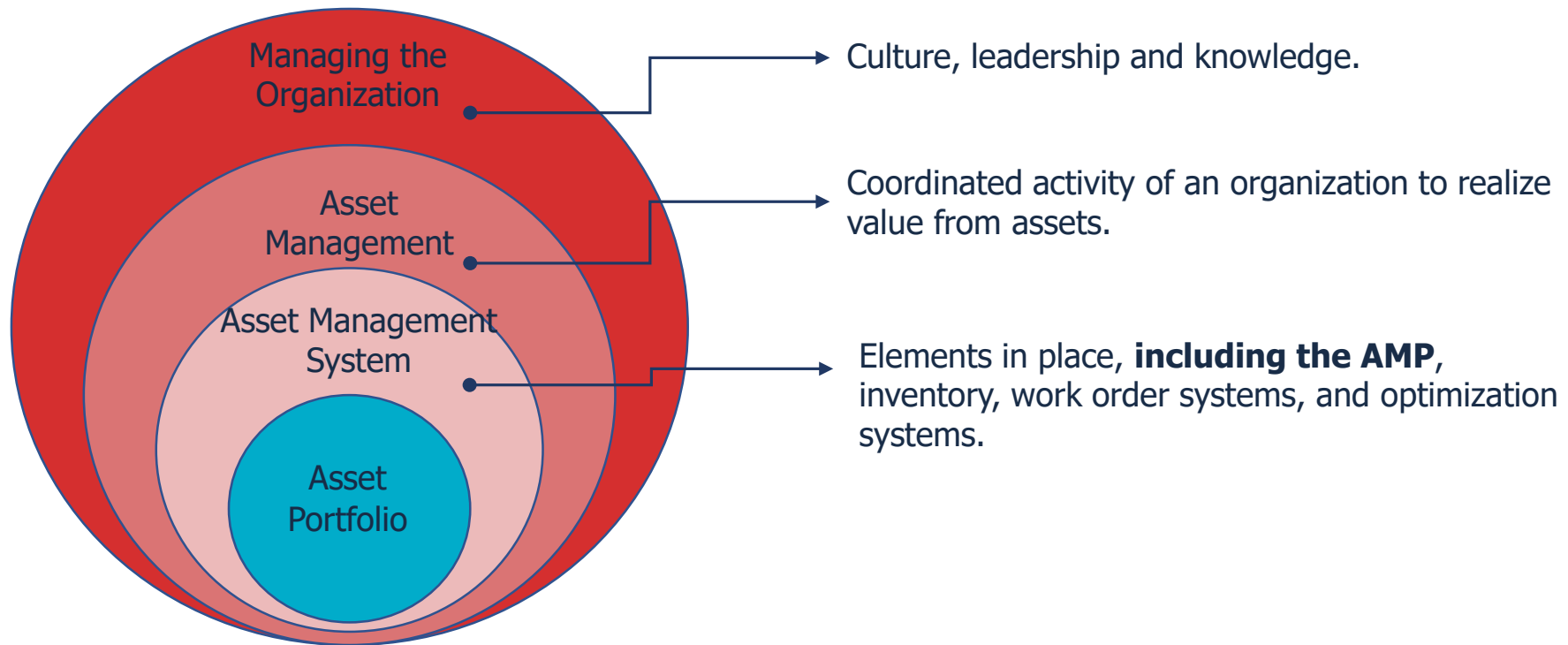


What Each Resident Must Give Up



Now What?

- A significant infrastructure deficit was observed
- Updating the AMP will provide a **current assessment** of Amherstburg's position
- Updating the overall asset management program will ensure **tools, processes, and competencies** are in place to intelligently manage the backlog

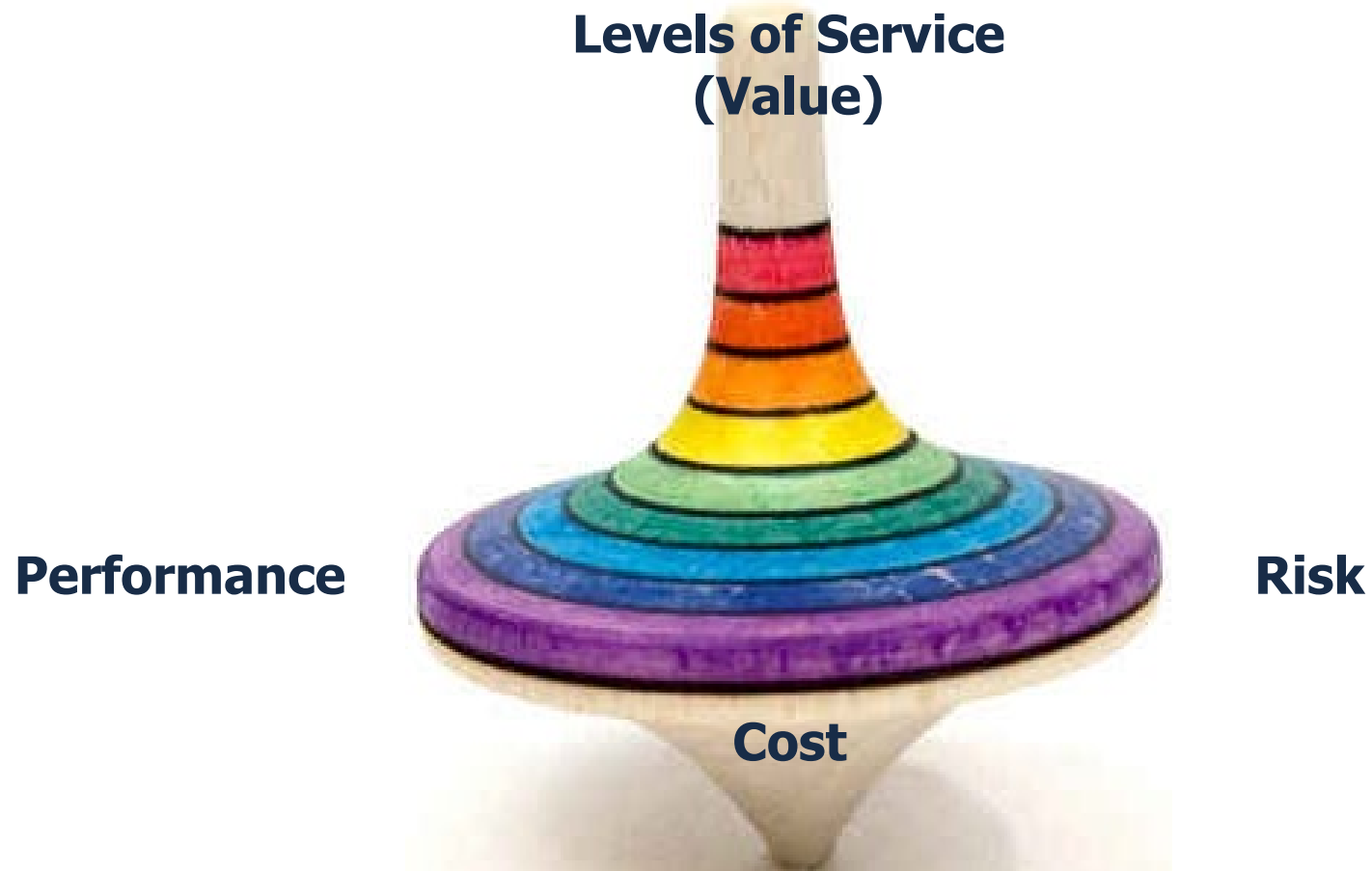


Break (15 minutes)

What is Asset Management?

Short Answer: Finding a Balance

ISO 55000: "Coordinated activity of an organization to realize **value** from assets"



Key Questions (Asset Centric)

- What do we own and where is it?
- What is it worth?
- What condition is it in?
- What do we need to do to it?
- When do we need to do it?
- How much money do we need?
- How do we achieve sustainability?

Two additional important questions:

- Do we still need it?
- How do we maintain sustainability?

Key Questions (Service Centric)



- What are the organizational objectives?
- What assets are owned ?
- What is the assets value (to the organization and the community)?
- What is the asset's impact to service delivery (condition, performance and risk)?
- What are the life cycle needs and available options?
- What are the work/budget prioritisation processes?
- What are the financial strategies?
- What level of service is attainable?

Asset Management Includes

- A sophisticated and coordinated effort
- A multi-disciplined team
- Ultimately public engagement and input



Asset Management Involves

- Processes, procedures and practices to assist and define the management of infrastructure
- Achieving total lowest cost of ownership
- Established measures for performance, risk and cost



The Challenges



**Resource
Heavy**

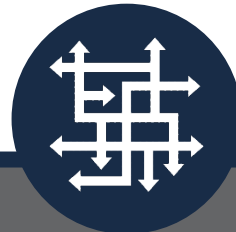
**Lack of resources
(Time, Money, People)
make assessing, and
sustainably managing
your current asset portfolio
difficult.**



**Ongoing
Effort**



**Time
Consuming**



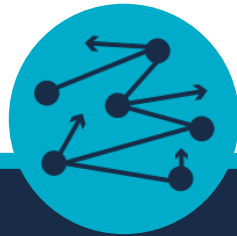
**Complex
Task**

The Consequences

This process is complex and if not tackled strategically can have severe repercussions on a municipality.



