Climate Change and Asset Management:
First Steps Towards Climate Resiliency

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City of Guelph
Making a Difference

Guelph at a Glance

Location, Location, Location
Ideally located minutes from the 401, Highway 6 and Highway 7 along the Innovation Corridor 100km west of Toronto

One of the fastest growing cities in Canada
Our current population of ~150,000 is expected to grow by 30% in the next 10 years

High quality of life
Guelph is consistently ranked as one of the best places in Canada to live, work and play

Vibrant and diverse local economy:

- Education
- Manufacturing
- Clean technology
- Distribution, warehousing and wholesale
- Culture, entertainment and tourism

Service Areas

Corporate Services	Public Services
Office of the CAO	Infrastructure, Development and Enterprise Services

Approximately 2,000 employees

Our Strategy at a Glance

City Building

- Improve housing supply
- Grow and care for our community spaces and places
- Make it easier to get around

Environment

- Be a leader in climate action
- Empower the community to help create a sustainable city

People and Economy

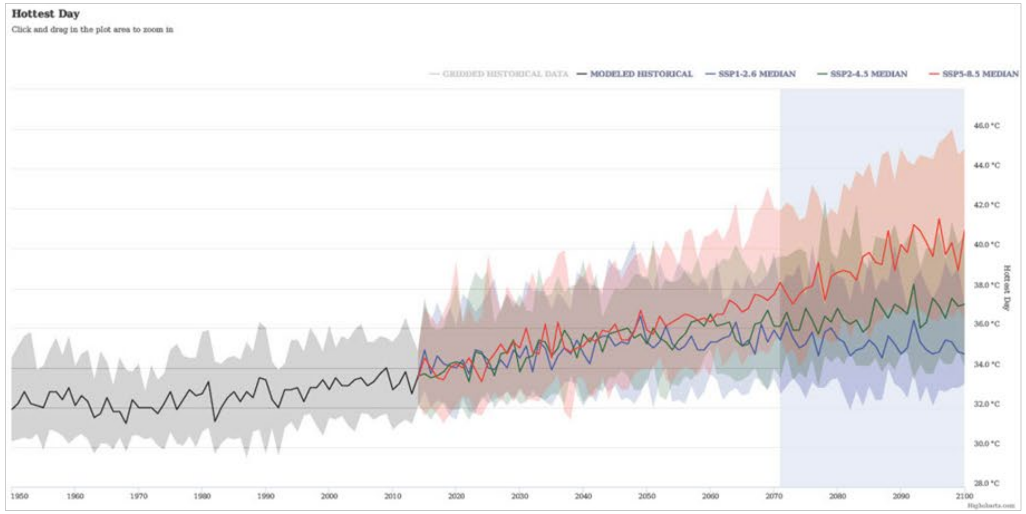
- Grow Guelph's economy
- Make downtown a vibrant place for everyone
- Support community well-being

Foundations

- Be an employer of choice
- Lead with accountability
- Provide excellent service
- Advocate for our city
- Maintain the City's healthy financial position

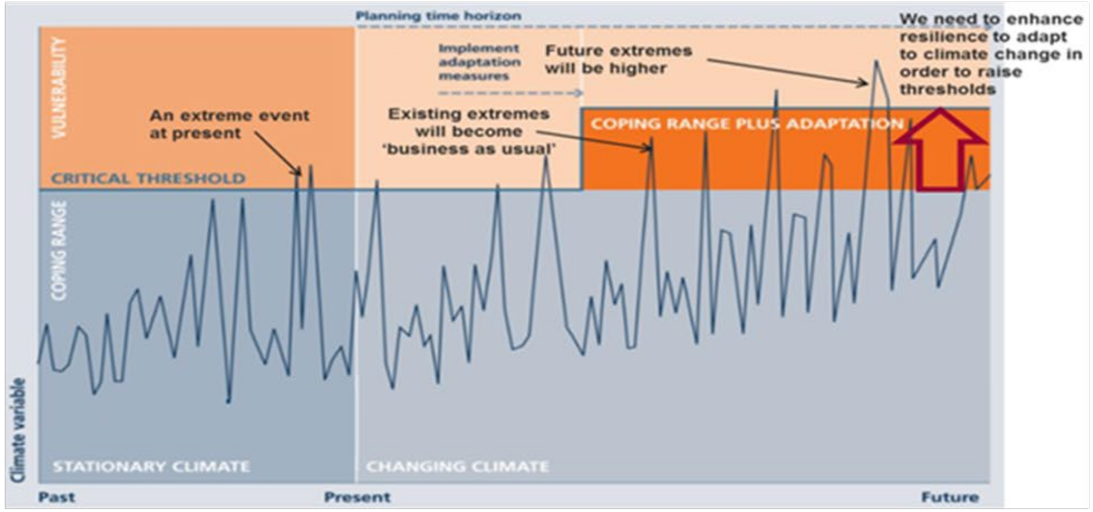
Is the Past a Good Indicator of the Future?

Tmax for Guelph: Low, Medium and High Emissions Scenarios 2005-2025-2055-2085



Source: climatedata.ca

Managing Extreme Weather Events: Asset Management Application



Source: Lemmen, D.S., Warren, F.J., Lacroix, J. and Bush, E. (eds) (2008) From Impacts to Adaptation: Canada in a Changing Climate 2007 (Ottawa: Government of Canada).

City of Guelph Climate Adaptation Plan

Addressing climate change requires **adaptation** (the focus of this plan) as well as **mitigation**.

