

CLIMATE RESILIENCE CAPACITY BUILDING PROGRAM

Infrastructure Asset Management Alberta

Red Deer Workshop

February 8, 2023



Municipal
Climate Change
Action Centre

A partnership of

 **Alberta
Municipalities**
Strength
In Members



RMA
RURAL MUNICIPALITIES
of ALBERTA

Alberta 



About Alberta Municipalities



Alberta Municipalities works with municipal leaders to advocate for solutions to municipal issues and supports communities by providing services, helping them thrive and be more resilient. The Sustainability Services department supports municipalities in reducing emissions and creating resilient communities with two programs.



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**Clean Energy
Improvement
Program**

Alberta Municipalities is the program administrator for the Clean Energy Improvement Program as designated under the Clean Energy Improvements Regulation.



About the Action Centre

The Municipal Climate Change Action Centre was founded in 2009 as a collaborative initiative of the Alberta Municipalities, Rural Municipalities of Alberta, and the Government of Alberta.

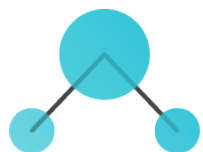


Our Impact

Updated: Dec. 1, 2022



389 participants
completed **721** projects



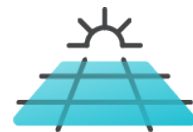
728,310 t of CO₂e
avoided over projects lifetimes



885 full time jobs
created in energy efficiency
and solar industries



\$157M energy savings
over projects lifetimes



**29.6 MW installed
solar energy capacity**
including 55,636 solar panels



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Programs and Services



**ALBERTA MUNICIPAL
SOLAR PROGRAM**



**CLIMATE RESILIENCE
CAPACITY BUILDING PROGRAM**



**ELECTRIC VEHICLES FOR
MUNICIPALITIES PROGRAM**



**ELECTRIC VEHICLE
CHARGING PROGRAM**



**MUNICIPAL COMMUNITY
GENERATION CHALLENGE**



**MUNICIPAL
ENERGY CHAMPIONS**



**MUNICIPAL ENERGY
MANAGER PROGRAM**



**RECREATION ENERGY
CONSERVATION PROGRAM**



**SOLAR FOR SCHOOLS
PROGRAM**



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Agenda

- Climate Resilience 101
- Climate Change and Asset Management
- Examples
 - Sturgeon County
 - City of Lethbridge
- Climate Resilience Capacity Building Program
- Q&A



Climate Change

- Some degree of climate change is unavoidable, with environmental, social, and financial impacts
- Climate Resilience – anticipating, preparing, responding, and recovering from the impacts of climate change



Climate Change Impacts

- Permafrost thawing
- Warming and prolonged droughts
- Increased forest fires and insect infestations
- Increased drying, reduced snow packs, shrinking glaciers and other impacts to fresh water
- Increased frequency of heat waves and smog
- Increased severity and frequency of extreme weather events, flooding
- Damage to natural habits and vulnerable species, impacting traditional ways of life and local economies

Climate Change Impacts on Local Government Infrastructure Systems

- Drinking Water
- Buildings
- Land Transportation
- Wastewater
- Draining and Flood Protection
- Parks
- Solid Waste Management

[\(Climate change and asset management, a sustainable service delivery primer\)](#)

Climate Change Adaptation

- Actions reduce the harmful impacts of climate change and take advantage of potential new opportunities
- Proactive Planning and Reactive Response



Climate Resilience Express is focused on climate 'adaptation' — actions to efficiently manage the negative impacts of climate change or take advantage of new climate-related opportunities.

