Asset Management Webinar Series

Understanding Service Levels

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

Contact ccbf@amo.on.ca for more information

Asset Management Webinar Series

1) Leadership and Governance in Asset Management

2) Establishing Asset Hierarchy & Conducting Data Gap Analysis

3) Understanding Service Levels

4) Using Risk Assessments to Identify Local Priorities
   - October 29

5) Developing a Financial Strategy Using Whole Lifecycle Costs
   - November 5

AMO Association of Municipalities Ontario

AGENDA

- Asset Management Ontario
  - Troy Mander, Director, Asset Management
- Township of South Stormont
  - Mohammed Alsharqawi, Asset Management Program Coordinator
- Q&A

AMO Association of Municipalities Ontario

Levels of Service

The Key to Asset Management Planning

Troy Mander

October 22, 2021

Connection to O.Reg. 588/17

- Identifying Current & Proposed Community and Technical Levels of Service is a specific requirement of the regulation
  - Identifying current and proposed levels of service is foundational to asset management planning
  - The formats for reporting Levels of Service as outlined in the regulation are insufficient for asset management decision making
  - Additional Community and Technical (Asset) Levels of Service are required

Current vs. Proposed Level of Service

Proposed Levels of Service

The levels of service that a municipality seeks to achieve for the assets and services.

Current Levels of Service

The present levels of service being achieved for an asset, or service.

- Council signs off on both Proposed & Current LOS as part of approving the Asset Management Plan

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Why are Levels of Service Important?

They are the cornerstone of asset management planning & decision making

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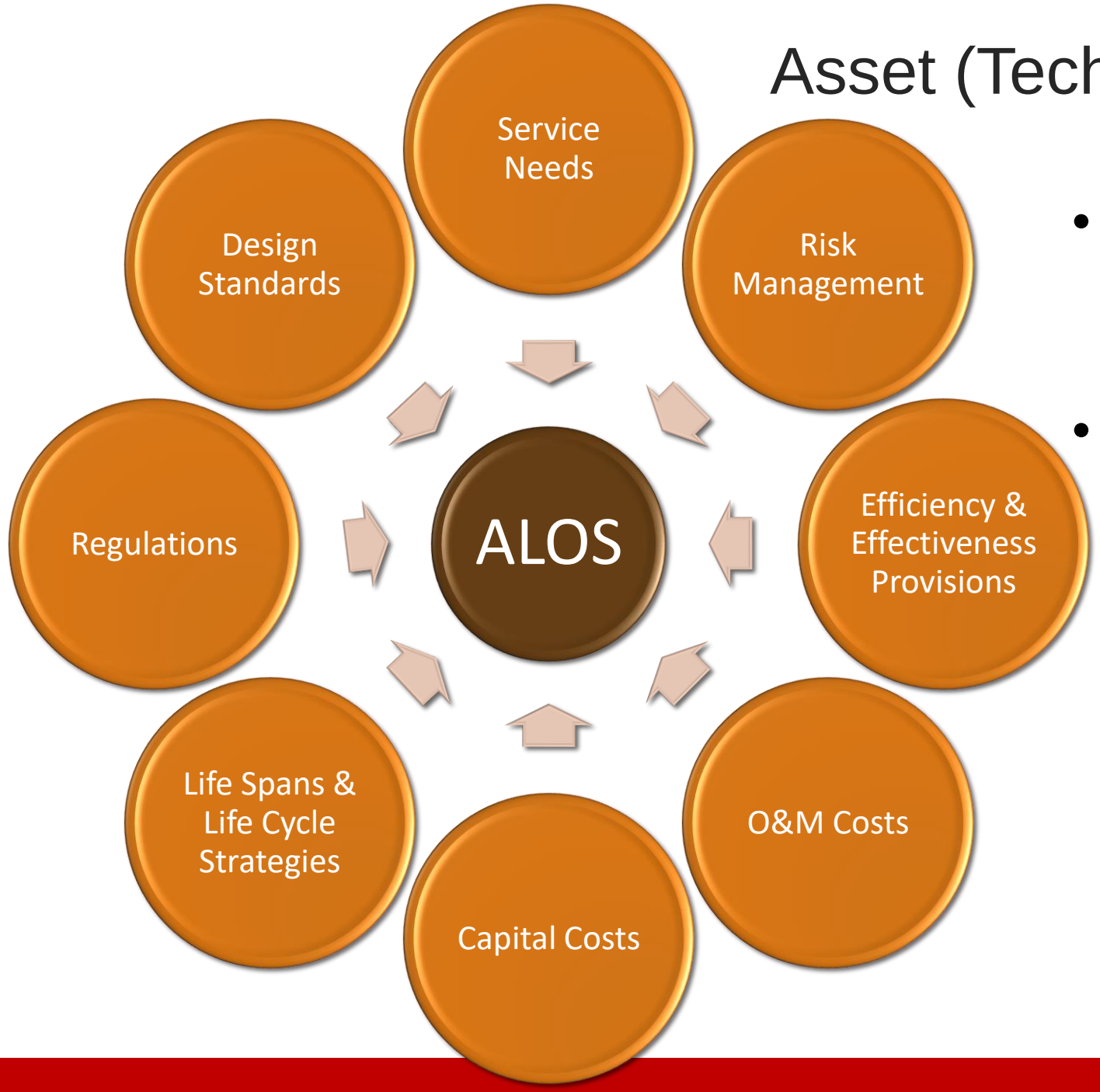
Asset (Technical) Levels of Service



- Determining the right ALOS depends on many inputs
- As the information matures, ALOS will evolve & improve

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The Levels of Service Hierarchy (Water Example)

Service Outcomes

- **Aspirational Goals**
- **Corporate goals across all services**

Health & Safety, Reliability, Quality, Quantity, Efficiency, Accessibility

Strategic LOS

- **Desired Service Outcomes**
  - *Accessible, cost efficient & reasonable cost*
  - *Clean, safe water*
  - *Adequate pressure & flow*

Community LOS

- **How the community experiences the services**
  - *Reliable water that is safe and trustworthy*
  - *Water at a fair and reasonable price*
  - *Available at the quantity & pressure desired*

Asset LOS

- **Capital asset requirements to provide the CLOS**
- **Technical, quantitative, asset specific, drives capital needs**
  - *Assets in "Good" condition*
  - *Operational Functionality = "Good"*
  - *Operational Resiliency = "Good"*
  - *Capacity to Meet Demands ="Good"*