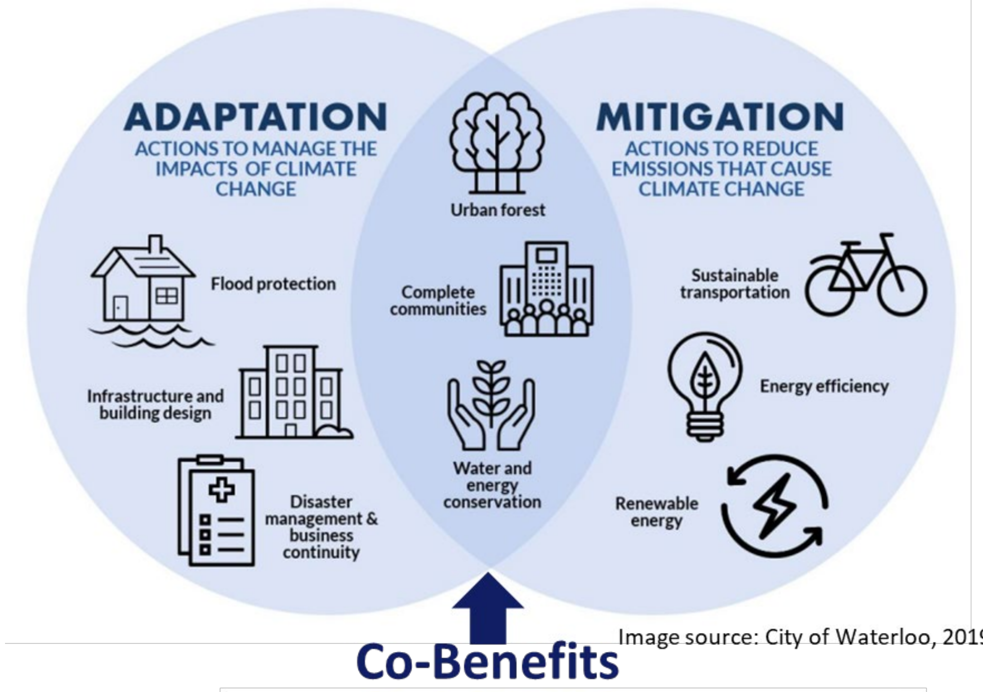


Image source: City of Waterloo, 2019

Race To Zero

The City of Guelph is committed to the United Nations' Race To Zero initiative and has set targets for the whole community to reduce carbon emissions: **Reduce our community carbon emissions by 63 per cent against the 2018 baseline by 2030.**

Climate Change Planning in Other Municipalities

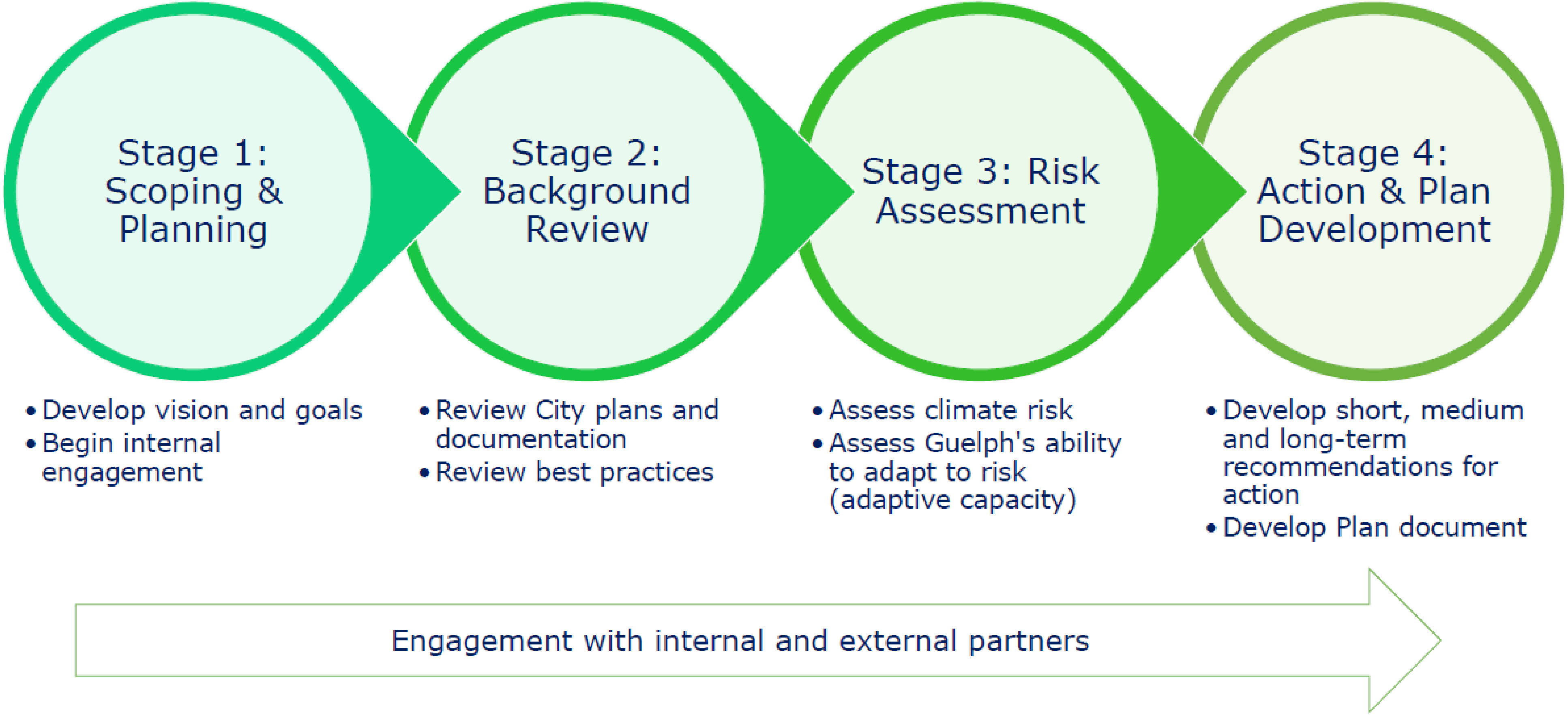
Tier	Comparator	Climate Action Plans
Single Tier	City of Barrie	City of Barrie Climate Change Adaptation Strategy (2017)
	City of Brantford	A Community Climate Change Action Plan for the City of Brantford (2022)
	Municipality of Chatham-Kent	Chatham-Kent Climate Change Action Plan (in progress)
	City of Hamilton	Climate Science Report for the City of Hamilton (2021)
	City of Kingston	Kingston Climate Action Plan (2014); Climate Leadership Plan (in progress)
	City of Greater Sudbury	Greater Sudbury Community Energy and Emissions Plan (2021)
Lower Tier	City of Brampton	Our 2040 Energy Transition: Community Energy Emissions Reduction Plan (2020; as part of chapter 1)
	City of Burlington	Climate Action Plan (2020, to be updated); Climate Resilient Burlington: Climate Change Vulnerability and Risk Assessment (2021)
	City of Cambridge	City of Cambridge Energy Conservation and Demand Management Plan (2020)
	City of Kitchener	Kitchener, Changing for Good: Our Corporate Climate Action Plan for Sustainability (2019)
	City of Mississauga	Climate Change Action Plan (2020)
	Town of Oakville	Town of Oakville Climate Change Strategy Technical Report (2015)
	City of Waterloo	City of Waterloo Corporate Climate Change Adaptation Plan (2019)
Upper Tier	Regional Municipality of Halton	Climate Change Discussion Paper: Regional Official Plan Review (2020)
	Regional Municipality of Waterloo	Community Climate Change Adaptation Plan for Waterloo Region (2019); Transform WR: Waterloo Region's Transition to an Equitable, Prosperous, Resilient Low Carbon Community
	Regional Municipality of Peel	Climate Change Master Plan (2019)