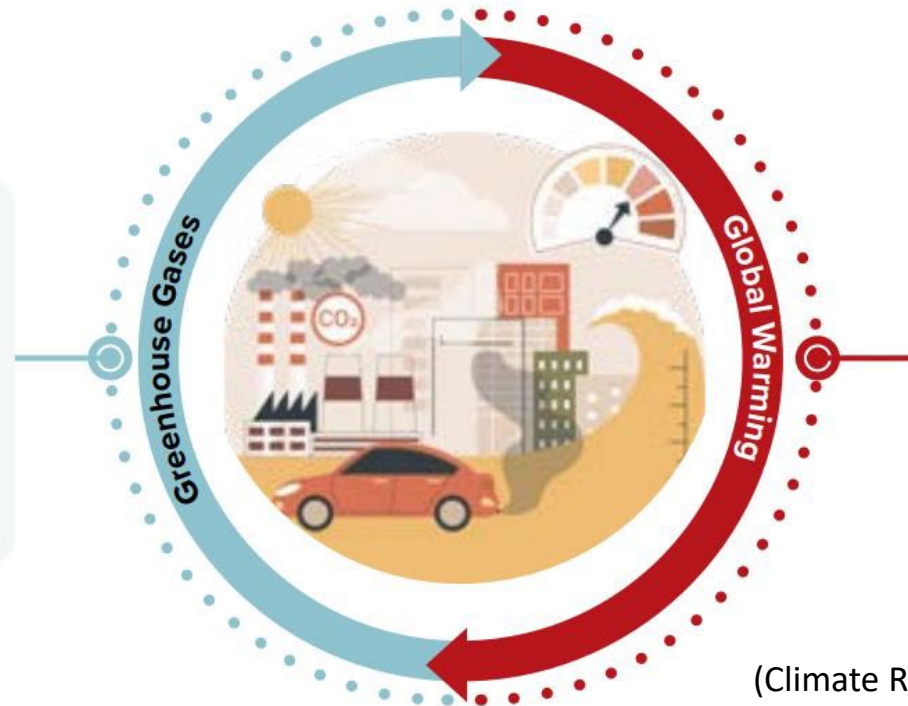
Mitigation actions

reduce or prevent releases of greenhouse gases to the atmosphere or capture and store carbon

Adaptation (or resilience) actions

focus on managing the anticipated impacts of climate change to your community

Greenhouse gases are released to the atmosphere, trapping heat and **causing** global warming



Global warming is changing the regional and local climate which will **impact** your community



Adaptation Examples

Extreme weather
emergency response plans



Zoning measures
(e.g. building away from flood plains.)



Updating vulnerable infrastructure

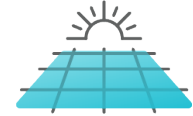


FireSmart Programs



Mitigation Examples

Installing solar panels



Reducing building energy usage



Composting



Converting carbon into new products



Climate adaptation planning and implementation is an ongoing process. We will always need to adapt!

The purpose of step 1 is to:

- Determine the scope of the planning process [Pages 4 & 5]
- Develop a plan to engage stakeholders and residents
- Compile climate trends and projections for your community [Page 6]

The purpose of step 4 is to:

- Commit funding and staff time to implement actions
- Partner with local and regional organizations
- Monitor impacts and actions
- Repeat the process every 5-10 years [Page 18]

The purpose of step 3 is to:

- Define actions to manage priority climate impacts and consequences
- Assess and prioritize actions
- Formulate a Climate Adaptation Action Plan [Pages 14–17]

The purpose of step 2 is to:

- Understand your communities' vulnerabilities
- Develop climate impact statements
- Conduct a climate change risk and opportunity assessment
- Determine priorities for action planning [Pages 7–13]



Examples

- Sturgeon County – CRE Community Scale Plan
- City of Lethbridge – PIEVC Assessment for Infrastructure
- Town of Okotoks – Natural Asset Inventory



Climate Adaptation Challenge in Sturgeon County

Adaptation Close To Home

Developing a climate adaptation action plan for Sturgeon County to help build local climate resilience.



Climate Risks	Climate Impact Description	Proxy Indicator
Heat Wave	Three or more consecutive days of +30°C temperatures or hotter	3 heat waves occur in any given year
Seasonal Drought	A period of anomalously low moisture during the frost-free season	A class D3 drought occurs in any given year
Wildland/Cropland Fire	A wildland or cropland fire, small or large, that occurs in an area where there is little development, except for roads, railroads, power lines and other linear infrastructure	A wildland/cropland fire occurs within the municipal boundary in any given year
Wildfire Smoke	Smoke from wildfires enters into municipal boundaries	The maximum Air Quality Health Index (AQHI) is 10 in any given year
Outbreak of Invasive Agricultural Pests	An outbreak of invasive plant and insect pests, such as Bertha Armyworm and Grasshopper, etc.	Growing Degree Days of 547 GGD (Base 15 Degrees) in any given year
Water Supply Shortage	Extreme low flow conditions in the North Saskatchewan River, endangering local water supply	North Saskatchewan River flow rate is 25 m ³ per second or lower in any given year
Lowland Flooding due to Precipitation	Heavy precipitation of 10mm or more rain in a day causes flooding within County boundaries	11.4 heavy precipitation days (10mm or more) in any given year

