

DATE OF MEETING June 22, 2020

AUTHORED BY ROB LAWRENCE, ENVIRONMENTAL PLANNER

SUBJECT CLIMATE CHANGE RESILIENCE STRATEGY

OVERVIEW

Purpose of Report

To present to Council the Climate Change Resilience Strategy for adoption.

Recommendation

That Council adopt the Climate Change Resilience Strategy and direct Staff to prioritize actions in this report and begin implementation of the strategy.

BACKGROUND

Addressing climate change involves more than just lowering greenhouse gas (GHG) emissions, effective climate change action requires both mitigation, or actions to reduce the emission of GHGs into the atmosphere, and adaptation, or actions designed to reduce the negative impacts of climate change. This report introduces the Climate Change Resilience Strategy, a foundational document that focuses on adaptation and preparing Nanaimo for the current and future impacts of climate change.

Nanaimo is currently feeling the effects of climate change. Annual temperatures have risen alongside an increase in the number of extreme weather events, and these are having serious consequences in the region. As an example, the Nanaimo Lakes Fire (August 2018) burned more than 450 hectares, while a recent windstorm (December 2018) left over 150,000 people on Vancouver Island without power. The overall magnitude of these climate-related events, as well as overall changes in climate, are projected to increase over time.

In 2017, the City applied for and received \$175,000 in funding to complete a Climate Change Resilience Strategy from the Federation of Canadian Municipalities (FCM) Climate Innovation Program. The program provides funding to communities interested in addressing the impacts of climate change and reducing its effects in communities across Canada. The City also contributed \$50,000 funding and Staff time toward the project.

The Climate Change Resilience Strategy's objective is to identify all climate-related vulnerabilities within the city of Nanaimo, up to the year 2100, and recommend best practice action to address or avoid any climate-related risks identified.

Council has directed Staff to accelerate the City's actions on climate change by passing the Climate Emergency Declaration in April 2019. The City has completed a number of projects and initiatives in sustainability action, infrastructure design, and asset and energy management that have helped lower greenhouse gas emissions in the city. Some of these actions have also contributed to Nanaimo's climate resiliency. This strategy focuses on enhancing climate

resiliency initiatives that currently exist and identifying new actions where potential gaps have been identified.

DISCUSSION

The strategy was developed using the BC Climate Risk Assessment Framework. The methodology followed four general steps outlined below (and as shown on Page 8 of Attachment A). Impacts, risks, and vulnerabilities to the city were identified in a series of workshops with Staff and invited community stakeholders.

Strategy Development Steps:

Step 1

Understanding Local Context: Staff and the consulting team began by reviewing the City's current policy, operating standards, and practices that relate to climate adaptation. They identified potential gaps and opportunities to enhance resilience throughout the city.

Step 2

Identify Climate Risk: Through a series of workshops, Staff and a number of community stakeholders representing a number of key sectors in the community reviewed climate science projections and generated impact statements on how climate change might affect Nanaimo. These statements were meant to be clear and concise statements that identify possible negative or positive effects of climate change on the city. These statements consider discrete events, as well as ongoing weather trends that are sources from regional or provincial climate modelling (as shown on page 48 – 62 of Attachment A).

Step 3

Analyze Climate Risk: The impact statements were prioritized in order to focus adaptation planning efforts on the areas of greatest need. This process followed the International Council for Local Environmental Initiatives (ICLEI) Canada's *Building Adaptive and Resilient Communities* (BARC) approach to assess vulnerability by rating two factors: sensitivity and adaptive capacity. Sensitivity is the degree to which people or systems are impacted by changing climate conditions either positively or negatively, whereas adaptive capacity refers to the ability to prepare for these impacts or respond to the consequences. A risk assessment was also performed where risk was evaluated by considering the likelihood of an event and the consequence of that event should it occur.

Step 4

Identify and Prioritize Actions: Recommended actions were then developed. By considering the impact statements that were generated in Step 2 and prioritized in Step 3, specific adaptation actions to reduce risk and capitalize on opportunities were developed. This was first done in a workshop setting and then followed up with several sets of review to determine how each action could be effectively implemented and monitored. The finalized adaptation actions were then categorized by themes and objectives, which are introduced on Page 16 of Attachment A. The themes are Water Supply, Flooding and Drainage, Environment and Parks, Well Being and Preparedness, and Corporate Governance.

Recommended Actions:

Through the process, over 60 actions were identified and organized under six key themes. The highest priority actions are listed below and are numbered according to how they are found in Attachment A.

1. Water Supply:

- a. Objective 1: Actions to prepare for a more limited water supply and improve the resilience of existing water infrastructure.