O&M LOS

- **O&M requirements to provide the CLOS**
- **Technical, quantitative, informs annual operations**
  - *Operate all mainline valves annually*
  - *Perform Hydrant Fire Flow Testing every 10 years*
  - *Complete pump inspections & preventative maintenance annually*
  - *Test standby power generators annually*
  - *Test water quality daily*

Line of Sight

Capital Planning Measures

O&M Planning Measures

Community Levels of Service

- Objective-based
- Non-technical
- Tied to the service delivery objectives
- How the community expects to receive the service
- Informed by:
  - Strategic Plans
  - Official Plans
  - Service Plans/Service improvement Plans
  - Public Consultation

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Asset Levels of Service

- Outcome-based
- Technical
- Keep them simple
- Avoid using precise or specific industry design criteria
- Minimize the number of LOS
  - Just enough to describe what is required of the assets to deliver services
  - If numerous criteria are necessary to measure asset requirements, bundle them under an ALOS
  - Continually ask:
    - *“Why do we need this asset level of service?”*
    - *“What will it tell us about the service/asset?”*
    - *“How will it help decision making?”*

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Defining Asset Levels of Service

- Include attributes that reflect:
  - *Health & Safety*
  - *Quality & Quantity*
  - *Efficiency & Reliability*
  - *Accessibility*
  - *Legislated Requirements*

- Targets must be:
  - *Specific*
  - *Measurable*
  - *Relevant*
  - *Achievable*
  - *Sustainable*

- Use industry measures to set ALOS ratings & targets
  - E.g., PCI, BCI, FCI, PACP

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Setting Asset Levels of Service Targets

Use for:
- Complex or critical assets
- Where rehab strategies are more cost efficient than full asset replacement

Higher ALOS

- Maintains higher service levels
- Reduces risk
- May be more difficult to sustain

Lower ALOS

- Lowers service levels
- Increases risk
- May be easier to sustain

Use for:
Less critical, less complex or “throw-away” assets

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Finding the Right Balance

- Levels of Service evolve over time
  - Start with what you know works for services in the community
  - Maintain targets for what works
  - Revise targets for what doesn't work

A Process of Trial & Error!

LOS Process – Sustainable Services = Sustainable Assets

State the service goals

Describe the services the public receives

ID Asset Classes that provide the services

Consider what is required of the Asset Class to provide the service

- What is the minimum condition the assets should be in?
- How should the assets perform?

How can the requirements be measured? E.g.:

- Age
- Wear/breaks
- Condition Index
- Capacity to Meet Demands
- Operational Functionality
- Operational Resiliency

What are the risks if the requirements are not met?

- Health & Safety
- Community Services
- Municipal Finances
- Environment
- Reputation

Set ALOS to provide adequate & safe services & manage risks

- Capital costs to achieve ALOS?
- O&M costs to maintain ALOS?

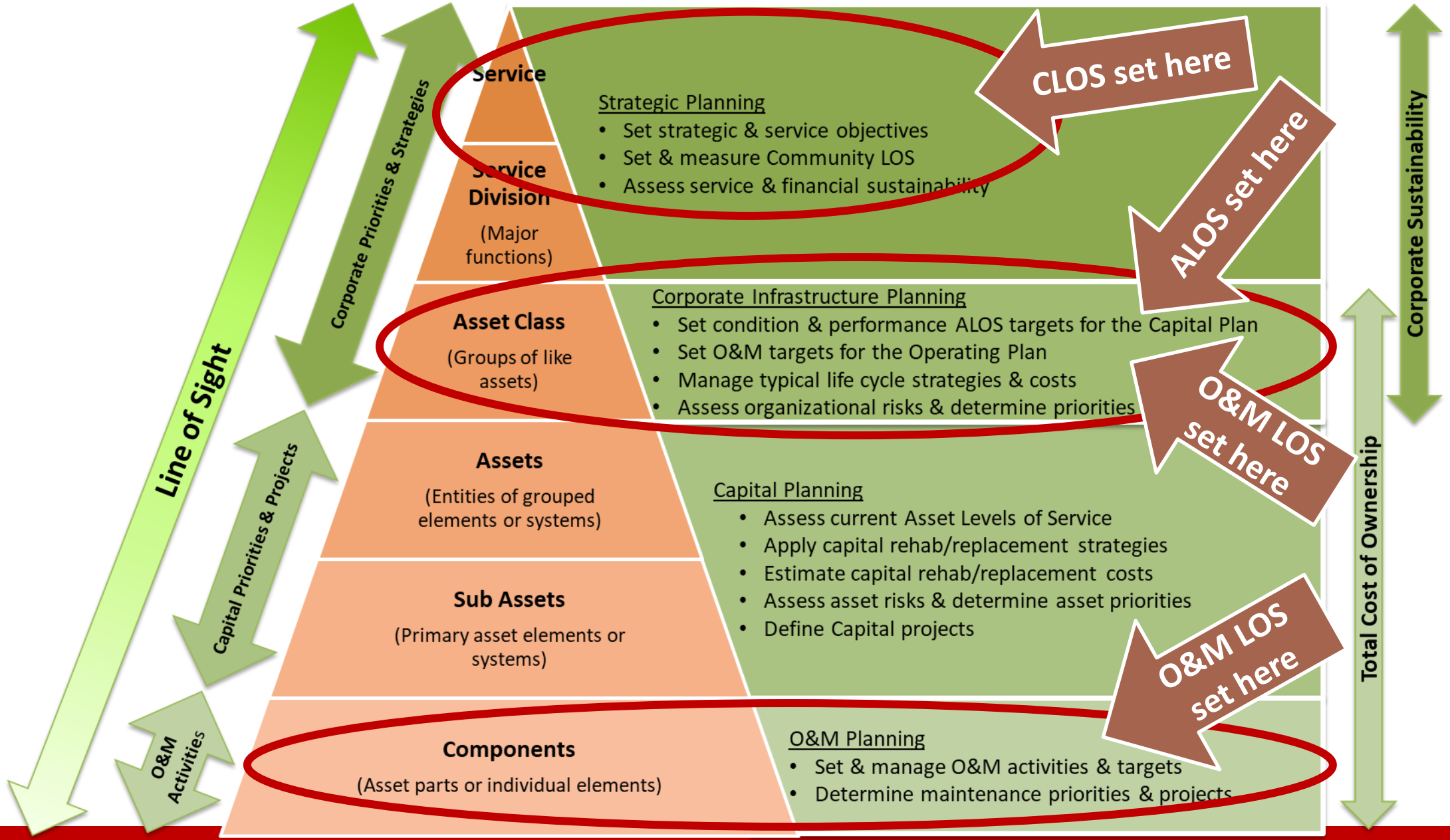
Are the ALOS sustainable?