Climate Opportunities	Climate Impact Description	Proxy Indicator
Increased Agricultural Productivity	A warmer growing season for plants and crops, providing favorable conditions for agriculture	Growing Degree of 1243 GDDs (Base 10 degrees) in any given year

Table 2: Final Climate Impact Scenarios (Risks and Opportunities)



Climate Impacts Scenarios with negative consequences	Likelihood	Consequence	Risk Score
Water Shortage	5	4.3	21.5
Heat Wave	5	3.3	16.7
Invasive Agricultural Pests	5	3.3	16.4
Seasonal Drought	4	3.9	15.6
Wildfire Smoke	4	3.8	15.2
Wildland/Cropland Fire	4	3.8	15.2
Flooding due to Precipitation	4	3.8	15.2
Freezing Rain	5	2.9	14.5
Crop Pathogens	4	3.1	12.5
Increased Space Cooling Demand	4	3	12.0
Windstorm	4	3	11.7
Sturgeon River Flooding	3	2.9	8.8
Heavy Snowfall	3	2.9	8.8
Hailstorm	3	2.8	8.3
North Saskatchewan River Flooding	3	2.7	8.0

Table 3. Climate Impacts (Risks) recommended for action planning

Climate Adaptation Challenge in Sturgeon County

4 Action Themes

- Resilient Water Management
- Health and Wellbeing
- Strong and Resilient Economy
- Disaster Resilience

Action Types

- Plan
- Policy
- Infrastructure
- Education and Awareness
- Naturalization
- Research and Monitoring
- Partnership
- Operations

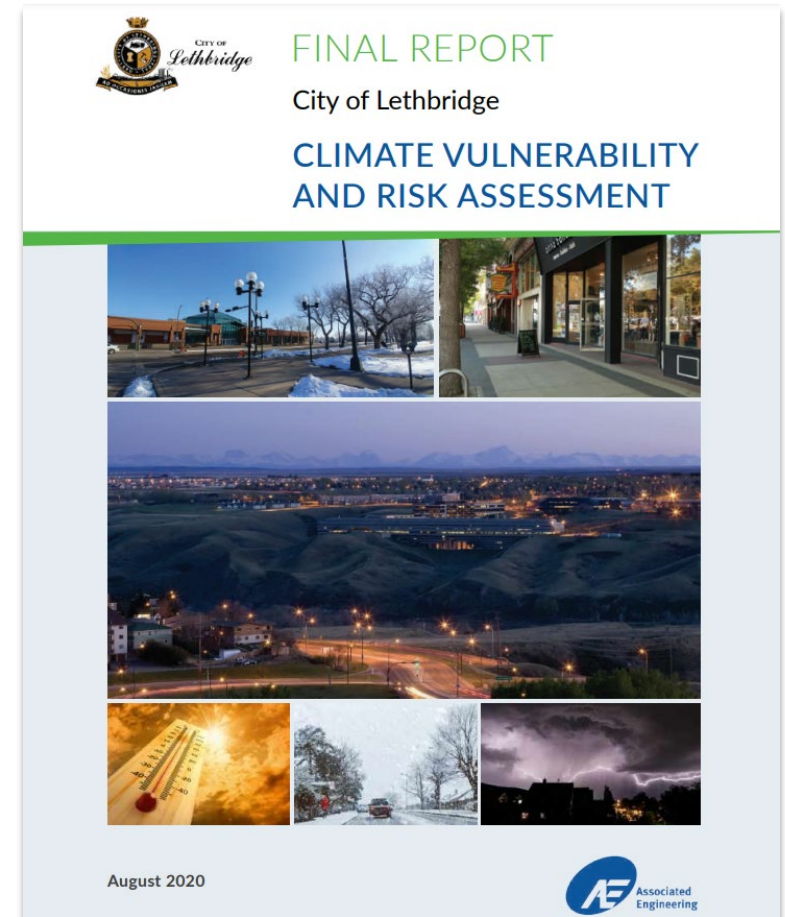
Climate Adaptation Challenge in Sturgeon County



City of Lethbridge - Climate Change Vulnerability and Risk Assessment

Overall risk map of municipal infrastructure:

- Key infrastructure assets at risk
- Climate hazards, stressors, and trends
- Risk evaluation for each infrastructure
- Adaptation measures



