Prince Edward Island
CANADA

Environment, Energy and Climate Action

Planning for Climate Change

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Planning for Climate Change

1. Land Use and Municipal Planning
   - It's more than just Development Control
2. (Traditional) Climate Adaptation
   - Understanding Hazards, Vulnerability and Risk
   - Hazard- or Risk Based Adaptation Options
3. Transformative Climate Adaptation
   - Complete Communities are Resilient Communities

Municipal Planning in PEI

The *Municipal Government Act* requires municipalities to provide:

- Fire Protection;
- Emergency Measures Planning; and
- Municipal Planning Services

Generally interpreted to mean:

Municipal Official Plan (a.k.a., the vision)

Development Control and Subdivision Bylaw (a.k.a., the rules for permit applications)

Municipal Planning

considers public interests to **guide municipal decisions** about land, resources, and services to create healthy sustainable communities.

Planning considers **social, economic and environmental impacts** of growth and change –

because growth and **change are inevitable**.

The *Municipal Government Act* enables municipalities to do much more than just development control:

- Acquisition of land – and other dealings with real property
- Animal control
- Businesses
- Community and/or regional development
- **Development control (aka. where and what you can build)**
- Enforcement of Bylaws
- Establishment/decommissioning of cemeteries
- Libraries
- Maintenance standards for trees and other vegetation (preservation and protection)
- Municipal/public utilities, facilities, works and improvements on private and public land;
- Nuisances and obnoxious uses
- Parks and recreation
- Pension and benefit plans
- People, activities and things on or near a public place
- Police services
- Protection of the natural environment
- Protection of heritage property
- Regulation of discharge of firearms
- Safety, health and welfare of people and property
- Transport and transportation systems

Benefits of Good Planning

- Fewer land use conflicts
- More efficient and cost-effective development, use and maintenance of infrastructure
- Predictability for landowners
- Protection of natural resources
- Clean and healthy environment
- Better quality of life for residents
- **Climate resilience and preparedness**
- **Low carbon lifestyles that reduce greenhouse gas emissions**

Consequences of Not Planning

- Conflicting land uses
- Urban sprawl and rural ribbon development
- Unpredictable development
- Loss of natural assets, biodiversity and vulnerable habitat
- Expensive and inefficient delivery of services
- High cost to maintain infrastructure
- **Increased climate vulnerability**
- **High dependence on personal vehicles (increased emissions)**

The secret to good (great) planning is using all the tools in your toolbox.

Planning policies can be realized through:

- **Budget** considerations and priorities
- Property Tax Differentials
- **Programs** and **services**
- Strategic **partnerships**
- Municipal **bylaws and regulations**
- **Secondary Plans**: Emergency Management Plan, Infrastructure Plans, Storm Water Management Plans, Recreation Plans, and other Strategic Plans
- Land Use / Zoning / Subdivision / **Development Control regulations**

example of using a variety of planning tools

A local issue/priority

One of the main roads and some homes in the community are susceptible to flooding during extreme rain events.

Response (Planning Policies)

1. Ensure new development is built better.
2. Help residents identify ways to protect their homes.
3. Work with the province and/or public works department to find solutions to address the issues with public infrastructure

How? (The Actions)

1. Support use of stormwater retention ponds in new subdivisions
2. Require stormwater management plans
3. Incentives for reducing hard surfaces/asphalt
4. An education campaign
5. Rain barrel program
6. Seek funding- partnership opportunities to address infrastructure issues

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For municipalities… size does matter

If you are concerned about:

Financial capital

Human resource capacity

Volunteer/council capacity

Service provision capacity

The number of tools in your policy-implementation toolbox.