**Poor Data =
Knowledge Gaps**









**Misalignment = Poor
Direction**



**Future Services =
Disruption / Failure**

The Benefits

Benefits of Asset Management	
	Good governance and increased accountability
	Data-driven decision-making
	Enhanced sustainability of infrastructure
	Improved level of service and quality of life
	Accurate forecasting of infrastructure replacement and enhancement needs
	Compliance with federal and provincial regulations

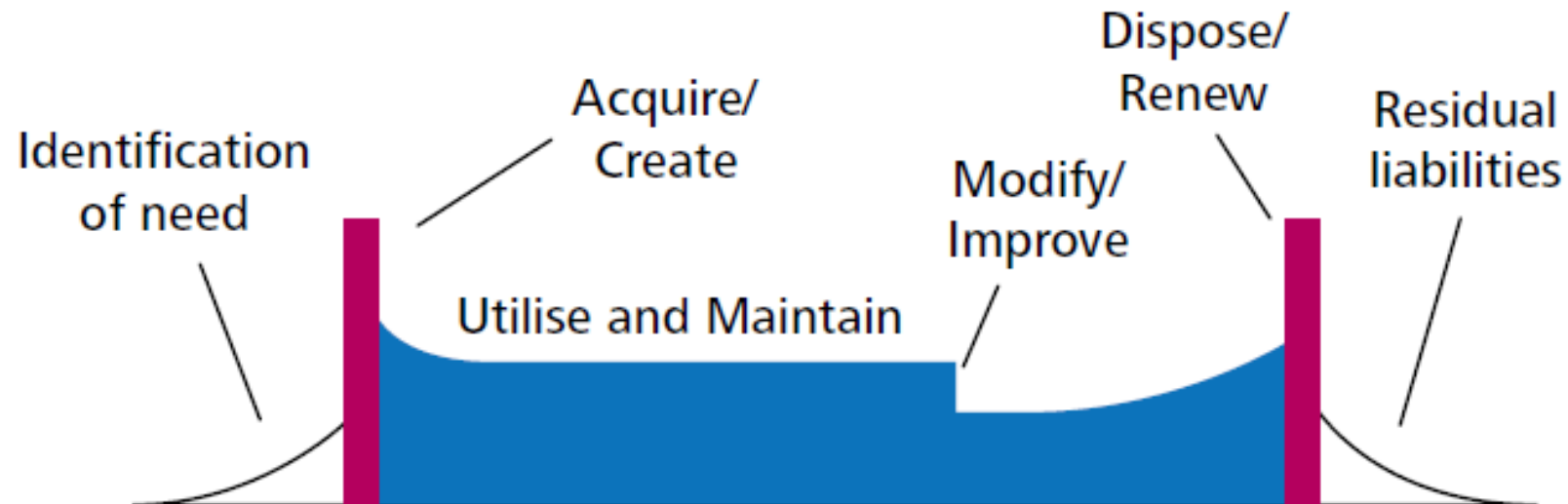
Element: Asset Information

- Good data is the foundation of good decisions
- Two major reasons for decision error
 - **Incomplete** or inaccurate data used
 - **Misrepresentation** and usage of data
- Need to define data management processes and procedures



Element: Lifecycle Delivery

- Ensure you have a long-term plan to manage assets
- Maintenance & Operations costs can be significant
- The AMP will document these activities



Element: Risk & Review

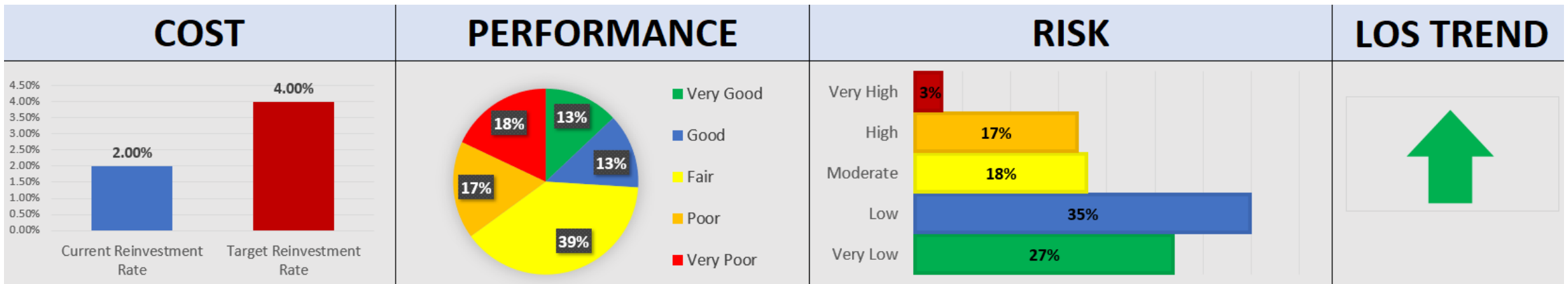
A Good Risk Model will:

- Identify critical assets
- Allow decision-makers to prioritize
- Be easily understood



Element: Levels of Service

- Centralized performance measurement program
- Develop a framework for tracking and evaluating levels of service
 - Trend analysis
- Start with high-level service indicators (Cost, Condition, Risk)
 - Work towards technical levels of service



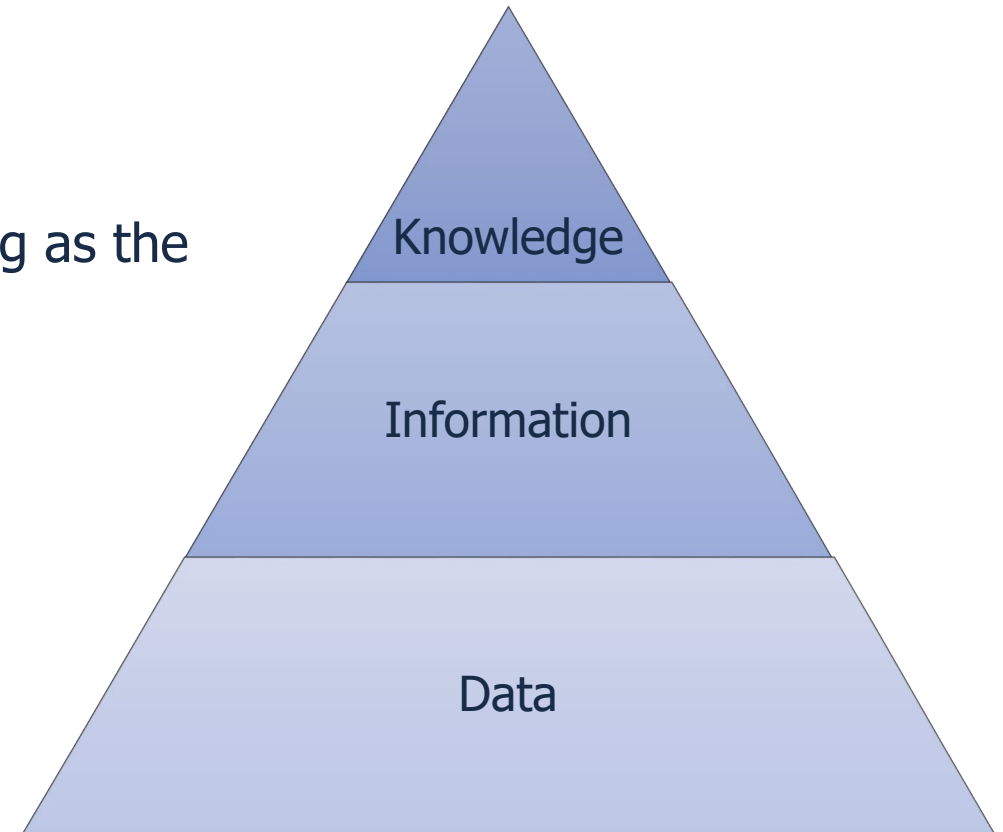
Asset Data Collection

We need data to support our Objectives

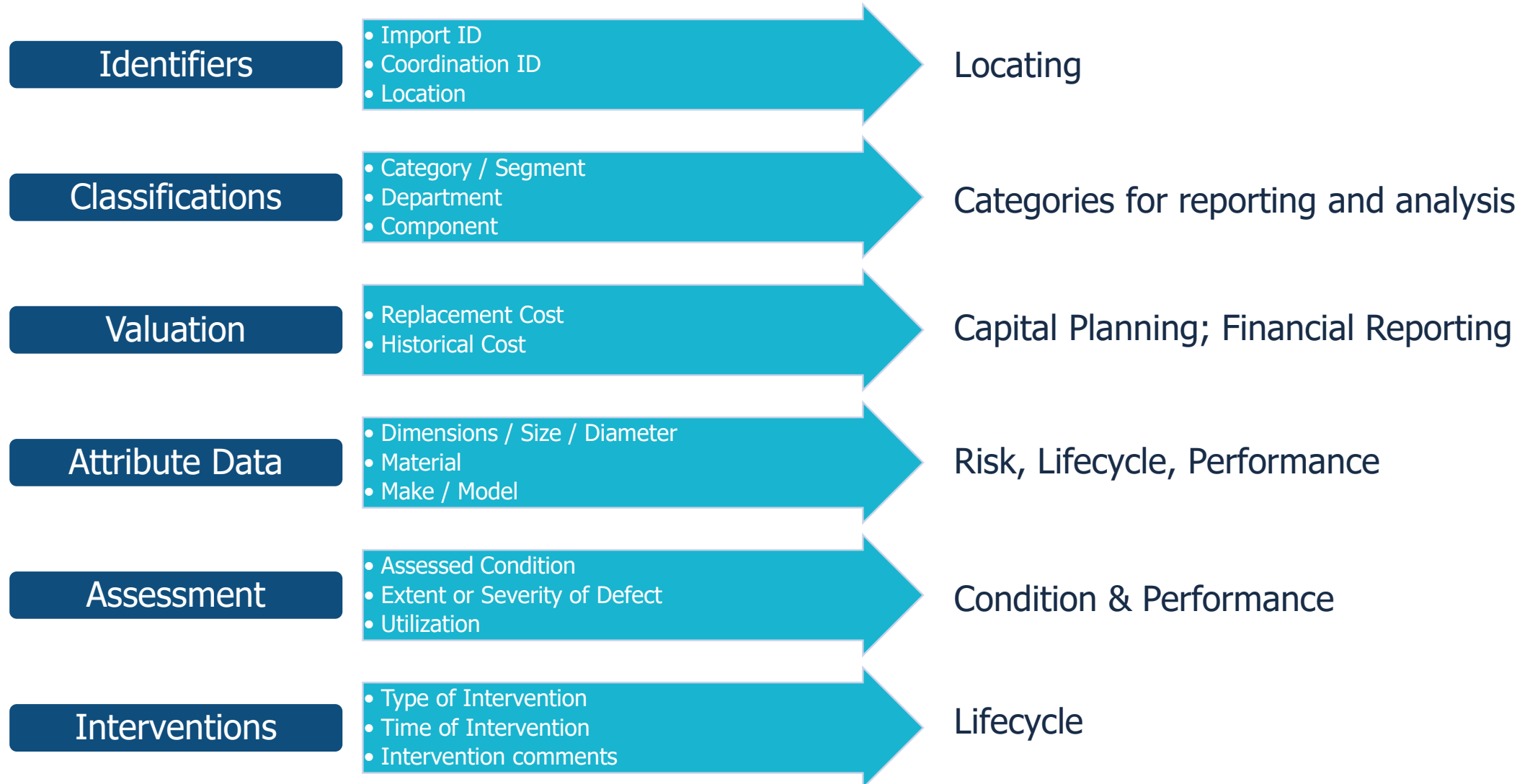


Knowledge, Information, and Data

- Asset Data/Information is the backbone of asset management
- Data/Information Hierarchy
 - Data – facts, signals and symbols that we can interpret
 - Information – interpretations of data; operationalized data
 - Knowledge – what we know; acquired through experience
- Asset management decision-making is only as strong as the data that it is based upon



