



Committee of the Whole

penticton.ca

Committee of the Whole
to be held at
City of Penticton, Council Chambers
171 Main Street, Penticton, B.C.

Tuesday, June 19, 2018
Recessed from the Regular Council Meeting at 1:00 p.m.

1. **Call Committee of the Whole to Order**
2. **Adoption of Agenda**
3. **Delegations and Community Recognition**
 - 3.1 Okanagan Lake Stewardship and Outreach Initiative 1-13
Bryn White, Program Manager, South Okanagan Similkameen Conservation Program
 - 3.2 Asset Management Investment Plan 14-41
Cory Sivell, Urban Systems
4. **Adjourn to Regular Meeting of Council**



Request to Appear as a Delegation

Preferred Council Meeting Date: June 19th, 2018

Second choice(s): July 3, 2018

Subject matter: Okanagan Lake Stewardship and Outreach Initiative

Name of person(s) making presentation:

Bryn White, South Okanagan Similkameen Conservation Program Manager

Address: 102 Industrial Place
Penticton BC

Phone: 250-490-8225

Email: bryn.white@gov.bc.ca

Please provide details of your presentation or request of Council here: (or provide a detailed attachment)

Overview of results and recommendations of Okanagan Lake Foreshore Inventory Mapping project, including increasing public awareness to guide Okanagan Lake health, stewardship and development activities. SOSCP and Okanagan Lakeshore Living Project partners would like to invite the City of Penticton to participate in this important outreach initiative.

Please note:

- This form and submissions will become part of the public record.
- The Mayor has the authority to determine if the subject matter warrants the delegation to appear before Council and may determine at which meeting.
- Please submit this completed form at your earliest convenience. Written Requests to Appear are to be received by the Corporate Officer, no later than noon Monday, one week prior to the Council meeting. Please include a copy of all materials that will be discussed.
- If you'd like to share a PowerPoint with Council, email it to the Corporate Officer by 9:30 a.m. Wednesday prior to the Council meeting to be included with the Agenda.
- We recommend you bring backup PowerPoint files with you on a memory stick.
- Delegations are limited to 5 minutes.



**South Okanagan
Similkameen**
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Okanagan Lake Stewardship and Outreach Initiative 2018

**Bryn White,
South Okanagan Similkameen
Conservation Program Manager
June 19th 2018**

Bryn.white@gov.bc.ca



Okanagan Lake Foreshore Inventory & Mapping (FIM) Project Report 2016:

“At the current rate of land development, the natural areas around Okanagan Lake that are not located in parks or protected areas could be completely lost... within the next generation or two”.



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Okanagan Lake Foreshore Inventory & Mapping (FIM) Project Report 2016:

“Observed changes in the condition of the shoreline of Okanagan Lake continue to raise concern. Increased development around the lake is affecting natural areas and their associated ecological functions.”

Shorelines:
natural
transition
area between
land & water

+

Vegetation =
Buffer: protects
water from land use
activities

Clean Water

**Flood and Erosion
Protection**

Property Values

Recreation

Biodiversity



Shorelines: Nature's kidney



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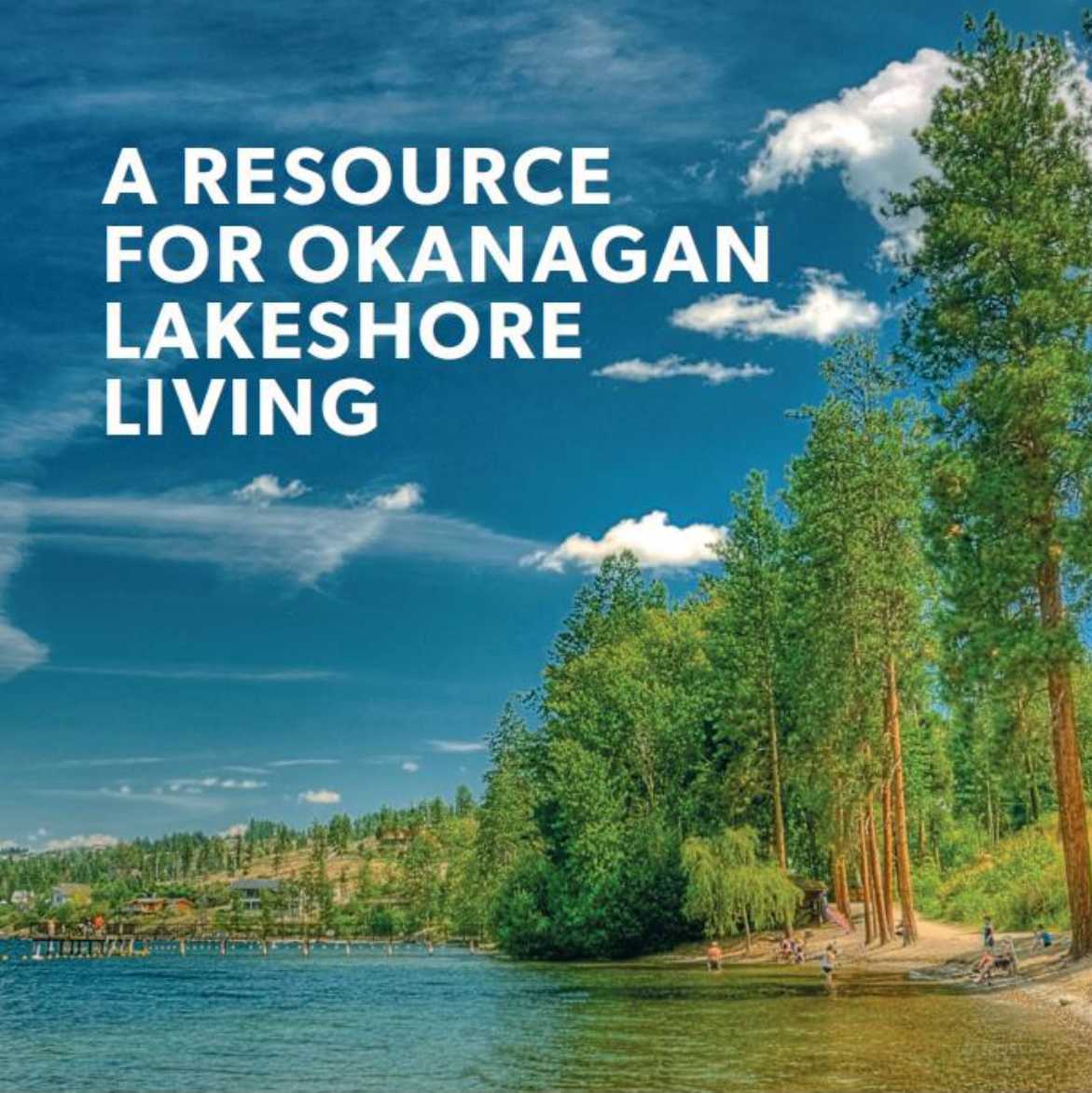


