# Asset Management Investment Plan – V2.0

June | 2018

CITY OF Penticton

URBAN systems

# 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 | • Soil conditions, break history, operator knowledge, research & observed data |
| Electrical System | • Research & observed data |
| Water/Sanitary Facilities | • Condition assessment &observed data |
| Buildings | • Condition assessment & observed data |
| Fleet | • Condition assessment & observed data |
| Pavement | • Condition assessment & observed data |
| Parks | • 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

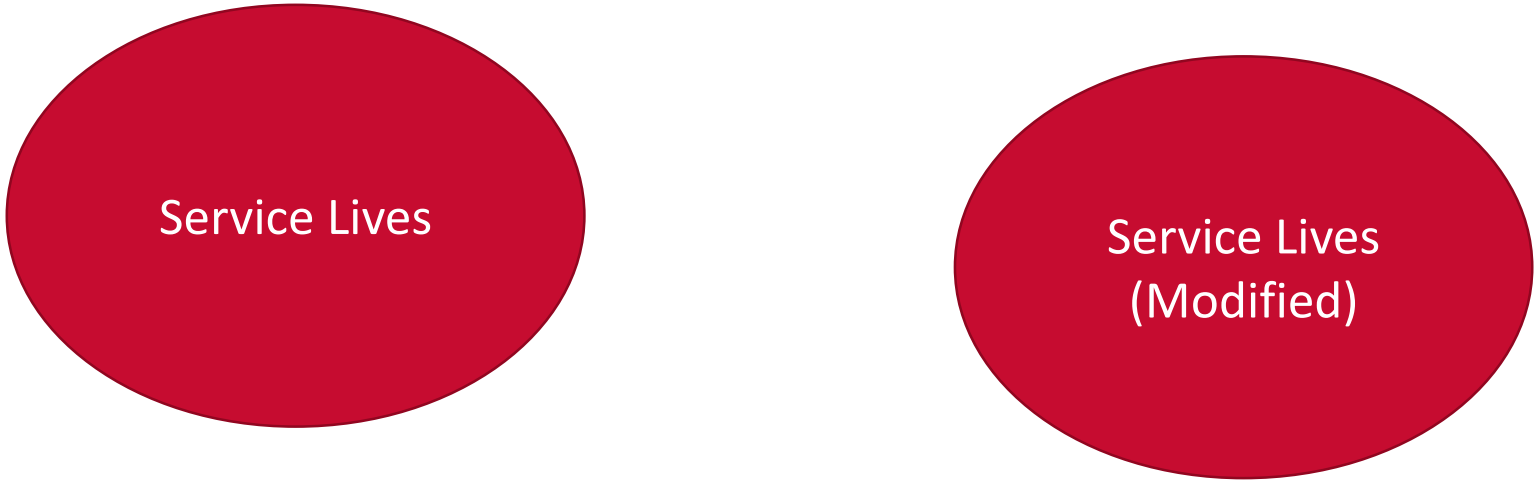

**Base Case Service Life:** 100 Years
**Service Life Adjustment Factor**: 0%
**Risk Based Service Life**: 100 Years

# 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

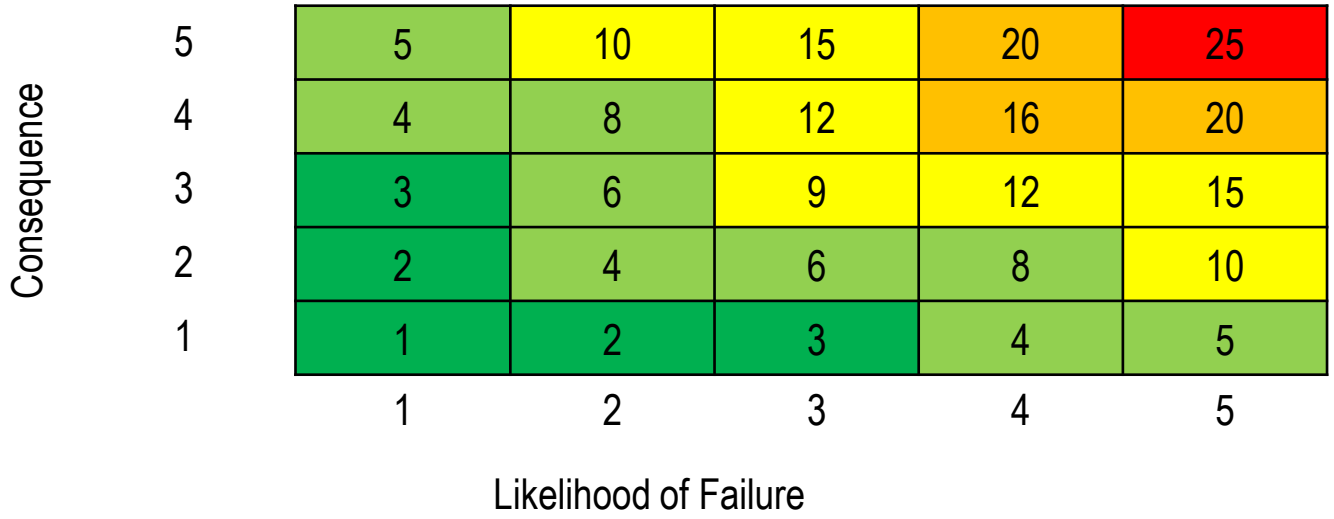


