



# CLIMATE RISK ASSESSMENT

# HOMEOWNER CHECKLIST



Welcome to the “Homeowner Climate Risk Assessment Checklist” for the Pincher Creek region in Alberta. This important tool comes from the 2023 Climate Resiliency and Adaptation Report. The Climate Risk Assessment and Adaptation Report was developed in partnership with the Town of Pincher Creek, Municipal District of Pincher Creek, and Piikani Nation which compose the region for the purpose of this checklist

Pincher Creek recognizes that we sit on the territory of the Blackfoot Confederacy and the Piikani people. The Blackfoot Confederacy includes Siksika, Kainai, Piikani and Amsakpii Piikani.

We have collaborated with the Piikani Nation Lands Department on our Climate Risk Assessment and Adaptation Plan to share solutions with combating climate change. Due to climate change, extreme weather events like floods, droughts, heatwaves, windstorms, hailstorms, wildfires, and long-lasting wildfire smoke are happening more often and are more intense.

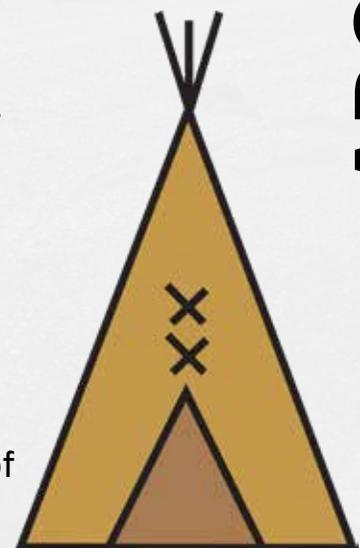
It’s essential for individuals to be prepared for these changes. This checklist helps homeowners evaluate how vulnerable their property is to these specific weather challenges in the region. The idea to create this checklist was driven by the urgent need, as mentioned in the report, to increase the community’s ability to withstand these changes. Based on the report’s strategic recommendations, the checklist offers practical steps for homeowners to actively protect their homes, which in turn, boosts the overall climate resilience of the region.

### **Climate Risk Score**

Calculate your climate risk score by assigning points to your responses as follows:

- High risk: +2 points
- Moderate risk: +1 point
- Low risk: +0 points

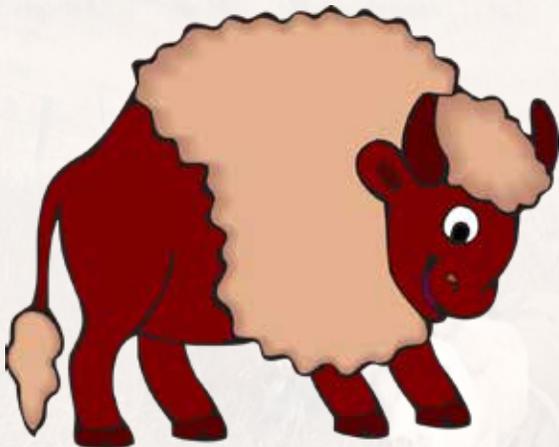
Calculate your total score by summing the points from your responses. Your climate risk score can range from 0 (lowest risk) to 16 (highest risk), reflecting the overall vulnerability of your property to climate risks.



# **ABOUT THIS CHECKLIST**

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# O'kakoyi FLOOD RISK

In the region, flood risk mainly happens when the snow in the nearby Rocky Mountains melts quickly during the spring and summer months. The possible consequences of this flood risk are far-reaching, and can include property damage, road closures, and threats to public safety, all stemming from the rapid surge of water.

Properties **very close to water bodies** are at **high risk** of flooding and erosion. These properties often have features such as:

High Risk  
+ 2 points

- **Low Elevation:** They are often situated at lower elevations, increasing vulnerability to flooding during heavy rainfall or high water levels.
- **Minimal Buffer Zone:** There may be limited or no natural buffer zone (like a floodplain) between the property and the water body.
- **Absence of Flood Mitigation:** Lack of flood mitigation infrastructure, such as levees or barriers.

