



# Managing Urban Forests to Mitigate and Adapt to Climate Change Impacts

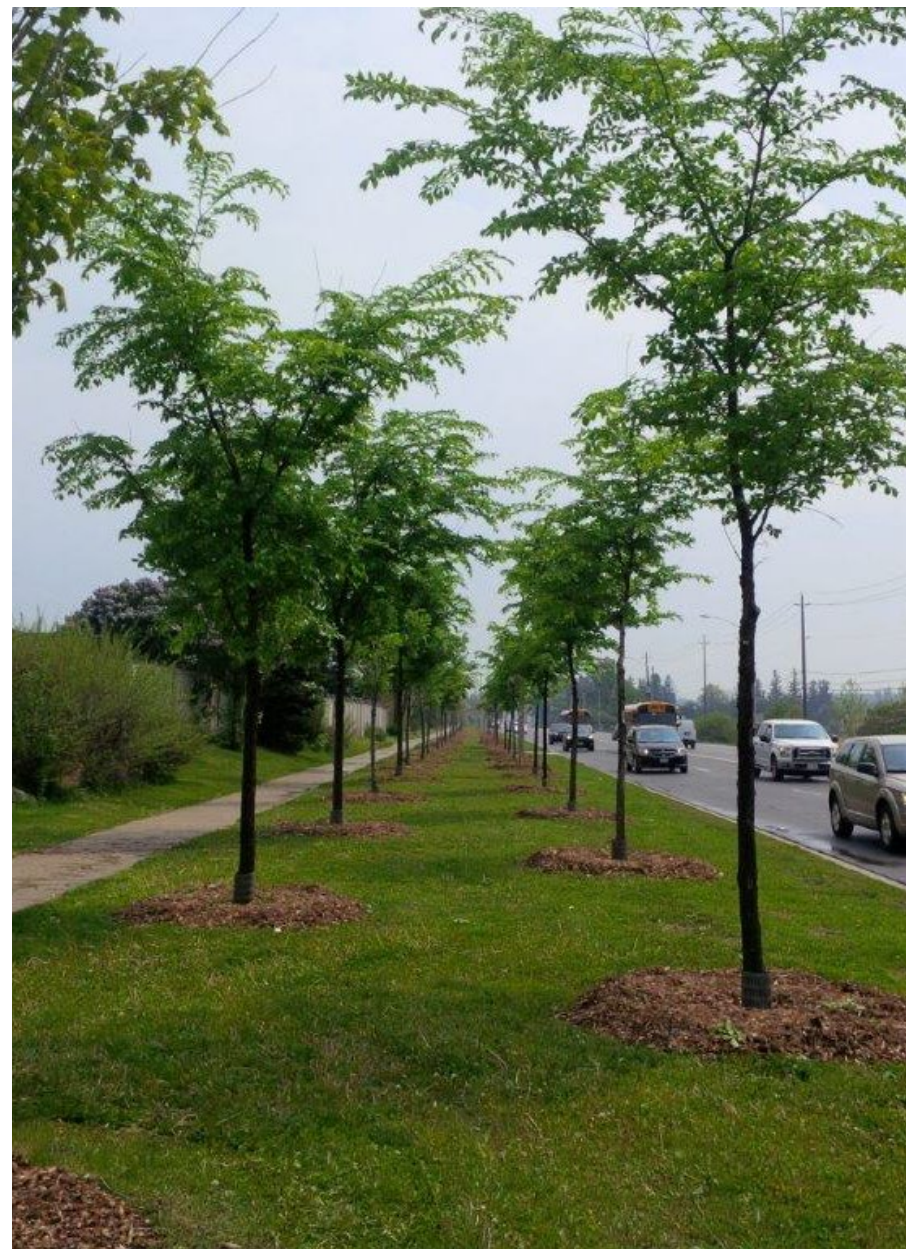
WSP

Regional Municipality of York, ON

City of Edmonton, AB

# Today's Presentation

- Urban forests
- Mitigating climate change impacts
- Asset management
- York Region
- City of Edmonton



# Urban Forest Assets



## **York Urban Forest**

Street trees  
Planters  
Growing  
Medium  
Supporting civil assets



## **York Regional Forest**

Forest stands  
Non-forested areas  
Access infrastructure



## **Edmonton - Naturally Wooded Areas**

Forest stands in River Valley and Ravine system and on Tableland



## **Edmonton Naturalization Areas**







Areas selected for naturalization through planting or natural growth



## **Edmonton – Maintained Trees**

Individual trees in boulevards and open spaces

# Mitigating Climate Change with Urban Forests

	Cooling the air by 2 to 8 degrees C		Carbon sequestration
	Filtering air pollution		Increasing urban biodiversity
	Regulating water flow Improving water quality		Increase property values Reduce air conditioning and save energy

United Nations story – As cities boom, forests key to meeting demands for water, food and energy,  
<https://news.un.org/en/story/2018/03/1005561>