# Asset Management Work To Date

**2016-2018: AMIP V2.0**

**Step 4:** Integration of Risk (Investment Priorities)

**Risk = Consequence of Failure X Likelihood of Failure**

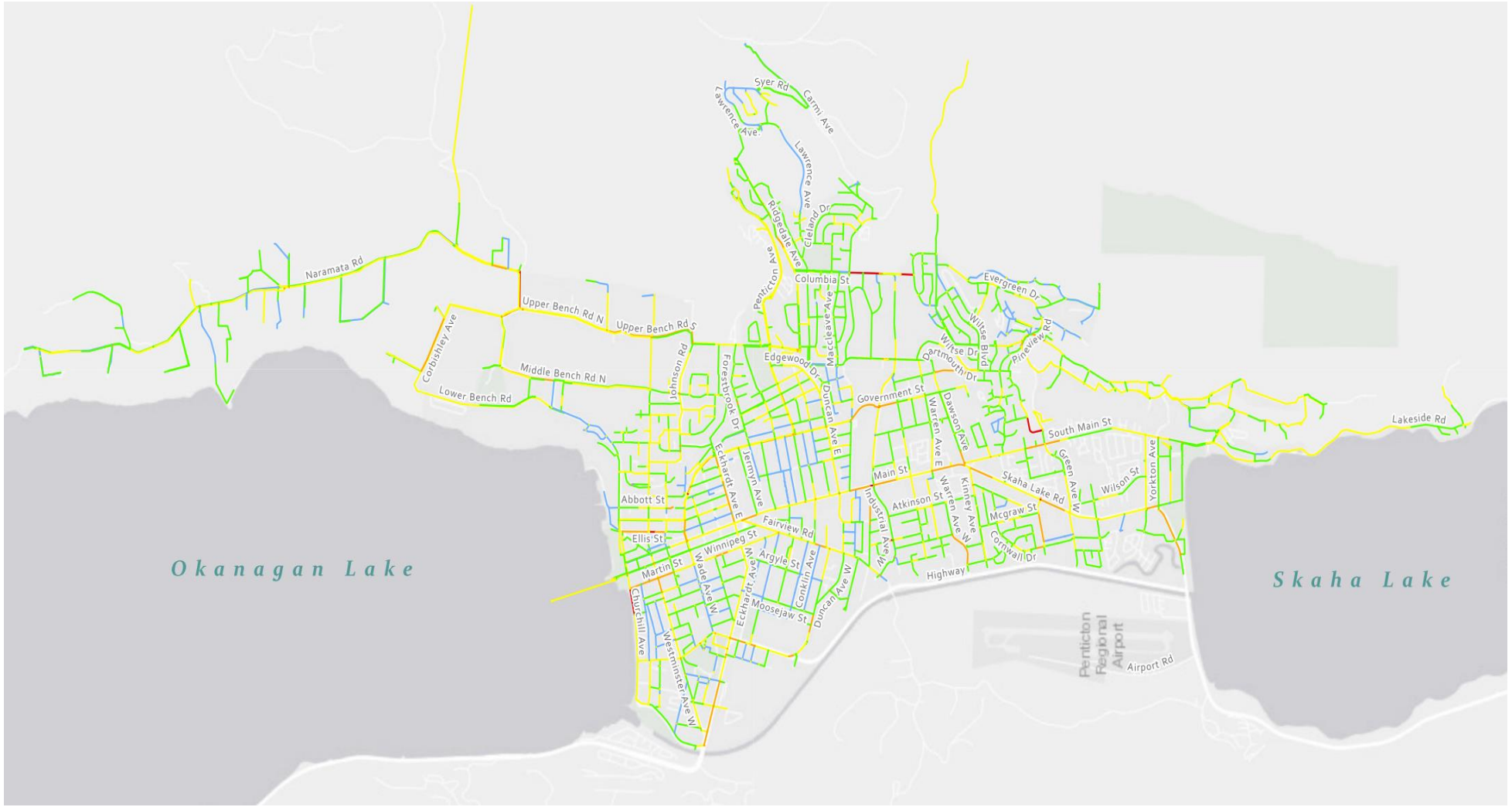


# Asset Management Work To Date

## **Step 4:** Integration of Risk (capital planning)

Example: Water Risk Map

| Risk Description |
| --- |
| Very Low |
| Low |
| Medium |
| High |
| Very High |



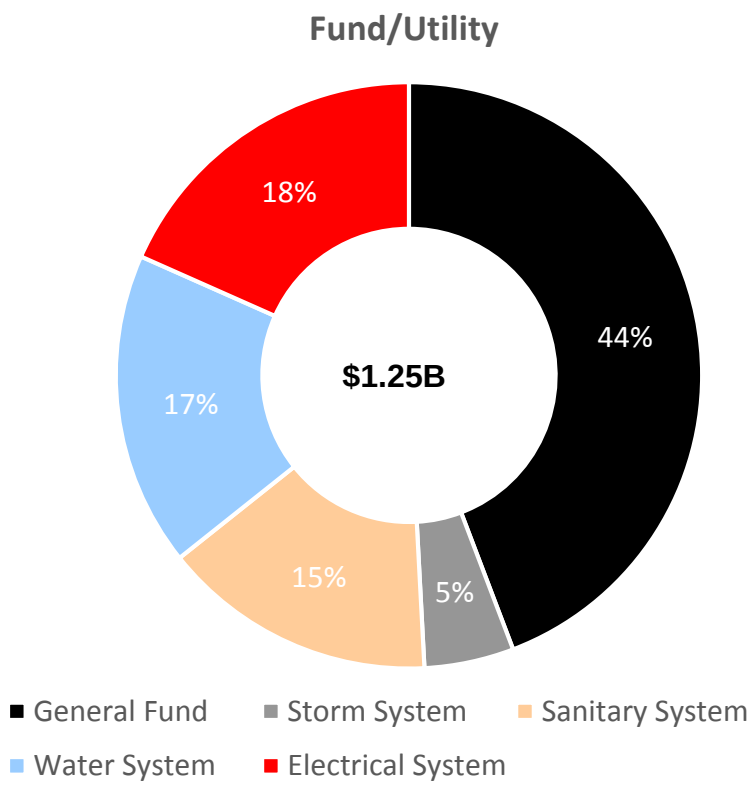
# Asset Management Investment (AMIP)