Properties **moderately close to water bodies** face a **moderate risk** of flooding and erosion, especially during heavy rainfall or high water levels. These properties may have:

Moderate Risk  
+ 1 point

- **Slightly Higher Elevation:** They may be positioned at a slightly higher elevation, reducing flood risk compared to very close properties.
- **Some Natural Buffer Zone:** There could be a natural buffer zone, but it might not be sufficient to prevent all flood-related risks.

Properties **far away from water bodies** have a **lower risk** of flooding and erosion. They often have:

Low Risk  
0 points

- **Considerable Distance:** These properties are situated at a considerable distance from water bodies, reducing flood risk significantly.
- **Higher Elevation:** They tend to be at higher elevations, minimizing the risk of flooding during most weather events.
- **Natural Barriers:** Natural features like hills or valleys may act as barriers against water body overflow.



In the region, the risk of drought and water shortages mainly comes from the region's semi-arid climate, which means it doesn't get much rain and what little water there is tends to evaporate quickly. This situation is made worse by factors like low snowfall in the nearby Rocky Mountains and a lack of early-season rain. These conditions affect how much water is stored in the Oldman Reservoir, which is crucial for the area's water supply. Because of this, there could be lower crop yields, harm to the local ecosystems, and difficulties in ensuring there's enough water supply for people, livestock, and industries.

Properties at **high risk of water shortages** during drought conditions often exhibit features such as:



High Risk  
+ 2 points

- **Limited Water Supply:** Limited capacity for water, making them highly susceptible to water scarcity. This is generally in the form of shallow wells or reliance on runoff.
- **Inefficient Irrigation:** May use outdated or inefficient irrigation systems that consume excessive amounts of water.
- **Water-Dependent Land Use:** Used for water-intensive activities, like large-scale agriculture, increasing water demand.
- **Lack of Water-Efficient Fixtures:** Often lack water-efficient fixtures and appliances, contributing to higher water consumption.

Properties at **moderate risk of water shortages** during drought conditions often exhibit features such as :



Moderate Risk  
+ 1 point

- **Aging Water Infrastructure:** May be at moderate risk, as deteriorating systems can lead to water losses and reduced availability during droughts.
- **Limited Groundwater Access:** Properties that rely on groundwater sources but have limited access or over-exploited aquifers.
- **Seasonal Water Usage:** Such as vacation homes or recreational facilities, may be at moderate risk due to fluctuating water demand and reduced maintenance during off-seasons.
- **Insufficient Rainfall Capture:** Properties in regions with low rainfall but without rainwater harvesting systems may face moderate drought risk as they lack alternative water sources during dry periods.

Properties with a **lower risk of water shortages** often have features like:



Low Risk  
0 points

- **Reliable Water Supply:** Typically connected to municipal water systems or have substantial well capacity, ensuring a stable water supply.
- **Water-Efficient Fixtures:** Are equipped with water-efficient fixtures, reducing water consumption.
- **Active Water Conservation:** Owners practice active water conservation and may use rainwater harvesting or other water-saving measures to maintain a sustainable water supply.



# lihkssoyi DROUGHT & WATER SHORTAGES

# Waata'pssoyi EXTREME HEAT

In the region, extreme heat poses a serious risk, with long stretches of very high temperatures, often going over 30°C, especially in the summer. These extreme heat conditions can lead to different consequences including heat-related illness, like heatstroke or dehydration, which can be dangerous for everyone in the community. Extreme heat can also lead to higher risk of wildfire and harm the local environment, leading to reduced water supply and crop growth. Additionally, these conditions can put a strain on things like roads and power systems, while an increased demand for cooling systems can cause power outages.

High Risk  
+ 2 points

Properties at **high risk for extreme heat events** often have features that exacerbate heat-related issues, including:

- **Low Insulation:** Inadequate insulation in walls and roofs allows heat to penetrate the building, leading to increased indoor temperatures.
- **Large Windows:** Extensive use of large windows or glass facades without shading can result in solar heat gain, causing indoor spaces to overheat.
- **Dark-Colored Roofing:** Dark roofing materials absorb and retain heat, contributing to higher indoor temperatures.
- **Lack of Ventilation:** These properties may lack proper ventilation, trapping heat indoors, and hindering heat dissipation.