Municipal Climate Vulnerability and Risk Assessments – Common Examples

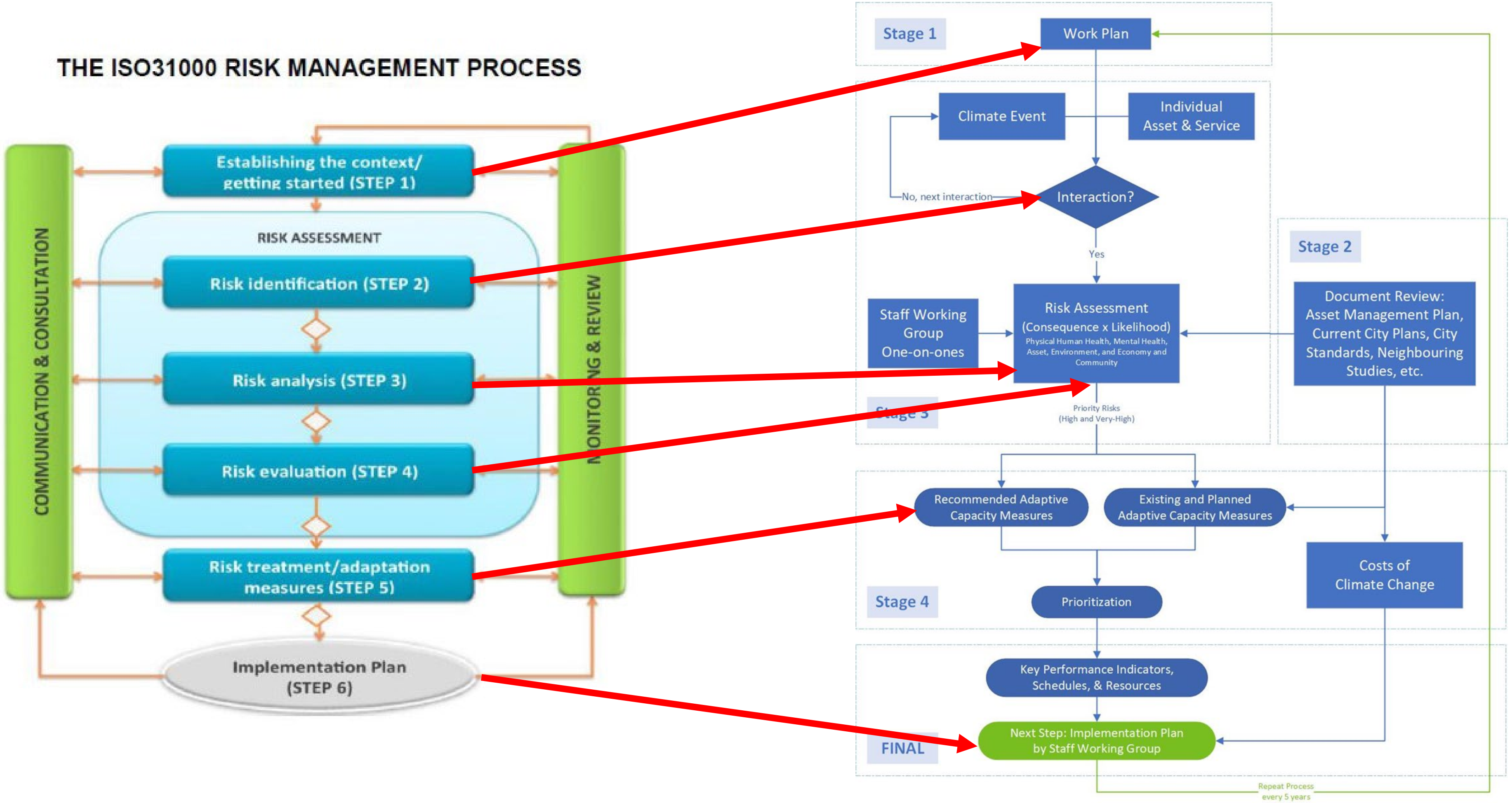
<table>
<tr><th>Impact Statements</th><th>Departments</th><th>Actions</th><th>Plans, Policies, Strategies</th></tr>
<tr>
<td>Goals
Thematic
Health & safety
Buildings and property
Infrastructure
Business & tourism
Ecosystems & biodiversity
Community services
Household resilience</td>
<td>Planning
Engineering - water
Transportation - roads and fleet
Parks
Corporate facilities
Human resources</td>
<td>Investigate and explore opportunities to collect and recycle water and storm water
Update flood risk mapping
Research and explore options for transporting those in need to warming and cooling facilities</td>
<td>Official plans
Seasonal control plans
Emergency response plans
Stormwater management master plan
Asset management plan (AMP)</td>
</tr>
</table>