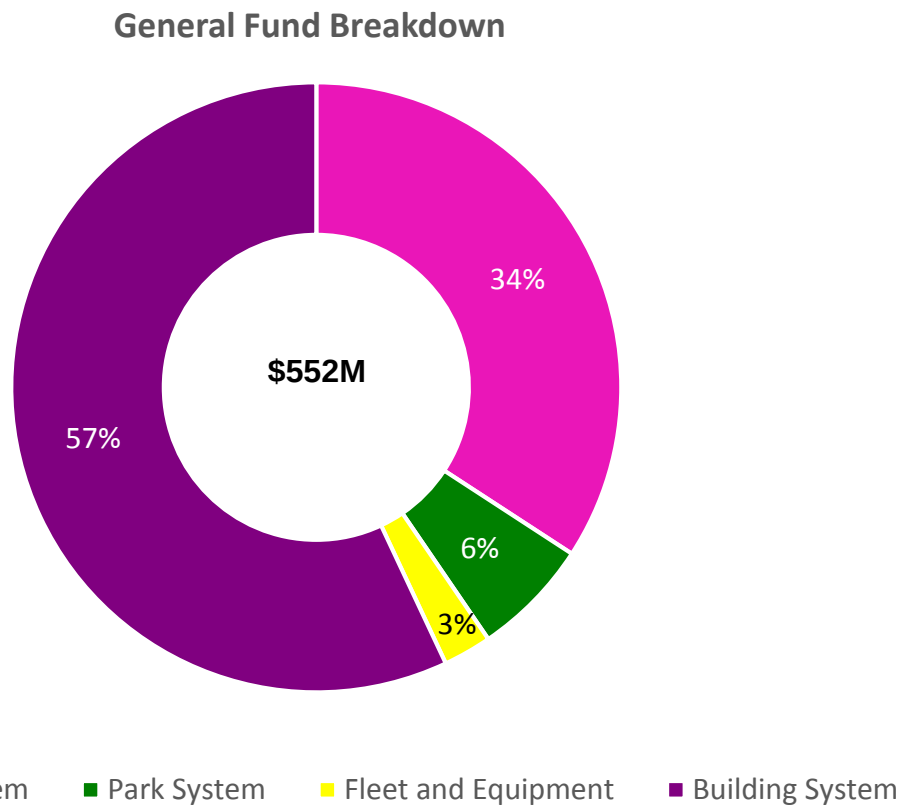
**Key questions that will be answered:**

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?

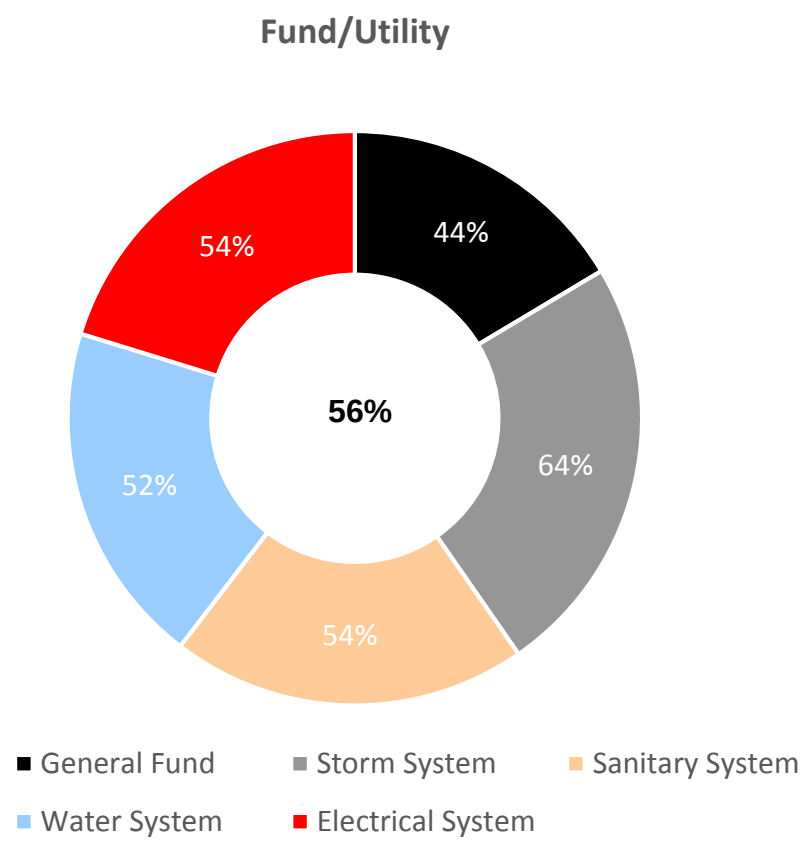
# How Much Are Our Assets Worth?