YES → Maintain ALOS

NO → Revise revenues or ALOS

AMONTario Level of Service Framework

Alignment of the Service to Asset Hierarchy to Organizational Processes



AMONTario LOS Framework

Inputs to the Risk assessments & modelling

Condition Levels of Service				Performance Levels of Service			
ALOS Measures	**Corresponding Likelihood of Failure Measures**			**ALOS Measures**		**Corresponding Likelihood of Failure Measures**	
PCI, BCI, FCI, PACP, General Ratings ("Very Good" to "Very Poor"), Maximum Age, etc.	**Risk Ratings**	**Estimated Timeframe**	**% LoF**	1. Operational Functionality 2. Capacity to Meet Demands 3. Operational Resiliency 4. Environmental Resiliency	**ALOS Rating**	**Risk Ratings**	**% LoF**
	Very Unlikely	>20 yrs.	<10%		Very Good	Very Unlikely	<10%
	Unlikely	11-20 yrs.	10%-30%		Good	Unlikely	10%-30%
	Possible	6-10 yrs.	30%-60%		Fair	Possible	30%-60%
	Likely	1-5 yrs.	60%-90%		Poor	Likely	60%-90%
	Very Likely or Certain	<1 yr.	>90%		Very Poor	Very Likely or Certain	>90%

Measured using specific asset design criteria in combination with operational or site assessments

AMONTario ASSET MANAGEMENT ONTARIO

ALOS & Supporting Criteria

ALOS Categories	Measurement Attributes Using Industry Measures, Ministry Design Guidelines, Regulations & Other Precedents
Condition	Physical state of the asset measured by condition rating systems: • PCI, BCI, FCI, PACP, Number of Breaks, Very Good to Very Poor etc.
Operational Functionality	- Efficiency and effectiveness of service delivery - Ability to meet minimum current design and/or safety requirements - Level of operational problems experienced and whether they affect community services. - Compliance with current Regulations and/or Standards (including the level of "grandfathering") - Whether all required elements are present. - Relevance and effectiveness of technology - Efficiency of resource consumption
Capacity to Meet Demands	- To what degree capacity satisfies current demands and minimum community service levels - Level of operational problems experienced. - Are there noticeable negative affects on community service levels or stakeholders (residents and businesses)
Operational Resiliency	- To what degree minimum service requirements are maintained/protected with back-up systems, spare capacity or alternative supply. - To what extent the assets are secure from acts of vandalism, trespassing, theft, assault or terrorism.
Environmental Resiliency	- To what extent the assets are resilient to environmental stresses; e.g., impacts from wind, fire, flooding, excessive rainfall/snowfall etc.. - To what extent are the assets resilient to the affects of climate change.

Principles of the AMONTario LOS Framework

- ALOS are distinguished by the asset classes
  - i.e. all assets in the asset class generally meet similar ALOS targets
- Use industry precedent as much as possible
  - e.g. typical industry measures, design guidelines
- Guided by available asset data or data to be collected
  - Must first have the data in order to use the measures
- Minimize the number of ALOS
  - Objective-based measures
  - Just enough to tell the story of what is needed & relevant
  - Can bundle several criteria under one ALOS
  - Minimizes the costs & time to maintain supporting data

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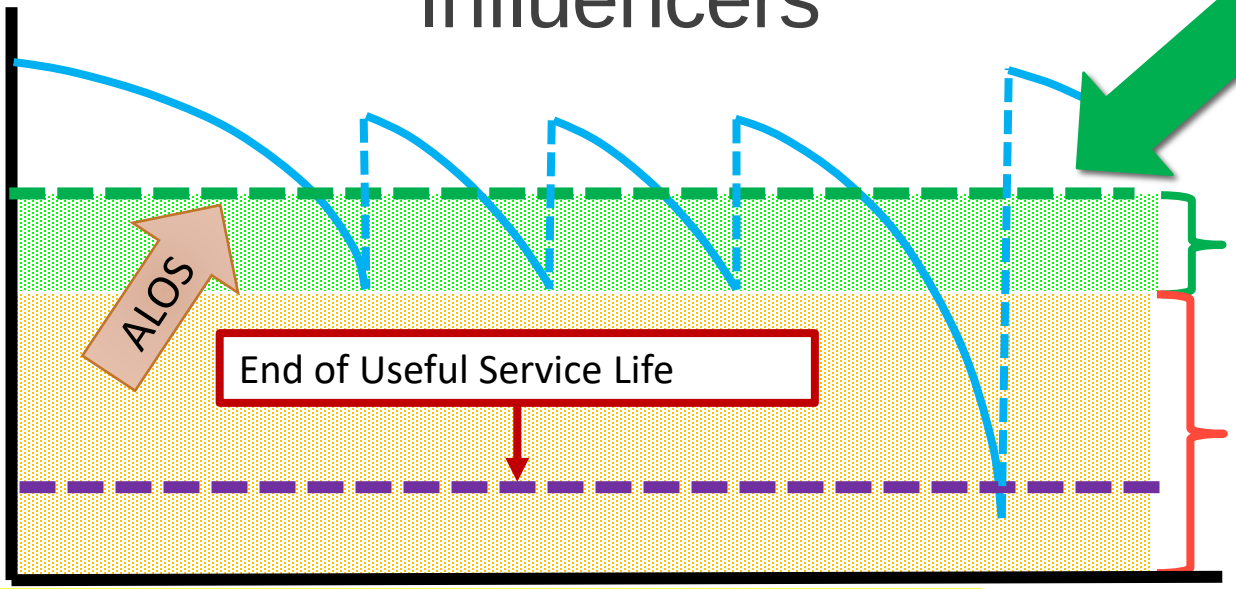
Principles of the AMONTario LOS Framework

- Informs appropriate life cycle strategy options
  - What needs to happen to the assets & when
  - Reflects cost effective life-cycle strategies
  - Informs the annual budget & forecast

Asset Levels of Service Influencers



Higher ALOS Target: **"Good" or LoF > 10 Years**

Provides for:

- Cost effective renewal options,
- Longer lead time to plan & finance major capital works
- Less risk of failure.