Size limitations will influence the:

Climate vulnerability of residents

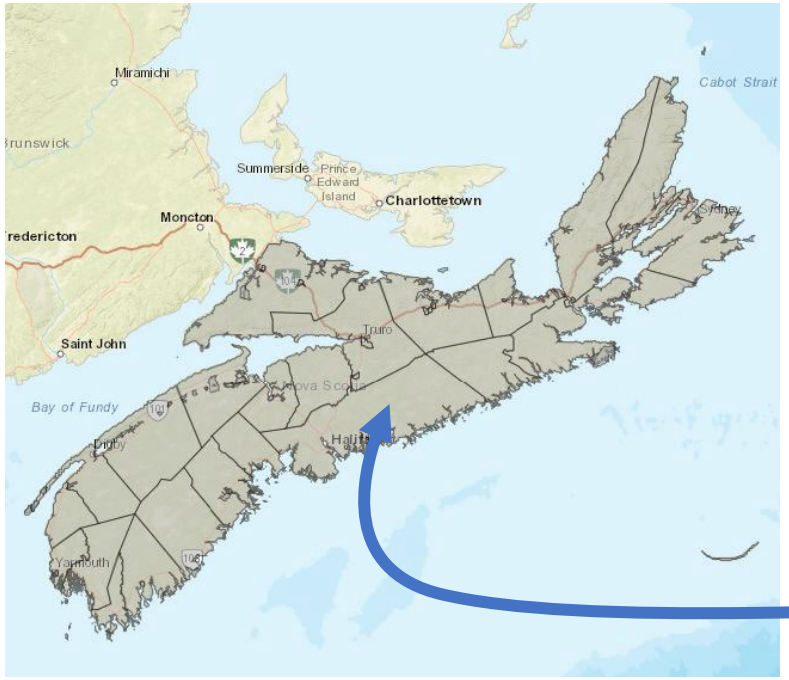
Climate vulnerability of infrastructure

Emergency response capabilities

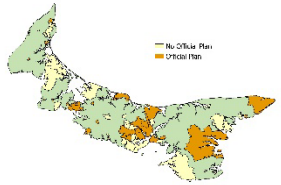
Ability to secure/match funding to proactively address climate risks

Unfortunately, PEI's municipal system is and will continue to cause strain on low-capacity municipalities

Nova Scotia
Population: 969,383
Size: 55,284 km^2
50 municipalities = 99.8% of land area



Prince Edward Island
Population: 154,331
Size: 5,660 km^2
63 municipalities = 34% of land area