Moderate Risk  
+ 1 point

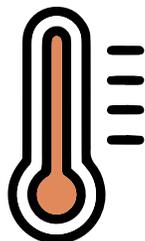
Properties with a **moderate risk of extreme heat** often have some mitigation measures:

- **Improved Insulation:** Properties at moderate risk have better insulation, which helps reduce heat penetration.
- **Shading Solutions:** They incorporate shading elements, such as awnings or window coverings, to mitigate solar heat gain.
- **Reflective Roofing:** Moderate-risk properties often use reflective roofing materials that reflect more sunlight, reducing heat absorption and cooling the interior.
- **Adequate Ventilation:** These properties ensure adequate ventilation, promoting heat dissipation.

Low Risk  
0 points

**Low-risk properties** are often:

- **High-Quality Insulation:** Low-risk properties feature high-quality insulation in walls and roofs, effectively blocking external heat.
- **Advanced Shading Systems:** They utilize advanced shading systems that automatically adjust to changing sunlight.
- **Cool Roofing:** Low-risk properties have cool roofing materials that reflect a significant amount of solar heat, reducing heat absorption and interior temperature rise.
- **Natural and active ventilation:** Effective natural and active ventilation systems are in place to encourage air circulation and cooling.



In the region, the risk of wind and hail damage is linked to the area's vulnerability to severe weather. This can lead to structural damage to buildings, vehicles, and infrastructure, as well as crop damage for local farmers, possibly causing crop losses. Additionally, power outages and road and access closures can occur due to fallen trees and debris.

A property is at **high risk of wind and hail damage** when it:

High Risk  
+ 2 points

- Has a roof with **aging or damaged shingles** that are vulnerable to hail impact.
- **Lacks protective measures**, like storm shutters, for windows during strong wind events.
- Is located in an area **prone to frequent severe storms** or hurricanes.

A property has a **moderate risk of wind and hail damage** when it:

Moderate Risk  
+ 1 point

- Has a relatively **newer roof with durable materials**, reducing vulnerability to hail.
- Utilizes **storm-resistant windows or shutters** during occasional storm events.
- Is in an area with **occasional strong winds**, but not constantly exposed to such conditions.

A property has a **lower risk of wind and hail damage** when it:

Low Risk  
0 points

- Is equipped with a **well-maintained roof** and sturdy construction that can withstand hail.
- Has little exposure to stormy weather or hail events due to its **location in a protected area**.
- Employs protective measures like **windbreaks or sturdy landscaping** to minimize exposure to strong winds.

# Miiyikssopoyi WIND & HAIL DAMAGE

# Ohpak'koyitsii WILDFIRE RISKS

Wildfire risk in the region is higher because the area is close to forested areas and has significant grasslands. Combine that with strong winds and hot, dry weather in the summer, and the chances of wildfires increase. If a wildfire happens, it can cause serious damage to homes and infrastructure, displacement of residents, loss of valuable land resources, and threats to public safety. Air quality can deteriorate due to smoke and ash, leading to health concerns. Furthermore, the economic impact of wildfires can be substantial, with costs associated with firefighting efforts, property damage, and lost revenue from disrupted tourism and outdoor activities.

High Risk  
+ 2 points

A property is at **high risk of wildfires** when it:

- Is located in an **area with a history of frequent wildfires**, increasing the likelihood of fire events.
- Features **structures with flammable materials**, such as wooden siding, that are prone to catching fire.
- **Lacks defensible space**, including firebreaks, to prevent the spread of wildfires.
- Has **vegetation or flammable materials** along the structure, unkept vegetation surrounding the structure, or **piled waste**
- Has **no access to water** for suppression

Moderate Risk  
+ 1 point

A property has a **moderate risk of wildfires** when it:

- Is in an **area with occasional wildfire occurrences**, necessitating fire preparedness.
- Utilizes **fire-resistant building materials** or coatings on structures.
- Implements **defensible space measures** to reduce wildfire risk around the property.

Low Risk  
0 points

A property has a **lower risk of wildfires** when it:

- Is situated in an area with a **low historical occurrence of wildfires**.
- Uses **fire-resistant building materials**, reducing the likelihood of property ignition.
- Maintains a **well-maintained and defensible space** that minimizes the risk of fire spread.
- Has access to **consistent water sources** and equipment to increase humidity on the property



Risk of wildfire smoke in the region comes from regional and international wildfires, which can send thick plumes of smoke into the air, affecting air quality. This reduction in air quality can lead to breathing problems and other health issues, especially for people who are already vulnerable. Poor visibility caused by dense smoke can also result in poor driving conditions and accidents, impacting both daily life and emergency services. Additionally, reduced air quality can discourage outdoor activities, affecting tourism and local businesses.