Suitable for:

- Costly, critical & complex assets
- Assets that are more cost effective to renew than replace
- Assets with higher O&M costs

Lower ALOS Target: "Fair" or LoF = 6 – 10 Years

- Renewals are simple or not economically viable

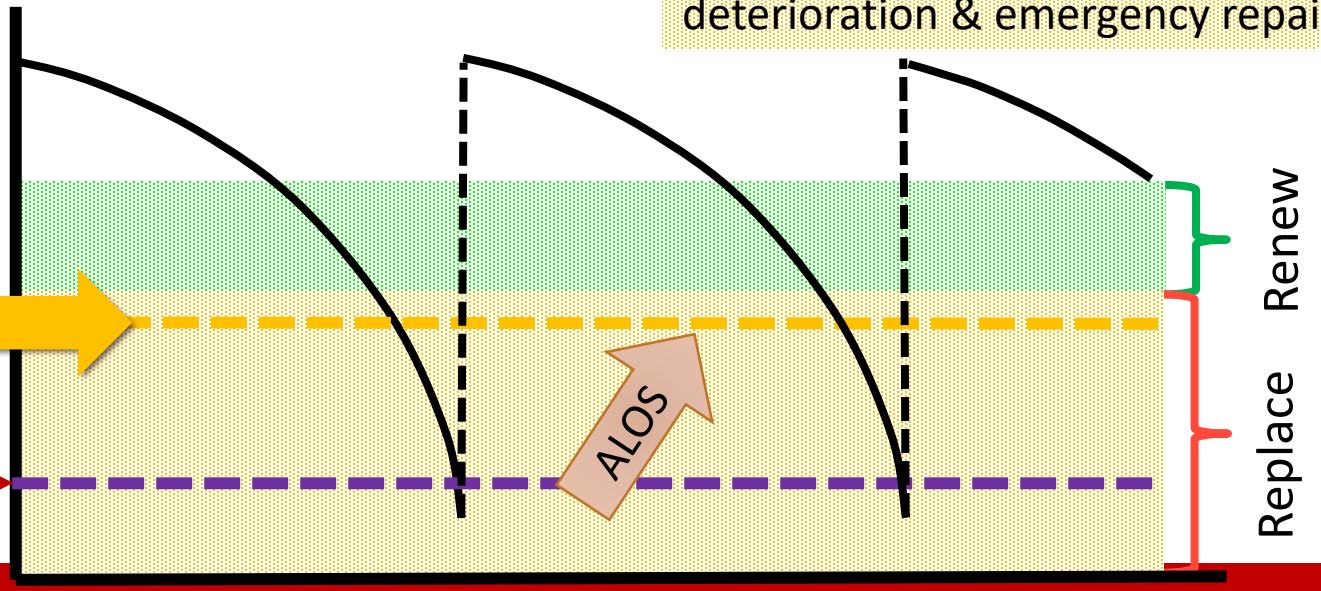
May be suitable for:

- Simpler, less costly, non-critical assets
- Assets for which complete change-outs are more cost effective & straightforward and can be done in a short time
- Assets with lower or less variable O&M costs

End of Useful Service Life

Most efficient operating zone

Higher O&M cost zone due to deterioration & emergency repairs



Principles of the AMONTario LOS Framework

- Reflects asset criticality & risk tolerances
  - Set a higher ALOS for more critical assets where there is less tolerance for failure

- ALOS Controls the level of risk to assets and services
  - Higher ALOS targets = less risk/risk tolerance

Asset Levels of Service control Likelihood of Failure

Risk =  **Consequence** ✕ **LoF** 

Failing ALOS targets <u>OR</u> setting inadequate ALOS targets

= **Unacceptable Risk**

Meeting appropriate ALOS targets

= **Acceptable Risk**

Principles of the AMONTario LOS Framework

- Measures that inform what is required of the assets to provide services
  - A direct method to measure progress toward CLOS objectives
  - Reuses Current & Target ALOS for Performance monitoring
  - An alternative to collecting numerous KPI's that inform on parts of service level achievements
  - Reduces data management

Mapping ALOS to Service Outcomes

ALOS Categories	Predominant Community Service Outcomes					
	Health & Safety	Reliability	Quality	Quantity	Efficiency	Accessibility
Condition	X	X	X	X	X	
Operational Functionality	X	X	X		X	X
Capacity to Meet Demands	X	X	X	X	X	X
Operational Resiliency	X	X				
Environmental Resiliency	X	X				X

Measuring Achievement of Service Objectives

Level of Service Performance Scoring						
Service Outcomes	**Community Levels of Service**	**Asset Class**	**ALOS Targets**	**Supports CLOS[1]**	**Target CLOS Performance[2]**	**Current CLOS Performance**
1. Health & Safety 2. Reliability 3. Quality 4. Quantity 5. Efficiency 6. Accessibility	1. Reliable water that is safe and trustworthy 2. Water at a fair and reasonable price 3. Available at the quantity & pressure desired	Pumping Stations	Condition = Good	1, 2, 3	6	TBD
			Operational Functionality =	1, 2, 3	6	TBD
			Capacity to Meet Demands = Good	1,2,3,4,5,6	6	TBD
			Operational Resiliency = Good	1	2	TBD
			Environmental Resiliency = Good	1	2	TBD
			CLOS Performance Totals		**22**	**TBD**

Option 1

Option 2

Multiply # of CLOS by **2** (Meets ALOS Targets)
e.g. 3 CLOS X 2 = 6

Notes: 1. Alternative Option: Reference the "Service Outcome:" measures

2. Target CLOS Performance = 2 (Meets ALOS Targets) X Number of CLOS or Service Outcomes Supported

Notes:
1. If CLOS Rating is **higher** than Target: Then NOT fully meeting CLOS objectives
2. If CLOS Rating is **equal** to Target: Then MEETS CLOS objectives
3. If CLOS Rating is **less** than Target: Then EXCEEDS CLOS objectives

Desired Target

TABLE 1
Measuring CLOS Performance

ALOS Status	CLOS Performance Rating
Exceeds ALOS Targets	1
Meets ALOS Targets	2
Partially Below ALOS Targets	3
Well Below/Fails ALOS Targets/ Unacceptable	4