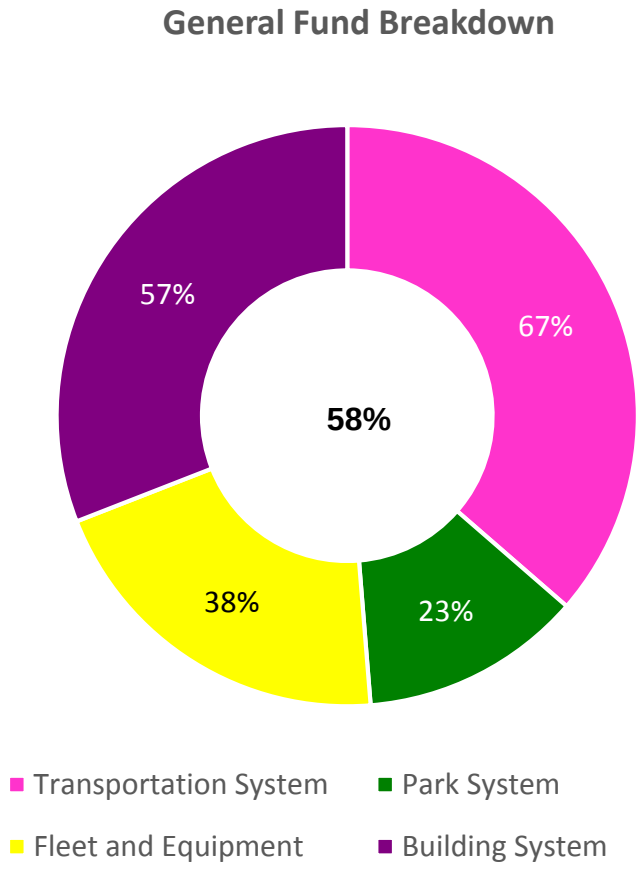
## 2018 Infrastructure Value: $1.25 billion



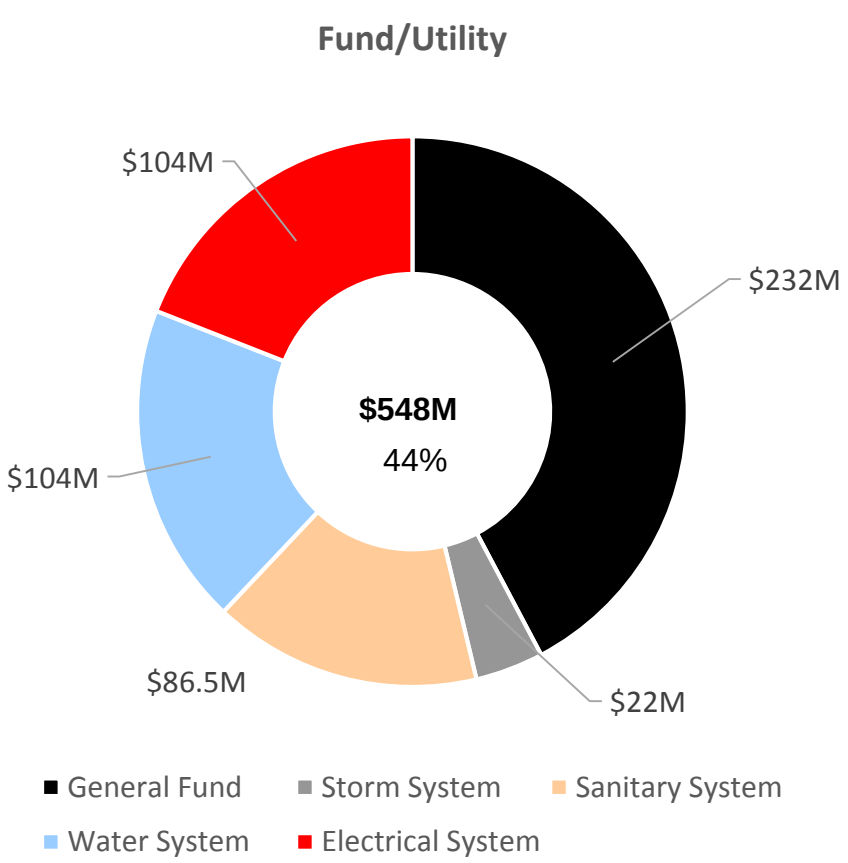
# How much remaining life do our assets have?