Infrastructure assets and services, and AMPs considered among the mix

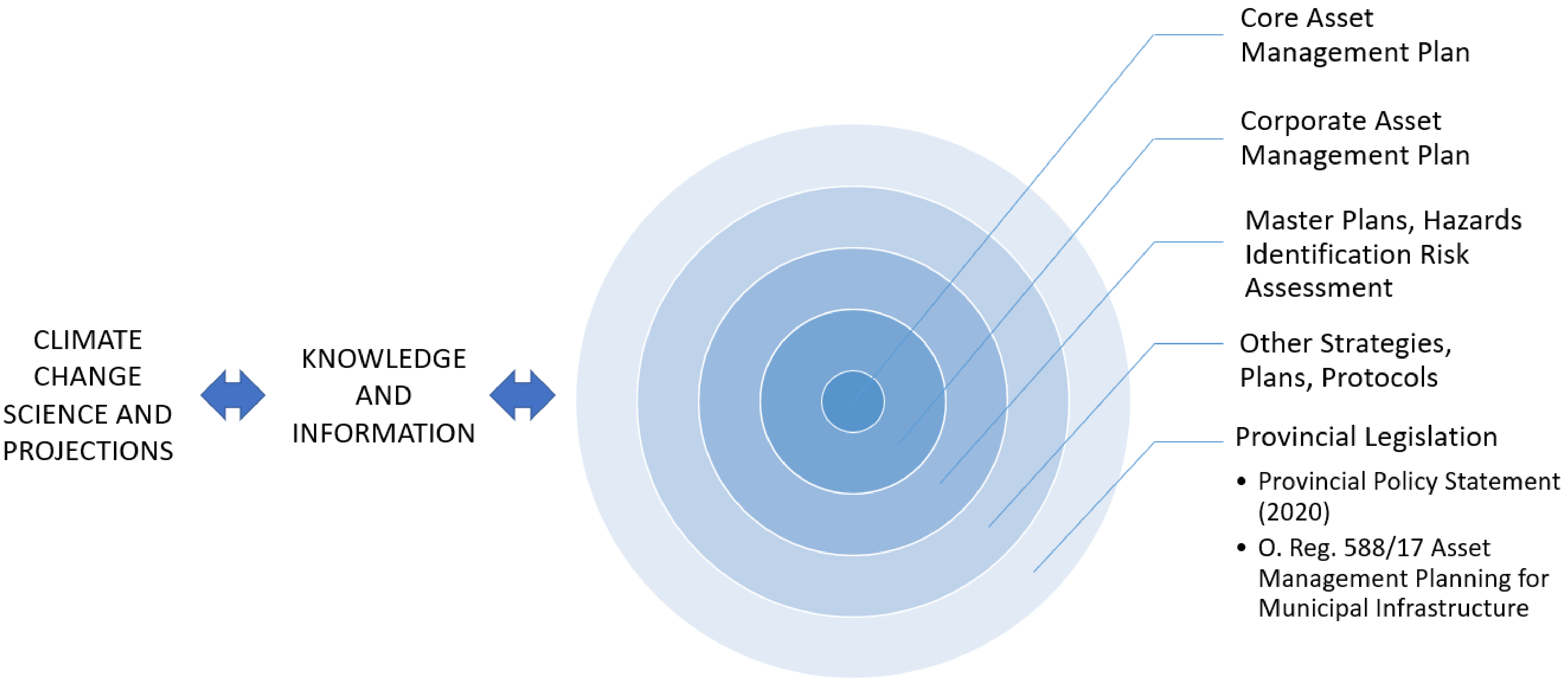
Development Process



Climate Risk Management Framework



Asset Based Approach



City Departments/Divisions & Assets

Office of the Chief Administrative Officer

Departments:
- Strategic Communications Engagement
- Internal Audit
- Smart Cities
- Strategy, Innovation and Intergovernmental Services

Guelph Public Library

Guelph Police Service

Corporate Services

Departments/Divisions:
- City Clerk's Office
- Finance
- Human Resources
- Information Technology
- Legal, Realty and Court Services

Infrastructure, Development and Enterprise Services

Departments/Divisions:
- Economic Development and Tourism
- Engineering and Transportation Services
- Environmental Services (Solid Waste Resources, Wastewater Services, Water Services)
- Facilities and Energy Management
- Planning and Building Services

Public Services

Departments/Divisions:
- Fire Services
- Guelph Wellington Paramedic Services
- Guelph Transit
- Operations
- Culture and Recreation
- Parks

Asset Category	Items included		Group Categories
• Administrative and Operations Facilities • Contaminated Sites • Corporate Vehicles and Equipment • Emergency Services • Green Infrastructure (Natural Assets) • Parking • Parks, Recreation and Culture • Software and Hardware • Solid Waste • Stormwater • Transit Services • Transportation • Wastewater • Water	• Arkell Springs, Water, Spring Recharge System • Bridges and Structures • Bus – Conventional; Bus – Mobility; Transit Vehicle – Other • Channels, Culvert, Management Ponds, Oil and Grit Separator, Pipes • Collector Aqueduct • Commercial Facilities, Corporate Administration Facilities, Operations Facilities • Contaminated Land • Emergency Buildings • Emergency Equipment • Emergency Vehicles • Equipment • Fleet vehicles • Groundwater Well Station, Pumping Station, Well Station (inactive) • Hydrants, Water Flow Meter Stations, Watermains	• Maintenance Hole, Sanitary Pipe, Siphon, Wastewater Pumping Station • Natural Heritage • Parking Garage, Parking • Parks, Recreation and Culture • Roads, Sidewalks, bike paths/trails • Signage, Streetlights, Traffic Controls • Transit • Transit Facilities • Waste Collection Fleet Vehicles • Waste Resource Innovation Centre (Facility) • Water Resource Recovery Centre • Water Tower • Water Treatment Plant	• Arkell Springs and Recharge System • Bridges and Structures • Buildings • Bus Stops/Shelters • Bus Terminal • Collector Aqueduct • Contaminated Land • Emergency Buildings • Emergency Equipment • Emergency Vehicles • Equipment • Forest and Plants • Library, Culture, Tourism and Community Investment • Parking • Parks • Recreation Facility • Roads • Signage • Stormwater Infrastructure • Surface Water • Vehicles • Wastewater infrastructure • Wastewater Treatment Facility • Water Infrastructure • Water Tower • Water Treatment Plant • Well Station • Wetlands

Climate Related Hazards

- Project Definition
- Risk Identification
- Risk Analysis
- Risk Rating
- Adaptive Measures
- Implementation

Climate Variables	Hazard Represented
Acute Weather Events	Number of days with high wind gusts >40 and 70 km/hour
Drought	Number of periods with more than 5 consecutive dry days (less than 1 mm per day)
Extreme Cold	Number of days <-15°C
Extreme Heat	Number of days >30°C
Flooding	Return levels for max 24-hour rainfall
Flooding	Return levels for max 5-day rainfall
Freeze/Thaw	Number of days experiencing freeze/thaw conditions
Snow	Days >5 cm
Freezing Rain	Days with freezing rain
Warmer Ambient Temperatures	Winter season mean temperatures and/or number of days >31°C and nights >20°C
Winter/Spring Rainfall	Winter season precipitation (mm)

Risk Assessment

Asset Subclass	Service	Drought	Extreme Cold	Extreme Heat	Freeze/ Thaw	Acute Weather Events	Flooding	Snow and Freezing Rain	Warmer Ambient Temp	Winter/ Spring Rainfall
Water Treatment Plant	Providing potable water to residents and businesses	X	X	X	X	X	X	X	X	X
Groundwater Well	Providing potable water to residents and businesses	X	X	X	X	X	X	X		X
Hydrants, flow meters, watermains	Fire protection		X	X	X	X	X	X		X

Interactions

Risk Assessment

Asset Subclass	Service	Drought	Extreme Cold	Extreme Heat	Freeze/ Thaw	Acute Weather Events	Flooding	Snow and Freezing Rain	Warmer Ambient Temp	Winter/ Spring Rainfall
Water Treatment Plant	Providing potable water to residents and businesses	X	X							
Groundwater Well	Providing potable water to residents and businesses	X	X							
Hydrants, flow meters, watermains	Fire protection		X							