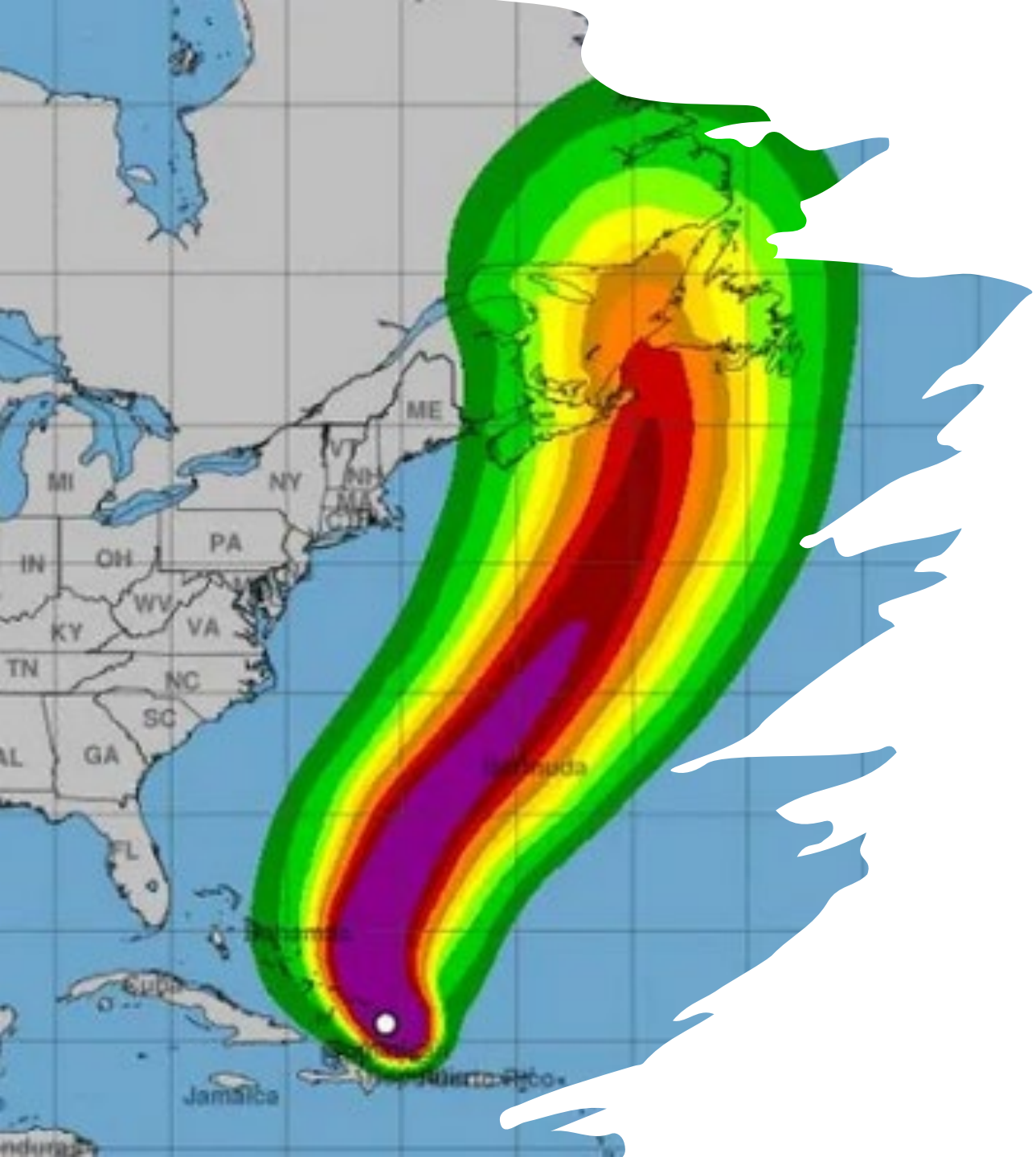


Halifax Regional Municipality: 5,475.57 km^2
Population: 439,819

(Traditional) Climate Adaptation

Hazard-or Risk Based Adaptation Options

From a land use planning perspective, hazard-based adaptation strategies *should be* relatively straightforward.



What is a Climate Hazard?

"A potentially damaging event or phenomenon, resulting from climate change, that would consequently result in major impacts, such as loss of life or injury, environmental degradation, infrastructure damage, or social and economic disruptions."