City of Lethbridge - Climate Change Vulnerability and Risk Assessment

- PIEVC Protocol – High Level Screening
 - Step 1: Define Infrastructure
 - Step 2: Evaluate Climate Changes
 - Step 3: Conduct Risk Assessment
 - Step 4: Conclusions and Recommendations
- Guidelines on Climate Probability Scoring, Consequence Scoring, and Risk Assessment

City of Lethbridge - Climate Change Vulnerability and Risk Assessment

- Stormwater
- Water Assessment
- Wastewater Assessment
- Waste and Recycling Utility
- Community and Corporate Facility Assessment
- Electric Utility Assessment
- Road, Fleet, and Transit Assessment
- Environment Assessment

City of Lethbridge - Climate Change Vulnerability and Risk Assessment

- Preliminary Adaptation measures
 - 71 measures identified – based on climate hazards of most concern
 - 16 cross department measures to assist in future planning and management of the Cities Infrastructure
- Ongoing monitoring
- Implementation of appropriate measure to reduce the impacts of climate change

Climate Resilience Capacity Building Program



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Program Objectives

Better understand, cope, manage, and adjust to changing climatic conditions:

- broaden climate resilience literacy
- assess climate vulnerabilities
- build climate resilience plans
- make progress on risk reduction strategies



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Funding Streams

Program Stream	Purpose
Planning Stream	Funding for the assessment of climate risks and vulnerabilities, and the creation of a climate resilience plan
Strategies and Initiatives Stream	Funding for research and assessment of the feasibility of adaptation measures in community plans and preparing actions for implementation
Indigenous Climate Resilience Stream	Funding for projects that increase community capacity on climate resilience, recognizing the unique impacts, needs, and perspectives of Indigenous Peoples, including the use of Indigenous and/or Traditional Ecological Knowledge

Program Eligibility – Community Types

- ✓ Municipalities in Alberta (as per the Municipal Government Act)
- ✓ First Nations within Alberta
- ✓ Tribal Council, Regional Councils, Confederacies, or Treaty Organizations representing affiliations of First Nations
- ✓ Métis Settlements
- ✓ Métis Settlements General Council representing affiliations of Métis Settlements
- ✓ Métis Nation of Alberta, including Regions and Locals
- ✓ Self governing Métis Nations / Communities
- ✓ Non-Status Indigenous Nations / Communities



Funding

For all streams, the maximum funding cap is **\$80,000, per project**

- Communities may form regional, cultural, governance, or organizational partnerships. Partnership proposals have a funding cap of **\$160,000, per project**

Total program funding cap is **\$160,000 per community**

First-come, first-serve



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Considerations

Climate resilience activities directly controlled or influenced by a community.

Topics or sectors may include:

- water quality and quantity
- assets and infrastructure
- agriculture
- forestry
- economy
- human health
- food security
- knowledge transfer / capacity building



Eligible Costs

Program Stream	Deliverables	Eligible Costs
Planning Stream	Climate Risk Assessments and / or Community Climate Resiliency Plans	<ul style="list-style-type: none">- Contracted services performed by a qualified service provider- Costs related to the development of internal capacity, including but not limited to knowledge transfer, workshops, training, contractors, and wage subsidies.

Eligible Costs

Program Stream	Deliverables	Eligible Costs
Strategies and Initiatives Stream	Feasibility assessments, Engineering studies, and/or research reports that advance community climate adaptation and resilience plans	<ul style="list-style-type: none">- Contracted services performed by a qualified service provider- Costs related to the development of internal capacity, including but not limited to knowledge transfer, workshops, training, contractors, and wage subsidies.

Eligible Costs

Program Stream	Deliverables	Eligible Costs
Indigenous Climate Resilience Stream	Projects should investigate climate risk, resilience, and adaptation at the community level, focus on the unique impacts, needs, and perspectives of Indigenous Peoples	<ul style="list-style-type: none">- Contracted services performed by a qualified service provider- Costs related to the development of internal capacity, including but not limited to knowledge transfer, workshops, training, contractors, wage subsidies, and honourariums- Administrative costs (up to 15% of the grant value)



Ineligible Expenses

- ✘ Infrastructure or capital projects
- ✘ Equipment and facility costs
- ✘ Travel, accommodation, and meal costs
- ✘ Land restoration or reclamation
- ✘ Lobbying or advocacy activities
- ✘ Capital acquisitions or regular operating costs
- ✘ Other costs deemed ineligible



Participation Timeline

Step 1: Review the Program Materials

- Review the Guidebook and online information.

Step 2: Submit an Expression of Interest

- Complete and submit an online Expression of Interest.