Categories of Data



Current Inventory Gap Analysis

Identify data requirements

Operational and capital planning and budgeting

Asset Management Plans

Levels of service

Complete an inventory gap analysis

Define what data is required and what data is desired

Identify current and future state

Develop workplan and resourcing strategy to close the gap

Asset Category	Water System	Completion Date
Asset Segment	All segments	Performed By

Category	Segment	Quantity
Water System	Water System	38 Units
Total		38 Units

	Attributes	Data Maturity (%)	Inventory Count
Mandatory	Category	100%	38 / 38
	Segment	0%	0 / 38
	Import ID (unique ID)	53%	20 / 38
	Historical Cost	100%	38 / 38
	In-Service Date	100%	38 / 38
	Estimated Useful Life	100%	38 / 38
	Quantity	71%	27 / 38
	Location	100%	38 / 38
Recommended	Current Replacement Cost	71%	27 / 38
	Assessed Condition	0%	0 / 38
	Material	0%	0 / 38
	Diameter (mm)	0%	0 / 38
	Manufacturer	0%	0 / 38
	Supplier	24%	9 / 38
	Model	0%	0 / 38
	Serial Number	0%	0 / 38
	Landuse	0%	0 / 38
	Number of Breaks	0%	0 / 38
	Bury Depth	0%	0 / 38
	Proximty to Natural water Bodies	0%	0 / 38
	Critical User Mains	0%	0 / 38
	Soil Type	0%	0 / 38
Cathodic Protection	0%	0 / 38	

Inventory System

- The place the inventory is “housed”
- A good inventory will enable the user to better retrieve and use the inventory, regardless of the data



Key Areas of Focus

Avoid data “obesity”

Collect data that provides meaningful data and **actionable insight**

Define scope and intent of data collection before executing

Define Data Governance Policy/Procedures

Who owns the data?

Prioritize efforts by asset value and criticality

Roads, Water, Sewer, Storm



Consequences of a Poor Inventory

- Untimely decisions
- Unreliable maintenance and lifecycle schedules
- Poor criticality and risk prioritization
- Inaccurate performance evaluation
- Poor financial forecasting and capital planning
- **Ultimately:** Decreased service, increased cost, increased risk

Levels of Service: Overview

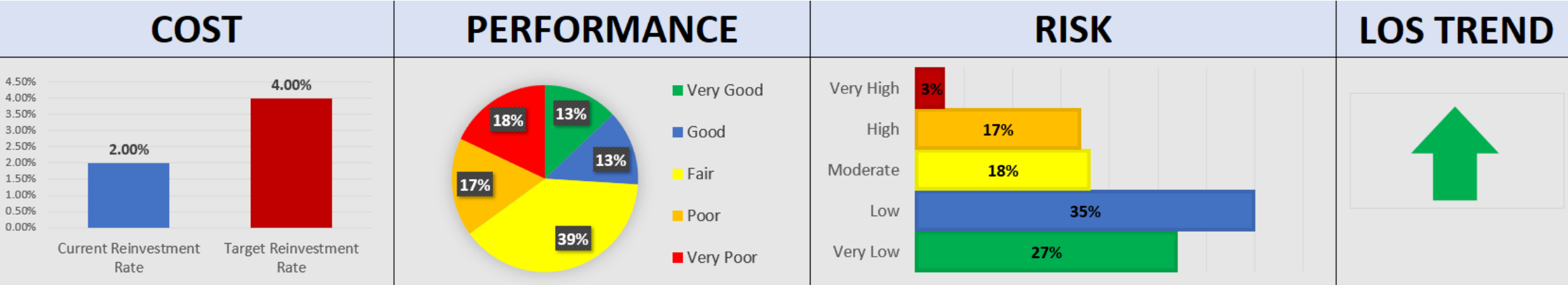
Asset Management is Service Management

- The asset is the conduit for the service
- Infrastructure provides services that bring our cities to life
 - Pipes provide a clean drinking water service
 - Roads provide a transportation service
 - Vehicles and equipment support our emergency services
 - Facilities / Parks provide recreation programs and service

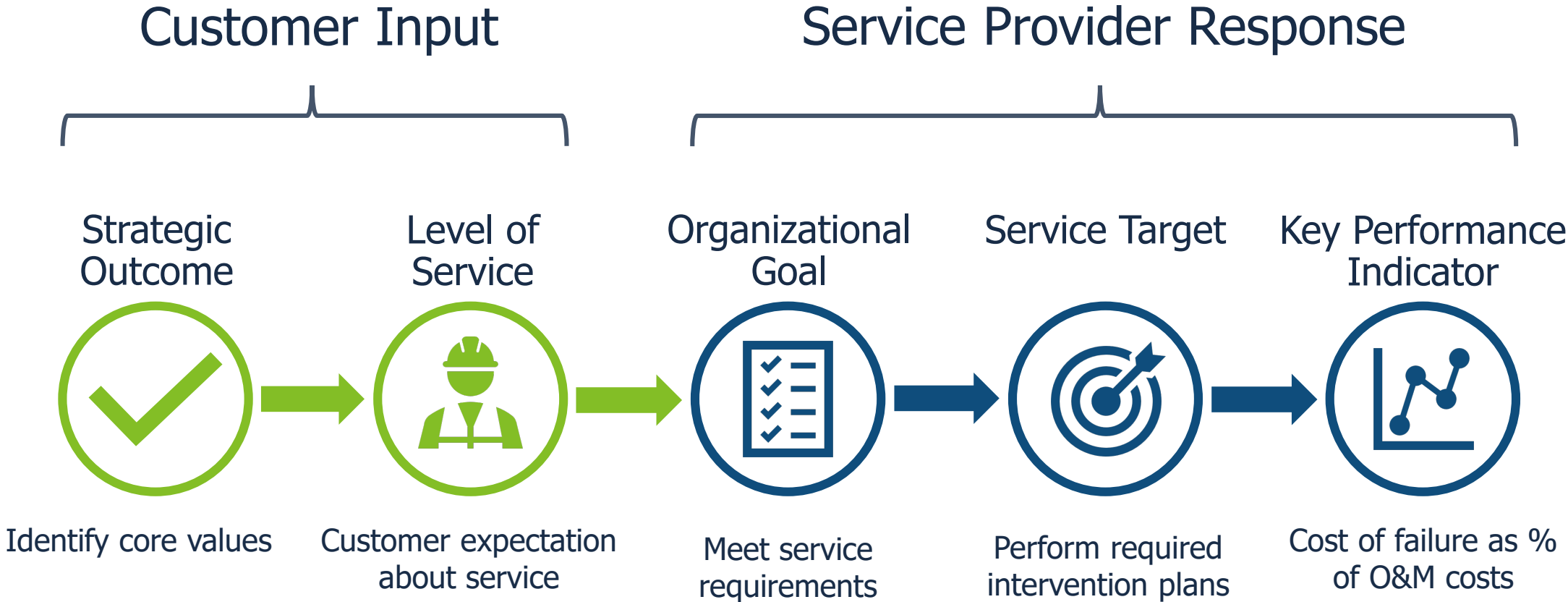


Measuring Levels of Service

- Centralized performance measurement program
- Develop a framework for tracking and evaluating levels of service
 - Trend analysis
- Start with high-level service indicators (cost, condition, risk)
 - Work towards technical levels of service (as defined in O. Reg. 588/17)



Customer input will influence key performance indicators



Determining Core Service Values

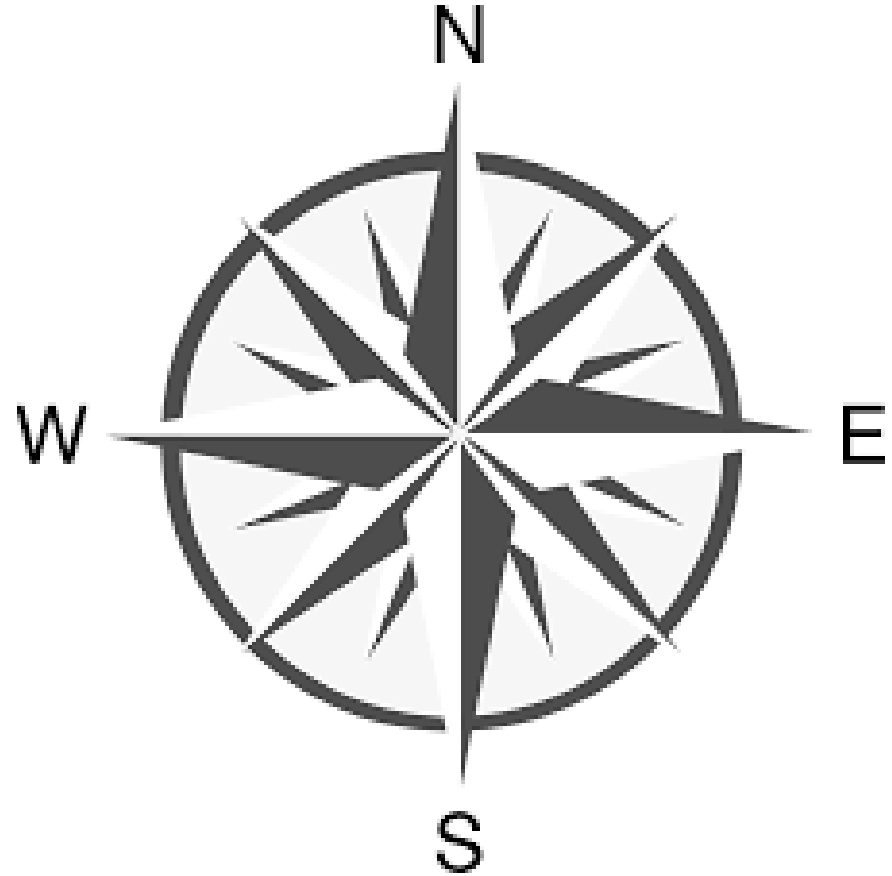
- What does the public value in the services that you provide to them?

Value	Description
Accessible	Services are available and accessible for customers who require them.
Reliable	Services are provided with minimal service disruption and are available to customers in line with needs and expectations.
Safe	Services are delivered such that they minimize health, safety and security risks.
Regulatory	Services meet regulatory requirements of all levels of government.
Affordable	Services are delivered at an affordable cost for both the organization and customer.
Sustainable	Services are designed to be used efficiently and long-term plans are in place to ensure that they are available to all customers into the future.

Trends Influencing Levels of Service

Do any of the following apply?