PEI Climate Change Risk Assessment, 2021

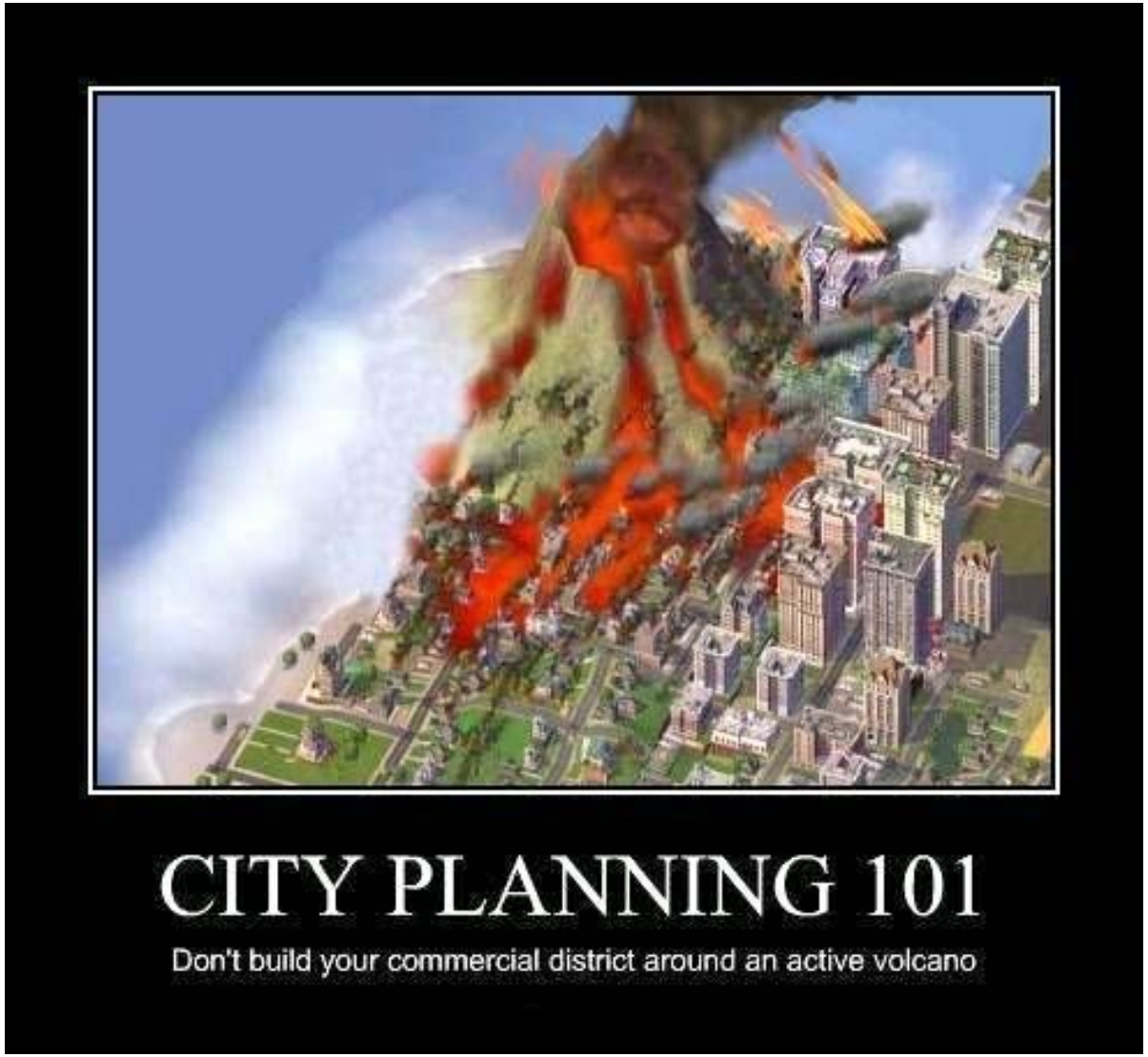
Discrete climate hazards, occur over a relatively short period of time, and are becoming more frequent and more intense.

Discrete Hazards	Potential Impacts
Coastal Hazards	Wave action causing accelerated rates of erosion Storm surge causing coastal flooding
Post tropical storms	High winds Extreme rainfall in a short period of time Potential storm surge causing coastal flooding
Extreme Precipitation	Extreme rainfall/snow in a short period of time causing overland flooding
Extreme Heat	A heat wave is 3 or more consecutive days with no relief from high temperatures at night. Strain on individuals, plants (including crops), animals Increased risk of wildfire
Ice Storms/Freezing Rain	Mild winter temperatures result in more freezing rain vs snow More frequent freeze/thaw events

Ongoing/gradual climate hazards, refer to gradual changes in conditions over longer periods of time. These changes are not fluctuating (i.e., permanent).

Gradual Hazards	Potential Impacts
Coastal Hazards	Accelerated rates of erosion due to reduced sea ice coverage Sea level rise causing permanent flooding of low-lying lands
Earlier, warmer springs	Seasonal shifts result in changes in growing seasons Introduction of new pests/invasive species that thrive in new conditions Changes in economic/recreational activities influenced by weather
Seasonal droughts	Potential for significant impact on vulnerable species (plant and animal) Potential for significant impact on agricultural sector Increased risk of wildfires

If only,
it were so
easy.



Coastal Hazards – Risk Assessment Checklist

Is the property in the coastal zone?

YES

- Historically prone to flooding? ✓
- Within the projected current/future floodplain? ✓
- Has experienced high rates of erosion in the past? ✓

Regulations and design considerations should address the coastal hazards and risks identified.

Is the property in the coastal zone?

NO

Congratulations, coastal hazards are not a risk to this property.