Step 3: Submit an Application

- Submit application form and attachments

*Application deadline: **March 31, 2023***

OR

until all funding is allocated

Step 4: Project Approval

- Receive project application results.



Participation Timeline

Step 5: Funding agreement and First Payment

- Receive, review and sign the Funding Agreement.
- Receive first payment.

Step 6: Project Completion

- Complete project, as submitted in the application.
- Fulfill project completion requirements.

Project completion deadline:

March 21, 2024

Step 7: Second Payment

- Receive second payment.

Tools & Resources

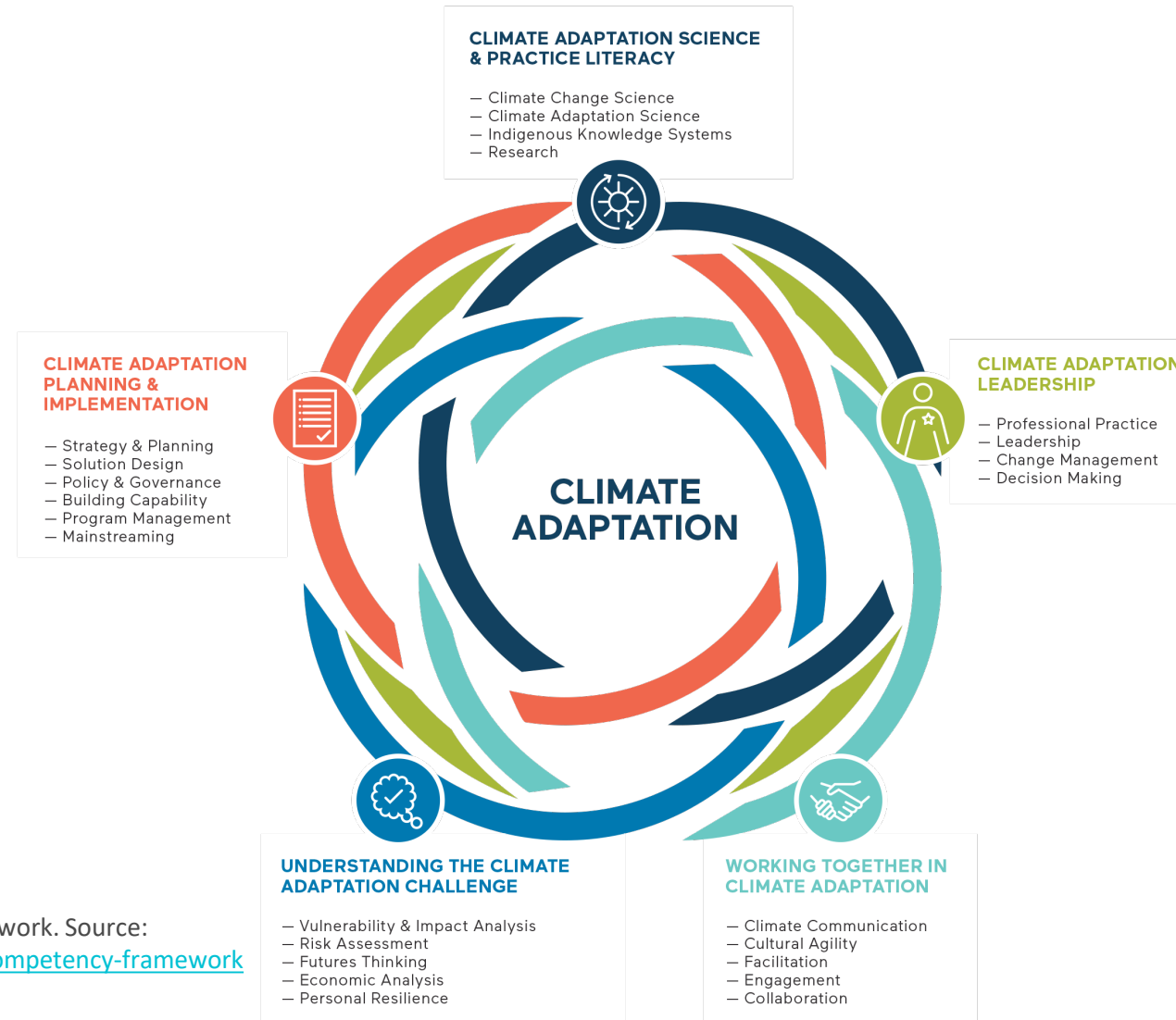


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Climate Adaptation Competency Framework and the CRCB Program Self Assessment Tool

- Assess internal climate resilience capacity
- CRCB program Self Assessment Tool based on the [Climate Adaptation Competency Framework](#)



Prequalified Contractor List



Climate Resilience Capacity Building Program Pre-qualified Contractor List

Capacity building supports for Alberta municipalities and Indigenous communities

The Climate Resilience Capacity Building Program helps Alberta municipalities and Indigenous communities better understand, manage, and adjust to changing climatic conditions.