AMONTario Level of Service Packages

ALOS Summary – Water

ALOS Type	Asset Classes/Types	Rating Method	Distribution by Asset Ratings (Assets as a % of the Total Asset Class) and Corresponding Likelihood of Failure[1]				
			Very Unlikely <10%	**Unlikely 10%-30%**	**Possible 30%-60%**	**Likely 60%-90%**	**Very Likely >90%**
Condition	All	Remaining Useful Service Life[2]	>20 Years	11-20 Years	6-10 Years	1-5 Years	<1 Year
	Civil Structures, Mechanical & Electrical Equipment	Generic Rating	Very Good	Good	Fair	Poor	Very Poor
		General Description	- Fit for the future. - Well maintained, in good condition, new or recently rehabilitated. - *Minor defects and/or wear*	- Adequate for now. - *Modest defects and/or wear.*	- Shows signs of deterioration and some elements exhibit deficiencies. - May require attention. - *Moderate defects and/or wear*	- An increasing potential for asset conditions to affect the services it (or they) provides. - Approaching the end of service life. - The condition is below the standard and a large portion of the system *(or asset)* exhibits significant deterioration. - *Significant defects and/or wear.*	- Unfit for sustained service. - Near or beyond its expected service life and shows widespread signs of advanced deterioration. - The asset or some assets may be unusable. - *Severe defects and/or wear*
	Watermains	Breaks	<X Breaks	X to X Breaks	X to X Breaks	X to X Breaks	>X Breaks
Performance	All	Generic Rating	Very Good	Good	Fair	Poor	Very Poor
		General Description	Exceeds or fully meets performance requirements. No affect to services	Meets performance requirements. No affect to services	Just meets performance requirements with some limitations Minor or no perceivable affects to services.	Does not meet several performance requirements in whole or in part. Perceivable and/or sporadic affects to services	Does not meet many or most performance requirements as a whole. Moderate or significant and/or ongoing affects to services.

Use Condition Assessments, Asset Age or Maintenance Information

Use AMONTario Performance Evaluation sheets

AMONTario ASSET MANAGEMENT ONTARIO

AMONTario **Asset Class** Performance Evaluation

(Partial Listing)

Prepopulated evaluation criteria

Entered by users as a % of the Asset Class

Asset Class Performance Scores:
Inputs to the AMONTario Level of Service Document

Asset Classes/Types[7]	ALOS	Context for Evaluating Performance Criteria[1]	Criteria to Support Proposed ALOS Target[1, 2] (where information is available)	Weightings based on importance to ALOS[4, 5] (Optional)	Distribution of Asset Ratings for each ALOS[2, 3]						
					% Very Good	% Good	% Fair	% Poor	% Very Poor	% NA	TOTAL
- Pumping Stations/Booster Pumping and Pumping Systems - Standby Power - Surge protection systems/tanks	Operational Functionality	- Efficiency and effectiveness of service delivery - Ability to meet minimum current design and/or safety requirements - Level of operational problems experienced and whether they affect community services. - Compliance with current Regulations and/or Standards (including the level of "grandfathering") - Whether all required elements are present. - Relevance and effectiveness of technology - Efficiency of resource consumption	- Does not exceed recommended maximum pressures and flows	3		90	10				100
			- Operates within recommended minimum and maximum pressures and flows during normal conditions	4		90	10				100
			- Suction and discharge stays within minimum and maximum velocities for various demand conditions		20	50	10	20			100
			- Systems and technology are efficient	4		50		50			100
			- Compliance with Provincial and Municipal Codes/Regulations (Ministry of Labour, Building, Fire and Electrical including Canadian Electrical Code (CSA C22.1-06)).	5		50		30	20		100
			Average Operational Functionality ALOS Ratings	**18**	**2**	**66**	**5**	**22**	**6**	**0**	**100**
			ALOS Rating - Operational Functionality	**3**	**Fair**						
	Capacity to Meet Demands	- To what degree capacity satisfies current demands and minimum community service levels - Level of operational problems experienced. - Are there noticeable negative affects on community service levels or stakeholders (residents and businesses)	- Able to provide adequate minimum pressures and flows for peak hour or maximum day plus fire demand conditions	5		80	10	10			100
			- Other								
			Average Capacity to Meet Demands ALOS Ratings	**5**	**0**	**80**	**10**	**10**	**0**	**0**	**100**
			ALOS Rating - Capacity to Meet Demands	**2**	**Good**						
	Operational Resiliency	To what degree are minimum service requirements are maintained/protected with back-up systems, spare capacity or alternative supply.	- Pumping stations have "firm" pumping capacity	5		100					100
			- Adequate back-up capacity/units for critical pumping station processes	5		50		50			100
			- Adequate standby power generation capacity (e.g. Average day demand + power for process control + emergency lighting. (Requirements can be increased by municipalities)	4		50	20		30		100
			- Pumping systems and stations should be designed to minimize surges and transient pressure conditions including negative pressures	2		50	30	20			100
		To what extent are the facilities secure from acts of vandalism, trespassing, theft, assault or terrorism.	- Adequate site security	3		100					100
			Average Operational Resiliency ALOS Ratings	**19**	**0**	**71**	**7**	**15**	**6**	**0**	**100**
			ALOS Rating - Operational Resiliency	**3**	**Fair**						
	Environmental Resiliency	To what extent the assets are resilient to environmental stresses, e.g. impacts from wind, fire, flooding, excessive rainfall/snowfall etc..	- Pumping Station facilities are protected from 100-year storm events	4		100					100
		To what extent are the facilities resilient to climate change.	- Climate change adaptation measures are in place								
			Average Environmental Resiliency ALOS Ratings	**4**	**0**	**100**	**0**	**0**	**0**	**0**	**100**
			ALOS Rating - Environmental Resiliency	**2**	**Good**						

ALOS Criteria
Example: Operational Functionality for Water Pumping Stations

ALOS	Context for Evaluating Performance Criteria[1]	Criteria to Support Proposed ALOS Target[1, 2] (where information is available)	Weightings based on importance to ALOS[4, 5] (Optional)	Distribution of Asset Ratings for each ALOS[2, 3]						
				% Very Good	% Good	% Fair	% Poor	% Very Poor	% NA	TOTAL
Operational Functionality	- Efficiency and effectiveness of service delivery - Ability to meet minimum current design and/or safety requirements - Level of operational problems experienced and whether they affect community services. - Compliance with current Regulations and/or Standards (including the level of "grandfathering") - Whether all required elements are present. - Relevance and effectiveness of technology - Efficiency of resource consumption	- Does not exceed recommended maximum pressures and flows								
		- Operates within recommended minimum and maximum pressures and flows during normal conditions								
		- Suction and discharge stays within minimum and maximum velocities for various demand conditions								
		- Systems and technology are efficient								
		- Compliance with Provincial and Municipal Codes/Regulations (Ministry of Labour, Building, Fire and Electrical including Canadian Electrical Code (CSA C22.1-06)).								
		Average Operational Functionality ALOS Ratings	**0**							**0**
		ALOS Rating - Operational Functionality		**0**						