# Why Asset Management?

## Forest Management Plans

- Vision and Goals
- Current State and Gaps
- Strategies and Actions

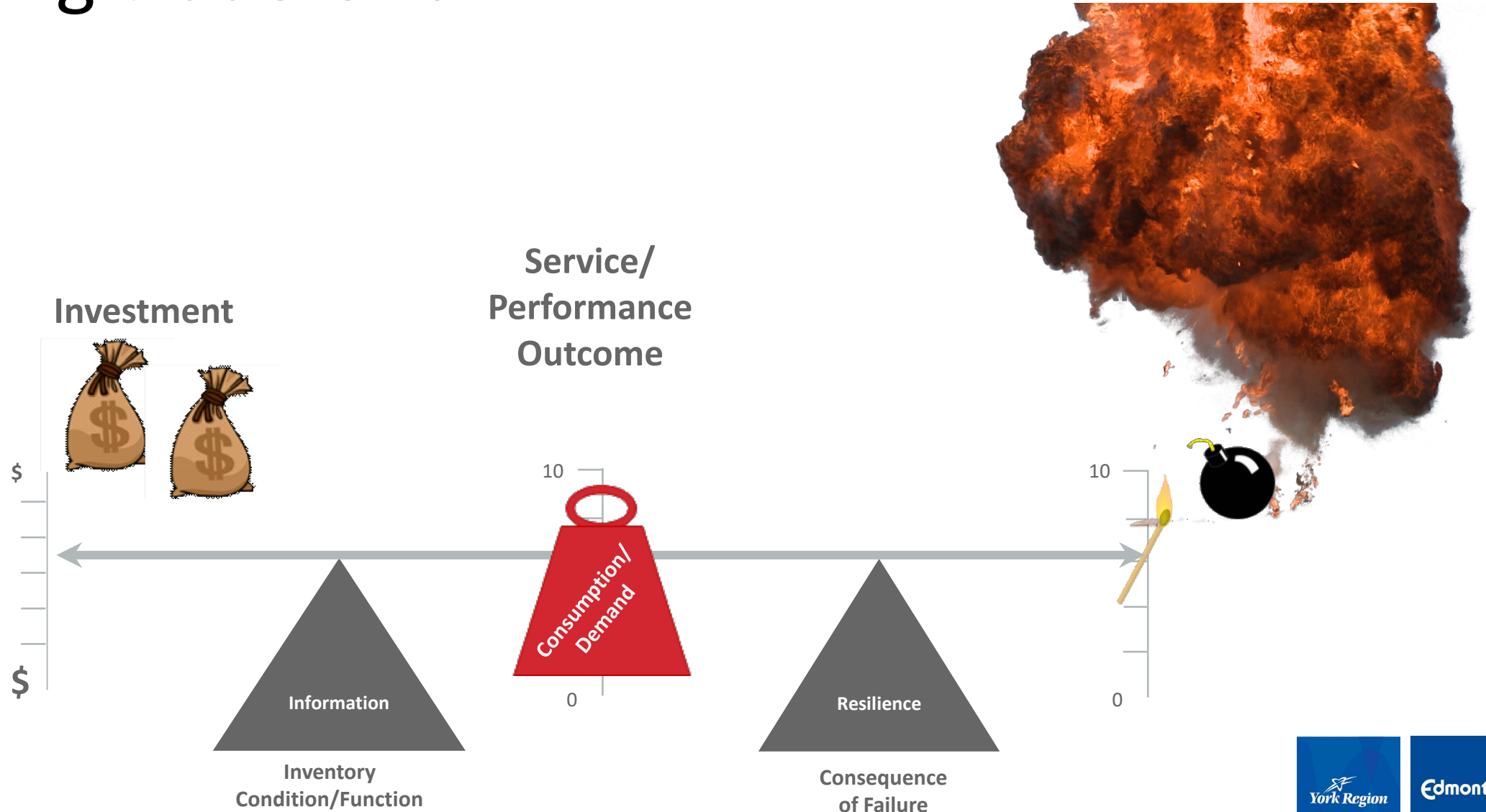
## Forest Asset Management Plans

- Setting LOS and Performance Measures for Assets
- Current State – PM Gaps
- Lifecycle activities to close gaps
- Scenarios and Costs
- Risk management