- Natural Environment
- Aging Infrastructure
- Demographics & Service Expectations
- Fiscal Capacity
- Retaining Expertise
- COVID



Technical metrics provide line of sight to Community metrics

- **Community LOS:** What the customer experiences at a **service level**
- **Technical LOS:** What is observed at an **asset or operational level**

What the customer experiences



CLOS- Complaints due to rideability

What is observed at the asset or operational level

Asset level indicator



TLOS- % of paved roads below PCI of 55

Operational level indicator



TLOS- km of paved roads receiving crack sealing

Developing Level of Service Framework

Core Value	Levels of Service Statement	KPI	Technical Levels of Service					Target
			Performance					
			2019	2020	2021	2022	2023	
Accessible & Reliable	The transportation network is reliable and provides reasonable access to properties throughout the municipality	Lane-km of arterial roads (MMS classes 1 and 2) per land area in the municipality (km/km ²)						
		Lane-km of collector roads (MMS classes 3 and 4) per land area in the municipality (km/km ²)						
		Lane-km of local roads (MMS classes 5 and 6) per land area in the municipality (km/km ²)						
		% of bridges in the municipality with loading or dimensional restrictions						
		Average response time to ammend a failed light (days)						
		# of street lights failed for 5 or more days consecutive days						
Safe & Regulatory	The transportation network is managed in accordance with minimum maintenance standards and all other regulatory requirements	Winter control costs / lane-km						
		% of road network receiving preventative maintenance (e.g. crack sealing)						
		% of road network below a Pavement Condition Index of 55%						
Affordable	The transportation network is managed cost-effectively for the established level of service	% of street lights equipped with energy efficient bulbs						
		O&M costs for paved roads / lane-km (excluding winter control)						
		Annual capital reinvestment rate of roads						
		O&M costs for sidewalks / lane-km (excluding winter control)						
		Annual capital reinvestment rate of sidewalks						

Operationalizing Levels of Service

- Measuring and evaluating levels of service does not have to be resource intensive
- Develop a process to review framework and refine as necessary
 - Annual performance review process
- Take your time to measure current level of service before setting your targets
 - Review KPIs to ensure that data is meaningful, accurate and reliable
- Identify where there are gaps between current level of service and target level of service
 - Determine targeted actions required to close gap

Key Areas of Focus

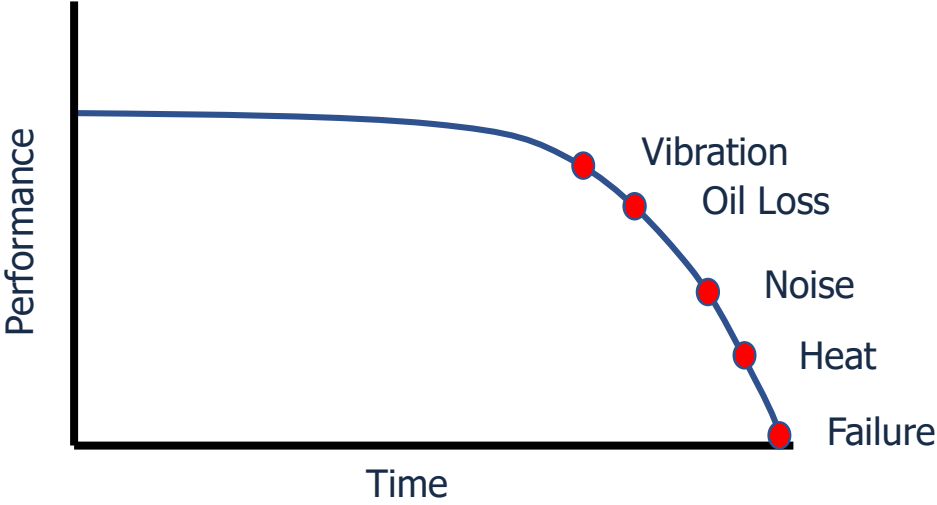
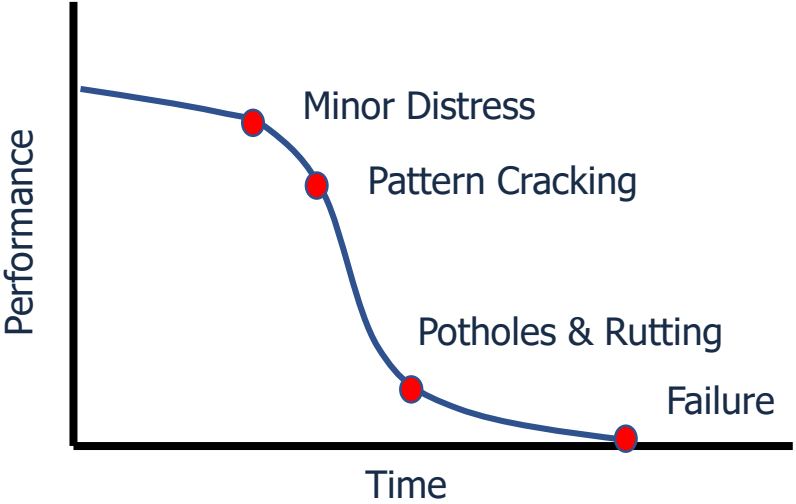
- Start to measure community and technical LOS identified in O.Reg.
 - Who will be responsible?
 - How will the data be stored?
- Identify which metrics you would like to collect in addition to the minimum requirements
- Develop a framework to collect and store LOS data
- Levels of Service metrics should be tracked on an annual basis

Developing a Condition Assessment Program

Condition as a Measure of Performance

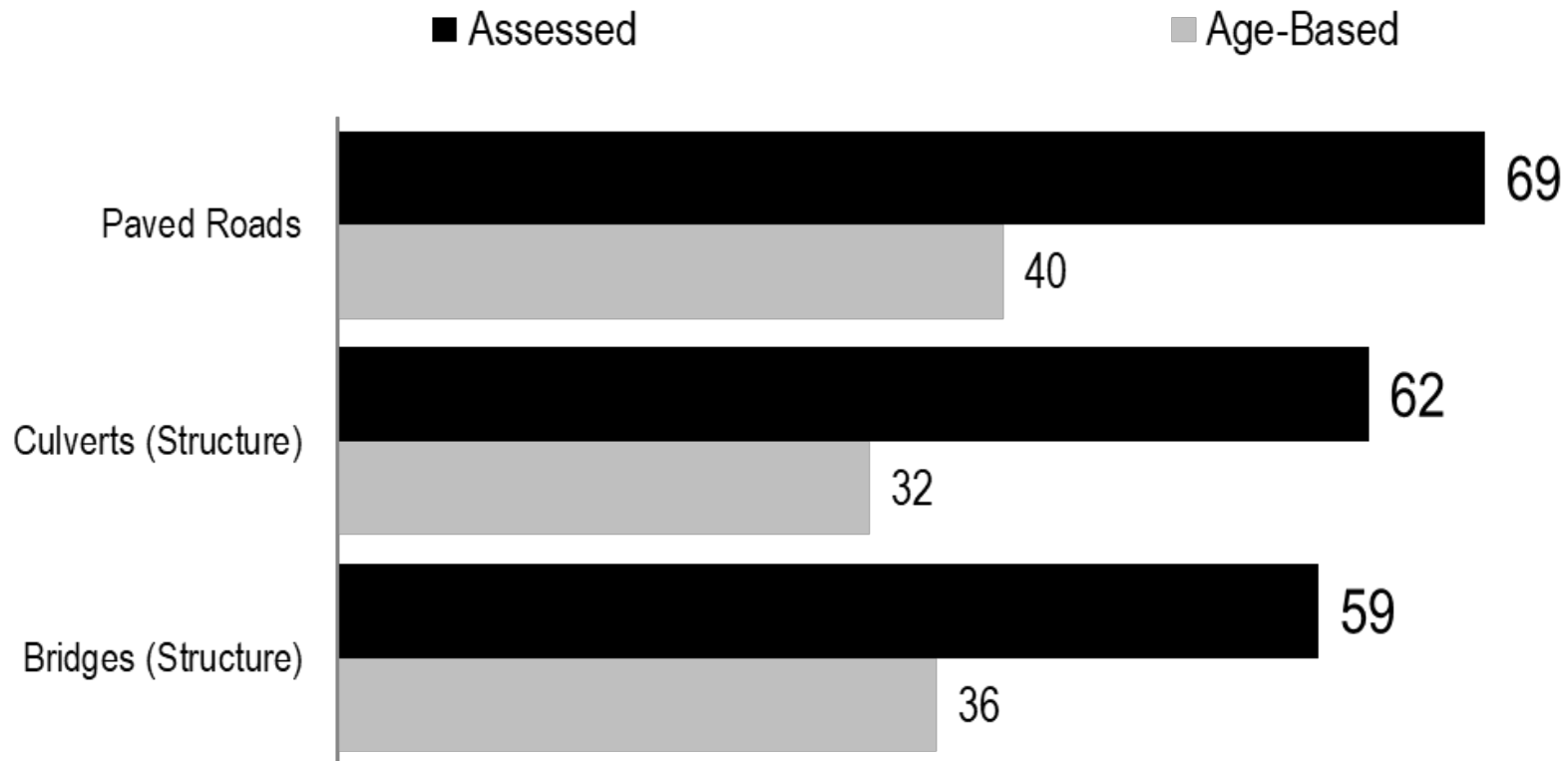
- **Condition** is the performance of an asset, represented numerically (e.g. 80%) or qualitatively (good)
- **Assessments** map observations to specific condition scores
 - Excessive heat of a pump may indicate poor or very poor condition
 - Extensive alligator cracking of a road may indicate a pavement condition index less than 50%

Condition as a Measure of Performance



Age-based Condition Tends to Underestimate the True Life

Assessed vs. Age-Based: **Average Asset Condition Rating (0-100)**



Considerations for Collecting Condition Assessment Data

Type of capture

- Daily equipment inspections (internal)
- Performance monitoring (internal)
- Code & Condition Study (external)

Cycle of Capture

- Time-based (e.g. annually / quarterly / daily)
- Performance based (e.g. diagnostics)
- Usage based (e.g. mileage points)

Supporting Information

- Energy Audits
- Capacity Data
- Key Performance Indicators



Define a Grading Scale

Detailed Condition Rating Scale							
Category	Component or Segment	Minor Component	Very Good 0.00<FCI<0.2	Good 0.02<FCI<0.05	Fair 0.05<FCI<0.10	Poor 0.10<FCI<0.30	Very Poor FCI>0.31
Superstructure & Substructure	A - Substructure	All	No evidence of structural flaws, deterioration, or discoloration	Structural integrity sound. Signs of minor wear, deterioration or corrosion	Structural integrity sound. Signs of minor cracking and/or foundation movement. Minor staining, leakage or damage to coatings	Significant cracking and/or foundation movement that may affect structural integrity. Extensive staining, leakage, breakage or overflow	Structural integrity seriously compromised. Structure is weakened, visibly by extensive corrosion, leakage, or displacement of elements.
	B - Shell	All					
	C - Interiors	All					
	F - Special Construction	All					
	G - Building Site work	G10 - Site Preparation					
	G - Building Site work	G20 - Site Improvements					

- A condition grading scale will link visual assessments to condition scores
- Ensures consistency across assets and assessors

Risk

Risk Management

O. Reg Required – high level documentation

- Corporate risk elements
- Asset system/network risk elements

Better management approach

- Probability of failure analysis
- Consequence of failure analysis



What is Risk?