Priority Actions:

- (1.1.1) Update the Water Supply Strategic Plan to account for climate change, population growth, and identify additional sources of drinking water.
- (1.1.2) Update the Emergency Response Plan for the water treatment plant and water supply infrastructure.

2. Flooding and Drainage:

- a. Objective 1: Minimize urban and overland flooding resulting from heavy rainfall.

Priority Actions:

- (2.1.1) Identify, enhance, and re-establish overland flow paths, drainage basins, and protected right-of-ways on private property.
- (2.1.2) Prioritize and accelerate stormwater catchment master planning for local water basins.
- (2.1.3) Explore the potential for a stormwater utility rate to generate revenue as a sustainable funding source to mitigate impacts from climate change.
- (2.1.4) Complete floodplain modeling for major rivers.

- b. Objective 2: Prepare for the impacts of rising sea level and associated erosion and coastal flood risk.

Priority Actions:

- (2.2.1) Review minimum flood construction levels (FCL) and incorporate the results of the Sea Level Rise Study for Nanaimo into the Building and Zoning Bylaws.
- (2.2.2) Develop a framework for a Sea Level Rise Management Plan that includes next steps and timelines.
- (2.2.3) Complete inundation modeling and mapping for areas identified as vulnerable during Phase 1 of the SLR Study (i.e., Departure Bay, Downtown, Protection Island).
- (2.2.4) Review storm / sanitary manholes located in areas at risk of flooding, then outline steps for monitoring and preventative action.

3. Environment, Parks and Recreation:

- a. Objective 1: Quantify and manage Nanaimo's urban forests to prepare for climate change.

Priority Actions:

- (3.1.1) Review and update City planning standards (for both City-led and private developments) to prioritize the use of climate-resistant tree species.
- (3.1.2) Reduce safety standards and access issues by improving tree resilience to storm and wind events along main transportation routes.
- (3.1.3) Develop and complete an urban forest inventory and update the Urban Forest Management Strategy using a future climate lens.

- b. Objective 2: Assess and restore Nanaimo's watercourse and marine ecosystems to become biologically diverse and resilient.

Priority Actions:

- (3.2.1) Identify and inventory the City's natural assets and incorporate into the City's asset management program to protect and maintain their function.
- (3.2.2) Enhance watershed storage and impoundment to build resilience for urban streams within the Millstone River catchment area for fish habitat use during low summer flows.

4. Well-being and Preparedness:

- a. Objective 1: Work with community partners to minimize health impacts of extreme weather (higher heat days and poor air quality from wildfires) on residents.

Priority Actions:

- (4.1.1) Develop an Extreme Heat Response Strategy that includes information on cooling spaces that can serve community members during extreme heat days.
- (4.1.2) Work with Island Health and other stakeholders to deliver coordinated information on what the public can do during heat waves and poor air quality days.
- (4.1.3) Apply a climate change resilience lens when planning and designing public facilities through considerations such as whether the facility can act as a cooling centre or clean air shelter.

- b. Objective 2: Improve knowledge, capacity, and response plans to deal with increasing risk of landslides and wildfires.

Priority Actions:

- (4.2.1) Review and update the North Slope Geotech Study to incorporate climate change impacts and projections and expand these lessons to other steep-slope areas (e.g., Cilaire, Stephenson Point).
- (4.2.2) Review procedures for servicing public infrastructure located on private property, including challenges accessing infrastructure.

- c. Objective 3: Improve community capacity and resilience following events by increasing public awareness of climate change, expected impacts, and how the community can prepare.

Priority Actions:

- (4.3.1) Provide residents, neighbourhoods, and community organizations with opportunities to learn more about climate change mitigation and adaptation efforts, and help facilitate resilience capacity building in the community.
- (4.3.2) Support neighbourhood-level organizations that help community members to prepare for climate emergencies.
- (4.3.3) Develop a community education program on park use fire and safety awareness.

5. Land Use and Buildings:

- a. Objective 1: Incorporate resilience into new and existing facilities and support climate change resilience for homes.

Priority Actions:

- (5.1.1) Develop policy to require future climate considerations into new construction projects / rezoning applications (e.g., passive design, future climate modeling, appropriate shading).
- (5.1.2) Include assessments for climate change impacts (e.g., wildfires, flooding, landslips) into City-owned building facility assessments.

- b. Objective 2: Ensure development regulation and guidelines incorporate anticipated changes to climate-related natural hazards.

Priority Actions:

- (5.2.1) Identify forest interface wildlife risk areas adjacent to residential areas and City infrastructure, and establish a wildfire development permit area (DPA) that includes Firesmart principles.
- (5.2.2) Update the Hazard Land and Steep Slope Development Permit Area Guidelines in the Official Community Plan (OCP) and other pertinent bylaws to require geotechnical reports for new construction in areas at high risk of flooding and landslides.