(FIM) Report Recommendations

- Develop an Okanagan Lake Management Plan;
- All jurisdictions work collaboratively towards common goals and consistent regulations;
- Set clear targets for retention and restoration of natural areas;
- Policies and regulations reflect habitat values; and,

Increase public awareness to guide environmental stewardship and development activities

A RESOURCE FOR OKANAGAN LAKESHORE LIVING



Okanagan Lake Stewardship and Outreach Initiative 2018



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**PROTECT YOUR PROPERTY FROM FLOODING
AND WAVE EROSION, SAFEGUARD WATER
QUALITY, AND PROTECT NATURAL AREAS
FOR FUTURE GENERATIONS**

Key Messages

- Okanagan Lake shoreline habitats have been lost.
- Healthy shorelines support clean water, property values, recreation, & biodiversity.
- Healthy shorelines help maintain water quality, prevent floods and limit erosion.
- People have significant influence on lake health and water quality through land use and vegetation management.
- Activities near water are regulated; contact local government planning departments first to understand the rules and to learn more about protecting lake health.

KNOW YOUR LAKESHORE



A HEALTHY AND NATURAL SHORELINE

keeps the water safe and clean for people and animals.

PLANTS ALONG THE SHORELINE

can protect property damage from flooding, high waters and waves.

41%

OKANAGAN LAKE HAS 290KM OF SHORELINE

and research from the 2016 Foreshore Inventory and Mapping update that shows that the majority is developed, with only 41% remaining natural.



INCREASED SHORELINE DEVELOPMENT

from 2009 to 2016, has added 165 retaining walls, 164 docks, and 9 new marinas around the lake.



THE OKANAGAN VALLEY IS BIOLOGICALLY UNIQUE

with some of the greatest concentrations of species and ecosystems in Canada. Many are found nowhere else in the country and in some cases the world.



OKANAGAN LAKE HAS TWO DISTINCT TYPES OF KOKANEE SALMON

that rely on sediment-free streambeds and lakeshores for spawning habitat.



THE SYILX/OKANAGAN FIRST NATION TERRITORY

extends from North Okanagan and into Washington State. Learn more about the Syilx/Okanagan Nation and read about their Water Declaration here: www.syilx.org/about-us/syilx-nation/water-declaration/

KEEPING THE LAKESHORE NATURAL IS IMPORTANT



PROTECT YOUR PROPERTY FROM FLOODING

Deep-rooted trees and shrubs absorb water and wave energy, reducing shoreline erosion. This helps protect your property from flooding.



SAFEGUARD YOUR DRINKING WATER

Native plants, trees, rocks, and soil help filter rain and stormwater runoff by trapping sediment and contaminants which protect water quality.

CARE FOR KOKANEE AND WILDLIFE

Fish spawn along the shoreline, and eagles and osprey rely on them for food. All wildlife need a healthy and safe place to survive and thrive.



CHAMPION LAKESHORE LIVING

A healthy lake allows everyone to enjoy recreational activities on and around the lake. Help sustain the lake for your community, your health, and your well-being. Become a guardian of the lake by protecting and enhancing the shoreline for visitors, residents, and future generations.

EMPOWER ECONOMIC GROWTH AND TOURISM

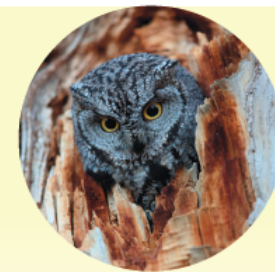
People from around the world come to work and play on Okanagan Lake. Keeping our shorelines natural can enhance property value, and protect the Okanagan's beautiful vistas for everyone's enjoyment and benefit.

THE LAKESHORE ZONES AND THEIR BENEFITS TO YOU

Land below the present natural boundary of the lake is Crown land and is usually represented by the High Water Mark. Unsure where your property line is? Contact a B.C. Land Surveyor.

DID YOU KNOW?

Any land disturbance in or around Okanagan Lake is subject to permit(s) and approvals. This may include authorizations from multiple agencies prior to proceeding with any proposed development.



DID YOU KNOW?

Western screech owls need older trees in riparian areas to nest, such as aspen, and cottonwood. Removing old growth trees or snags in riparian areas alters this critical habitat.

UPLAND

• local governments

Upland areas are the drier, terrestrial areas above the riparian buffer zone.

How healthy upland areas benefit you:

- Trees and shrubs reduce erosion, improve air and water quality, and help bring soil moisture to the surface for smaller plants.
- Trees help homeowners save money on energy costs by providing shade in the hot summer months, and protecting against cold wind in winter.
- Native plants are already adapted to the hot Okanagan climate, and require less water.

RIPARIAN

• local governments

Riparian areas are the transition between land and water.