Definition (ISO 31000):

- “The effect of uncertainty on objectives”

Typical Municipal Objective

- Deliver desired level of service at the lowest total cost of ownership Strategic Plan



Risk

=

**Probability
of Failure**

X

**Consequence
of Failure**

Probability vs Consequence

Probability of Failure

- Consumed life
- Condition
 - Age Based
 - Internal Cursory Approach
 - Internal Intermediate Approach
 - Comprehensive Study or Structural Assessment
- Other Contributors to Failure
 - AADT
 - Commercial Traffic
 - Sub Terrain Base
 - Climate Change

Triple Bottom Line

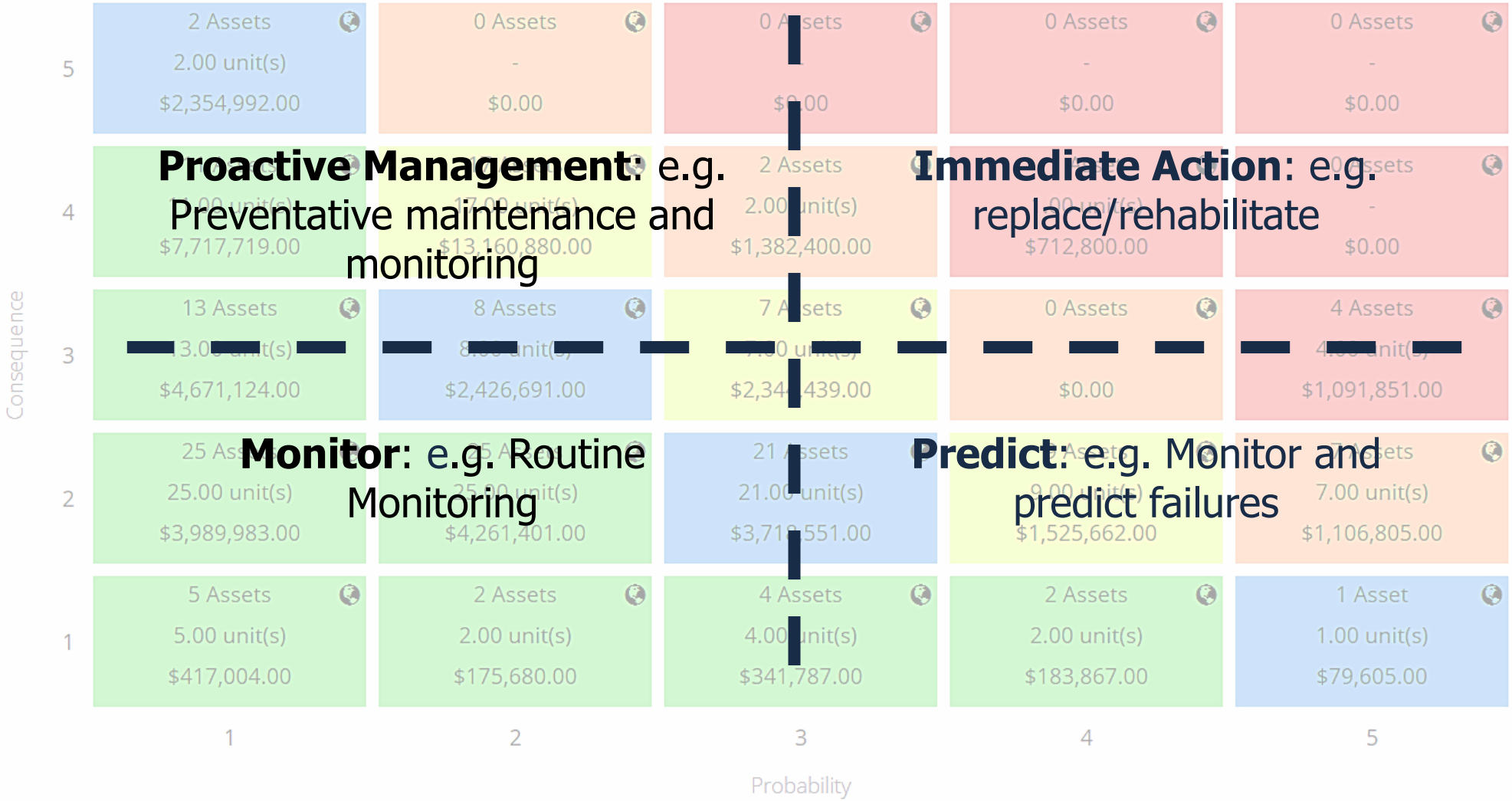
Consequence of Failure

- Economic
- Social
- Environmental
- Operational
- Health & Safety
- Strategic

Risk & Criticality Models



Operationalizing Risk



Operationalizing Risk

- Identify which assets pose the highest risk to delivering your objectives
- Use this data to drive capital planning process

Asset ID	Class	Category	Segment	Profile	Name	In-Service Date	Historical Cost	Risk Rating ▼
14687	Infrastructure	Bridges & Culverts	Major Bridge	Bridge Culvert, Major Bri...	KIPP	1982-01-01	\$924,000.00	16.21 - Very High
3005	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	NOBLEFORD	1974-01-01	\$77,000.00	13.16 - High
3066	Infrastructure	Bridges & Culverts	Bridge Culvert	Bridge Culvert, Major Bri...	NOBLEFORD	1910-01-01	\$15,603.94	11.79 - High
2960	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	COALDALE	1989-01-01	\$173,000.00	11.58 - High
3056	Infrastructure	Bridges & Culverts	Bridge Culvert	Bridge Culvert, Major Bri...	LETHBRIDGE	1990-01-01	\$26,000.00	10.95 - High
2959	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	COALDALE	1982-01-01	\$143,000.00	10.32 - High
2957	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	PICTURE BUTT	1981-01-01	\$114,000.00	9.89 - Moderate
2962	Infrastructure	Bridges & Culverts	Bridge Culvert	Bridge Culvert, Major Bri...	LETHBRIDGE	1910-01-01	\$8,803.15	9.32 - Moderate
3065	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	COALDALE	1986-01-01	\$213,000.00	9.32 - Moderate
3048	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	LETHBRIDGE	1985-01-01	\$167,000.00	8.68 - Moderate
3064	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	COALDALE	1986-01-01	\$252,000.00	8.68 - Moderate
3022	Infrastructure	Bridges & Culverts	Bridge Culvert	Bridge Culvert, Major Bri...	PICTURE BUTT	1991-01-01	\$38,000.00	8.63 - Moderate
2928	Infrastructure	Bridges & Culverts	Bridge Culvert	Bridge Culvert, Major Bri...	COALDALE	1968-01-01	\$13,000.00	8.42 - Moderate
2937	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	PICTURE BUTT	1965-01-01	\$0.00	8.42 - Moderate
2949	Infrastructure	Bridges & Culverts	Bridge Culvert	Bridge Culvert, Major Bri...	PICTURE BUTT	1990-01-01	\$22,000.00	8.37 - Moderate
3050	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	LETHBRIDGE	1985-01-01	\$169,000.00	8.37 - Moderate
2958	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	LETHBRIDGE	1984-01-01	\$147,000.00	8.21 - Moderate
2979	Infrastructure	Bridges & Culverts	Standard Bridge	Bridge Culvert, Major Bri...	LETHBRIDGE	1961-01-01	\$18,400.02	8.21 - Moderate

Key Areas of Focus

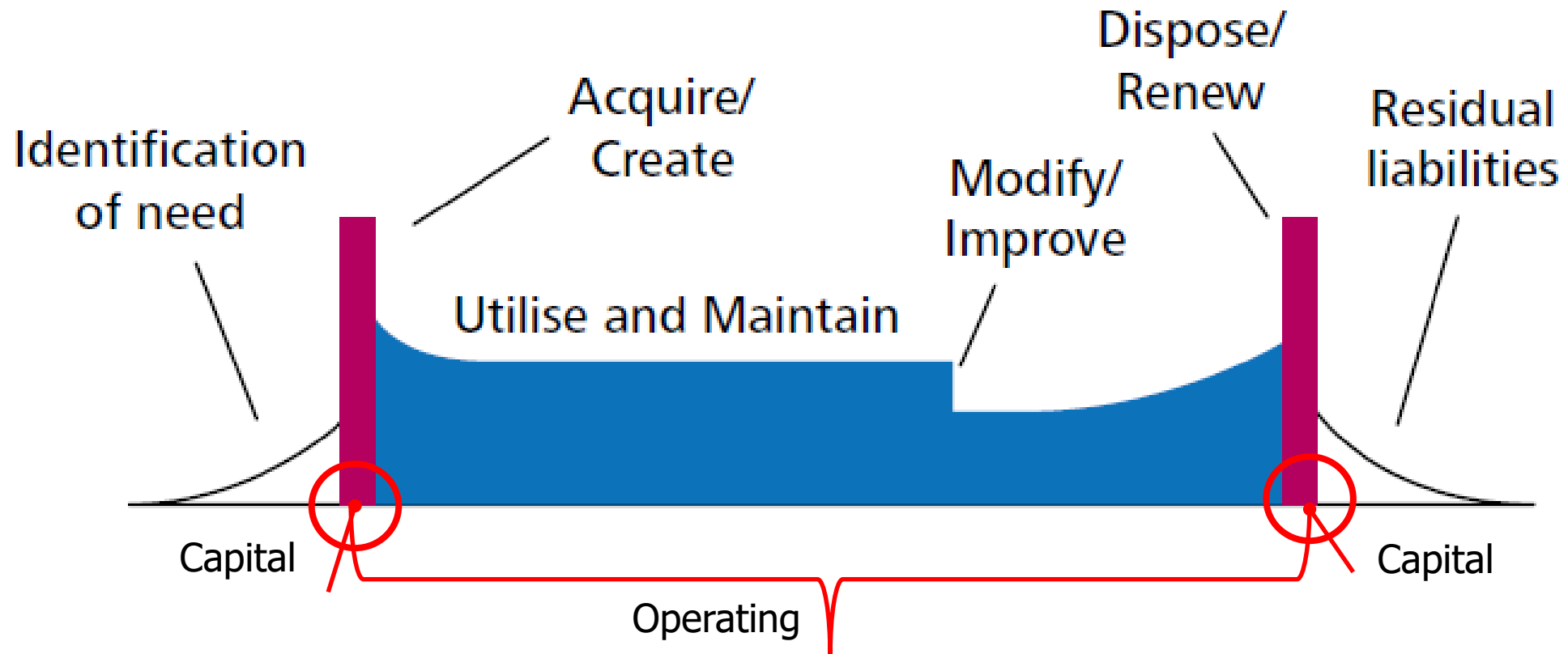
- Identify existing asset data that can be leveraged to measure risk
- Determine where additional data or analysis may be required to determine risk
- Define organizational risk appetite and risk tolerance
- Measure risk and identify risk mitigation strategy



