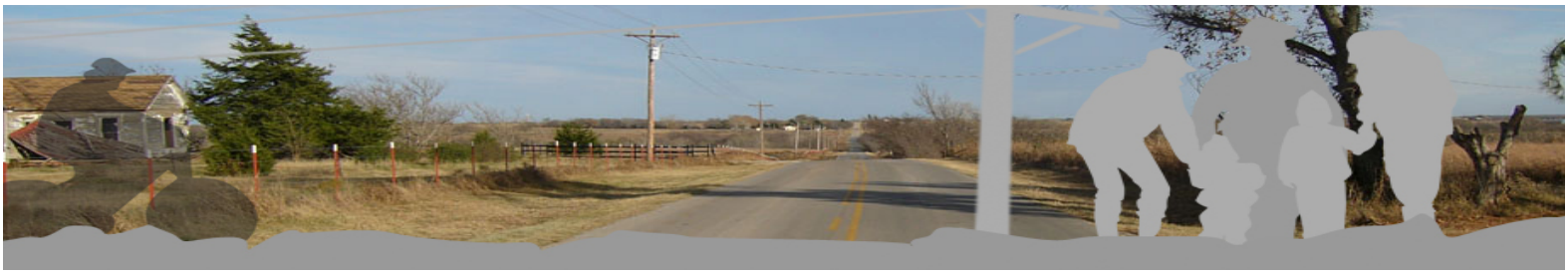

Hazard Resilience Strategies

Atmospheric

Blizzards [1] [2] [3]

- Ensure building regulations require building designs that reduce and withstand snow accumulation on roofs
- Ensure community-based blizzard exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure critical power lines and sewer and water pipes are buried
- Ensure hazardous trees are trimmed and/or removed near residences
- In case of an extended power failure due to a blizzard, ensure there are plans to allow residents to evacuate to a designated shelter with back-up power
- Ensure most homes have well insulated walls, attics and pipes and roofs are in good condition
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents have heating sources that do not require power and/or have alternate power sources (e.g., generator)

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- Ensure most residents have winter tires and winter emergency kits (including rock salt, shovels, blankets, food and water) in their vehicles
- Ensure roads are adequately maintained to allow emergency personnel to access residents during a blizzard
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of a potential blizzard
- Ensure there is a warning system in place to notify residents of a potential blizzard
- Ensure there is a warning system in place to notify transient, migrant and homeless people of a potential blizzard
- To increase traffic safely ensure there are visible fixed message signs, and raised reflective pavement markers on critical roads where possible
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Climate Change [4] [5]

- To offset the growing climate change crisis, ensure locals, including residents, businesses and organizations adopt sustainable, environmentally friendly practices.
- Ensure carbon emission is reduced with an eye for eliminating emissions.
- Ensure community members have been educated about climate change hazards and residents have been encouraged to change actions that contribute to climate change, such as driving vehicles less often and increasing the energy efficiency of homes and businesses.
- Ensure the community has a “no idling” in your vehicle for more than one minute policy.
- Ensure the community promotes the building of “green” buildings including installation of solar panels, collecting of rain water, insulated windows, and use of recycled building materials.
- Ensure the community promotes the use of public and school transportation systems and car pooling when possible.

Extreme Cold [6] [7]

- Ensure building designs can withstand extreme freezing temperatures.
- Ensure community-based cold-weather exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- In case of an extended power failure, ensure there are plans to allow residents to evacuate to a designated shelter with back-up power
- Ensure most homes have well insulated walls, attics and pipes and roofs are in good condition
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents have heating sources that do not require power and/or have alternate power sources (e.g., generator)

- Ensure most residents have winter tires and winter emergency kits (including rock salt, shovels, blankets, food and water) in their vehicles
- Ensure there is a cold-weather shelter in the community that is accessible to transient, migrant and homeless people.
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of extreme cold conditions
- Ensure there is a warning system in place to notify residents of extreme cold conditions
- Ensure there is a warning system in place to notify transient, migrant and homeless people of extreme cold conditions
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Fog [8] [9]

- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure there are installed fixed message signs, raised reflective pavement markers, lighted pavement markers, and variable message signs where possible.
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potentially heavy fog
- Ensure there is a warning system to notify residents of potentially heavy fog and to instruct people to limit travel.