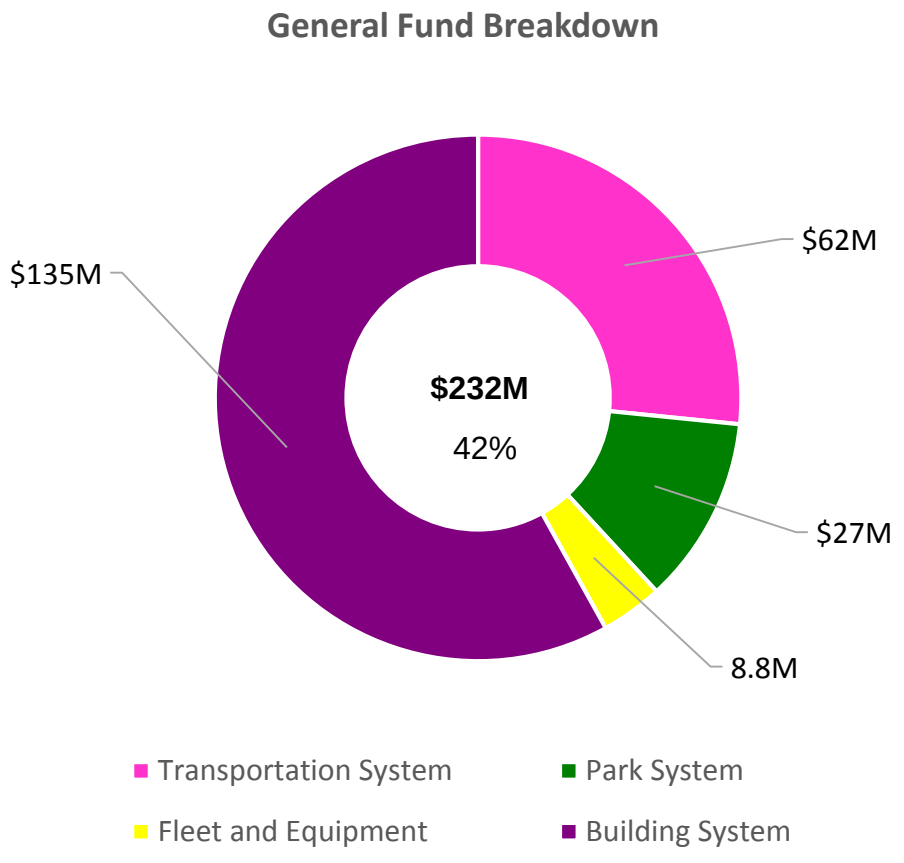



Using Service Life Modified

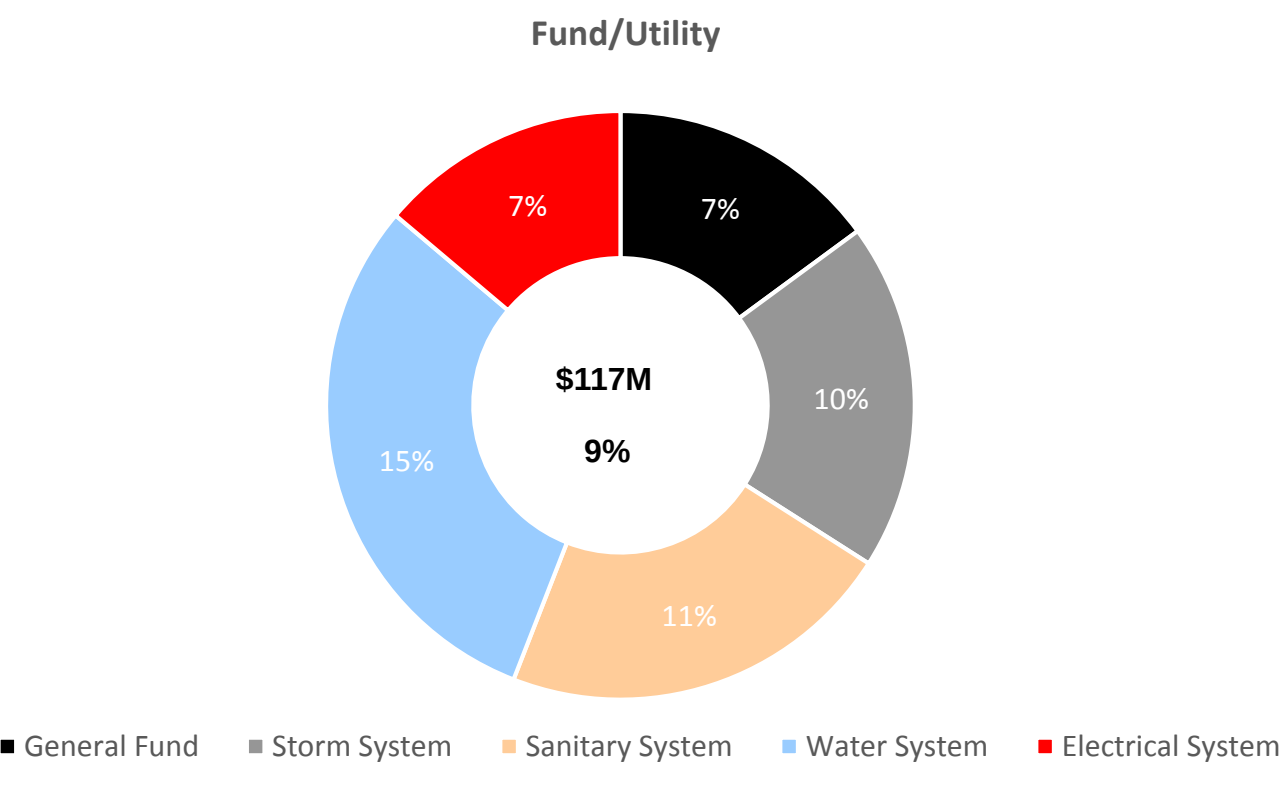
# How much of our asset life is consumed?