How healthy riparian areas benefit you:

- Riparian areas improve water quality by filtering runoff and preventing sediments and contaminants from entering the lake.
- Deep rooted trees and shrubs protect lakeshore areas against wind and wave action. Plants provide 19 to 120 times more protection than large rock (rip-rap).
- Riparian and forested areas act as enormous sponges and can soak up as much as 45 cm of rain. This helps mitigate flood damage.

LAKESHORE

• provincial government

Lakeshore areas are the sandy shorelines and the lake beds below the present natural boundary.

How healthy lakeshore areas benefit you:

- Aquatic plants form a flexible barrier along the waterfront that dampens the impact from wave action, reducing erosion.
- Undisturbed lakeshores provide safe spawning grounds for salmon and improve lake circulation.
- Natural shorelines provide aesthetic value by framing a more natural view from your home, and offer wildlife viewing opportunities.

AQUATIC

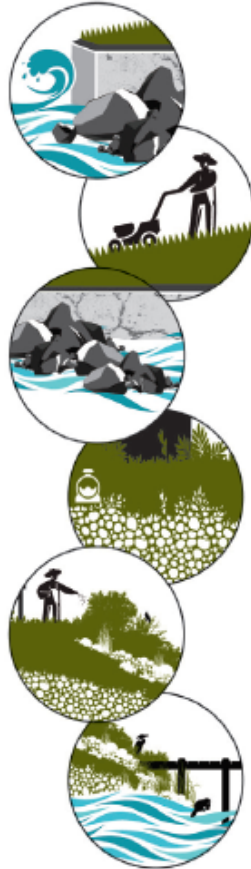
• provincial and federal governments

Aquatic areas include the water and all living things within it.

How healthy aquatic areas benefit you:

- Water supports life. The lake provides drinking water, water for our crops and supports our recreational activities.
- Water helps regulate climate because it can absorb vast amounts of heat energy.
- Sunlight penetrates only a short distance in aquatic areas. Clear water in shallow areas promotes the highest diversity of native plants and animals.

WITH A FEW SIMPLE STEPS WE CAN ALL PROTECT OUR WATER



1 HARD SURFACES = BIG CONSEQUENCES

Retaining walls (rock, wood or concrete) increase erosion in adjacent areas. Walls break down over time and are expensive to maintain. Soften your shoreline by replacing hard surfacing with native rocks, gravel and plants to decrease erosion.

2 FILTER INSTEAD OF FERTILIZE

Manicured lawns allow water and pollutants to move quickly into the lake. Fertilizer causes excessive weed and algae growth. Planting and retaining native vegetation naturally filters storm water and protects water quality from pollution.

3 PROTECTING THE SHORE

Clearing rocks on the beach and creating rock piles into the water is known as a 'groyne'. Groynes force young fish to swim into deeper water where they are in greater risk of being preyed upon. It is prohibited to dump sand, gravel, or fill on the shoreline. Deposits can destroy spawning sites and habitat for fish.

4 MAINTAIN YOUR SEPTIC SYSTEM

A properly designed septic system can keep your water safe for drinking and swimming. Need an inspection or maintenance? Contact Interior Health Authority.

5 USE THE POWER OF PLANTS TO COMBAT EROSION

Frame your view with trees, and retain as many native plants as possible. Deep plant roots are great for holding soil together and stabilizing the shoreline. Trees and plants also provide food and shade for fish.

6 A DOCK DILEMMA

Docks are easily damaged with high water levels and can cause harm to fish and fish habitat. Construct a pile-supported dock following provincial regulations or consider sharing a dock with your neighbour. Want to learn more? Contact FrontCounter BC.

PLANNING TO DEVELOP NEAR THE SHORE?

DEPENDING ON YOUR JURISDICTION CONTACT
YOUR LOCAL OR YOUR FIRST NATIONS GOVERNMENT
PRIOR TO DEVELOPMENT TO INQUIRE ABOUT
REGULATIONS AND SUPPORT TOOLS

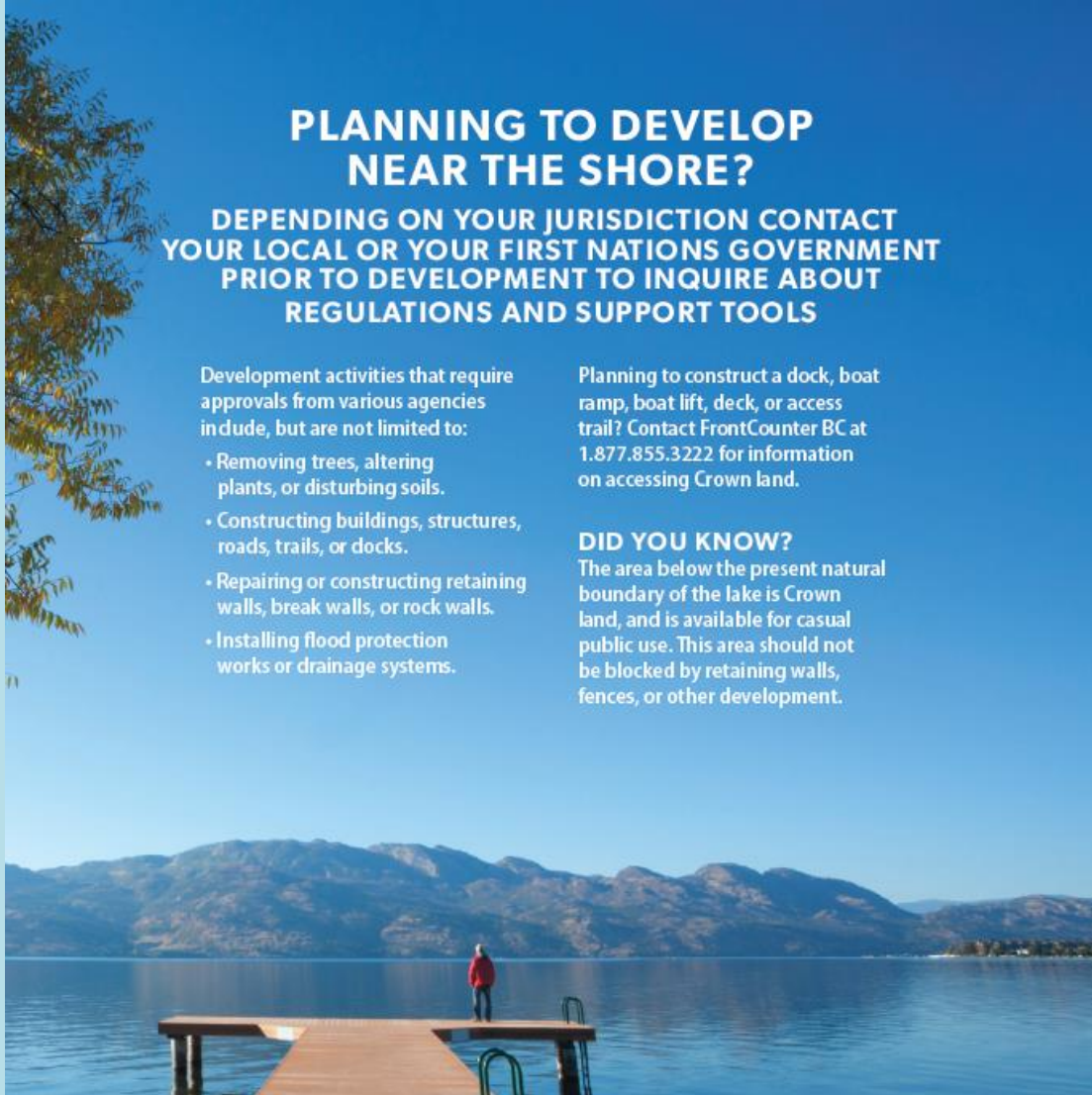
Development activities that require approvals from various agencies include, but are not limited to:

- Removing trees, altering plants, or disturbing soils.
- Constructing buildings, structures, roads, trails, or docks.
- Repairing or constructing retaining walls, break walls, or rock walls.
- Installing flood protection works or drainage systems.

Planning to construct a dock, boat ramp, boat lift, deck, or access trail? Contact FrontCounter BC at 1.877.855.3222 for information on accessing Crown land.

DID YOU KNOW?

The area below the present natural boundary of the lake is Crown land, and is available for casual public use. This area should not be blocked by retaining walls, fences, or other development.



WANT TO LEARN MORE?
Visit the complete online resource for lakeshore living at:
WWW.OKCP.CA



Report All Polluters and Poachers (RAPP) 1.877.952.7277
Or download the BC Wildlife Federation Conservation App on your phone. This tool gives everyone the ability to protect our natural resources for future generations.



Photo credit,
front cover:
Sharrl Madden



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Into the future....

“Okanagan Lake is an invaluable natural and recreational asset, and a popular destination for residents and visitors.”



Asset Management Investment Plan – V2.0

June | 2018



Agenda

- Canada's Infrastructure Challenge
- What is Asset Management?
- Why is Asset Management Important?
- Asset Management Investment Plan – V2.0

Canada' Infrastructure Challenge

- Majority of Canada's infrastructure was installed in the 1960s
- Assets have continually provided service to the community with little service disruption but this is changing
- Assets are nearing the end of their life and local governments have not fully planned for their replacement
- Canada's Infrastructure deficit is estimated to be \$123 billion and growing (FCM)
- Majority of water and sewer systems across BC are underfunded (BCCWA)

What is Asset Management?



Why Asset Management?



Why Asset Management?



Why Asset Management?



Why Asset Management?

Other Benefits:

- Manage trade-off's between service, cost and risk
- Defensible way to prioritize projects (demonstrates accountability)
- Requirement under the Gas Tax Agreement and grant applications

Asset Management Work To Date

- **2016 – AMIP V1.0**
 - **Inventory:** Readily available information (TCA)
 - **Replacement Cost:** tender estimates, historical costs (Index'd)
 - **Service Life:** Accounting and Engineering Best Practice (most sensitive parameter)

Description	Value
Asset Replacement Value	\$1.1 Billion
Infrastructure Deficit	\$51-\$175 Million (5% - 16%)
Average Annual Life Cycle Investment	\$18.8 M - \$28.7M

Asset Management Work To Date

2016-2018: AMIP V2.0

Step 1: Update Inventory

Asset Category	Description
Water, Sanitary, Storm, Transportation & Electrical	• Location based inventory (GIS)
Water & Sanitary Facilities	• Major component inventory
Buildings	• Major component inventory
Fleet	• Detailed list by fleet
Parks	• TCA

Asset Management Work To Date

2016-2018: AMIP V2.0

Step 2: Update Replacement Costs

- V1.0: Historical Costs (index'd), Tender Estimates & Insurance Values
- V2.0: Replacement Costs in 2018 dollars'

Asset Management Work To Date

2016-2018: AMIP V2.0

Step 3: Update Service Lives

Asset Category	Description
Water, Sanitary & Storm Pipes	<ul style="list-style-type: none">• Soil conditions, break history, operator knowledge, research & observed data
Electrical System	<ul style="list-style-type: none">• Research & observed data
Water/Sanitary Facilities	<ul style="list-style-type: none">• Condition assessment & observed data
Buildings	<ul style="list-style-type: none">• Condition assessment & observed data
Fleet	<ul style="list-style-type: none">• Condition assessment & observed data
Pavement	<ul style="list-style-type: none">• Condition assessment & observed data
Parks	<ul style="list-style-type: none">• TCA Useful Lives

Asset Management Work To Date

2016-2018: AMIP V2.0

Step 4: Integration of Risk

Outcome:

- Modified Service Life based on Consequence of Failure (COF)
- Investment Priorities

The Project

- Developing Risk Framework
- **Focus:** water, sanitary, storm pipes/pavement, ,major buildings, transformers, poles and conductors
- **Triple Bottom Line:** Environmental, Financial and Social Aspects