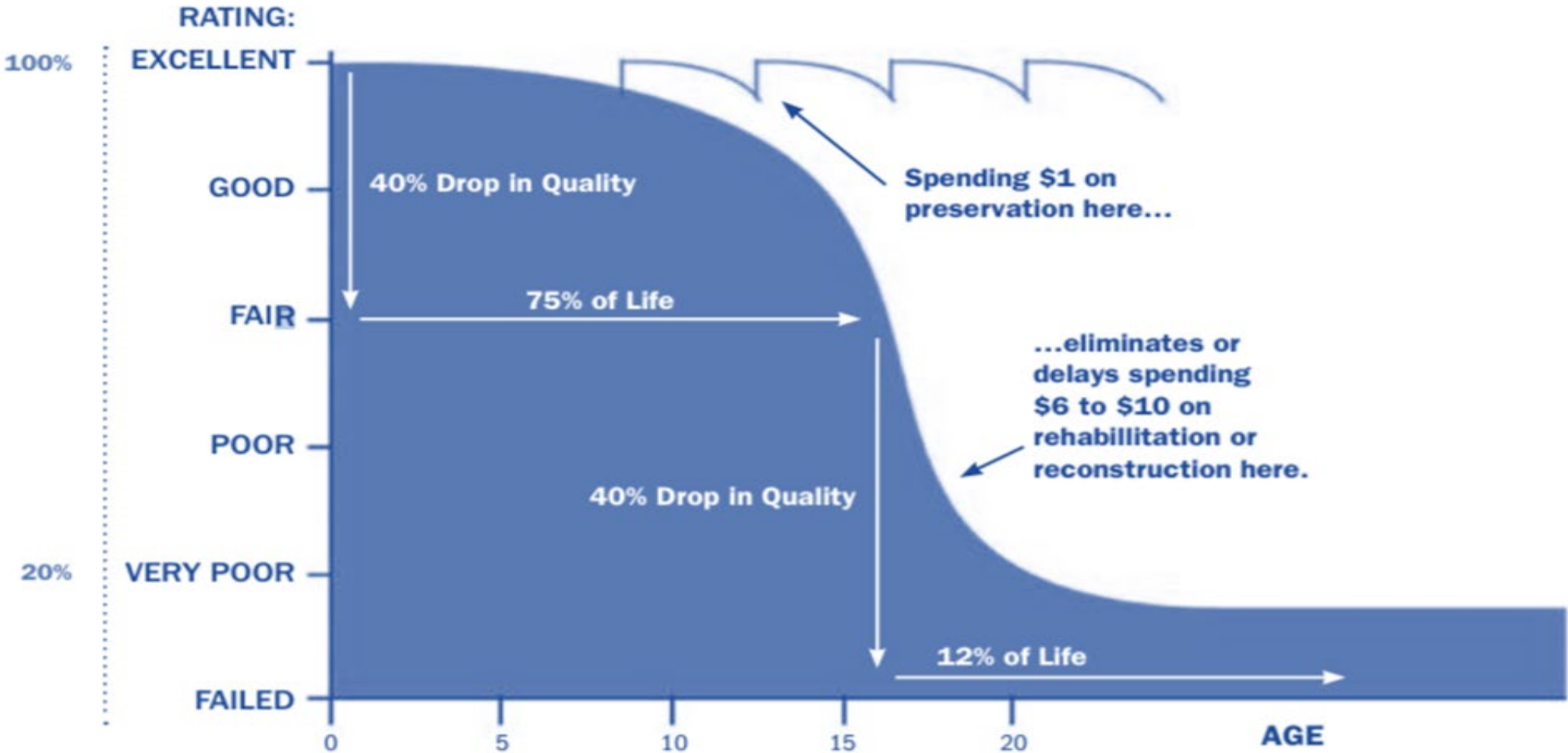
Lifecycle

What is Lifecycle Planning?

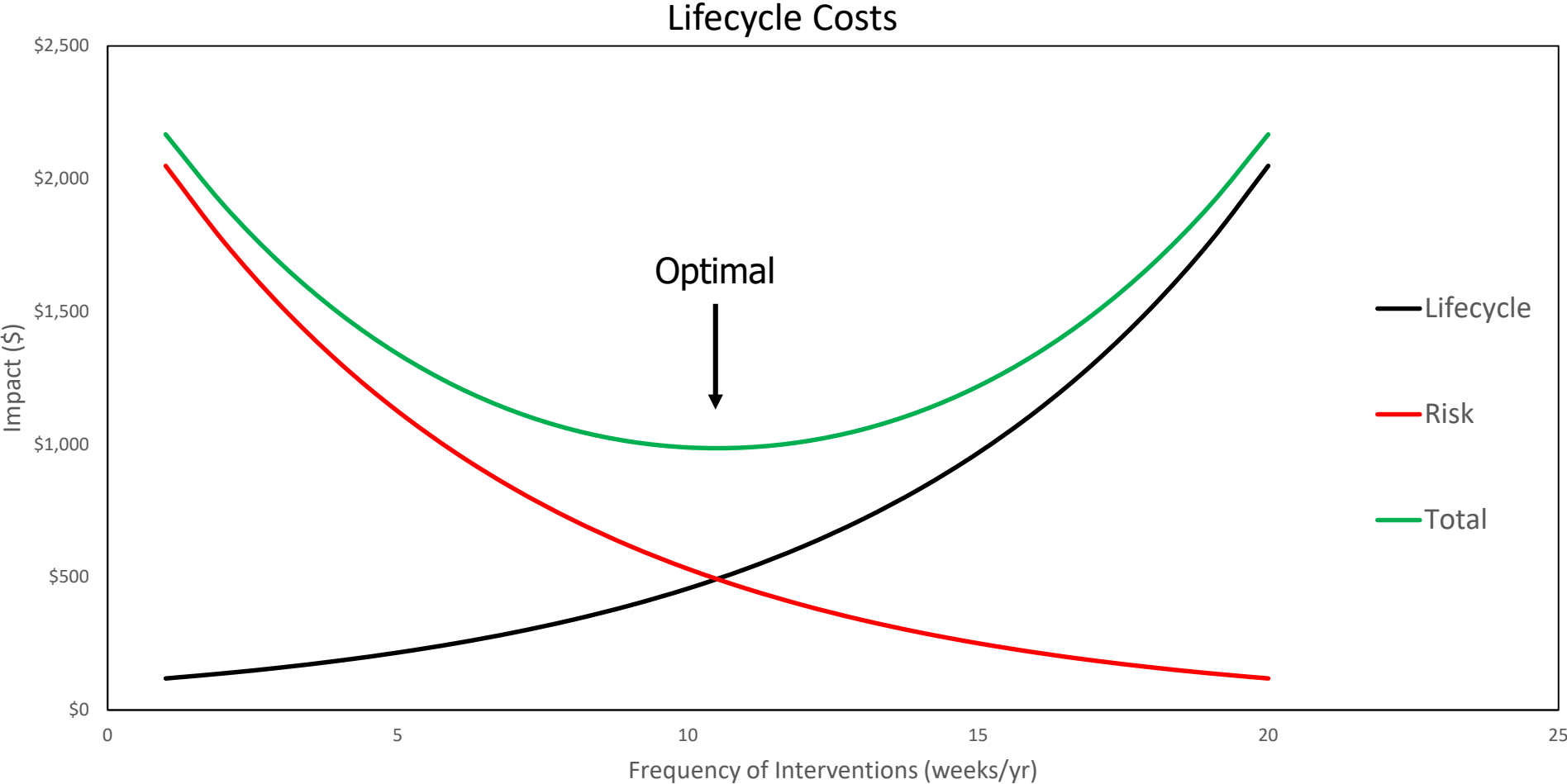
- Costs Accrue through the entire life of the asset
- Lifecycle management plans for the entire duration



