



cleanBC

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PROGRAMS AND  
IMPLEMENTATION

**CLIMATE RESILIENCE FRAMEWORK AND STANDARDS  
FOR PUBLIC SECTOR BUILDINGS**

# QUESTIONS TO ANSWER

- What is happening?
- Why do I need to know?
- What do I need to do?
- Who do I talk to if I have questions?

# CLIMATE IMPACTS TO PUBLIC SECTOR BUILDINGS



## **2021 Heat Dome** – 619 deaths

- Inadequate cooling in public sector buildings including housing
- Increased cooling demand and utility costs
- Closure of public sector facilities
- ZEV chargers melted
- System failures

## **2021 Wildfires** –


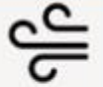
- Complete loss of a health facility in Lytton
- Increased operations costs for air filters

## **2021 Floods** –

- Closure of schools
- 5-month closure of the Animal Health Centre with 100 staff displaced and greater time for diagnostic services
- Damage to provincial infrastructure

# CLIMATE IMPACTS TO PUBLIC SECTOR BUILDINGS

- Compromised performance or catastrophic failures of buildings
- Downstream consequences including loss of life, injury, loss of services, loss of economic productivity, and psychological impacts
- Can jeopardize ability to meet emissions reduction targets

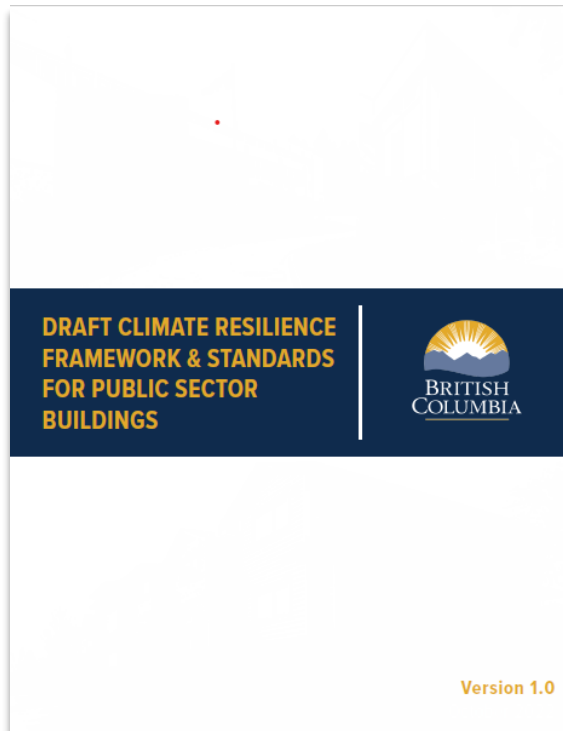
CLIMATE HAZARD		DESCRIPTION	EXAMPLES OF IMPACTS ON BUILDING SYSTEMS
Wildfires		Interface Fire – Increased frequency and severity of wildfires	<ul style="list-style-type: none"> <li>• Damage to building structure and/or components</li> <li>• Utility service disruption (e.g. water contamination, power outages, etc.)</li> </ul>
		Air Quality - Increased frequency and severity of wildfire smoke events	<ul style="list-style-type: none"> <li>• Decrease in indoor air quality</li> </ul>
Strong Wind Events		Wind – Increased frequency of gales and extreme wind events	<ul style="list-style-type: none"> <li>• Uplift of roof, loss of roof and enclosure elements</li> <li>• Damage of building from windborne debris (e.g. broken windows)</li> <li>• Snapped power lines from fallen trees or windborne debris (causes power outages)</li> </ul>

# ENVIRONMENTAL, SOCIAL AND GOVERNANCE FRAMEWORK FOR CAPITAL: CLEANBC POLICIES

Reduce greenhouse gas emissions and build climate resilience.

- 1. Climate Resilience Framework and Standards for Public Sector Buildings**
- 2. Greenhouse Gas Emissions Reductions**

# CLIMATE RESILIENCE FRAMEWORK AND STANDARDS



- Applies a systematic and consistent approach across government
- Results in climate risk informed development
- Informed by a financial analysis report that looked at different building archetypes
- Aligned with:
  - Initiatives of leading public sector organizations and ministries
  - Risk-informed recovery and development
  - CleanBC objectives
  - Federal code development in factoring in future climate in building code

# CLIMATE RESILIENCE FRAMEWORK AND STANDARDS FOR PUBLIC SECTOR BUILDINGS



- Requirements for high-level or concept plan stage, for business plans and reporting
- Applies to new business case approvals for the following public sector projects:
  - Construction of new or replacement facilities
  - Additions to existing buildings
  - Major alterations to existing buildings, where more than 75% of a building's fundamental components are being replaced

## Policy Requirements:

- Complete a climate exposure screening
- Complete a climate risk assessment
- Apply the minimum climate resilience standards



# CLIMATE RESILIENCE FRAMEWORK AND STANDARDS





# MINIMUM CLIMATE RESILIENCE STANDARDS

- For business plans, projects must assess climate risks and apply the standards.
- Warming climate and extreme heat, flooding, wildfire, strong wind events, cold snaps/extreme cold/ice storms, drought, power outages
- New and existing buildings