Interactions

Consequences

	None (1)	Low (2)	Medium (3)	High (4)	Very High (5)
Physical Human Health	Unlikely to result in injuries, illness, or fatalities.	Minor injuries or illness; few individuals; small portion of the City.	Minor injuries or illness. Many individuals. Small portion of the city.	Severe injuries, illness, or fatalities. Many individuals. Large portion of the city.	Mass severe injuries, illness, and fatalities. Many communities. Throughout the city.
Mental Health	Unlikely to result in mental and emotional distress.	Short-term mental or emotional distress. Few individuals. Small portion of the city.	Short-term mental or emotional distress. Many individuals. Small portion of the city.	Long-term mental or emotional distress. Many individuals. Large portion of the city.	Mass long-term mental or emotional distress. Many communities. Throughout the city.
Asset Management	Unlikely to result in property damage or damage or disrupt function of civic assets.	Minor property damage, infrastructure damage, or disruption. Few properties or civic assets. Small portion of the city.	Minor property damage, infrastructure damage, or disruption. Many properties or civic assets. Small portion of the city.	Severe property damage, infrastructure damage, or disruption. Many properties or civic assets. Large portion of the city.	Widespread severe property damage, infrastructure damage, or disruption. Many properties or civic assets. Throughout the city.
Environment	Unlikely to result in damage or loss of habitat or ecological function; no regulatory consequences.	Short-term damage or loss. Few ecological features. Small portion of the city. Regulatory reporting may be required.	Short-term damage or loss. Few ecological features. Small portion of the city. Reporting of regulatory violation required.	Long-term damage or loss. Many ecological features. Large portion of the city. Reporting of regulatory violation required.	Widespread long-term damage or loss. Many ecological features. Throughout the city. Reporting of regulatory violation required.
Community and Economy	Unlikely to impact access to support services, disrupt income generating activities or result in political or reputational impacts.	Short-term disruption or political/reputational damage. Few support services/individuals/businesses and a small portion of the city affected.	Short-term disruption or political/reputational damage. Many support services/individuals/businesses affected over a small portion of the city. Negative sentiment expressed on many media sources.	Long-term disruption or political/reputational damage. Many support services/individuals/businesses affected over a large portion of the city. Negative sentiment expressed on many media sources.	Widespread long-term disruption or political or reputational damage. Many support services, individuals, or businesses. Negative sentiment expressed on many media sources. Throughout the city.

Risk = Consequence × Likelihood

Risk Assessment

Asset Subclass	Service	Drought	Extreme Cold	Extreme Heat	Freeze/ Thaw	Acute Weather Events	Flooding	Snow and Freezing Rain	Warmer Ambient Temp	Winter/ Spring Rainfall
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Hydrants, flow meters, watermains	Fire protection		X							

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Environment	Unlikely to result in damage or loss of habitat or ecological function; no regulatory consequences.				
Community and Economy	Unlikely to impact access to support services, disrupt income generating activities or result in political or reputational impacts.				

Consequences

PIEVC HLSG Probability Scoring

Likelihood	Middle Baseline Approach	Method	Suggested Rational
1		Likely to occur less frequently than current climate	50% to 100% reduction in frequency or intensity with reference to baseline mean
2			10% to 50% reduction in frequency or intensity with reference to baseline mean
3	Establish Current Climate Baseline Per Parameter	Likely to occur as frequently as current climate	Baseline mean conditions or a change in frequency or intensity of ±10% with reference to the baseline mean
4			10% to 50% increase in frequency or intensity with reference to baseline mean
5		Likely to occur more frequently than current climate	50% to 100% increase in frequency or intensity with reference to baseline mean

Likelihood

Risk = Consequence × Likelihood

Risk Assessment

Risk = Consequence × Likelihood

Interactions

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Environment	Unlikely to result in damage or loss of habitat or ecological function; no regulatory consequences.				
Community and Economy	Unlikely to impact access to support services, disrupt income generating activities or result in political or reputational impacts.				

PIEVC HLSG Probability Scoring

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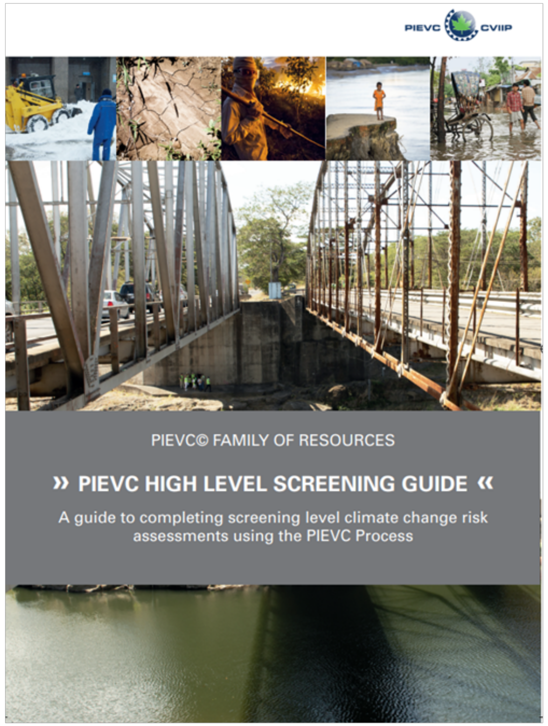
4			10% to 50% increase in fr intensity with reference
5		Likely to occur more frequently than current climate	50% to 100% increase in intensity with reference

Likelihood

Risk

LIKELIHOOD					
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
	CONSEQUENCES				

PIEVC HLSG: Probability Scoring



Climate Lens: Infrastructure Canada
https://pievc.ca/pievc-high-level-screening-guide/

Applications of the PIEVC HLSG Process

- Asset management, capital and master planning
- Infrastructure operations and management evaluation and review
- Asset portfolio assessment and evaluation
- Municipal climate vulnerability & risk assessment

PIEVC HLSG Probability Scoring			
Likelihood	**Middle Baseline Approach**	**Method**	**Suggested Rational**
1		Likely to occur less frequently than current climate	50% to 100% reduction in frequency or intensity with reference to baseline mean
2			10% to 50% reduction in frequency or intensity with reference to baseline mean
3	Establish Current Climate Baseline Per Parameter	Likely to occur as frequently as current climate	Baseline mean conditions or a change in frequency or intensity of ±10% with reference to the baseline mean
4			10% to 50% increase in frequency or intensity with reference to baseline mean
5		Likely to occur more frequently than current climate	50% to 100% increase in frequency or intensity with reference to baseline mean

Climate Hazards, Climate Parameters, Critical Thresholds and Likelihood Scores

Project Definition
Risk Identification
Risk Analysis
Risk Rating
Adaptive Measures
Implementation