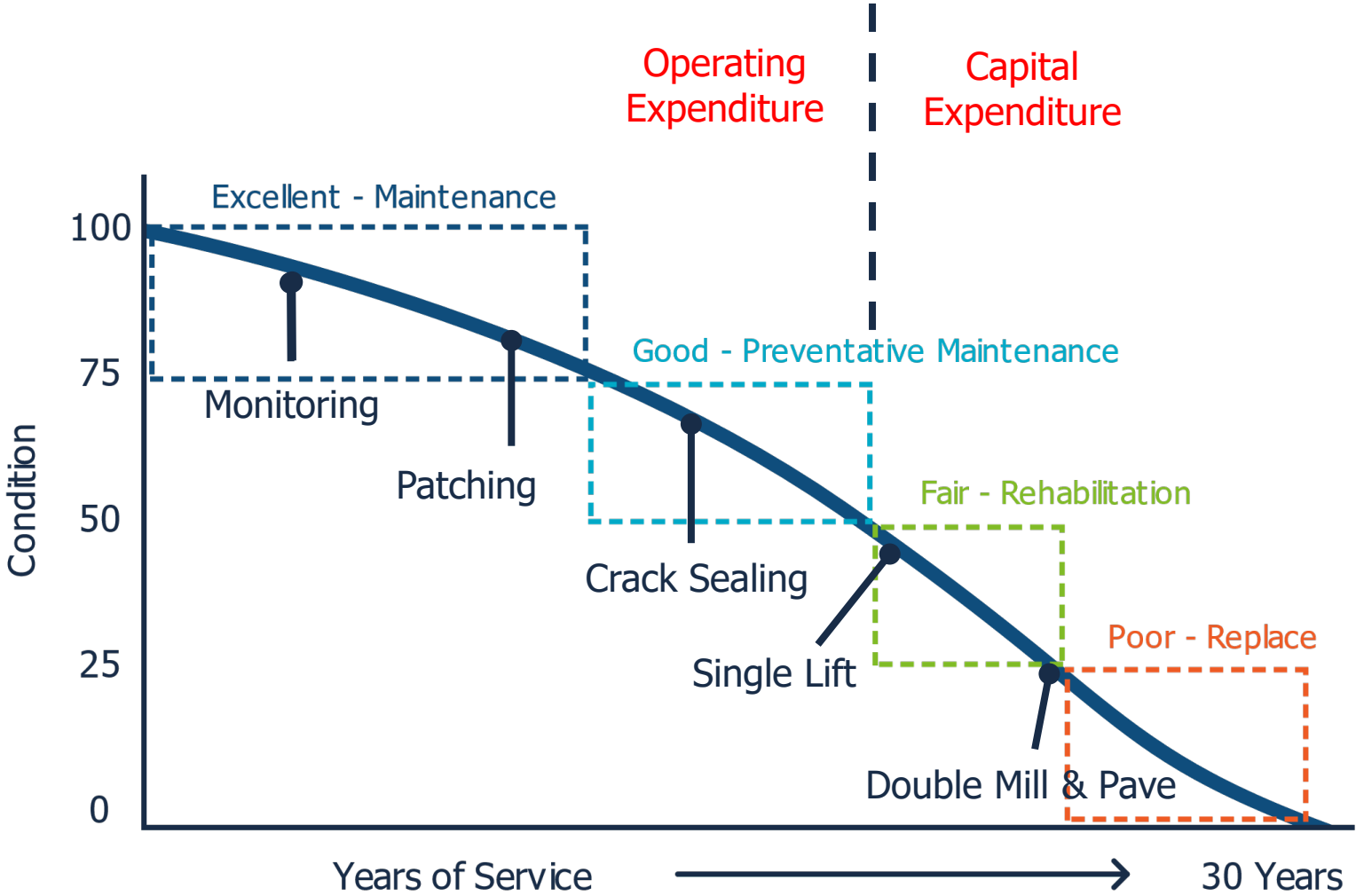
Lifecycle: Minimize Cost and Risk



Lifecycle: Find the Optimal Amount of Activities



Lifecycle Activity Framework



- Natural Progression of activities
- Maintenance activities often cyclical
- Not all activities will be required for each asset

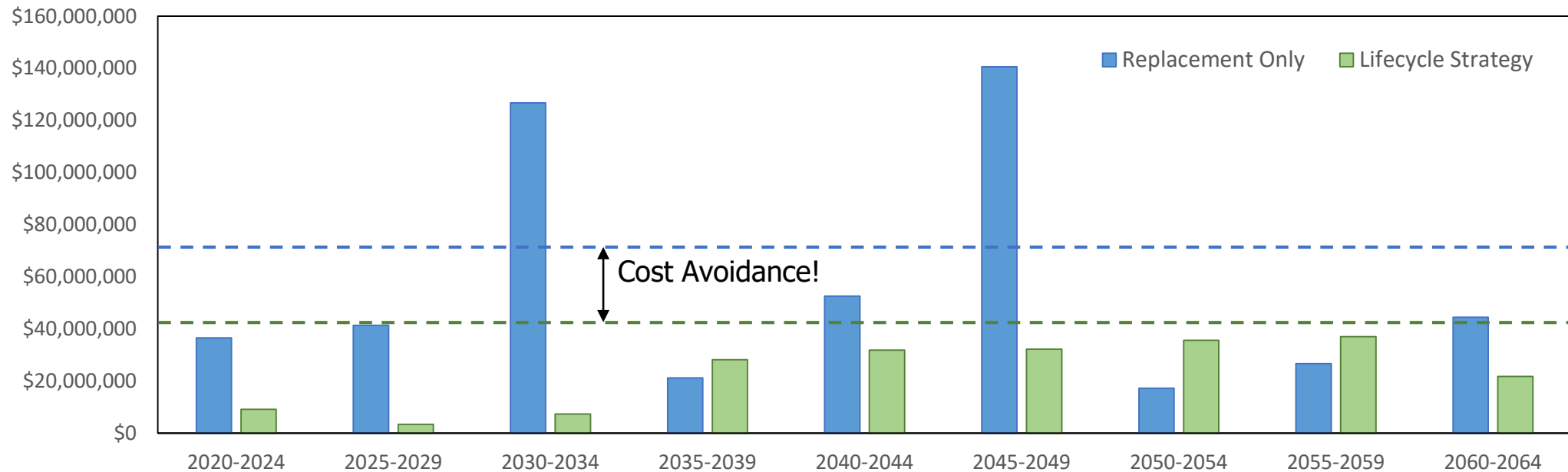
Lifecycle Activity Framework



Avoiding Costs Long-term

- Proactive treatments can reduce long-term capital requirements
- Budget Reallocations can be justified

Projected Paved Roads Capital Requirements



Benefits of a Lifecycle Program

- Transitioning from a reactive approach to a proactive approach in managing core infrastructure assets
- Maximizing the life of an asset at the lowest possible cost
- Improved levels of service
- Cost avoidance



Break (15 minutes)

AMPs and Financial Strategies

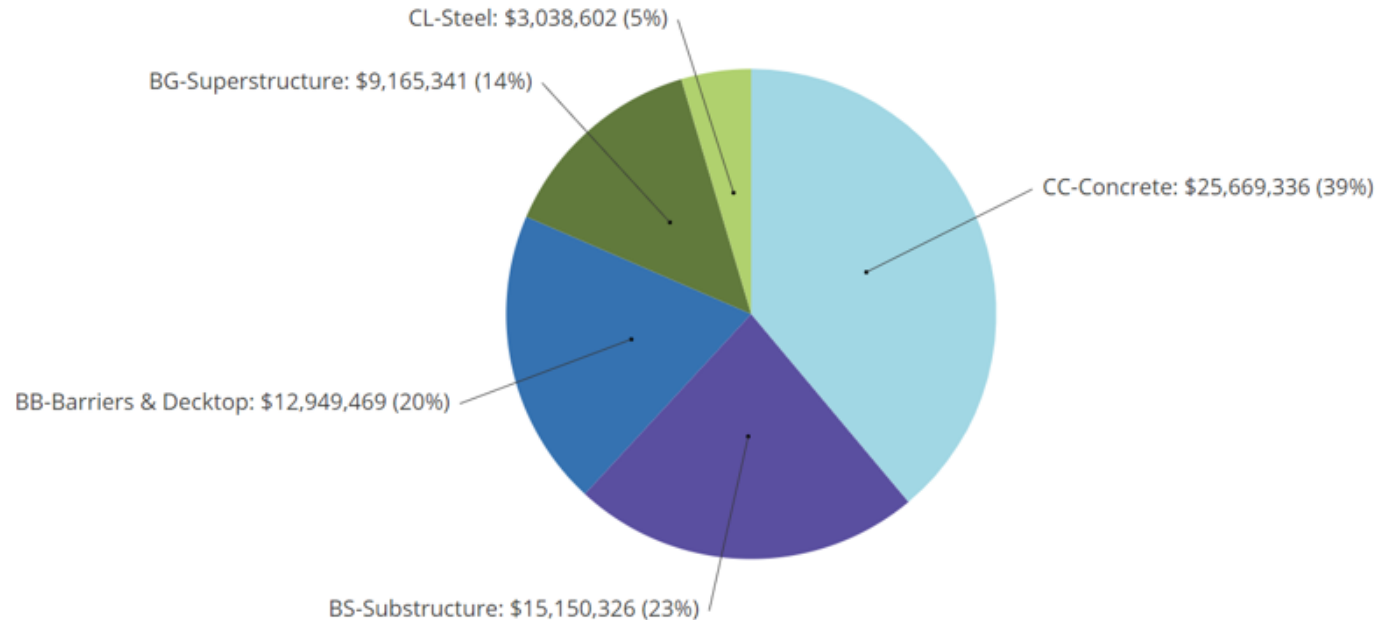
Asset Management Plans

- AMPs should consist of the following sections:
 - State of the Infrastructure
 - Asset Management Strategies
 - Financial Strategies
- What is the planning horizon?
 - Lifecycle and LOS should be at least 10 years
 - Financial Strategy be 10-20 years while also taking into account full lifecycle cost of all assets
- Who should be involved
 - Finance and Public Works, other departments
- Alignment with capital planning/budgeting
 - Ensure that asset management planning aligns with existing capital planning and budgeting processes

Example: Asset Inventory/Replacement Cost

Asset Inventory

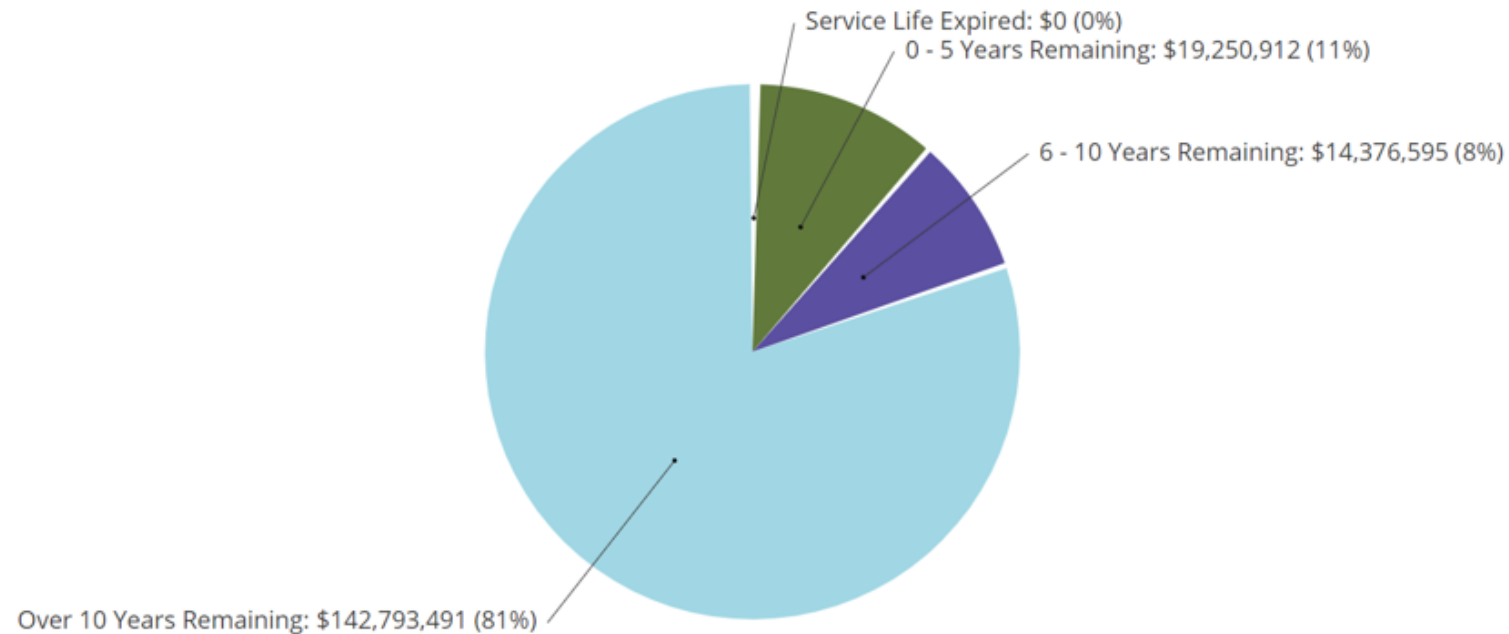
Asset Category	Asset Segment	Quantity	Replacement Cost Method	Replacement Cost
Bridges & Culverts	Bridges - Barriers & Decktop	42 units	NRBCPI (Toronto), User-Defined	\$12,949,469
	Bridges - Superstructure	42 units	User-Defined	\$9,165,341
	Bridges - Substructure	42 units	User-Defined	\$15,150,326
	Culverts - Concrete	66 units	NRBCPI (Toronto), User-Defined	\$25,669,336
	Culverts - Steel	9 units	NRBCPI (Toronto), User-Defined	\$3,038,602
Total:				\$65,973,074