Asset Management Project

2016-2018: AMIP V2.0

Step 4: Integration of Risk (modify service life based on COF)

Low Consequence of Failure

COF Score: 1



Base Case Service Life: 100 Years
Service Life Adjustment Factor: +50%
Risk Based Service Life: 150 Years

Higher Consequence of Failure

COF: 5



Base Case Service Life: 100 Years
Service Life Adjustment Factor: 0%
Risk Based Service Life: 100 Years

Asset Management Work To Date

2016-2018: AMIP V2.0

Step 4: Integration of Risk (modify service lives based on COF)

Outcome: Modified Service Lives based on condition & risk



Asset Management Work To Date

2016-2018: AMIP V2.0

Step 4: Integration of Risk (Investment Priorities)

Risk = Consequence of Failure X Likelihood of Failure

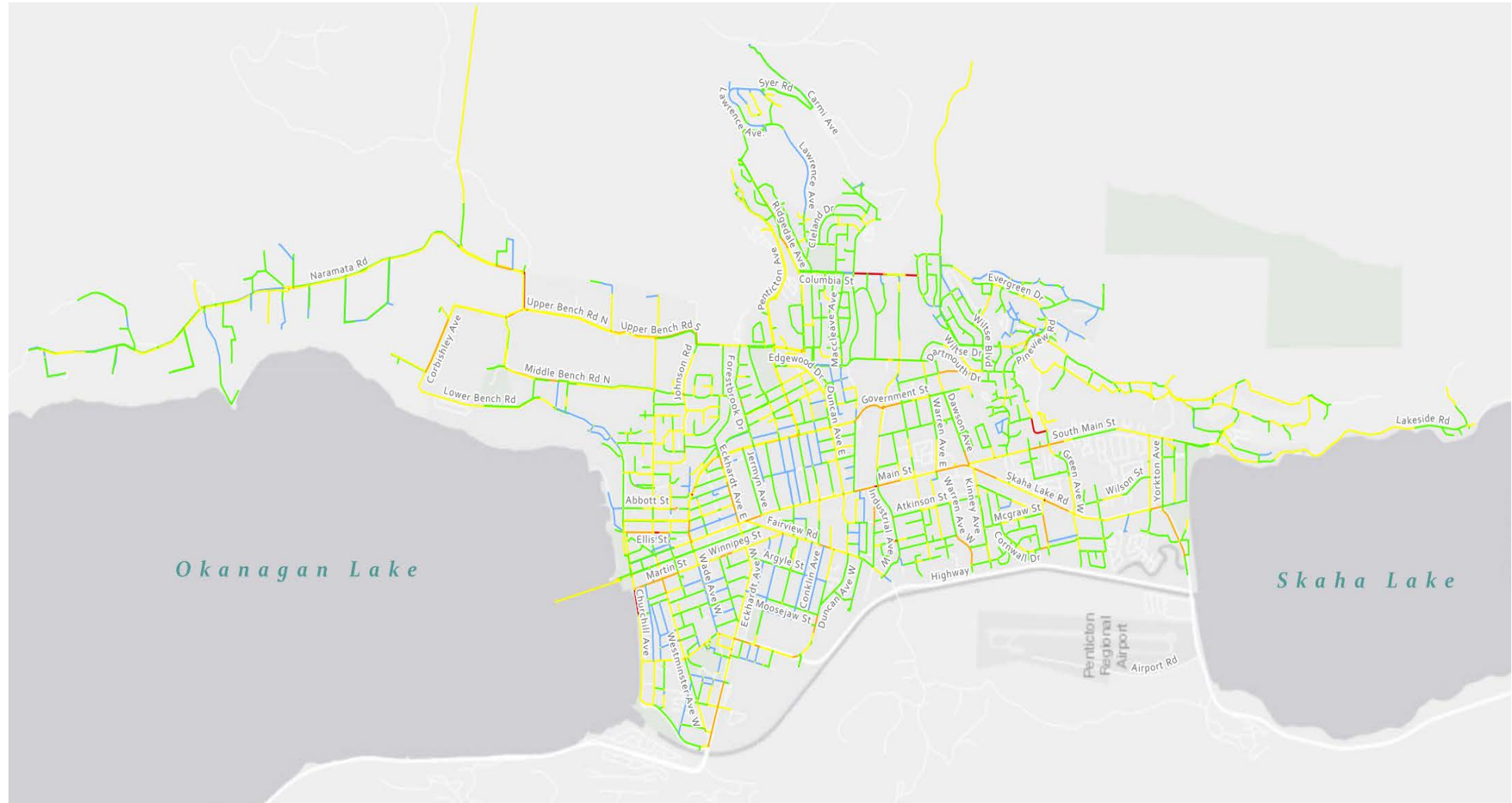
Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Likelihood of Failure				

Asset Management Work To Date

Step 4: Integration of Risk (capital planning)

Example: Water Risk Map

Risk Description
Very Low
Low
Medium
High
Very High



Asset Management Investment (AMIP)

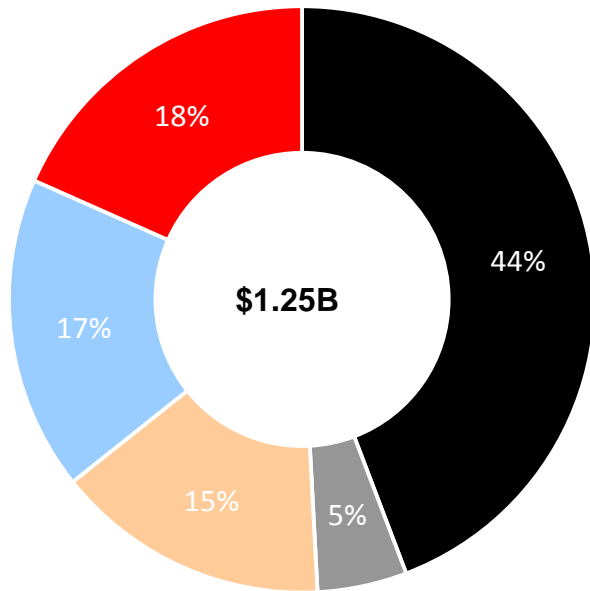
Key questions that will be answered:

- 1) How much are our assets worth?
- 2) How much remaining life do our assets have?
- 3) How much value of our asset is consumed?
- 4) What is our current and future infrastructure deficit
- 5) How much do we need to invest annually?