Documenting Current & Desired Levels of Service

AMONTario **Asset Class** Performance Evaluation Sheet

Based on Estimated remaining useful service life

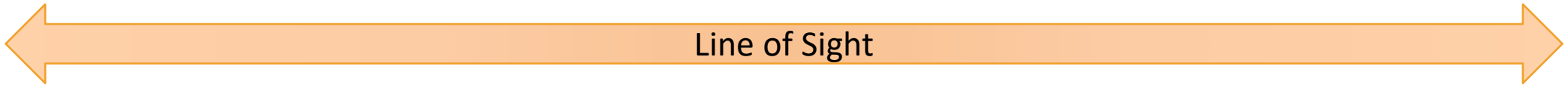
Estimated Likelihood of (Service) Failure

Based on asset condition information

Supporting Asset Classes	Target Asset Levels of Service (by Asset Class)	Current Asset Levels of Service						
		Asset Class Average	Distribution by Asset Rating					
			%	%	%	%	%	
Pumping Stations	Condition	Condition						
	Mechanical Equipment = Good	Fair		40	50	10		
	Electrical Equipment = Good	Fair	10	30	40	20		
	Civil Assets = Good	Good		70	30			
	Performance	Performance						
	Operational Functionality = Good	Fair	2	66	5	22	6	
	Capacity to Meet Demands = Good	Good		80	10	10		
	Operational Resiliency = Good	Fair		71	7	15	6	
	Environmental Resiliency = Good	Good		100				

Weightings based on importance to ALOS[4] (Optional)	Distribution of Asset Ratings for each ALOS[2, 3]						
	% Very Good	% Good	% Fair	% Poor	% Very Poor	% NA	TOTAL
[illegible]		90	10				100
4		90	10				100
2	20	50	10	20			100
4		50		50			100
5		50		30	20		100
18	**2**	**66**	**5**	**22**	**6**	**0**	**100**
3	**Fair**						
5		80	10	10			100
5	**0**	**80**	**10**	**10**	**0**	**0**	**100**
2	**Good**						
5		100					100
5		50		50			100
4		50	20		30		100
2		50	30	20			100
3		100					100
19	**0**	**71**	**7**	**15**	**6**	**0**	**100**
3	**Fair**						
		100					100
4	**0**	**100**	**0**	**0**	**0**	**0**	**100**
2	**Good**						

Completed Level of Service Documentation



Service	Program Service Objectives	Community Levels of Service	Service Division	Supporting Asset Classes	Target Asset Levels of Service (by Asset Class)	Current Asset Levels of Service					
						Asset Class Average	Distribution by Asset Rating				
							%	%	%	%	%
Water	Accessible, cost efficient & reasonable cost	Water at a fair and reasonable price	Distribution	Pumping Stations	Condition	Condition					
					Mechanical Equipment = Good	Fair		40	50	10	
					Electrical Equipment = Good	Fair	10	30	40	20	
					Civil Assets = Good	Good		70	30		
	Clean, safe water	Reliable water that is safe and trustworthy			Performance	Performance					
					Operational Functionality = Good	Fair	2	66	5	22	6
					Capacity to Meet Demands = Good	Good		80	10	10	
	Adequate pressure & flow	Available at the quantity & pressure desired			Operational Resiliency = Good	Fair		71	7	15	6
					Environmental Resiliency = Good	Good		100			

AMONTario **Asset** Performance Evaluation

(Partial Listing)

Asset Performance Scores

Asset Types	ALOS	Context for Evaluating Performance Criteria[1]	Criteria to Support Proposed ALOS Target[1] (where information is available)	Weightings based on importance to ALOS[2] (Optional)	Asset Ratings for each ALOS	TOTAL
- Pumping Stations/Booster Pumping and Pumping Systems - Standby Power - Surge protection systems/tanks	Operational Functionality	- Efficiency and effectiveness of service delivery - Ability to meet minimum current design and/or safety requirements - Level of operational problems experienced and whether they affect community services. - Compliance with current Regulations and/or Standards (including the level of "grandfathering") - Whether all required elements are present. - Relevance and effectiveness of technology - Efficiency of resource consumption	- Does not exceed recommended maximum pressures and flows	5	Fair	3
			- Operates within recommended minimum and maximum pressures and flows during normal conditions	4	Fair	3
			- Suction and discharge stays within minimum and maximum velocities for various demand conditions	1	Poor	4
			- Systems and technology are efficient	3	Poor	4
			- Compliance with Provincial and Municipal Codes/Regulations (Ministry of Labour, Building, Fire and Electrical including Canadian Electrical Code (CSA C22.1-06)).	3	Very Poor	5
			Average Operational Functionality ALOS Rating	**16**	**Poor**	**4**
	Capacity to Meet Demands	- To what degree capacity satisfies current demands and minimum community service levels - Level of operational problems experienced. - Are there noticeable negative affects on community service levels or stakeholders (residents and businesses)	- Able to provide adequate minimum pressures and flows for peak hour or maximum day plus fire demand conditions	5	Fair	3
			Average Capacity to Meet Demands ALOS Rating	**5**	**Fair**	**3**
	Operational Resiliency	To what degree are minimum service requirements are maintained/protected with back-up systems, spare capacity or alternative supply.	- Pumping stations have "firm" pumping capacity	5	Good	2
			- Adequate back-up capacity/units for critical pumping station processes	5	Poor	4
			- Adequate standby power generation capacity (e.g. Average day demand + power for process control + emergency lighting. (Requirements can be increased by municipalities)	4	Very Poor	5
			- Pumping systems and stations should be designed to minimize surges and transient pressure conditions including negative pressures	2	Poor	4
		To what extent are the facilities secure from acts of vandalism, trespassing, theft, assault or terrorism.	- Adequate site and facility security	2	Good	2
			Average Operational Resiliency ALOS Rating	**16**	**Poor**	**4**
	Environmental Resiliency	To what extent the assets are resilient to environmental stresses; e.g. impacts from wind, fire, flooding, excessive rainfall/snowfall etc..	- Pumping Station facilities are protected from 100-year storm events	4	Good	2
		To what extent are the facilities resilient to climate change.	- Climate change adaptation measures are in place		N/A	
			Average Environmental Resiliency ALOS Rating	**4**	**Good**	**2**
			Total Performance		Poor	**4**

Questions

Development of Levels of Service

Mohammed Alsharqawi

Township of South Stormont

October 22nd, 2021

What are LOS?