Frost [10]

- Ensure most farmers check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potentially heavy frost
- Ensure there is a warning system to notify residents of potentially heavy frost.

Hailstorms [11] [12]

- Ensure airport operators prepare for hailstorms by putting planes under cover
- Ensure community-based hailstorm exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure most car dealers prepare for hailstorms by putting vehicles under cover
- Ensure most farmers check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most farmers prepare for hailstorms by putting vehicles under cover, protecting greenhouses and bringing in animals wherever possible
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada

- Ensure most residents know to prepare for hailstorms by putting vehicles under cover
- Ensure residents are educated about storm safety and know to stay indoors and away from windows, skylights and glass doors during hail and avoid contact with plumbing, corded electrical equipment, concrete floors and walls if there is lightning along with the hail
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potential heavy hailstorms
- Ensure there is a warning system in place to notify residents of potentially heavy hailstorms
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Heat Waves[13] [14]

- Ensure community-based heat wave exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure plans are in place to install portable and widely available emergency drinking fountains for the public via portable water tanks or fire hydrant hook-up systems in the event of a heat wave.
- Ensure community plans are in place to check on vulnerable populations during a heat wave, especially the elderly and poor.
- Ensure developers and property owners are encouraged to install air conditioning in new commercial buildings
- If there is an extended heat wave, ensure plans are in place to allow residents to evacuate to a designated shelter with air-conditioned or cool temperatures
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.
- Ensure most farmers check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure residents are educated about heat waves and know the warning symptoms of heat exhaustion and how best to keep cool
- Ensure there are open green spaces, shade trees and light-coloured building in business areas
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potential heat waves
- Ensure there is a warning system in place to notify residents of potential heat waves

Hurricanes[15][16][17][18][19]

- Ensure coastal wetlands are in place or are being re-established
- Ensure community-based hurricane exercises have taken place in schools and the community-at-large
- Ensure critical power lines and sewer and water pipes are buried
- Ensure critical roads are well-draining
- Ensure designated shelters are in place in areas which are not impacted by hurricanes
- Ensure development regulations in areas susceptible to hurricanes limit land use, prohibit development or require wind and flood resilient building features including elevated buildings, concrete walls and roofs designed to withstand severe wind and rain
- Ensure hazardous trees are trimmed and/or removed near residences
- Ensure most buildings have secure roofs attached to building frames with straps or clips
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents have designated areas of refuge in their homes
- Ensure protective dykes or levees are in place and well maintained in areas likely to experience hurricane damage
- Ensure residents are aware of disaster evacuation routes for hurricanes
- Ensure residents know to prepare for high winds and flooding by: covering windows with storm shutters or plywood, reinforcing garage doors, clearing rain gutters and downspouts, securing boats to land or storing them on land and removing potential windborne missiles such as barbecues and patio furniture.
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potential hurricanes
- Ensure there is a warning system in place to notify residents of potential hurricanes
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Ice Fogs, Ice Storms and Freezing rain [20][21][22][23]

- Ensure community-based ice storm exercises have taken place in schools and the community-at-large
- Ensure critical power lines and sewer and water pipes are buried
- Ensure hazardous trees are trimmed and/or removed near residences
- In case of an extended power failure, ensure there are plans to allow residents to evacuate to a designated shelter with back-up power
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents have heating sources that do not require power and/or have alternate power sources (e.g., generator)
- Ensure most residents have winter tires and winter emergency kits (including rock salt, shovels, blankets, food and water) in their vehicles

- Ensure plans are in place to locate persons without power over extended time periods and to transport these persons to designated shelters
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of a potential ice storms and freezing rain
- Ensure there is a warning system in place to notify residents of a potential ice storms and freezing rain
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Lake-Effect Storms [24] [25] [26] [27]