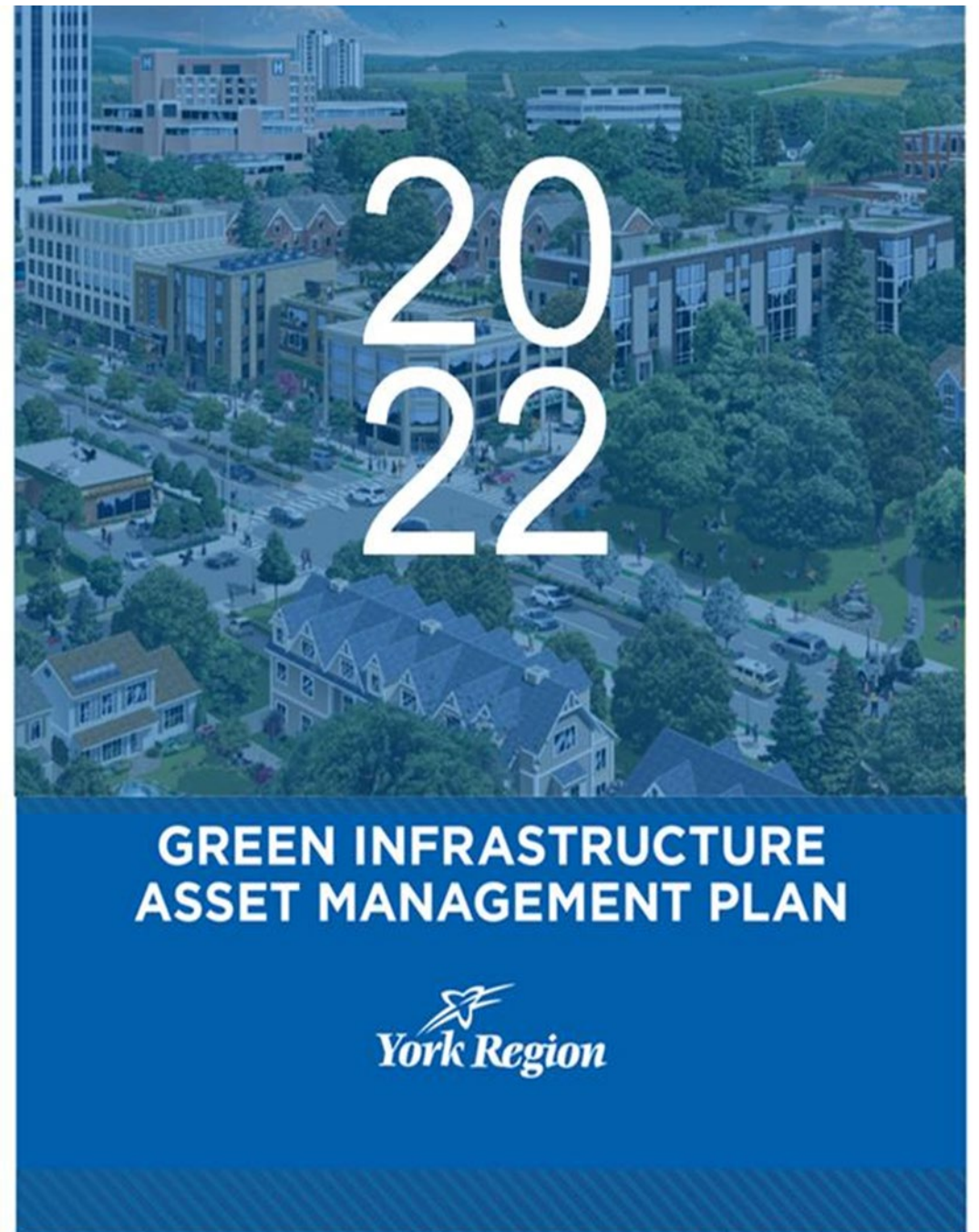
## Climate Change Action Plans

- Measures describing impacts of forests
- Adaptation and mitigation strategies and actions
- Climate change scenarios