Planning for **Coastal Hazards**:

1. Recognize coastal hazards as an issue of concern for public safety, infrastructure stability and environmental degradation.
2. Establish a policy to reduce the level of risk caused by coastal hazards.
3. Adopt regulations for new development in high-risk areas
4. Consider the impact of coastal hazards (flooding) on your emergency management plan

Planning for **Coastal Hazards**:

5. In the absence of regulations that restrict development, you have a responsibility to disclose information and conditions for new development.

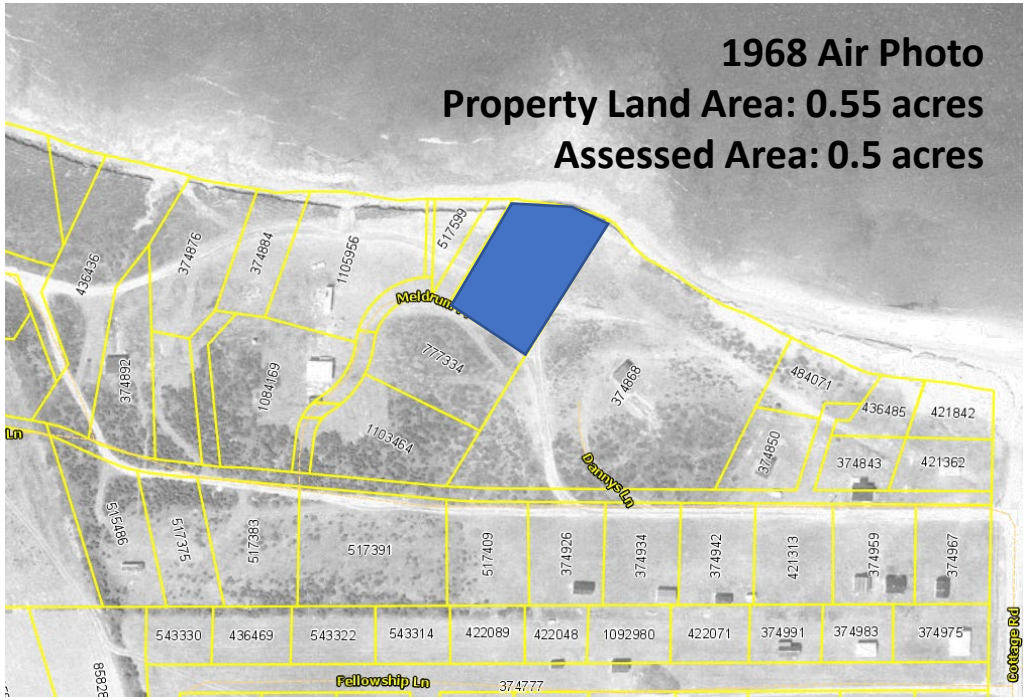
"Any new development located within the floodplain will not be eligible for Disaster Financial Assistance Arrangements (DFAA) unless specifically designed to withstand a 1-in-100 year flood".

Public Safety Canada

Planning for **Coastal Hazards**:

6. Recognize that coastal erosion has changed properties over time, and that what once was a developable property, may not be anymore.
7. Establish regulations to require updated survey plans to confirm lot size and minimum requirements for on-site services

   Geolink renderings are not survey plans



Extreme Weather – Risk Assessment Checklist

Is the property/land use susceptible to extreme wind and/or rain/snow?

YES

- Will alterations in the grade of the land impact existing stormwater flow? ✓
- Will increased hard surface area impact stormwater flow? ✓
- Will changes to stormwater flow on the property impact the current capacity of infrastructure to handle stormwater? ✓

Regulations and design considerations should address extreme weather and risks identified.

Is the property/land use susceptible to extreme wind and/or rain/snow?

NO

This property is probably not in PEI…

or is a versatile, outdoor land use.