Climate Variables	Hazard Represented	Historical Baseline 1986-2005	(2050s)	(2080s)	Change from Baseline
Acute Weather Events	Number of days with high wind gusts >40 and 70 km/hour	-	+10-20% by 2100	+20-40% by 2100	↑
Drought	Number of periods with more than 5 consecutive dry days (less than 1 mm per day)	12	12	12	-
Extreme Cold	Number of days <-15°C	22	6	<1	↓↓
Extreme Heat	Number of days >30°C	9	38	67	↑↑
Flooding	Return levels for max 24-hour rainfall	39	43	46	↑
Flooding	Return levels for max 5-day rainfall	67	73	78	↑
Freeze/Thaw	Number of days experiencing freeze/thaw conditions	70	61	52	↓
Snow	Days >5 cm	11	10	7	↓
Freezing Rain	Days with freezing rain	-	+40%	+45%	↑
Warmer Ambient Temperatures	Winter season mean temperatures and/or number of days >31°C and nights >20°C	<1	9	28	↑↑
Winter/Spring Rainfall	Winter season precipitation (mm)	193	217	232	↑

Water Treatment Plant: Consequences

- Project Definition
- Risk Identification
- Risk Analysis
- Risk Rating
- Adaptive Measures
- Implementation

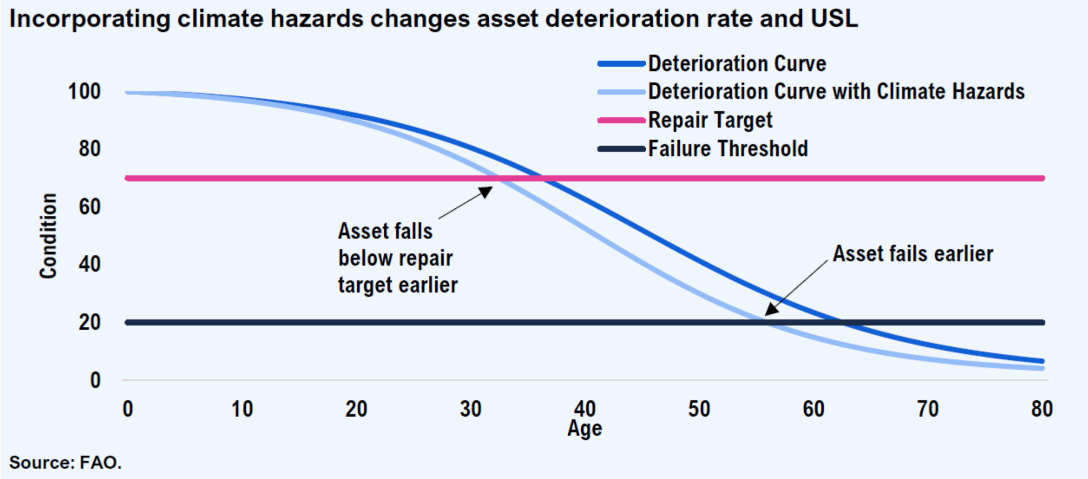
Hazard	Likelihood	Physical Human Health	Human Health Consequence	Mental Health	Mental Health Consequence	Asset Management	Asset Mgmt Consequence	Environment	Environment Consequence	Community & Economy	Community & Economy Consequence
Acute Weather Events	4	Safety concerns relating to building occupation and ancillary services. Impacts to the supply and quality of drinking water.	High	Stress related to working conditions and drinking water quality.	High	Acute events (e.g., wind, lightning) could result in building damage, damage to disinfection systems, PLC system, power outages. Repair and maintenance of property damage	High	Debris management	Low	Safety concerns relating to building occupation and ancillary services. Impacts to the supply and quality of drinking water.	High
Drought	5	Service to buildings, having no or limited access to water.	Low	Stress related to lower or lack of water supply.	Med					Service to buildings, having no or limited access to water.	Low
Extreme cold	1	Health impacts related to extreme temperature.	Low	Stress related to extreme temperatures.	Low					Health impacts related to extreme temperature.	Low
Extreme heat	5	Health impacts related to extreme temperature.	High	Stress related to extreme temperatures.	High	Damages to equipment and instrumentation. Impacts to temperature dependent processes. Increased cooling costs and equipment repairs.	Low	Water quality implications from damaged structures. Lower treatment efficacy.	Low	Health impacts related to extreme temperature.	High
Flooding	4	Safety concerns relating to building occupation and ancillary services. Impacts to the supply and quality of drinking water.	Med	Stress related to working conditions and drinking water quality.	Med	Floods could result in instantaneous damage. Repair and maintenance of property damage	High	Debris enters storm sewers and discharged to waterways	Med	Safety concerns relating to building occupation and ancillary services. Impacts to the supply and quality of drinking water.	Med
Freeze/Thaw	2	Safety concerns relating to building occupation and ancillary services.	Low	Stress related to slips and falls	Low	Structural damage related to freeze-thaw. Repair and maintenance of buildings related to freeze-thaw.	Low	Increased salt application.	Low	Safety concerns relating to building occupation and ancillary services.	Low
Snow and Freezing Rain	2	Safety concerns relating to building occupation and ancillary services.	Low	Stress related to slips and falls	Low	Increased snow loads on roofs may cause property damage. Repair and maintenance of property damage.	Low	Increased salt application.	Low	Safety concerns relating to building occupation and ancillary services.	Low
Warmer Ambient Temperature	5	Health impacts related to warmer ambient temperature.	Low	Stress related to warmer ambient temperatures.	Low	Impacts to temperature dependent processes.	Low	Lower treatment efficacy.	Low	Health impacts related to warmer ambient temperature.	Low

Water Treatment Plant: Risk Scores

- Project Definition
- Risk Identification
- Risk Analysis
- Risk Rating
- Adaptive Measures
- Implementation

Hazard	Human Health Risk Rating	Mental Health Risk Rating	Asset Mgmt Risk Rating	Environment Risk Rating	Community & Economy Risk Rating	Maximum Risk	Adjustment?
Acute Weather Events	16	16	16	8	16	16	No
Drought	8	12	0	0	0	15	No
Extreme cold	2	2	0	0	2	2	No
Extreme heat	20	20	10	10	10	20	No
Flooding	12	12	16	12	16	16	Yes – not in floodplain
Freeze/Thaw	4	4	4	4	6	6	No
Snow and Freezing Rain	4	4	4	4	6	6	No
Warmer Ambient Temperature	10	10	10	10	0	10	No
Winter/Spring Rainfall	0	0	12	12	8	12	No