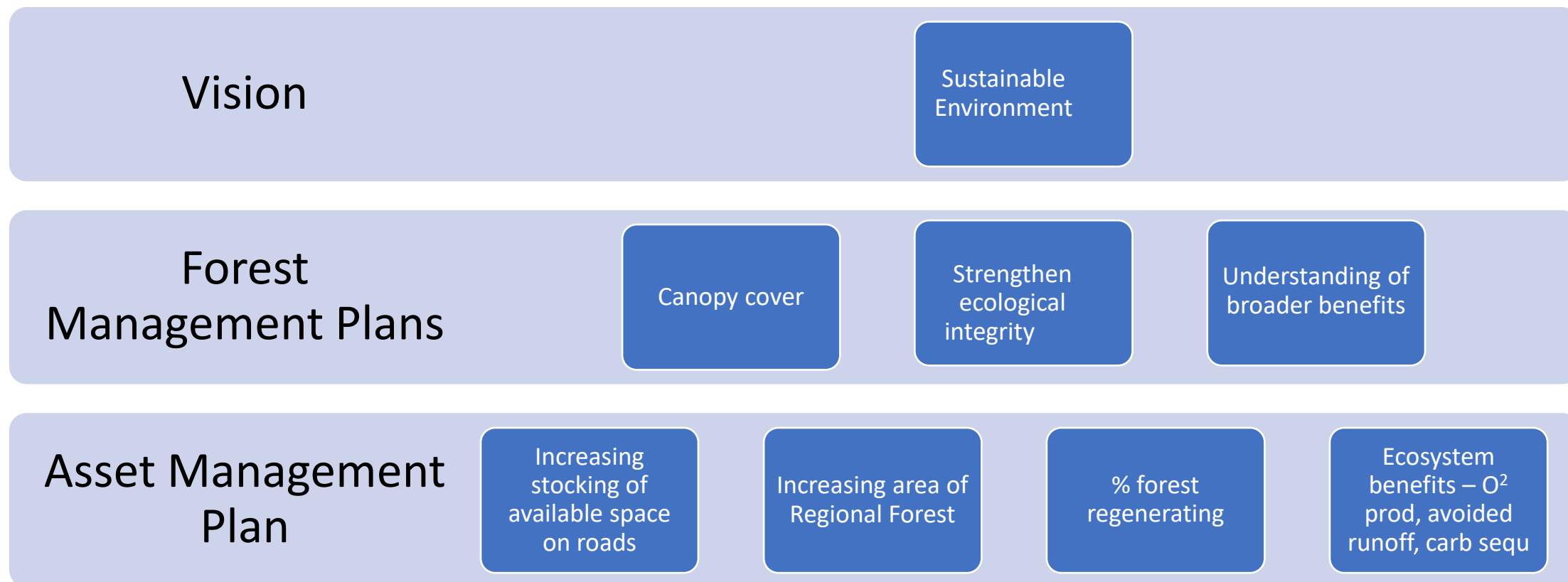
# Making trade-offs



# York Region

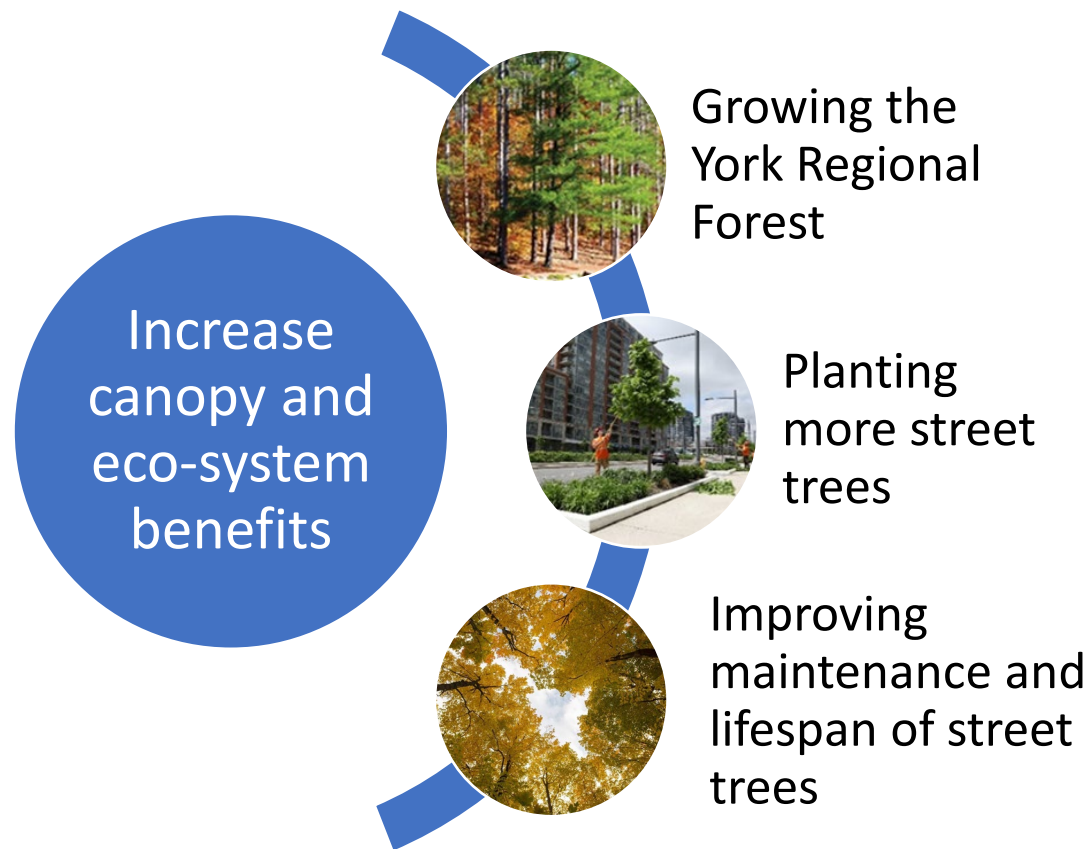


# Performance Measures

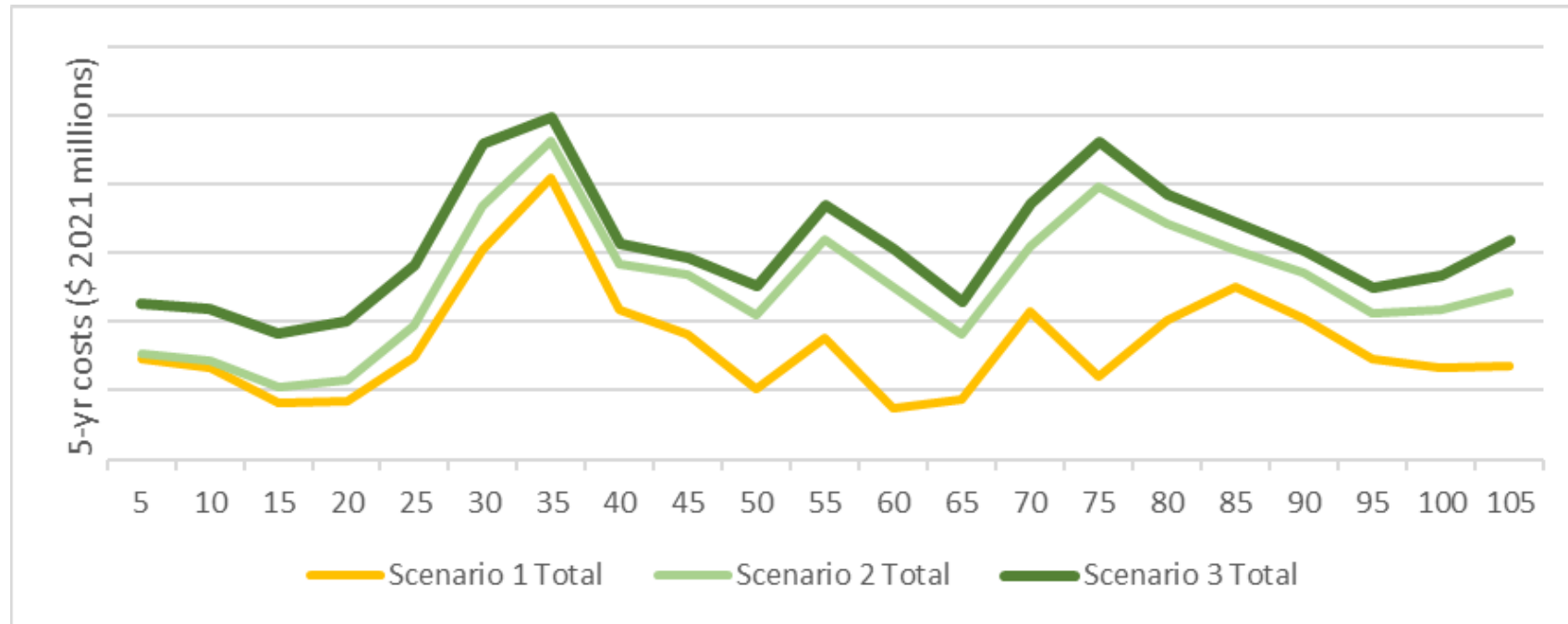




# Scenarios to Achieve Goals

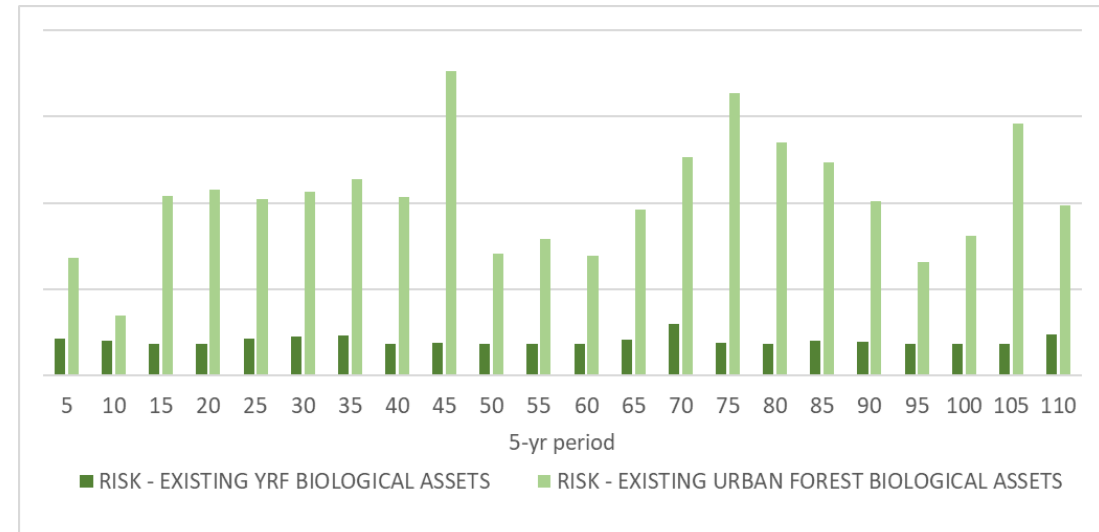


# Capital costs to reach performance targets



# Costs to mitigate high risks

- Invasive insects and disease
- Drought
- Hazards from damaged trees due to extreme weather



- Costs for additional activities to manage risks were 4% of the total costs:
  - Additional watering, increased inspections, more frequent pruning, higher infill planting, increased treatments for invasive species

# Next steps for York Region

## 2022 Climate Change Action Plan Implementation

- Conduct a vulnerability and ecosystem services assessment
- Integrate adaptive and mitigative actions into watershed planning
- Continue to adapt and respond to invasive species

## Asset Management – finding balance

- Explore opportunities to increase maintenance and inspections to extend the lifespan of street trees
- Identify and assess new planting locations to increase stocking rates along roadways

## Managing risks

- Establish a formal process for using the GIAMP risk register to inform decision-making and the prioritization of forest management activities