Planning for **Extreme Weather**:

1. Recognize extreme weather as an issue of concern for public safety, infrastructure and environmental degradation.
2. Establish a policy to reduce the level of risk caused by extreme weather events.
3. Identify areas of increased risk due to overhead power lines and tree cover.
4. Identify areas prone to stormwater drainage ponding and overflow.
5. Make an infrastructure management plan to identify priority upgrades.

www.cbc.ca/news/canada/prince-edward-island/pei-dorian-lessons-learned-1.5712929

Planning for **Extreme Weather**:

6. Require/incentivize new development in tree-covered areas to use buried powerlines.
7. Consider all-season needs and back-up power for your emergency reception centre for an extended power outage
8. Include a clean up and recovery plan – for after the storm – as part of your emergency management plan.
9. Establish a neighbor check-in program for the safety of vulnerable residents and people who live alone.
10. Establish a tree planting program or tree protection/replacement strategy to replace urban trees lost in past storms.

www.cbc.ca/news/canada/prince-edward-island/pei-dorian-lessons-learned-1.5712929

Extreme Heat – Risk Assessment Checklist

Is the building/land use susceptible to extreme heat?

YES

- Will people taking part in the land use be impacted by extreme heat? ✓
- Does the building/land use operate in the middle of summer? ✓
- Is the proposal for an older building that may not have appropriate insulation or cooling capabilities? ✓
- Does the outdoor space offer shade or hydration refills? ✓

Regulations and design considerations should address extreme heat and risks identified.

Is the building/land use susceptible to extreme heat?

NO

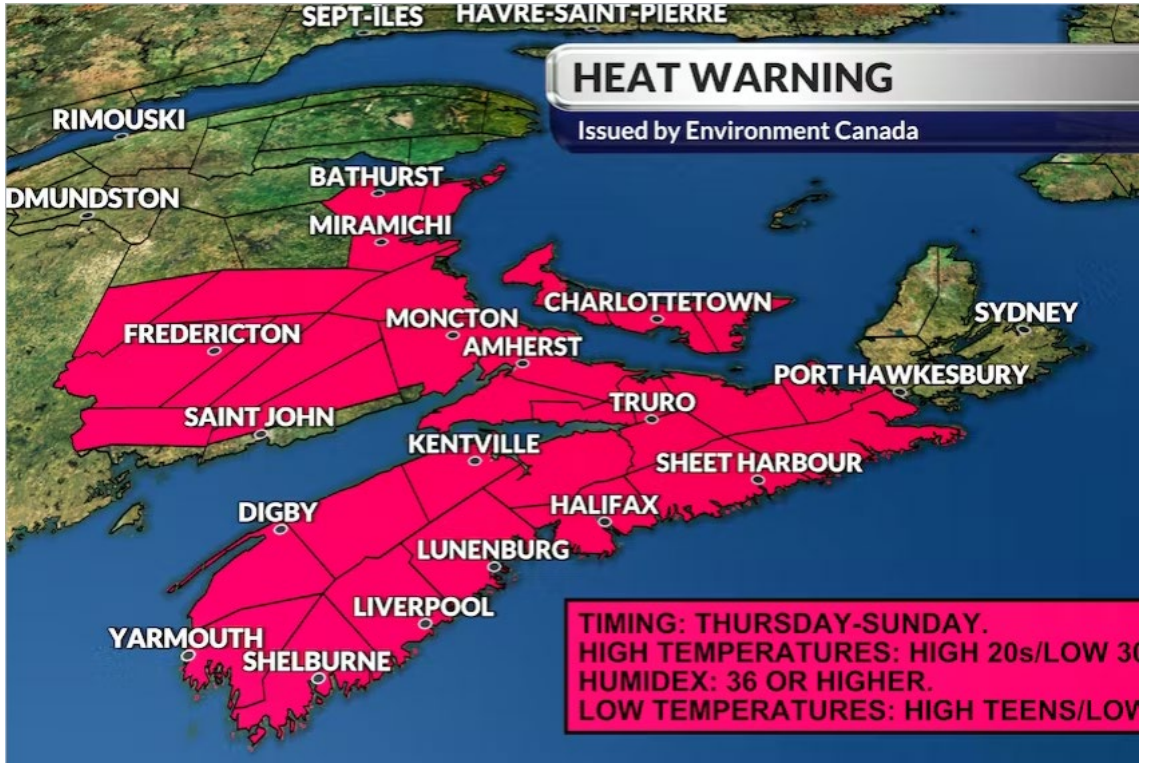
It is likely well shaded by trees;

A new development with A/C; or

Accommodating a use that is not required in the heat of summer.