How Much Are Our Assets Worth?

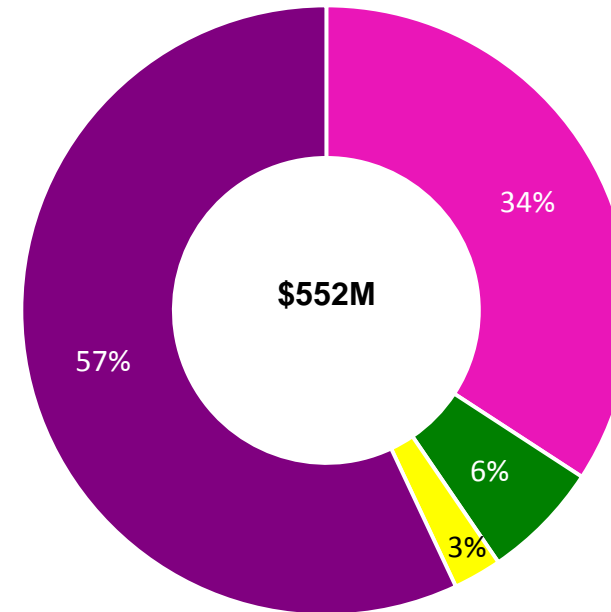
2018 Infrastructure Value: \$1.25 billion

Fund/Utility



- General Fund
- Storm System
- Sanitary System
- Water System
- Electrical System

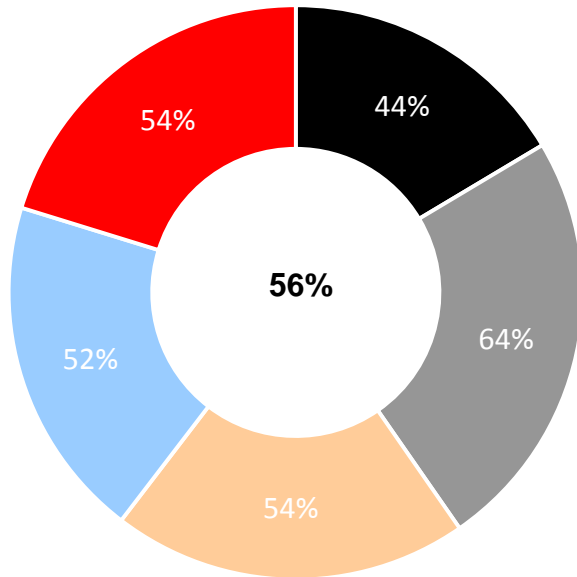
General Fund Breakdown



- Transportation System
- Park System
- Fleet and Equipment
- Building System

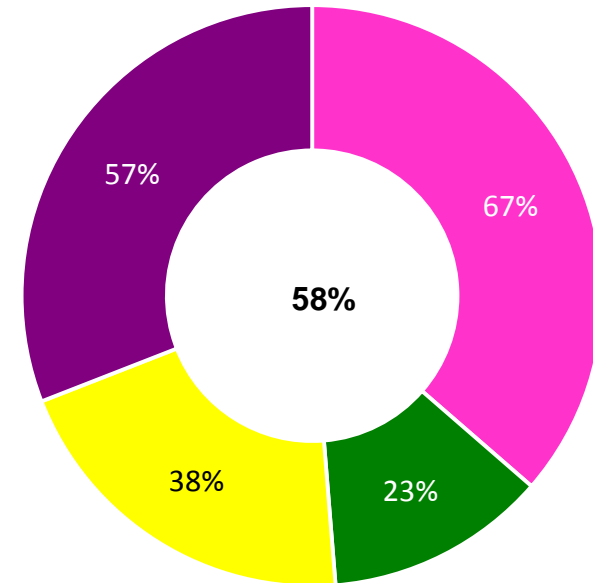
How much remaining life do our assets have?

Fund/Utility



- General Fund
- Storm System
- Sanitary System
- Water System
- Electrical System