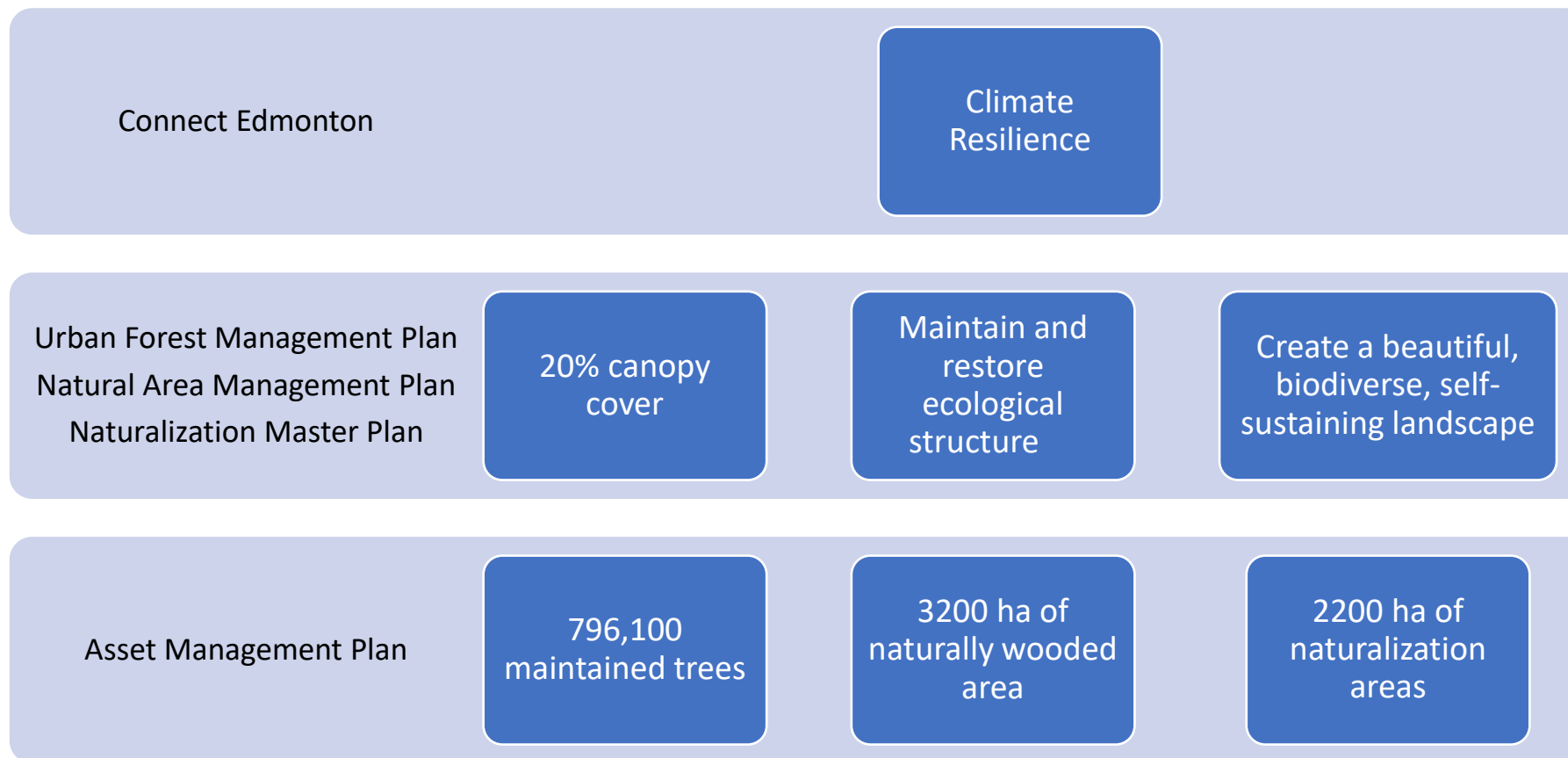
City of Edmonton

# URBAN FOREST ASSET MANAGEMENT PLAN

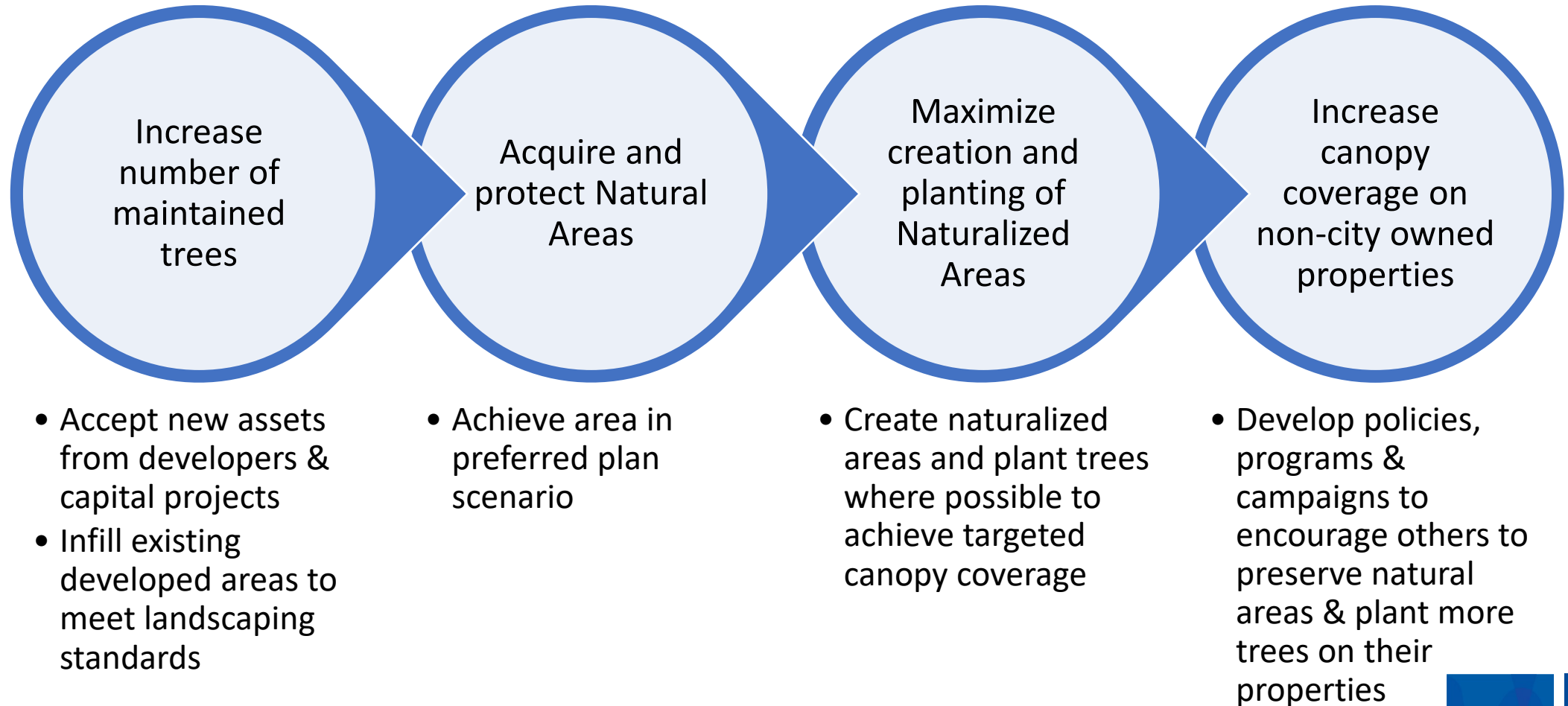
# City of Edmonton



# Performance Measures



# Strategy