Estimating Costs of Adaptation: FAO



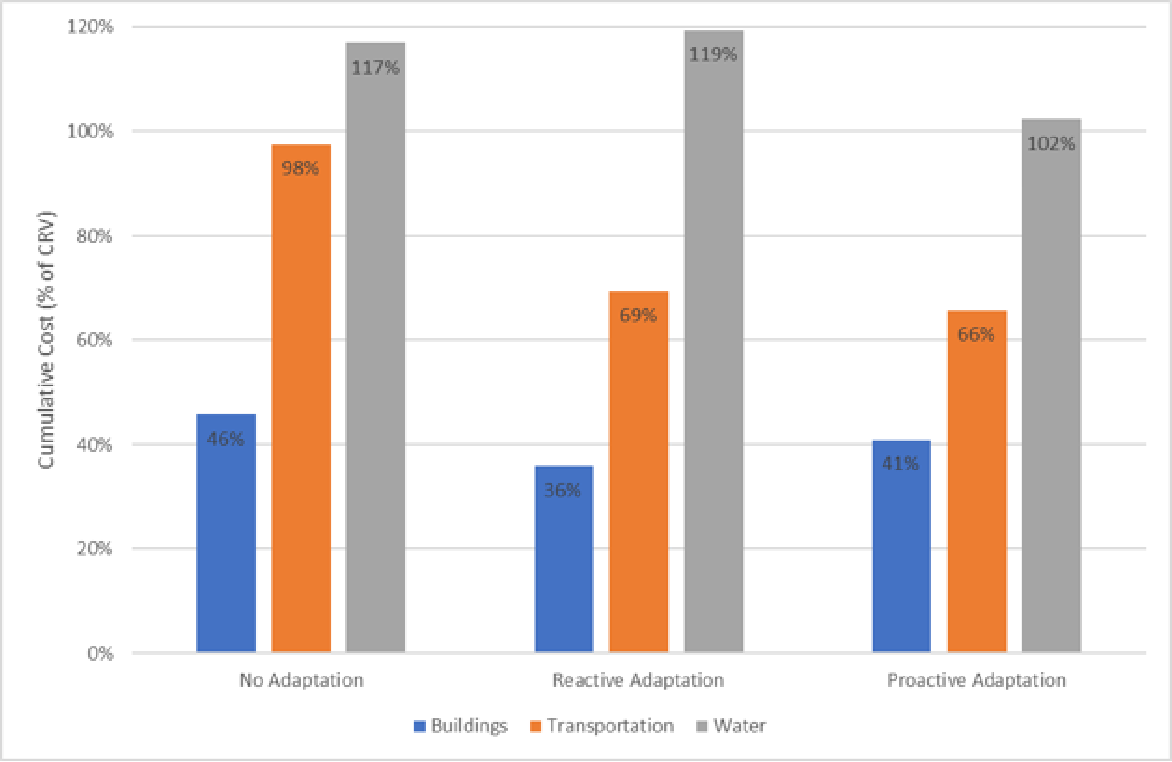


Figure 16 **Cumulative Cost of Climate Change on Public Sector Assets, 2022-2100, Percentage of Current Replacement Value, High Emissions Scenario (Afroz et al. 2022a, 2022b, 2021)**

Water Treatment Plant: Adaptation

Hazard	Existing	Recommended
Acute Weather Events	1. Continue to review and update as necessary emergency plan to include the loss of Woods Station or a water storage facility. 2. Continue to consider climate adaptation measures in the design of the Woods WTP upgrade. 3. Continue assessing risk as per the Drinking Water Quality Management System.	
Drought	1. Continue implementing the Water Efficiency Strategy programming, with periodic updates to programming offered, and evaluate its effectiveness at reducing water demand in the City. 2. Establish an Integrated Water Management Strategy for Guelph. The strategy should look at water re-use opportunities from wastewater and stormwater for non-potable uses (industry, vehicle washing, fire suppression, etc.). 3. Complete a Drought Response Operational Plan for the City. 4. Update the AMR technology to inform and account for water within each City district. 5. Continue the water meter program	1. Update the Automated Meter Reading technology to inform and account for water within each City district.
Extreme heat	1. Continue to review and update as necessary emergency plan to include the loss of Woods Station or a water storage facility. 2. Continue to consider climate adaptation measures in the design of the Woods WTP upgrade. 3. Continue assessing risk as per the Drinking Water Quality Management System	

Adaptation Measures: Water Services

No.	Adaptation Actions	Action Status	Collaborating /Benefitting Departments	Implementation				Example Key Performance Indicators
				Action Type	Schedule	Estimated Resources [1]	Goal Alignment	
8	Continue assessing risk as per the Drinking Water Quality Management System.	Existing	• Asset Management	Policy	Ongoing	$$	• Infrastructure • Economy	• Average risk status as dictated by the Drinking Water Quality Management System. • Conducting annual risk assessment.
9	Continue Source Water Protection program.	Existing	• Asset Management	Capital	Ongoing	$$ to $$$	• Environment & Health • Infrastructure • Economy	• Continuation of the Source Water Protection program.
11	Continue to stock backup equipment in the event of equipment failure.	Existing	• Asset Management	O&M	Ongoing	$$	• Infrastructure • Safety	• Number of assets with backup equipment readily available.
31	Continue to pursue venture with Rezatec to take into account history of breaks, combine with weather conditions, and soil type to order to advise when to replace infrastructure.	Existing	• Engineering (Stormwater) • Wastewater • Asset Management	Capital	Short term	$$	• Environment & Health • Infrastructure • Safety	• Length (km) of infrastructure requiring maintenance and replacement. • Completion of City-wide assessment.
36	Continue to review and update as necessary emergency plan to include the loss of Woods Station or a water storage facility.	Existing	• All Departments/ Divisions	Planning	Short term	$	• Infrastructure • Safety	• Establish a regular review of the emergency plan.
51	Source Water Protection group to work with Public Works to consider alternative means of de-icing instead of salt use.	Recommended	• Asset Management • Public Works (Operations)	Capital	Short term to medium term	$$	• Environment & Health • Economy Safety	• Amount (kg) of salt application.
99	Consider redundancy in aqueduct to direct some portion of flow to southern area of the City.	Recommended	• Asset Management	Capital	Medium term	$$$	• Infrastructure • Safety	• Area of the City with redundant source of water.
109	Establish plan with Public Works if additional assistance is needed to clear route to the Arkell Spring Grounds.	Recommended	• Public Works	Planning	Short term	$	• Infrastructure • Safety	• Establishment of plan with Public Works to clear route to the Arkell Spring Grounds.
110	Review redundancy planning for all water storage facilities.	Recommended	• Asset Management	Planning	Short term	$	• Infrastructure • Safety	• Number of water storage facilities with a redundancy plan.
114	Update the Automated Meter Reading technology to inform and account for water within each City district.	Recommended	• Asset Management	Capital	Short term to medium term	$$	• Infrastructure • Economy	• Update of the Automated Meter Reading technology.
116	Continue to consider climate adaptation measures in the design of the Woods Water Treatment Plan upgrade.	Existing	• Asset Management • Facilities and Energy Management	Capital	Short term	$$$	• Infrastructure • Safety	• Incorporation of the climate adaptation measures in the design of the Woods Water Treatment Plant upgrade.
119	Continue the water meter program.	Existing	• Asset Management	Capital	Ongoing	$$ to $$$	• Infrastructure • Economy	• Continuation of the water meter program.
158	Participate in the Water Managers Working Group with GRCA and other municipalities in the watershed.	Recommended	• Wastewater • Grand River Conservation Authority	Planning	Short term	$	• Environment & Health • Infrastructure • Safety	• Number of meetings/communication with the Water Managers Working Group with GRCA.