Levels of Service (LOS) are specific parameters that describe the extent and quality of services that the municipality provides to users. LOS link an asset's performance to target performance goals and can be broken down into the following:

- Customer (Community) Levels of Service: CLOS define how a service is perceived by the user, with non-technical measures for service goals.
- Technical (Asset) Levels of Service: TLOS are specific and quantifiable measures for service targets.

Within these LOS are Legal Requirements: Statutory, Regulatory and contractual requirements are the minimum levels of service that must be provided. For example, drinking water must meet legislative requirements.

The LOS Hierarchy

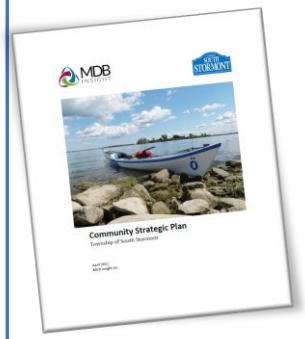
Township's LOS Hierarchy

TOWNSHIP STRATEGIC PLAN

Mission

Vision

Goals and Objectives



CUSTOMERS' VALUES

- Condition/ Quality
- Operational Functionality
- Capacity
- Financial Sustainability

CORPORATE LOS OBJECTIVES

- Assets kept in good condition
- Assets are safe and accessible
- Capacity meets/exceeds demands
- Availability of short/long term financial needs

CUSTOMER LOS

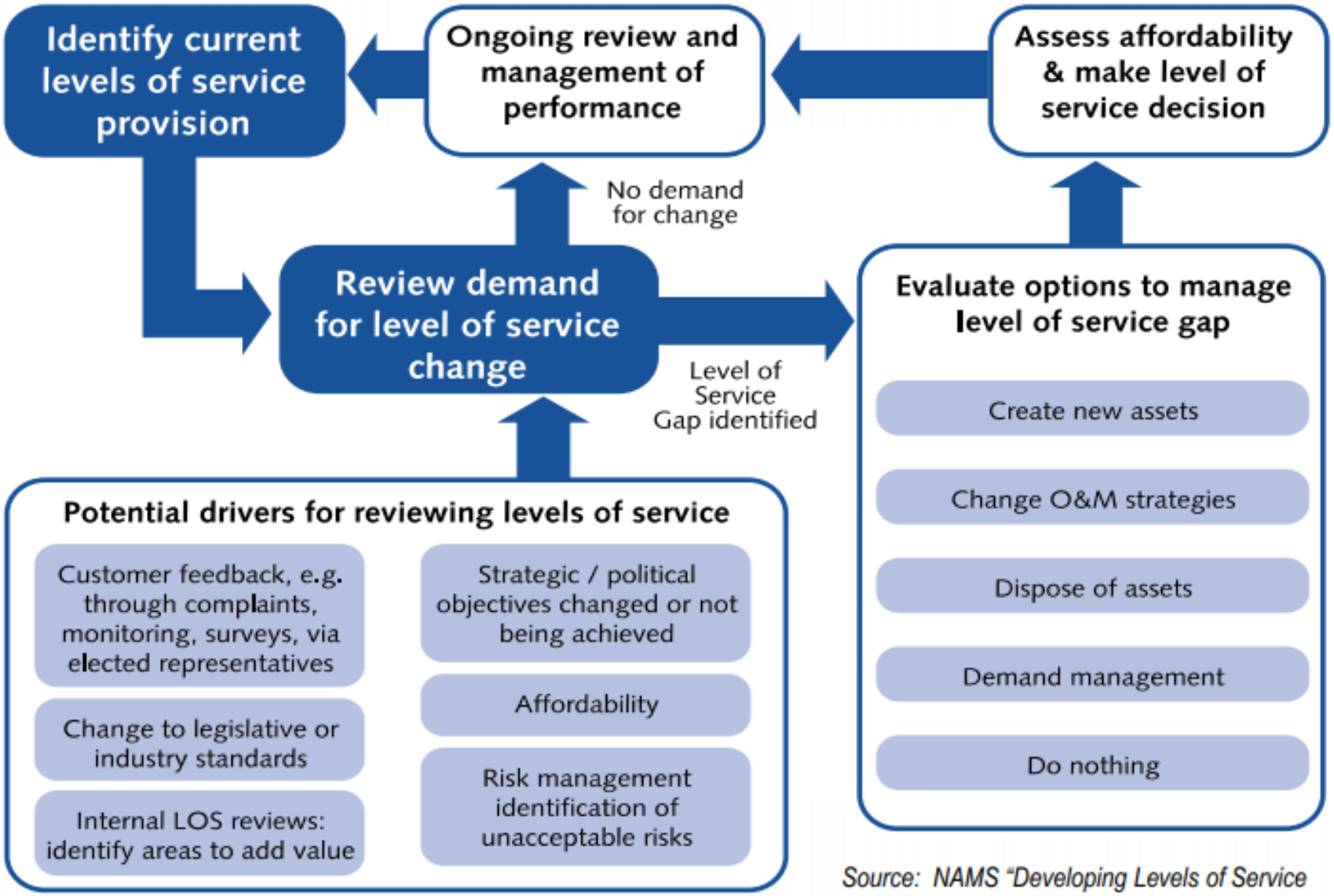
- Customer LOS 1
- Customer LOS 2
- Customer LOS 3
- Customer LOS 4
- Customer LOS 5

TECHNICAL LOS

- Technical LOS 1
- Technical LOS 2
- Technical LOS 3
- Technical LOS 4
- Technical LOS 5
- Technical LOS 6
- Technical LOS 7
- Technical LOS 8