to achieve goals



# Climate Change Risks

## Risks

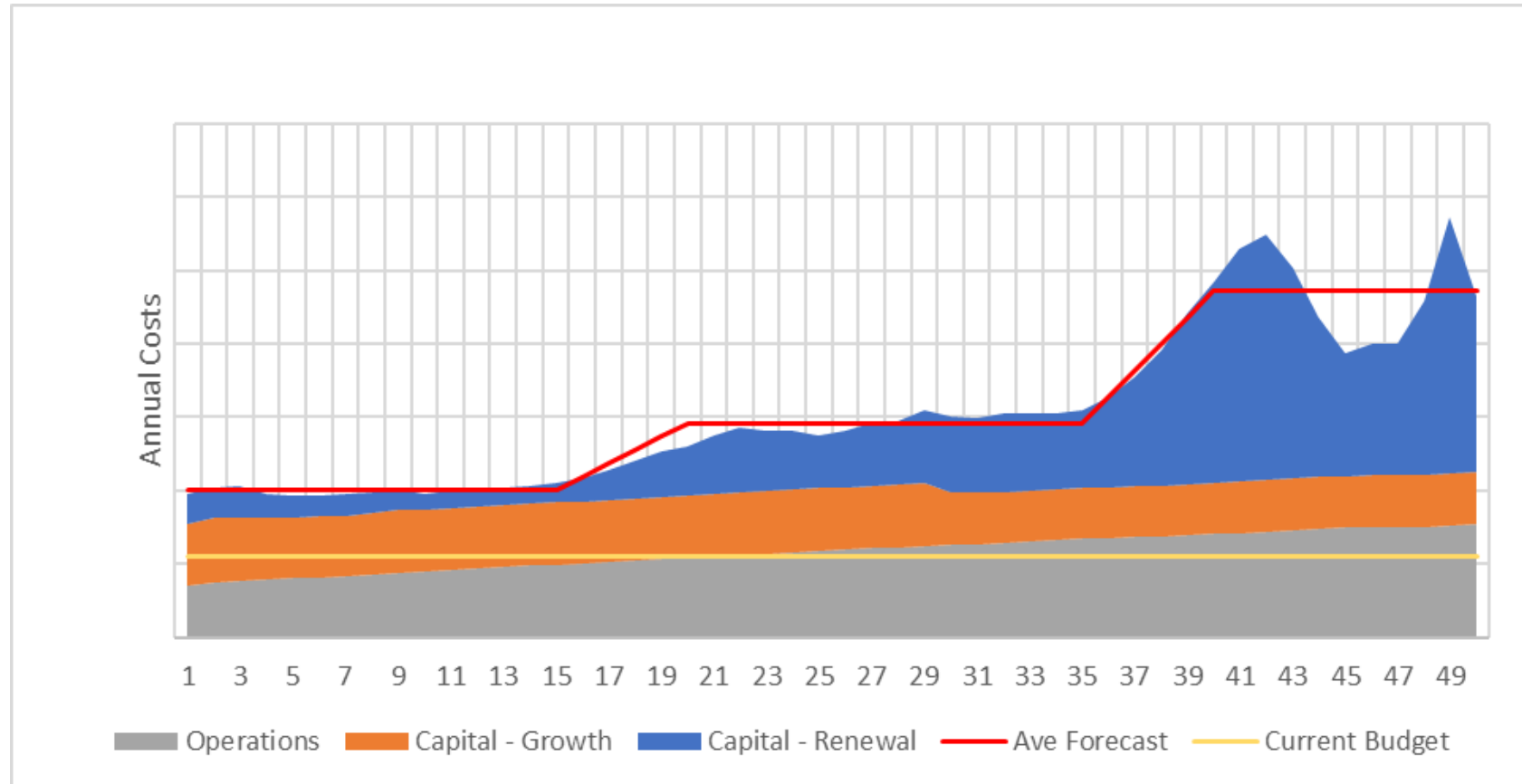
- Invasive insects and disease
- Drought
- Hazards created by weather damaged trees
- Flooding
- Fire