- c. Objective 3: Prioritize hazardous areas in the City's property acquisition strategy.

Priority Actions:

- (5.3.1) Identify hazardous lands and properties at risk from coastal flooding, sea level rise, and landslide risk. Advocate to the Province for support in purchasing these lands as part of the City's long-term property management strategy.

6. Corporate Governance and Mainstreaming:

- a. Objective 1: Improve the City's agility in responding and recovering from climate-related events.

Priority Actions:

- (6.1.1) Incorporate climate change resilience into the review and development of asset management plans.
- (6.1.2) Ensure contingency reserves contain an allowance for recovery from climate-related events.

Communication

While many actions listed in the Climate Change Resilience Strategy will remain the responsibility of the City to implement, the longer-term success of the strategy will depend on the awareness and participation of the residents, community organizations, and businesses. A key objective is to improve community awareness of future climate impacts and work with the community to build capacity for climate resiliency, especially amongst the most vulnerable. Both community organizations and local businesses play an important role in helping to develop and implement resiliency programs they can take a leadership role in. The City's Environment Committee will be working on developing a communication engagement strategy for how this objective can be implemented.

The Climate Change Resilience Strategy will provide background information and direction on how the City will address climate adaptation that can be used during the Reimagine Nanaimo Official Community Plan (OCP) update in the broader discussion on the role the public can play in raising awareness and better preparing for a changing climate.

Implementation and Monitoring

While there are a number of actions that can be implemented relatively quickly, others will require further investigation before being initiated and will be implemented over a longer period of time. Some will be driven by the outcome of the Reimagine Nanaimo strategic policy review and update.

Several actions will require new funding and resources for effective implementation. Staff tasked with implementing these priority actions in the strategy will provide Council with detailed business cases and cost estimates as part of the capital and operating budget process during upcoming budget cycles.

Staff will seek external funding for implementing this strategy as opportunities arise. Funding for climate change adaptation is available for specific projects identified in the strategy (e.g., such as the Disaster Mitigations and Adaptation Fund available through Infrastructure Canada).

The longer-term success of the strategy will also require setting key performance metrics for each of the major theme areas in the strategy to help the City track progress. The Strategy has recommended a number of performance metrics to monitor success of the implementation. Some of the metrics currently exist and others will be established through subsequent work following the adoption of the Climate Change Resilience Strategy.

OPTIONS

1. That Council adopt the Climate Change Resilience Strategy and direct Staff to prioritize actions identified in this report and begin implementation of the strategy.
 - Advantages: The Climate Change Resiliency Strategy provides clear direction and priority action to reduce the risk from a changing climate. Implementing the strategy is expected to support and improve community health and well being. Taking action helps build public confidence that the City is addressing the impacts of climate change. Risk and liability should decrease through strategic action.
 - Disadvantages: There will be significant cost implications to implementing the recommendations over time.
 - Financial Implications: Several of the actions identified in the strategy are planned and resourced within the existing budgets. Several actions also build on existing initiatives. Those requiring new funding will be identified in reports to Council for consideration as part of the long-term financial capital planning and operational budget process. Staff will seek opportunities to apply for external funding to recover some project costs. Over the longer term, financial reserves will need to be set aside to implement some of the actions. Adoption of the Strategy is anticipated to result in lower longer-term costs that would be expected through a continued reactionary approach.
2. That Council deny adoption of the Climate Change Resilience Strategy.
 - Advantages: Initial cost saving by avoiding implementation.
 - Disadvantages: Climate risks identified in this strategy will not be addressed. Community health and well-being are expected to be negatively impacted. Loss of opportunity for external funding for implementing resiliency actions. Risk and liability may increase by not taking strategic action.
 - Financial Implications: Avoid short-term costs. Significant long-term costs from the impact of cumulative future events potentially will increase. Continued reactionary approach to climate events and is anticipated to result in higher long-term costs to recover in the future.

SUMMARY POINTS

- Effective climate change action requires both mitigation, or actions to reduce the emission of GHGs into the atmosphere, and adaptation, or actions designed to reduce the negative impacts of climate change.
- The Climate Change Resilience Strategy's objective is to identify all climate-related vulnerabilities within the city up to the year 2100, and recommend best practice actions to address or avoid any climate-related risks that can be identified.
- This strategy focuses on enhancing initiatives where they currently exist and develop new actions where potential gaps have been identified and additional efforts are necessary.

ATTACHMENT:

ATTACHMENT A: Climate Change Resilience Strategy.

Submitted by:

Rob Lawrance
Environment Planner |

Concurrence by:

Jeremy Holm |
Director, Development Approvals

Dale Lindsay
General Manager, Development Services

Laura Mercer
Director, Finance