- Ensure building regulations require building designs that reduce and withstand snow accumulation on roofs
- Ensure community-based lake effect storm exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure critical power lines and sewer and water pipes are buried
- Ensure critical roads are well-draining
- Ensure hazardous trees are trimmed and/or removed near residences
- In case of an extended power failure due to a lake effect storm, ensure there are plans to allow residents to evacuate to a designated shelter with back-up power
- Ensure most homes have well insulated walls, attics and pipes and roofs are in good condition
- Ensure most residents have heating sources that do not require power and/or have alternate power sources (e.g., generator)
- Ensure most residents have winter tires and winter emergency kits (including rock salt, shovels, blankets, food and water) in their vehicles
- Ensure residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure roads are adequately maintained to allow emergency personnel to access residents during a lake effect storm
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of a potential lake effect storm
- Ensure there is a warning system in place to notify residents of a potential lake effect storm
- Ensure there is a warning system in place to notify transient, migrant and homeless people of a potential lake effect storm
- To increase traffic safety ensure there are visible fixed message signs, raised reflective pavement markers on critical roads where possible
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Lightning and Thunderstorms [28 29 30 31]

- Ensure building regulations limit land use or require wind, rain and lightning resilient building features including roofs designed to withstand severe wind and rain
- Ensure community members have been educated about lightning safety, such as avoiding contact with plumbing, corded electrical equipment, concrete floors and walls and staying indoors and away from windows and doors during lightning events
- Ensure critical power lines and sewer and water pipes are buried
- Ensure critical roads are well-draining
- Ensure hazardous trees are trimmed and/or removed near residences
- Ensure most buildings are grounded. For example, see the report *How to Protect Your House and Its Contents from Lightening* by Cohen, Dorr, Funke, Waterer and Jensen (2005).
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure playgrounds, golf courses and other outdoor areas with large numbers of the public have warning systems to notify the public of potential lightning and designated locations where they can take cover
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potential lightning and thunderstorms
- Ensure there is a warning system in place to notify residents of potential lightning and thunderstorms
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Microbursts [32 33]

- Ensure community-based microburst exercises have taken place in schools and the community-at-large
- Ensure designated shelters are in place in areas which are not impacted by microbursts
- Ensure most businesses have emergency kits on hand and have business continuity plans in place.
- Ensure development regulations in areas susceptible to hurricanes limit land use, prohibit development or require building reinforcements and wind resilient infrastructure
- Ensure hazardous trees are trimmed and/or removed near residences
- Ensure most buildings have secure roofs attached to building frames with straps or clips
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure residents are aware of disaster evacuation routes for microbursts
- Ensure residents know to prepare for high winds and flooding by: - covering windows with storm shutters or plywood, reinforcing garage doors, clearing rain gutters and downspouts, securing boats to land or storing them on land and removing potential windborne missiles such as barbecues and patio furniture.

- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potential microbursts
- Ensure there is a warning system in place to notify residents of a potential microburst and to instruct people to seek ground-level or underground shelter
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Sea Storms and Storm Surges [34] [35] [36] [37] [38]

- Ensure coastal wetlands are in place or are being re-established
- Ensure community-based sea storms and storm surges exercises have taken place in schools and the community-at-large
- Ensure critical power lines and sewer and water pipes are buried
- Ensure critical roads are well-draining
- Ensure designated shelters are in place in areas which are not impacted by sea storms and storm surges
- Ensure development regulations in areas susceptible to sea storms and storm surges limit land use, prohibit development or require wind and flood resilient building features including elevated buildings, concrete walls and roofs designed to withstand severe wind and rain
- Ensure hazardous trees are trimmed and/or removed near residences
- Ensure most buildings have secure roofs attached to building frames with straps or clips
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents have designated areas of refuge in their homes
- Ensure most residents know to prepare for high winds and flooding by: covering windows with storm shutters or plywood, reinforcing garage doors, clearing rain gutters and downspouts, securing boats to land or storing them on land and removing potential windborne missiles such as barbecues and patio furniture.
- Ensure protective dykes or levees are in place and well maintained in areas likely to experience sea storms and storm surges damage
- Ensure residents are aware of disaster evacuation routes for sea storms and storm surges
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potential sea storms and storm surges
- Ensure there is a warning system in place to notify residents, boaters and fishers of potential sea storms and storm surges
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Seiche [39 40 41 42 43 44]