Planning for **Extreme Heat**:

1. Recognize extreme heat as an issue of concern for public safety, infrastructure and environmental degradation.
2. Establish a policy to reduce the level of risk caused by extreme heat events.
3. Identify areas of increased risk due to outdoor activities and lack of shade and hydration options.
4. Identify older buildings that have inadequate cooling/ventilation to provide residents with relief.



https://www.saltwire.com/atlantic-canada/news/heat-warning-issued-for-pei-from-july-21-24-2022-100755379/

Planning for **Extreme Heat**:

6. Require/incentivize new development to maintain existing tree-cover to reduce urban-heat island effect
7. Establish a tree planting program or tree protection/replacement strategy to enhance shade
8. Establish a neighbor check-in program for the safety of vulnerable residents and people who live alone
9. Consider all-season needs for your emergency reception centre to function as a cooling centre in summer months

https://www.cbc.ca/news/canada/prince-edward-island/pei-heat-wave-heroes-1.6138433

Transformative Climate Adaptation

Complete Communities are Resilient Communities

Complete Communities

Complete Communities is an integrated approach in planning communities that **builds local resilience and wellbeing by meeting the needs of people** of all ages, abilities, ethnicities, and income levels.

It takes an integrated approach to municipal/provincial strategic planning, land use planning, infrastructure and transportation planning, economic development, community design, and provision of regional and local services.

Different Types of Complete Communities

In an urban context, a Town or City strives to build itself upon, plan, and manage based on all of the elements of Complete Communities.

In a rural context, Complete Communities focuses on nodes of development and connectivity to urban places to best serve rural residents, while applying as many Complete Communities elements as possible.

In a resort context, Complete Communities focus on economic development and connectivity of seasonal nodes of accommodation, attraction, retail, and support services for Island Visitors.

Planning a **Complete Community**:

1. Complete communities are PEOPLE CENTERED. Including all ages, abilities, ethnicities, and income levels.
2. Recognize housing as a fundamental right.
3. People thrive when the environment thrives.
4. Low carbon lifestyles are more resilient lifestyles.
5. Food security is an essential service.
6. **Prioritize reducing vulnerability of those most impacted by the physical, economic and emotional strain of climate change**.

https://www.cbc.ca/news/canada/prince-edward-island/charlottetown-farm-day-city-1.3788595

Increase **Housing Opportunities**

1. Recognize the housing crisis effects both rural and urban areas.
2. Increase residential density in core areas.
3. Encourage reduced lot sizes (maximum lot sizes) where central services are available.
4. Permit secondary suites as-of-right.
5. Promote mixed-use (commercial/residential) development.
6. Encourage the development of smaller homes/lots and mobile home developments.
7. Recognize that institutional facilities that provide residential services are RESIDENTIAL LAND USES.

https://www.princeedwardisland.ca/en/information/social-development-and-housing/affordable-housing-development-program

Reduce personal-vehicle dependency:

1. Prioritize and design for pedestrians and alternate forms of transportation (think 5-minute walk).
2. Reduce “minimum parking requirements” that prioritize cars
3. Promote development of density and public services around public transportation corridors.
4. Apply for funding to support the development of an active transportation network.
5. Support home-based businesses

https://www.charlottetown.ca/environment___sustainability/transportation/public_transit

Increase your development standards – prioritizing **sustainable, safe development**

1. Promote and support interconnected transportation networks – reduce dead-end streets.
2. Restrict development of private /seasonal roads that do not meet public safety standards.
3. Require under-sized lots to design on-site sewerage services to a higher standard to protect local ground water and near-by wells.
4. Protect vulnerable habitat and natural assets by restricting development and establishing buffers.

https://www.sandiego.gov/complete-communities

Good planning has always been “Planning for Climate Change”

THANK YOU

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