General Fund Breakdown

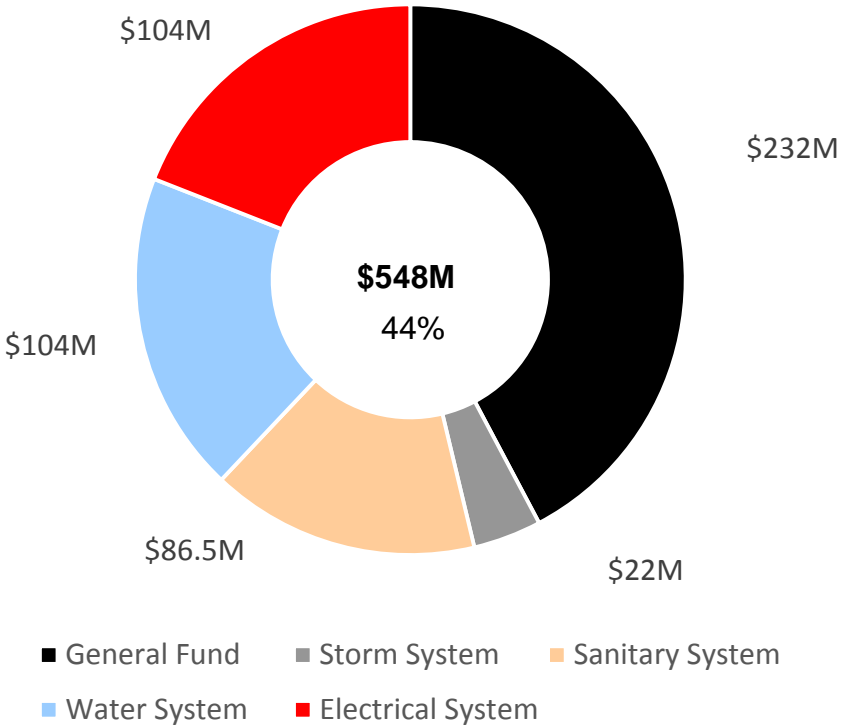


- Transportation System
- Park System
- Fleet and Equipment
- Building System

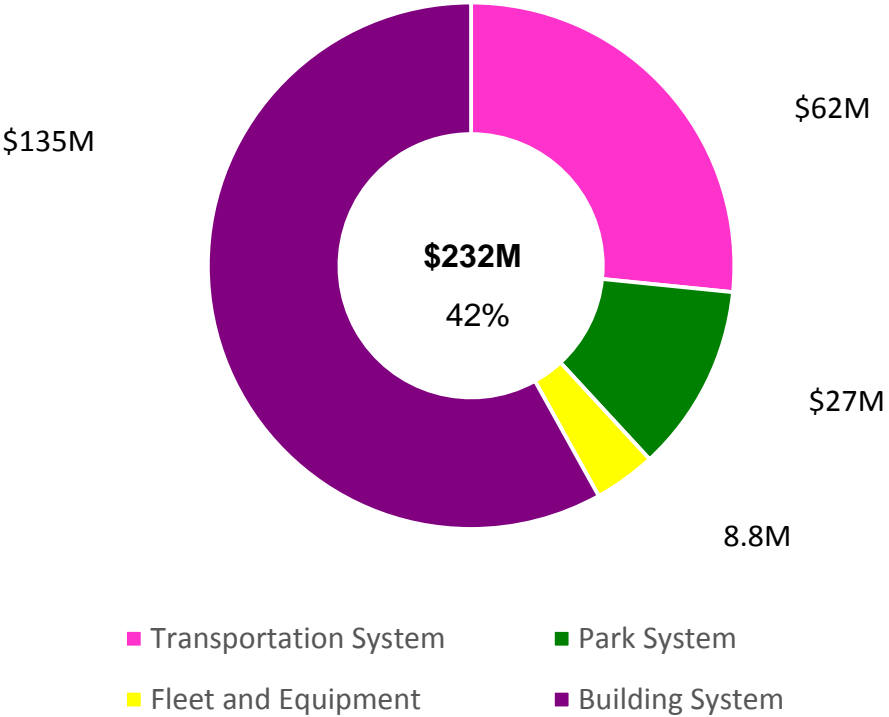
Using Service Life Modified

How much of our asset life is consumed?

Fund/Utility



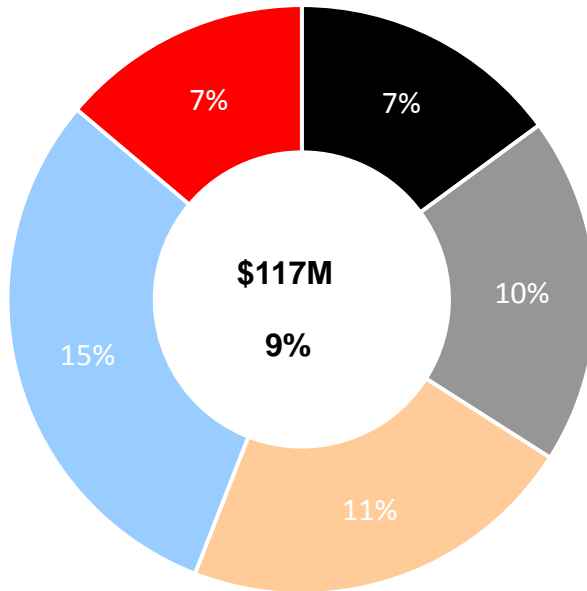
General Fund Breakdown



Using Service Life Modified

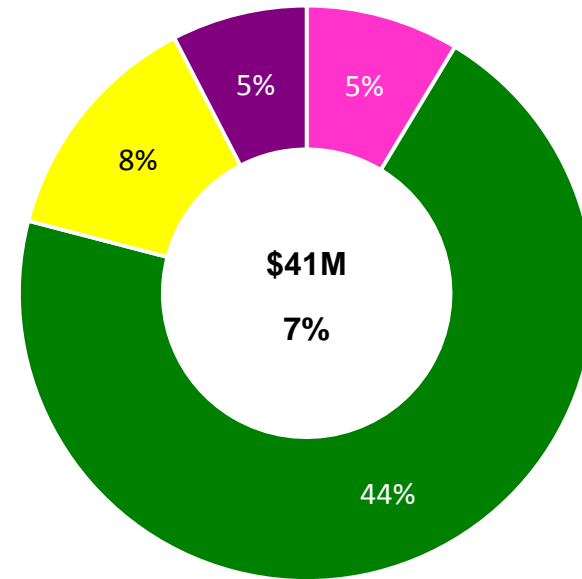
What is our infrastructure deficit?

Fund/Utility



■ General Fund ■ Storm System ■ Sanitary System ■ Water System ■ Electrical System

General Fund Breakdown



■ Transportation System ■ Park System
■ Fleet and Equipment ■ Building System

Typical Deficit Across BC: 10% - 40%

Using Service Life Modified

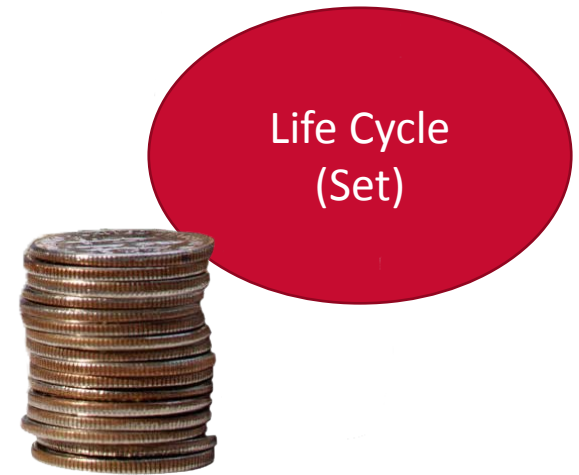
How much do we need to invest annually to sustain our assets?