- Ensure citizen-based disaster recovery groups are in place
- Ensure community-based seiche exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure designated shelters are in place in areas which are not impacted by seiches
- Ensure development regulations in areas susceptible to seiches limit land use, prohibit development or require wind and flood resilient building features including elevated buildings, concrete walls and roofs designed to withstand severe wind
- Ensure evacuation routes for a potential seiche are marked with visible signage.
- Ensure flood protection structures such as dykes have been built and are well maintained.
- Ensure hazard zonation maps for seiches are prepared and shared with the community.
- Ensure plans are in place to develop and preserve coastal forests which act as protection against seiches.
- Ensure residents are educated about seiches and know how and where to evacuate
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of potential seiches
- Ensure there is a warning system in place to notify residents, boaters and fishers of potential seiches
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Snowstorms [45 46 47]

- Ensure building regulations require building designs that reduce and withstand snow accumulation on roofs
- Ensure community-based snowstorm exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure critical power lines and sewer and water pipes are buried
- Ensure critical roads are well-draining
- Ensure hazardous trees are trimmed and/or removed near residences
- In case of an extended power failure due to a snow storm, ensure there are plans to allow residents to evacuate to a designated shelter with back-up power
- Ensure most homes have well insulated walls, attics and pipes and roofs are in good condition
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents have heating sources that do not require power and/or have alternate power sources (e.g., generator)
- Ensure most residents have winter tires and winter emergency kits (including rock salt, shovels, blankets, food and water) in their vehicles

- Ensure roads are adequately maintained to allow emergency personnel to access residents during a snow storm
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of a potential snow storm
- Ensure there is a warning system in place to notify residents of a potential snow storm
- Ensure there is a warning system in place to notify transient, migrant and homeless people of a potential snow storm
- To increase traffic safety there are visible fixed message signs, ensure raised reflective pavement markers are on critical roads
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Tornadoes and Waterspouts [48] [49]

- Ensure community-based tornado exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure development regulations require building reinforcements and wind resilient infrastructure.
- Ensure hazardous trees are trimmed and/or removed near residences
- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure most residents have designated safe areas/tornado refuge areas in their home.
- Ensure residents know to prepare for high winds and flooding by: covering windows with storm shutters or plywood, reinforcing garage doors, clearing rain gutters and downspouts, securing boats to land or storing them on land and removing potential windborne missiles such as barbecues and patio furniture.
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of a potential tornado
- Ensure there is a warning system in place to notify residents of a potential tornado
- Ensure there is a warning system in place to notify transient, migrant and homeless people of a potential tornado
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Wind Storms [50] [51] [52]

- Ensure community-based windstorm exercises have taken place in schools and the community-at-large (e.g., table-top or full-scale exercises)
- Ensure critical power lines, sewer and water pipes are buried
- Ensure development regulations require building reinforcements and wind resilient infrastructure.
- Ensure hazardous trees are trimmed and/or removed near residences
- In case of an extended power failure due to a windstorm, ensure there are plans to allow residents to evacuate to a designated shelter with back-up power

- Ensure most residents check regularly with weather and storm forecasting agencies such as Environment Canada
- Ensure residents know to prepare for high winds and flooding by: - covering windows with storm shutters or plywood, reinforcing garage doors, clearing rain gutters and downspouts, securing boats to land or storing them on land and removing potential windborne missiles such as barbecues and patio furniture.
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of a potential windstorm
- Ensure there is a warning system in place to notify residents of a potential windstorm
- Ensure there is a warning system in place to notify transient, migrant and homeless people of a potential windstorm
- Ensure existing homeless shelters have made provisions for increased capacity and hazard specific conditions.

Space Object Crashes [53]

- Ensure community-based space object crash exercises have taken place in the schools and community-at-large (e.g., table-top or full-scale exercises)
- Ensure there is a warning system in place to notify community residents of a potential space object crash
- Ensure there is a warning system in place to notify police, fire and ambulance personnel of a potential space object crash

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