Adaptation Measures: Responsibility

No.	Adaptation Actions	Action Status	Collaborating /Benefitting Departments
140	Engage MCFN and SNGR in the City's pre-consultation process.	Recommended	• All departments/ divisions • MCFN • SNGR
162	City managers to prioritize staff retention recognizing that the knowledge of staff is one of the City's best assets in an emergency situation.	Recommended	• All departments/ divisions

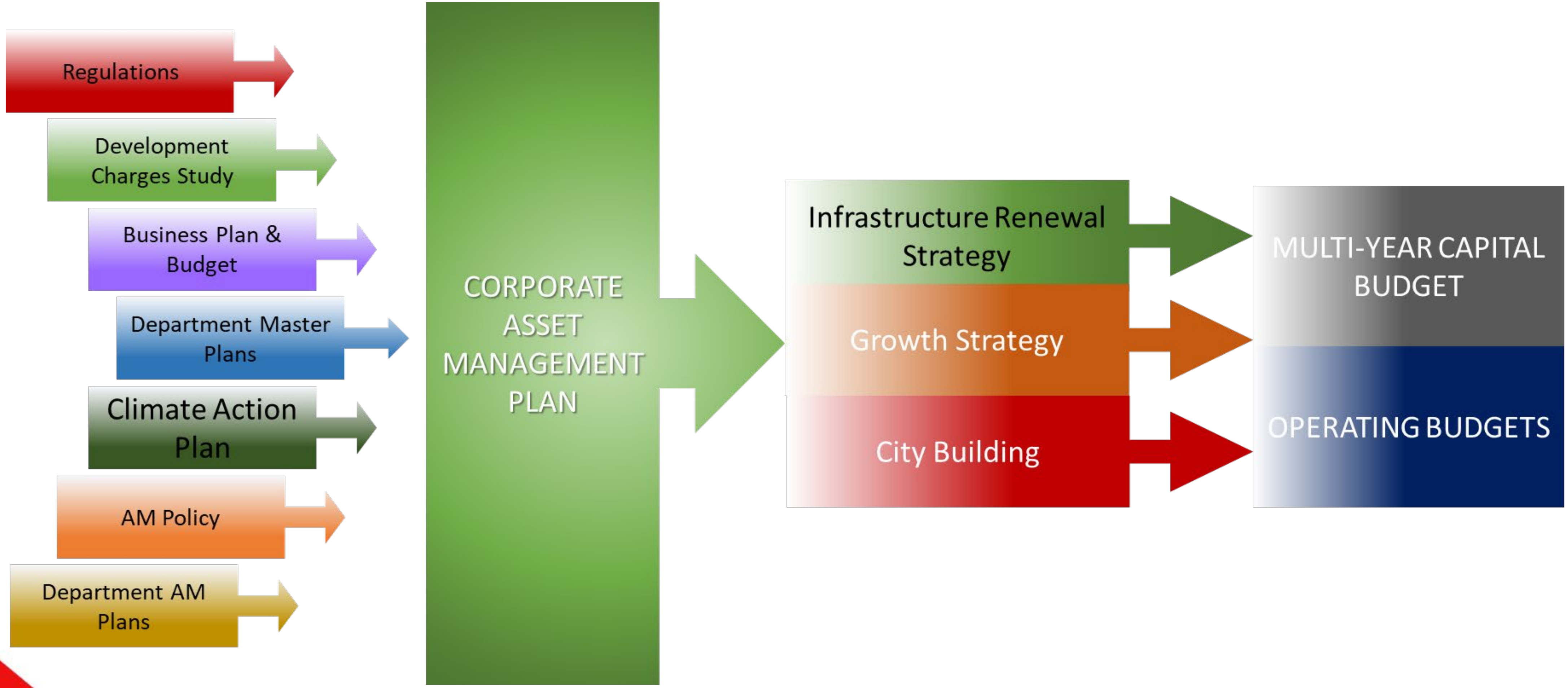
No.	Adaptation Actions	Action Status	Collaborating /Benefitting Departments
132	Continue involvement in the Emergency Operations Group.	Existing	• All departments/ divisions
133	Consider how to use communications to weave in climate change adaptation and mitigation messaging and make connections across the corporation.	Existing	• All departments/ divisions
136	Establish emergency internal and external communications that include digital and broadcast media in multiple languages, as well as American Sign Language.	Recommended	• All departments/ divisions • County of Wellington • Red Cross
137	Develop a list of support agencies to contact during an emergency to accelerate assistance to those in need. Create a plan outlining how and when these agencies will be contacted efficiently.	Recommended	• All departments/ divisions • County of Wellington • Red Cross • Wellington Dufferin Guelph Public Health
145	Establish business continuity plan in case communications are not available.	Recommended	• All departments/ divisions • All Partner Working Group
147	Continue to follow and adopt the Community Engagement and Communications Plan, and coordinate community consultation with the Sustainability Master Plan.	Existing	• All departments/ divisions

Relative Merits from this Approach

- Provides some initial clarity on where asset groups are vulnerable and at risk to climate hazards
- Focuses attention on existing and planned activities and their ability to enhance adaptive capacity – and where more attention is required
- Sheds some light where existing and planned asset management practices may require an increase in financial and human resources

Putting the Plan into Action

Asset Management Position



Lessons Learned

- Climate risk assessment involves investment of time and resources
- Stakeholder engagement through workshops and 1:1 meetings are essential
- Federal funding is welcomed, but can’t build our way to become 100% climate resilient
- Current shortfall with municipal budgets and asset management will increase with climate change

Questions and Discussion

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