- Service Lives based on published engineering and accounting best practice
- Typically: Conservative



- Service lives adjusted to: condition & risk



- No adjustment to service lives
- Considered future infrastructure deficit
- Infrastructure Deficit Today = Avg Infrastructure Future



Input into Rate Model

How much do we need to invest annually to sustain our assets?

Funding Summary				
Description	Life Cycle (\$/yr)	Life Cycle Modified (\$/yr)	Life Cycle Set (\$/yr)	Investment Savings (\$/yr)
General Fund	\$17M	\$13.7M	\$11.8M	\$5.2M
Transportation System	\$4,5M	\$4.4M	\$3.3M	\$1.3M
Park System	\$1,6M	\$1.4M	\$1.2M	\$376K
Fleet and Equipment	\$1.1M	\$982K	\$982K	\$118K
Building System	\$9.8M	\$7M	\$6.3M	\$3.4M
Storm System	\$1,0M	\$640K	\$481K	\$533K
Sanitary System	\$4.4M	\$3.6M	\$3.1M	\$1.3M
Water System	\$4.3M	\$3.4M	\$3.0M	\$1,3M
Electrical System	\$7.7M	\$4.9M	\$4.1M	\$3,5M
Total	\$34.4M	\$26M	\$22.5M	\$11.9M

Notes:

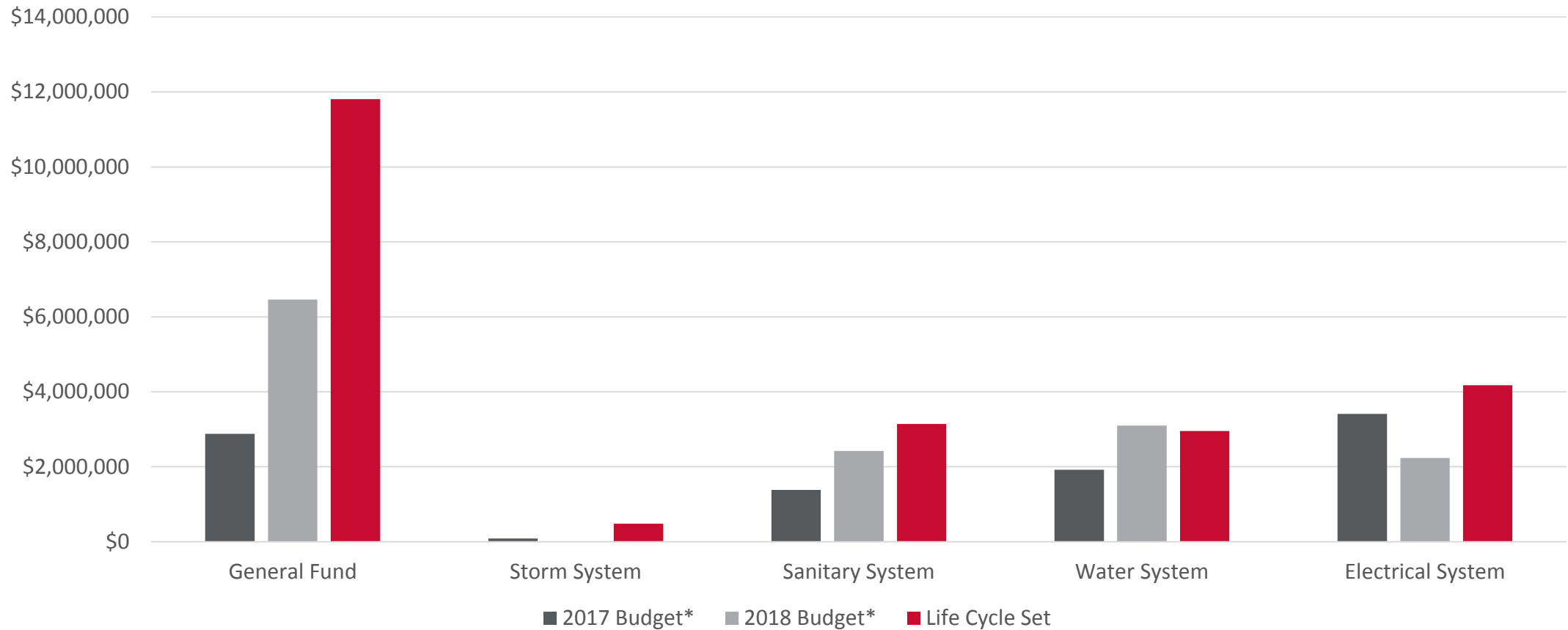
- Does not take into account communities willingness to pay, decreases to level of service & financing ability (debt, reserves, grants etc..)

2016-2018 Summary

Description	2016	2018
Replacement Cost	\$1.1 B	\$1.25 B
% Remaining Life	42%	56%
Infrastructure Deficit	\$51M – \$175M (5%-18%)	\$117M (9%)
Life Cycle (\$/Year)	18.8 M - \$28.7	\$22.6M*

*\$34.5 M if service life is not adjusted for condition and risk

What is our infrastructure funding gap?



*Asset Replacement Budget

Where do we go from here?

- Input Life Cycle funding targets into rate model
- Financial affordability check
- Development of Financial Policy
- Integration of risk scores into GIS Maps (Assist with Investment Priorities)

Questions?