A property has a **high risk of prolonged wildfire smoke** when it:



High Risk  
+ 2 points

- Is located in an **area prone to wildfires**, leading to frequent smoke exposure.
- **Lacks proper ventilation**, filtration, or air purification systems to mitigate poor air quality.
- Is occupied by **individuals with respiratory conditions**, making them more vulnerable to health issues.
- Is **not effectively sealed** to outside air and has natural infiltration through the roof, windows, doors, walls etc.

A property has a **moderate risk of prolonged wildfire smoke** when it:



Moderate Risk  
+ 1 point

- Property located in **areas with occasional wildfire exposure**.
- **Adequate ventilation** and air filtration systems are in place to mitigate air quality issues.
- Occupants have **limited respiratory conditions**, reducing vulnerability to health problems during smoke events.
- Has **some passive air exchange** and is not fully sealed

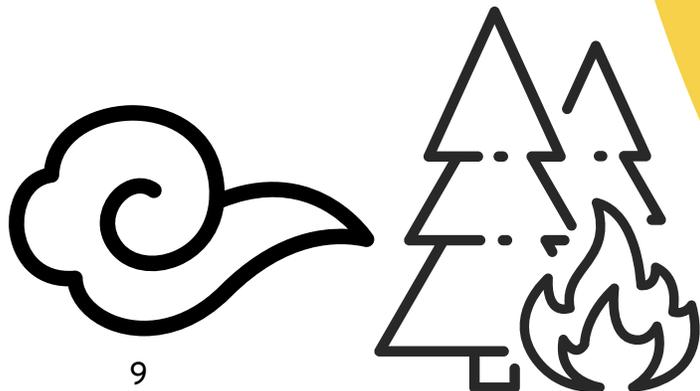
A property has a **lower risk of prolonged wildfire smoke** when it:



Low Risk  
0 points

- Is situated in **regions less prone to wildfires**, reducing smoke exposure.
- Has **efficient ventilation** or air filtration systems to maintain better indoor air quality.
- Is occupied by individuals with **minimal respiratory concerns**, reducing health risks during smoke events.
- Is effectively sealed with **low passive air exchange**

# Ohpak'koyitsii si'tsii WILDFIRE SMOKE



# FAMILY EMERGENCY PLAN & EMERGENCY KIT

A Family Emergency Plan is like a roadmap that lays out what each family member should do during a crisis. It includes who's in charge of what, how we'll talk to each other, where to go if we have to leave home, and where we'll meet up afterward. Having this plan helps keep everyone safe and calm during emergencies, makes sure we all know what to do, and makes it easier to make quick decisions.

No (High Risk)  
+ 2 points

High risk during emergencies, as a **lack of planning may lead to confusion and poor decision-making.**

Yes (Low Risk)  
0 points

Lower risk during emergencies, as a family emergency plan **ensures everyone knows how to respond**, where to go, and what to do

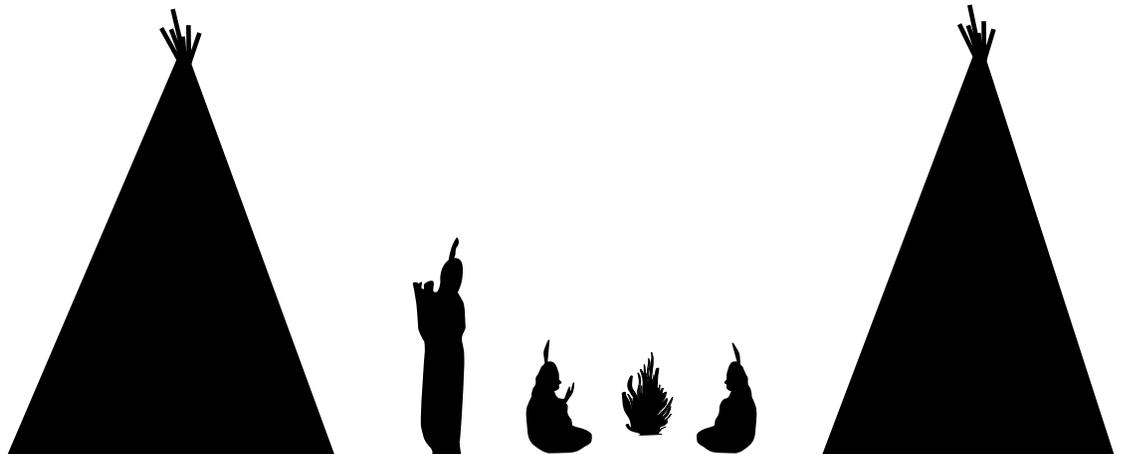
Emergency Kits typically include items such as non-perishable food, water, first aid supplies, flashlights, batteries, a multi-tool, and personal documents.