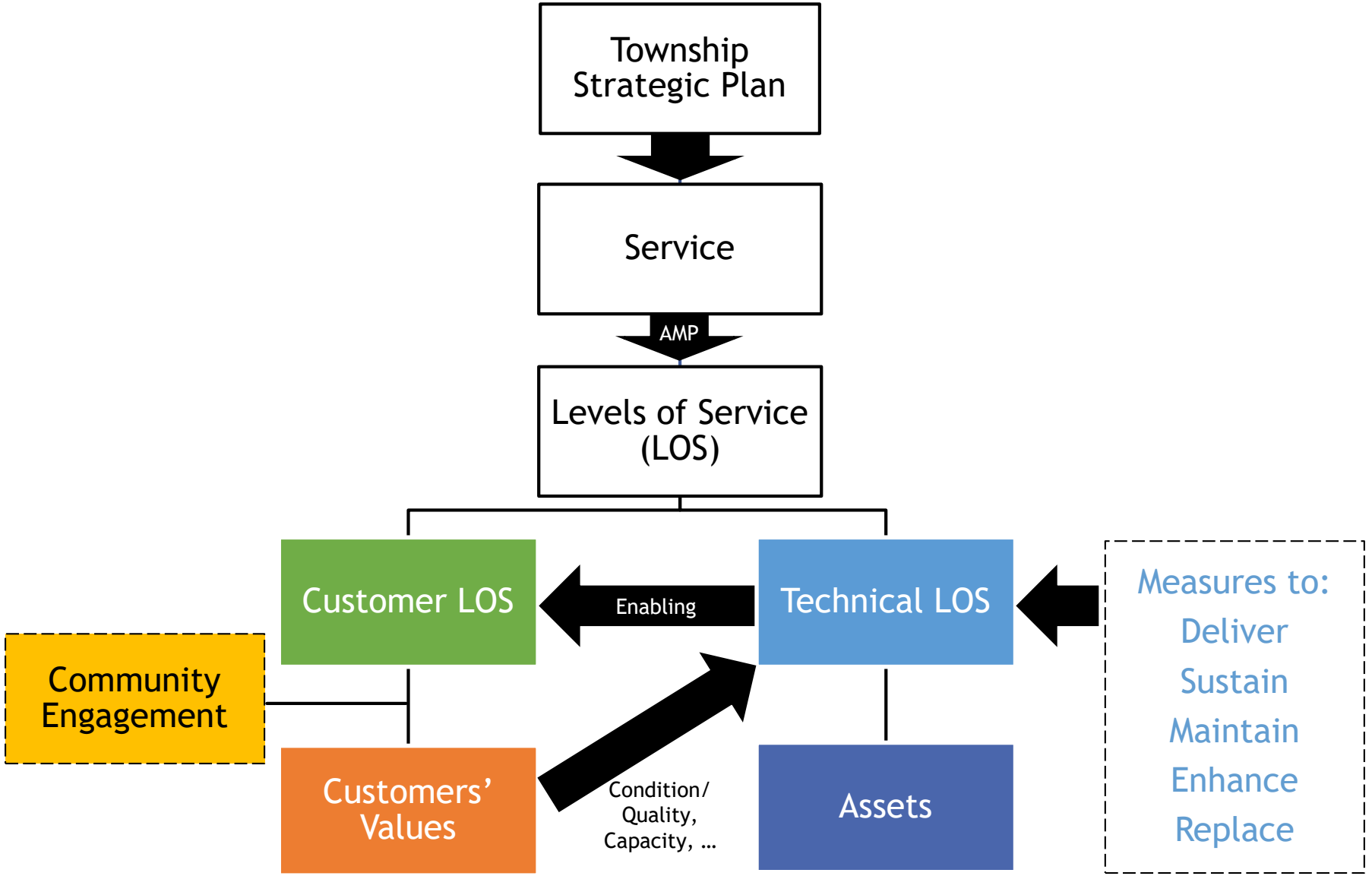
Line of Sight

Developing LOS and Performance Measures



Source: NAMS "Developing Levels of Service and Performance Measures" 2007

Developing LOS and Performance Measures



Setting Effective Customer & Technical Levels of Service

O. Reg. 588/17 Levels of Service Example for Roads

Service Attribute	Customer LOS	Technical LOS
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity.	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality.
Quality	Description or images that illustrate the different levels of road class pavement condition.	1. For paved roads in the municipality, the average pavement condition index value.
		2. For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).

Customer Levels of Service Example for Roads

Corporate LOS Objective	Customer LOS Measure	Current Performance	Expected Trend Based on Planned Budget
Assets are kept in good condition	Roads assets in fair or better condition		
Assets are as safe and accessible as possible throughout the year	Percentage of outstanding work orders		
Capacity meets or exceeds current demands	Current ADT (Average Daily Traffic)/Current Capacity in ADT		
Availability of near-term financial needs	Ratio of 10-year budget to need		
Replacement Cost is held in reserve	Ratio of reserve to replacement value		

Technical Levels of Service Example for Water

Purpose of Activity	Technical LOS Measure	Current Performance	Recommended Performance
Maintain user groups or areas of the municipality connected to the municipal water system			
Maintain overall quality and reliability of the water supply and distribution system			
Maintain Ontario Clean Drinking Water standard			
Alignment with service delivery and customer expectations			
Maintain sufficient capital re-investment in system and measure overall reliability of the system			
Maintain asset renewal rate			

Notes:	* O.Reg. 588/17 LOS

Technical Levels of Service Example for Wastewater

Purpose of Activity	Technical LOS Measure	Current Performance	Recommended Performance
Maintain user groups or areas of the municipality connected to the municipal wastewater system	Percentage of properties connected to the municipal wastewater system*		Not Applicable
Inspection Program Regulation	Assets undergo activities such as inspection, monitoring, cleaning and flushing	Every 5 years	Every 5 years
Maintain overall reliability of the wastewater system and level of risk to users	Number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system*		
Routine monitoring of effluent	Number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system*		
Alignment with service delivery and customer expectations	Number of complaints due to performance/failure of wastewater facility/equipment		
Maintain asset renewal rate	Percentage of assets beyond replacement year		
Notes:	* O.Reg. 588/17 LOS		

Thank You!

Mohammed Alsharqawi – Bio

An enthusiastic Civil Engineering professional with interest in Construction and Infrastructure Management. He has over 10 years of experience in construction, infrastructure, and academia as it relates to asset management. Currently, Mohammed is leading the Township of South Stormont asset management program initiatives and providing guidance and support to the Township's public works services.

Mohammed Alsharqawi holds a PhD from Concordia University, Canada as well as, a Master of Engineering Management from University of Wollongong, Australia and a Bachelor of Science in Civil Engineering from the American University of Sharjah, United Arab Emirates.

Questions?

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All presentations, templates and recordings can be accessed here

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