 PART 2: MINIMUM STANDARDS FOR NEW BUILDING RESILIENCE TO FLOODING			 PART 2: MINIMUM STANDARDS FOR EXISTING BUILDING RESILIENCE TO FLOODING			
	DESCRIPTION OF REQUIREMENTS AND SUB-REQUIREMENTS	RELEVANT CODES, STANDARDS, AND SUPPORTING REFERENCES		DESCRIPTION OF REQUIREMENTS AND SUB-REQUIREMENTS	RELEVANT CODES, STANDARDS, AND SUPPORTING REFERENCES	CATEGORY
2	All new public sector buildings must be designed to be resilient to flooding events (fluvial, pluvial, coastal) that can be expected over the building's service life (i.e. increased precipitation and sea level rise).		2	At the time of renewal, existing public sector buildings must be retrofitted to improve resilience to flooding events (fluvial, pluvial, coastal) if the site is located in an area that may have risk of flooding per future climatic projections.		
	NOTE: In the subsequent requirements, the Flood Construction Level (FCL) follows the definition provided in the Flood Hazard Area Land Use Management Guidelines 2018 Amendment, provincial regulation, and/or as defined by local bylaw. The FCL should represent a 200-year return period event at the end of the buildings design service life (i.e. with an allowance for climate change). For coastal areas, the FCL should also include a sea level rise allowance to the end of design service life climate projections.	Adapted from Flood Hazard Area Land Use Management Guidelines 2018 Amendment		NOTE: In the subsequent requirements, the Flood Construction Level (FCL) is defined in the Flood Hazard Area Land Use Management Guidelines 2018 Amendment, provincial regulation, and/or defined by local bylaw. The FCL should represent a 200-year return period event with an allowance for climate change. For coastal areas, the FCL should also include a sea level rise allowance to end of design service life.	Adapted from "Flood Hazard Area Land Use Management Guidelines" 2018 Amendment.	
2.1	For all new buildings, the site must be selected to limit the flood hazard wherever possible, while avoiding the construction of new buildings in areas that are: <ul style="list-style-type: none"> <li>a) in a floodplain area that is not protected by a standard dike under the jurisdiction of a government organization; or</li> <li>b) in an alluvial fan area that is not protected by structural flood protection works (e.g. debris barrier, berm) under the jurisdiction of a government organization</li> </ul> unless such use is consistent with local bylaws or provincial regulation (whichever takes priority), and a site assessment is conducted by a licensed qualified professional to confirm that the site is safe for intended use.		2.1	If the building is located in an area that is: <ul style="list-style-type: none"> <li>a) in a floodplain area that is not protected by a standard dike under the jurisdiction of a government organization; or</li> <li>b) in an alluvial fan area that is not protected by structural flood protection works (e.g. debris barrier, berm) under the jurisdiction of a government organization,</li> </ul> the building <u>should not be used as a high criticality or post-disaster structure</u> . For normal or low criticality buildings, a site assessment should be conducted by a qualified licensed professional to confirm that the site would be safe for the intended use.		Hydrological, Civil, Geotechnical
2.2	For post-disaster, high importance, or normal importance buildings that contain refuge areas during a flood or other emergency, the building should not be located in a floodplain or alluvial fan area. If locating the building in a floodplain is unavoidable, a site assessment is to be conducted by a qualified professional to confirm that the site would be safe for the intended use subject to additional flood protection measures. Flood protection measures must ensure that the building is able to function during an emergency.	For guidance on Criticality Classification (importance, post building), refer to Flood Hazard Area Land Use Management Guidelines 2018 Amendment	2.2	For a building located in a protected floodplain or alluvial fan that is considered a high criticality or post-disaster building, habitable spaces, business areas, storage of goods damageable by floodwaters, or fixed equipment damageable by floodwater must be elevated above the FCL. The building must be able to function with essential building services during a flood event.	Adapted from Flood Hazard Area Land Use Management Guidelines 2018 Amendment.	Various
2.3	Any proposed buildings must be set back from a watercourse or the sea in accordance with the Flood Hazard Area Land Use Management Guidelines 2018 Amendment, provincial regulation, and/or by local bylaw.	Flood Hazard Area Land Use Management Guidelines 2018 Amendment	2.2	a) Main electrical switchgear and important equipment for safety requirements (e.g. emergency generators, transfer switches, fire alarm panels, telecommunication rooms) must be relocated above the FCL. This requirement includes the equipment itself, and also the electrical connections. Where required to meet life safety provisions of the code, certain exterior electrical components may be installed below the FCL.	Adapted from IBC 2021, Chapter 27.	Electrical, Mechanical

# IMPLEMENTATION AND NEXT STEPS

- Have received and addressed early feedback
- Final review of the Climate Resilience Framework and Standards for Public Sector Buildings document
  - Advisory Committee
  - Public Sector Organization Technical Working Group
  - Engineers and Geoscientists BC, Architectural Institute of British Columbia, Association of Consulting Engineering Companies of BC
- Will be an iterative process
- Learning from early implementation, identifying training needs, etc.

# LEARNING AND TRAINING @ CAN-ADAPT.CA

## **Courses**

Climate Change Adaptation Fundamentals (Online)

Climate Change Perspectives for Project Managers (Online)

Natural Asset Management (Online)

The Financial Impact of Climate Change (Online)

PIEVC Protocol

## **Micro-credentials**

Climate Adaptation Fundamentals

Infrastructure Resilience Professional

## **Communities of Practice**

A scenic landscape background featuring a sunset over a body of water, with tall grasses in the foreground and mountains in the distance under a cloudy sky.

**FEEDBACK REQUEST:  
WHAT DO YOU FORESEE NEEDING AS FAR AS  
SUPPORTS AND RESOURCES TO IMPLEMENT  
THIS POLICY?**

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