No (High Risk)  
+ 2 points

High risk during emergencies, as the **absence of essential supplies** may result in difficulties and hardships during extended emergencies

Yes (Low Risk)  
0 points

Lower risk during emergencies, as an emergency kit with **essential supplies sustains you and your family** during power outages, extreme heat, or water shortages.



**Risk Score 15-16: “Charmingly Challenged Retreat” (High-Risk Property)**

“Welcome to the ‘Charmingly Challenged Retreat,’ where your property, scoring high, faces weather hurdles like a quirky adventure. From wildfires doing a dance to droughts testing the garden’s resilience, your home laughs in the face of challenges. Consider adding wildfire masks and a ‘Drought Dance’ routine to your emergency kit—it’s the newest trend in weather comedy!”

**Risk Score 11-14: “Casually Capable Homestead” (Moderate-Risk Property)**

“Living in the ‘Casually Capable Homestead,’ where floods, droughts, and winds drop by like weather’s friendly neighbors. Your moderate-risk property strolls through the unpredictable, ready for surprises. Add a windsock to your emergency kit and perhaps create a ‘Flood Float Parade’—you never know when a spontaneous celebration might be in order!”

**Risk Score 6-10: “Whimsically Windward Haven” (Elevated-Risk Property)**

“Ahoy there, captain of the ‘Whimsically Windward Haven’! Your elevated-risk property is a playground for winds and a stage for distant wildfires. From gusty tunes to spontaneous ‘Fire Drill Dances,’ your emergency preparations are as playful as the weather itself.”

**Risk Score 1-5: “Ridiculously Resilient Refuge” (Heightened-Risk Property)**

“Nestled in the ‘Ridiculously Resilient Refuge,’ your heightened-risk home faces weather dramas with a sense of humor. From Foothill frolics to distant wildfires, your property is ready for the unexpected. Include in your emergency kit a telescope for stargazing during power outages—because sometimes the best views come after the storm!”

**Risk Score 0: “Quaintly Calm Corner” (Low-Risk Property)**

“Ah, the ‘Quaintly Calm Corner’—where perpetual sunshine and low risk create a charming haven. Your low-risk property is like the cool cucumber at the weather party. In your emergency plan, establish a ‘Sunshine Salsa’ ritual, and consider a flood-proof plant collection for a garden that waltzes through any weather!”

**LOWER YOUR RISK**

Invest in advanced wildfire-resistant landscaping and explore water-efficient gardening techniques to navigate drought challenges. Enhance your home’s insulation and consider installing a sump pump for potential flood challenges. Have a reliable wind-resistant structure for garden elements. Secure outdoor furniture during windy days and create a fire-resistant zone around your property. Develop a family plan for rapid evacuation in case of a wildfire. Establish a robust evacuation plan for potential wildfires and reinforce your property’s structural integrity. Consider installing solar-powered backup systems. Focus on sustainable practices and landscaping that complements your low-risk environment. Emphasize energy-efficient solutions and maintain a well-stocked but streamlined emergency kit for any surprises.