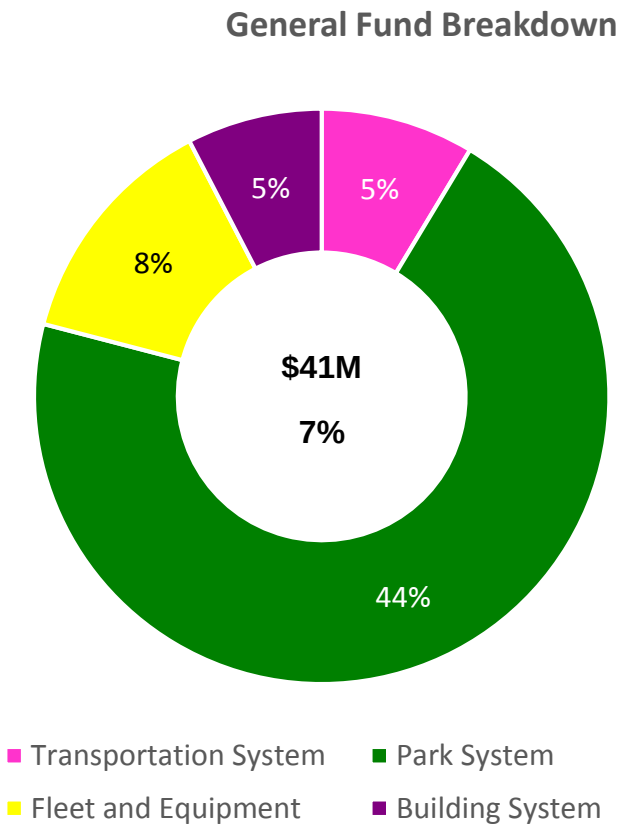



Using Service Life Modified

# What is our infrastructure deficit?

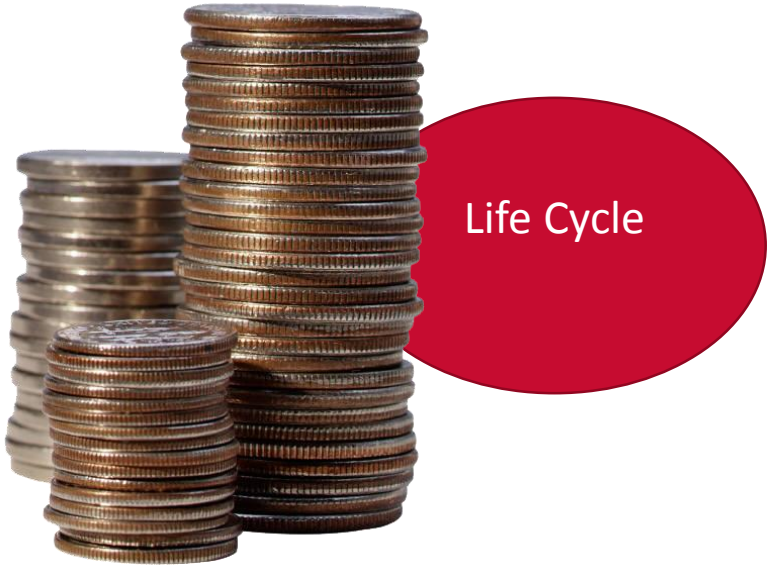



Typical Deficit Across BC: 10% - 40%

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:**