## Mitigation

- Diversifying the urban forest,
- Planting more trees
- Adjusting monitoring and maintenance processes
- Managing fuel loads in the forest



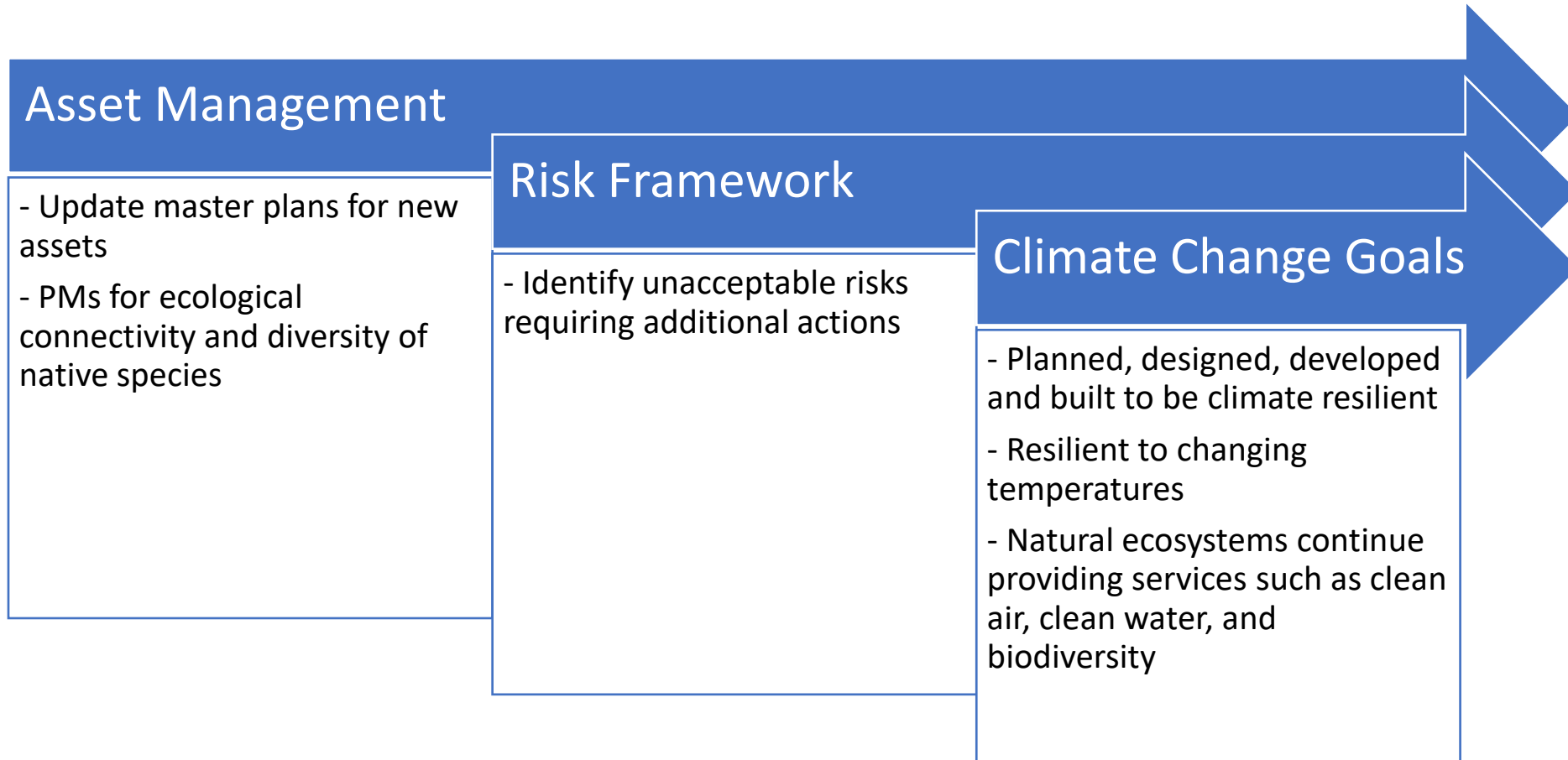
# Costs to reach performance targets



# What Did We DO with UFAMP

- Net reduction of GHGs of -3,224,297 metric tons of CO2
- EXTRA \$ for tree renewal - increase annual service levels
- \$100 million for growing the urban forest
  - 3,000 additional replacement plantings per year
  - 900 new boulevard & open space trees per year
  - 20 to 40 ha of new naturalized sites per year
- Buy-in for tree maintenance
- Common language amongst departments....ASSETS

# Next steps for Edmonton



# Closing comments

- Urban forests will help us adapt
- Governments will be investing
- Asset Management:
  - The right investment, on the right assets, at the right time
  - Processes and tools to describe the benefits, the costs to achieve them, and options for finding the right solution
- Don't forget risks



# Questions



Thank you