## Structural Modifications

### 1. Elevate or floodproof structures:

- Raise the foundation above the base flood elevation
- Install flood-resistant barriers around doors and windows

### 2. Reinforce roofing materials:

- Replace standard asphalt shingles with impact-resistant roofing materials
- Add a reflective coating to the roof to reduce heat absorption

### 3. Create a defensible space:

- Clear vegetation around the property, creating a buffer zone
- Use non-combustible materials for fences, decks, and patios

### 4. Use fire-resistant building materials:

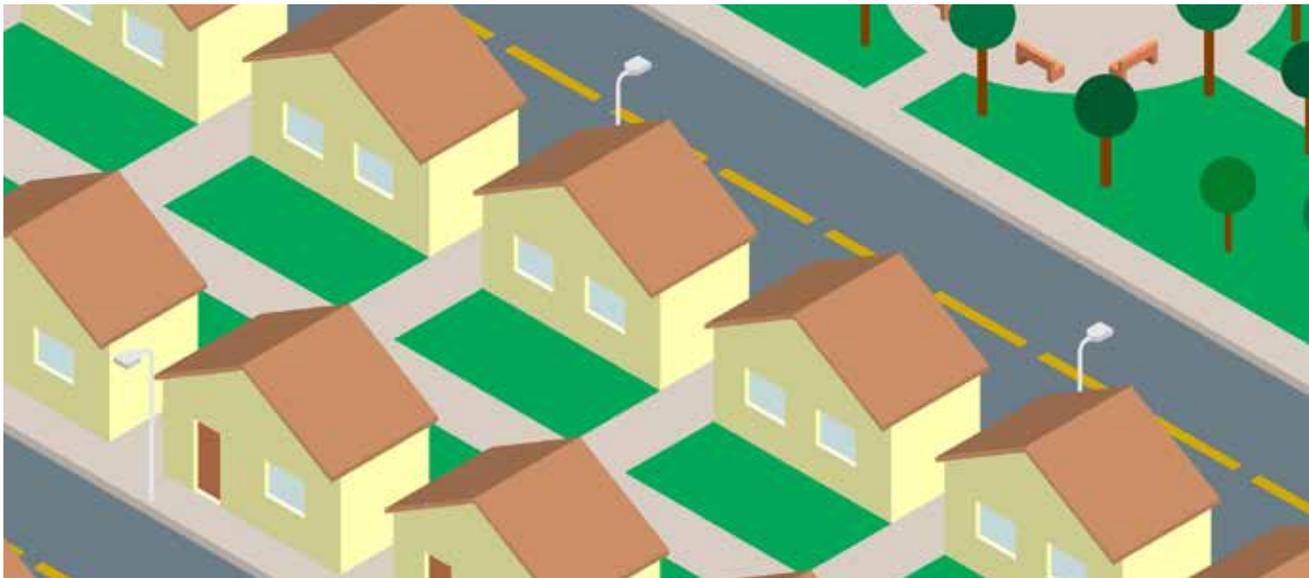
- Choose fire-resistant siding, roofing, and insulation materials
- Apply fire-resistant coatings to the exterior

### 5. Install energy-efficient windows and doors:

- Replace single-pane windows with double-pane or triple-pane windows
- Upgrade exterior doors with insulated and weather-sealed options
- Add weatherstripping to windows and doors, seal air leaks

### 6. Reflect sunlight with cool or reflective roofing materials:

- Choose cool roofing materials with reflective surfaces
- Apply reflective roof coatings for increased solar reflectance



# Landscaping and Vegetation

## 1. Maintain natural buffers:

- Preserve existing trees and vegetation to prevent erosion
- Plant native species along water bodies to stabilize the shoreline
- Plant or maintain vegetation to be used as a wind break

## 2. Utilize water-efficient landscaping:

- Use drought-tolerant plants and xeriscaping principles
- Install a rain garden to manage and filter stormwater