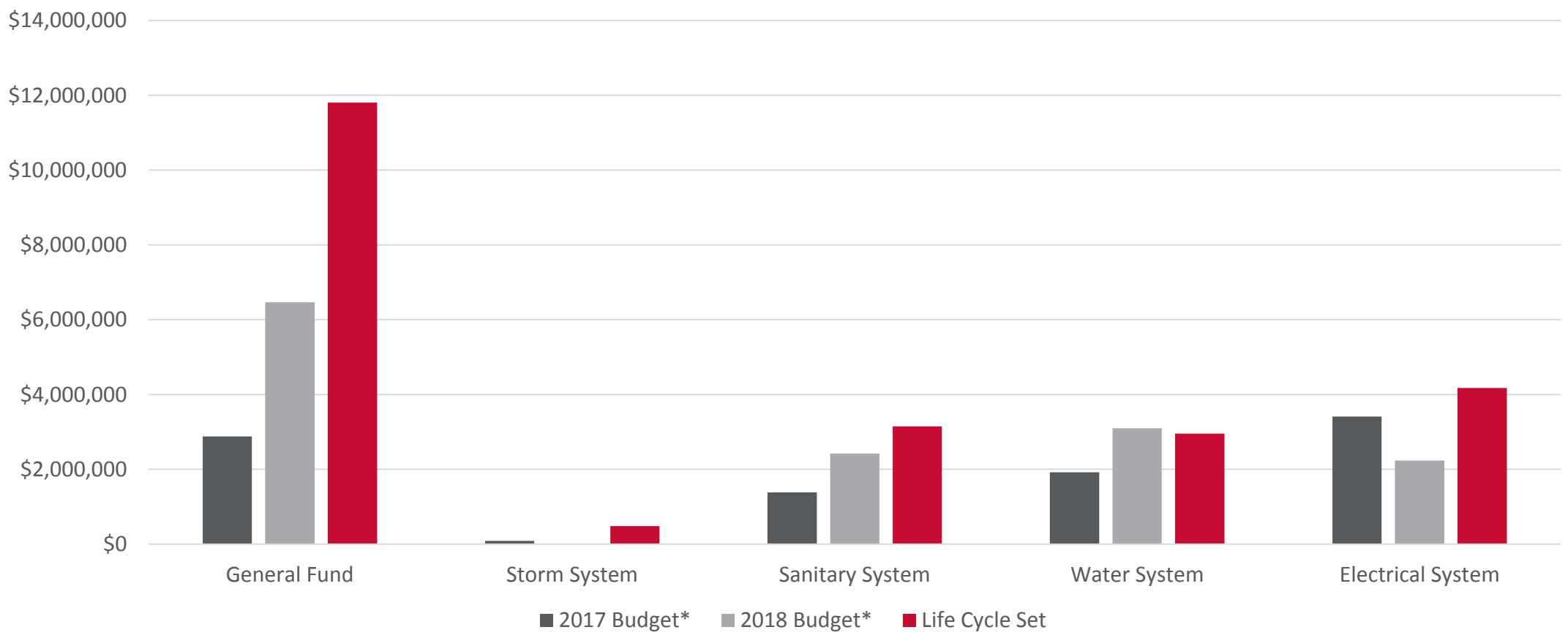
- Does not take into account communities willingness to pay, decreases to level of service & financing ability (debt, reserves, grants etc..)

# 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?