Example: Remaining Useful Life

Remaining Useful Life

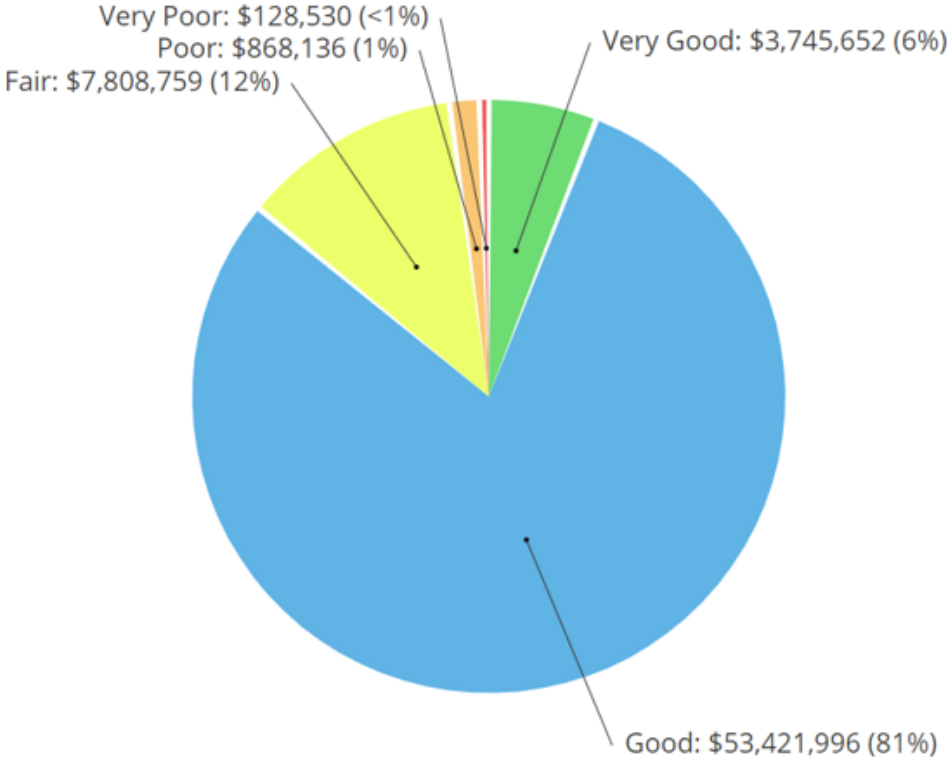
Asset Category	Asset Segment	Estimated Useful Life (Years)	Average Life Remaining (Years)
Bridges & Culverts	Bridges - Barriers & Decktop	30	3.9
	Bridges - Superstructure	60	16.0
	Bridges - Substructure	80	31.0
	Culverts - Concrete	80	39.0
	Culverts - Steel	50	13.8



Example: Condition

Current Asset Condition

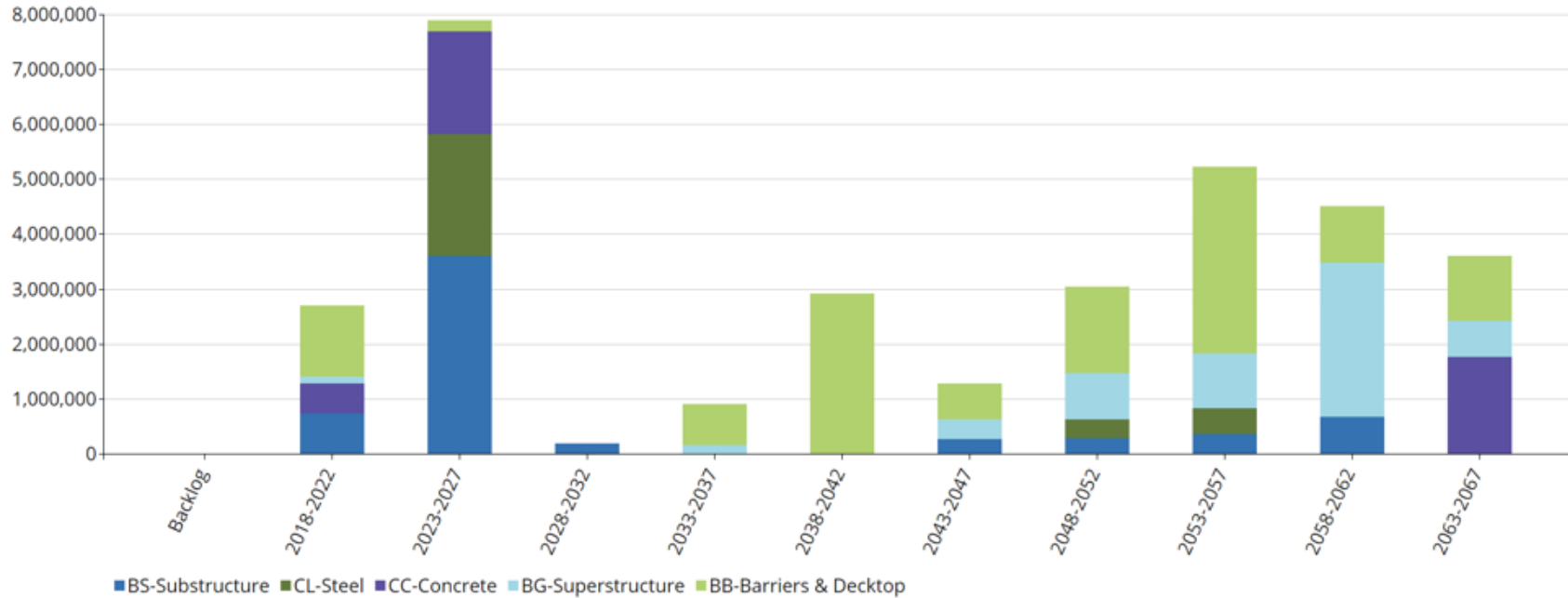
Asset Category	Asset Segment	Condition Source	Average Condition (0-100%)
Bridges & Culverts	Bridges - Barriers & Decktop	Assessed	62%
	Bridges - Superstructure	Assessed	63%
	Bridges - Substructure	Assessed	64%
	Culverts - Concrete	Assessed & Age	70%
	Culverts - Steel	Assessed	65%



Example: Replacement Requirement

Forecasted Replacement Requirements (End of-Life)

	Backlog	2018-2022	2023-2027	2028-2032	2033-2037	2038-2042	2043-2047	2048-2052	2053-2057	2058-2062	2063-2067
Bridges - Barriers & Decktop	\$0	\$1,295,000	\$204,942	\$0	\$742,440	\$2,930,301	\$655,656	\$1,575,888	\$3,412,591	\$1,026,909	\$1,191,215
Bridges - Superstructure	\$0	\$128,530	\$0	\$0	\$172,049	\$0	\$357,897	\$830,612	\$992,695	\$2,815,220	\$657,806
Bridges - Substructure	\$0	\$750,000	\$3,609,913	\$205,649	\$0	\$0	\$275,278	\$288,232	\$377,348	\$684,407	\$0
Culverts - Concrete	\$0	\$540,000	\$1,870,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,773,683
Culverts - Steel	\$0	\$0	\$2,219,960	\$0	\$0	\$0	\$0	\$354,656	\$463,986	\$0	\$0
Total:	\$0	\$2,713,530	\$7,904,815	\$205,649	\$914,488	\$2,930,301	\$1,288,831	\$3,049,388	\$5,246,621	\$4,526,536	\$3,622,703



Average Annual Requirement: \$1,155,000

Financial Strategy Development

- Determine AMP financial requirements based on replacement costs & lifecycle interventions
- Analyze financial capacity & optional funding streams
- Develop scenarios for consideration
- Make recommendations to council
- Determine how municipalities numbers relate to their comparators



Roles and Responsibilities

Roles and Responsibilities

Council

- Approve the AM policy and direction of the AM program
- Prioritize effective stewardship of assets in adoption and ongoing review of policy and budgets
- Approve levels of service. Pass the AMP by resolution

Executive Lead (Financial Services Division)

- Manage policy and policy updates
- Provide organization-wide leadership in AM practices and concepts
- Provide departmental staff coordination
- Monitor levels of service
- Coordinate and track AM program implementation and progress

Roles and Responsibilities

Leadership Team

- Development of policy and policy updates
- Provide corporate oversight to goals and directions and ensure the AM program aligns with the Municipality's strategic plan
- Ensure that adequate resources are available to implement and maintain core AM practices
- Provide departmental staff coordination
- Develop and monitor levels of service and make recommendations to Council
- Track, analyze and report on AM program progress and results
- Maintain adequate organizational capacity to support the core practices of the AM program

Roles and Responsibilities

Departmental Staff

- Utilize the new business processes and technology tools developed as part of the AM program
- Participate in implementation task teams to carry-out AM activities
- Implement and maintain levels of service
- Provide support and direction for AM practices within their department
- Track and analyze AM program progress and results

Summary of Findings

- Aging infrastructure is an international risk, not just local
- Amherstburg faces similar challenges to many municipalities in Canada
- 2016 Asset Management Plan (AMP) indicated a large backlog of work, and fiscal challenges to ensure sustainable services
- Asset Management, as a practice, can provide a way forward
 - Understand trade-offs between costs, risks, and quality of Town services
 - Optimize limited funds by being proactive
 - Forecast long-term needs to ensure Town services are sustainable
- Updating the AMP, and developing an overall program, is key to success
 - This requires roles of council, executive lead, senior management team, and staff

Questions?