## 3. Clear flammable vegetation:

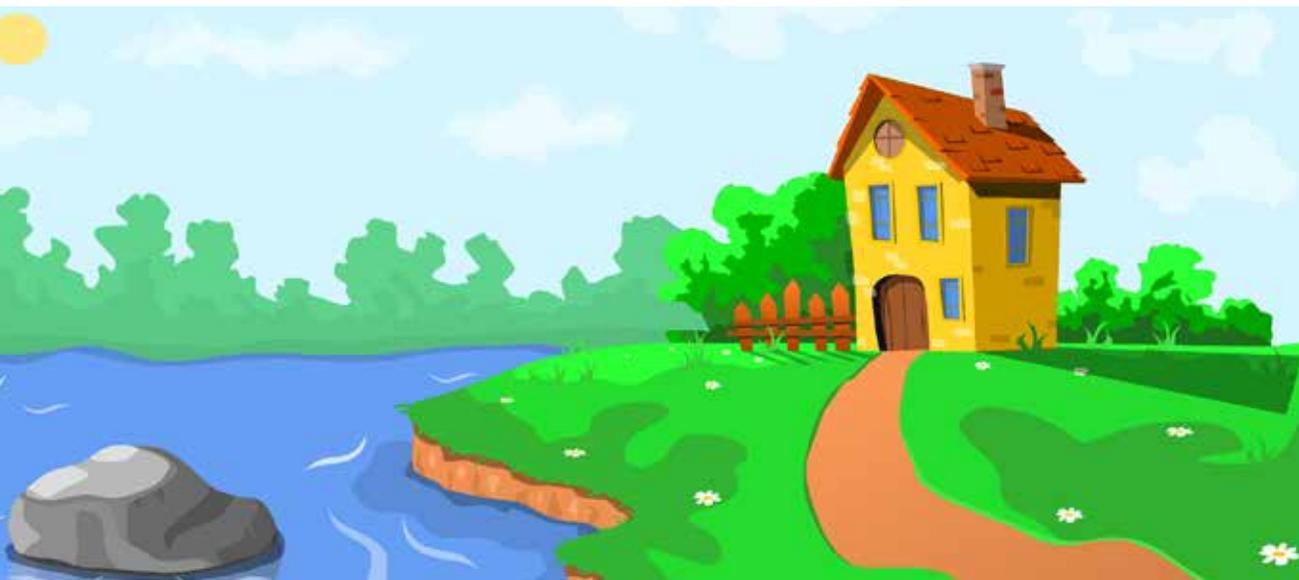
- Prune trees to create vertical separation and reduce ladder fuels
- Remove dead or dry vegetation around the property

## 4. Implement shading solutions:

- Install pergolas, awnings, or shade sails over outdoor spaces
- Plant deciduous trees on the south or west sides of the property for natural shading

## 5. Maintain property's landscaping:

- Regularly trim and maintain vegetation to prevent overgrowth
- Create firebreaks by removing or thinning out vegetation and yard waste



## Water Management

### 1. Install rainwater harvesting systems:

- Set up rain barrels to collect roof runoff for outdoor use and reduce well or municipal water draw
- Install a larger cistern to store rainwater for landscape irrigation

### 2. Upgrade to water-efficient fixtures:

- Replace old toilets with low-flow models
- Install aerators on faucets to reduce water consumption
- Low flow showerheads, dishwasher, washing machine, on demand water heater

### 3. Implement efficient irrigation systems:

- Install drip irrigation for targeted and efficient watering
- Use smart irrigation controllers to adjust watering based on weather conditions

### 4. Develop a water conservation plan:

- Set up a watering schedule to minimize waste
- Fix leaks and drips in plumbing to prevent water loss

### 5. Adjust water usage habits:

- Collect dishes and wash them all together in the dishwasher
- Wash clothes in full loads
- Turn off the tap when brushing teeth, washing vegetables etc.

### 6. Install a sump pump



# Emergency Planning

## 1. Develop a family emergency plan:

- Identify evacuation routes and emergency contacts
- Conduct family drills to ensure everyone knows their roles

## 2. Assemble an emergency kit:

- Include non-perishable food, water, first aid supplies, flashlights, and batteries
- Store important documents and medications in a waterproof container
- Examples can be found here <https://www.alberta.ca/emergency-preparedness>

## 3. Stay informed about local emergency alerts:

- Sign up for Alberta Emergency Alerts at <https://www.alberta.ca/alberta-emergency-alert.aspx>
- Follow social media accounts or websites for real-time updates



## Interior and Equipment

- 1. Install high-efficiency air filtration and purification systems:**
  - Use HEPA filters in air purifiers to remove fine particulate matter
  - Maintain and clean air ducts for better indoor air quality
- 2. Install high-efficiency ventilation systems:**
  - Use whole-house fans or attic fans for cooling during extreme heat
  - Ensure proper attic ventilation to reduce heat buildup
- 3. Equip your property with wildfire prevention tools:**
  - Store a rake, shovel, and fire extinguisher in an easily accessible location
  - Keep a hose with a long reach and a nozzle ready for outdoor use
  - Purchase and maintain garden sprinklers and weeping hose
- 4. Maintain and service existing insulation:**
  - Replace worn-out or damaged insulation in attics or crawl spaces
  - Caulk and weatherstrip gaps around doors and windows to improve insulation





# CLIMATE RISK ASSESSMENT

# RESOURCE SECTION



## Alberta Emergency Preparedness - Be Prepared

<https://www.alberta.ca/emergency-preparedness>

Resources to always be prepared in the event of an emergency

## Water Conservation Tips

[https://www.edmonton.ca/city\\_government/urban\\_planning\\_and\\_design/green-building-water-consumption](https://www.edmonton.ca/city_government/urban_planning_and_design/green-building-water-consumption)

<https://www.canadianliving.com/home-and-garden/gardening/article/water-conservation-10-ways-to-conserve-water-in-your-home>

<https://davidsuzuki.org/living-green/make-every-drop-count-water-conservation-tips>

<https://www.thezebra.com/resources/home/how-to-conserve-water-at-home>

## Landscaping and Vegetation

<https://www.piikaninationlandsdepartment.com>

<https://www.totallandscapecare.com/business/article/15040494/how-to-create-a-wild-naturalistic-style-garden>

Guide to the common native trees and shrubs of Alberta - <https://open.alberta.ca/publications/1711129>

<https://www.totallandscapecare.com/business/article/15040494/how-to-create-a-wild-naturalistic-style-garden>

Alberta Native Species Council - <https://anpc.ab.ca>

## Wildfire Risk

<https://www.alberta.ca/firesmart>

<https://firesmartcanada.ca/about-firesmart/the-home-ignition-zone>

<https://open.alberta.ca/publications/firesmart-begins-at-home-guide>

[https://firesmartcanada.ca/wp-content/uploads/2022/01/FireSmart\\_Canada\\_Home\\_Development\\_Guide.pdf](https://firesmartcanada.ca/wp-content/uploads/2022/01/FireSmart_Canada_Home_Development_Guide.pdf)

[https://firesmartcanada.ca/wp-content/uploads/2022/04/FSC\\_ConstructionChecklist\\_converted\\_rev.pdf](https://firesmartcanada.ca/wp-content/uploads/2022/04/FSC_ConstructionChecklist_converted_rev.pdf)

<https://firesmartcanada.ca/product/firesmart-guide-to-landscaping>

## Smoke Protection

<https://airquality.alberta.ca/map/>

<https://myhealth.alberta.ca/Alberta/Pages/wildfire-smoke-health.aspx>

# RESOURCES

## **Extreme Heat**

<https://www.albertahealthservices.ca/news/heat.aspx>

<https://canadasafetycouncil.org/keep-your-cool-in-the-heat>

<https://davidsuzuki.org/living-green/how-to-stay-cool-indoors-in-summer>

## **Hail and Wind**

<https://www.calgary.ca/environment/climate/climate-hazards--hail-and-high-wind.html>

## **Structural Tips**

<https://www.calgary.ca/content/dam/www/uep/esm/documents/calgary-climate-resilient-home-handbook.pdf>

[www.edmonton.ca/sites/default/files/public-files/ClimateResilientHomeGuide-web.pdf](http://www.edmonton.ca/sites/default/files/public-files/ClimateResilientHomeGuide-web.pdf)

<https://natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-grant/start-your-energy-efficient-retrofits/plan-document-and-complete-your-home-retrofits/resiliency-measures-protect-your-home/23590>

## **Clean Energy Improvement Program Financial Assistance**

<https://ceip.abmunis.ca/residential/locations>

## **Pincher Creek Business Registry**

<http://www.pinchercreek.ca/business/directory.php>

For local contractors

## **Energy Star**

<https://www.energystar.gov/productfinder>

For efficient equipment selection

## **Pincher Creek Emergency Services**

403-627-5333

For Fire Risk Inspection

## **Intact Centre on Climate Adaptation**

<https://www.intactcentreclimateadaptation.ca/climate-ready-infographics/>