This Program offers three funding streams, each with specific objectives and participation criteria. The purpose of each stream is outlined below:

- **Planning Stream:** Funding will be provided to communities in Alberta for the assessment of climate risks and vulnerabilities, and the creation of a climate adaptation and resilience plan.
- **Strategies and Initiatives Stream:** Funding will be provided to communities in Alberta for research and assessment of the feasibility of adaptation measures in community plans and preparing actions for implementation.
- **Indigenous Climate Resilience Stream:** Funding will be provided to Indigenous communities in Alberta for projects that increase community capacity on climate resilience, recognizing the unique impacts, needs, and perspectives of Indigenous Peoples, including the use of Indigenous and/or Traditional Ecological Knowledge.

The Climate Resilience Capacity Building Program supports climate resilience activities directly controlled or influenced by a community. Topics or sectors may include but are not limited to water quality and quantity, assets and infrastructure, agriculture, forestry, economy, human health, food security, and knowledge transfer / capacity building.

Eligible costs for each program stream include contracted services performed by a qualified service provider.

If a community decides to solicit the services of a contractor, the Action Centre recommends that communities solicit quotes from 2 or more service providers. Contractors should work with the community to share information about their supports and services, and to define a scope of work that best supports the needs of the community.

Communities may use a pre-qualified contractor or select their own contractor.

The Action Centre recognizes that procuring services of a contractor can be time-consuming. The Action Centre conducted a request for qualification procurement process to identify pre-qualified contractors with the skills and experience to provide Program services. Communities that use a pre-qualified contractor may leverage this procurement process, expedite their application, and move quickly into project implementation.

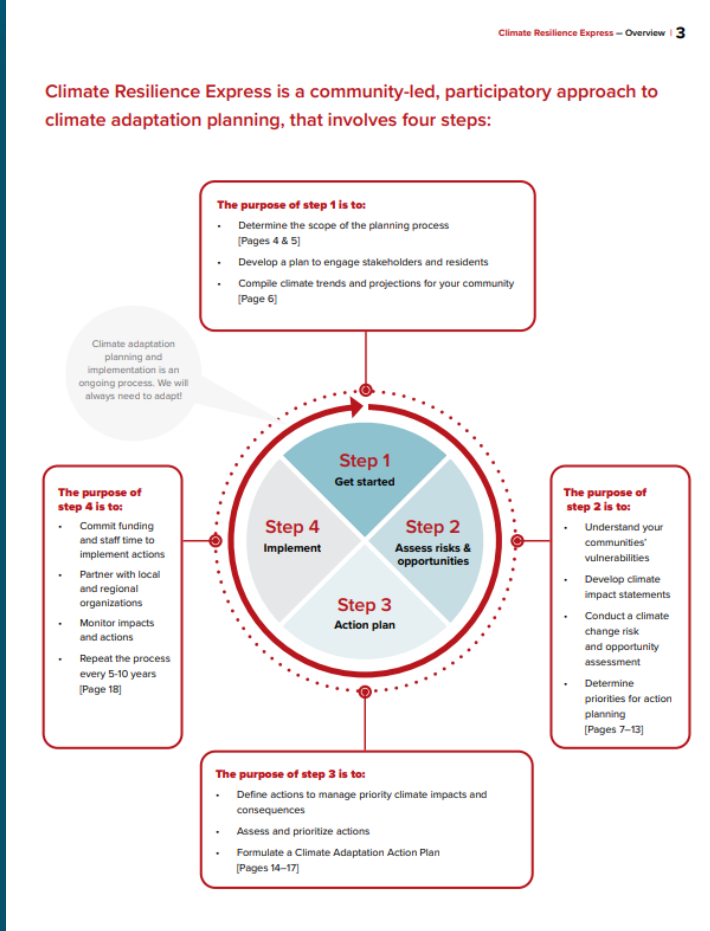
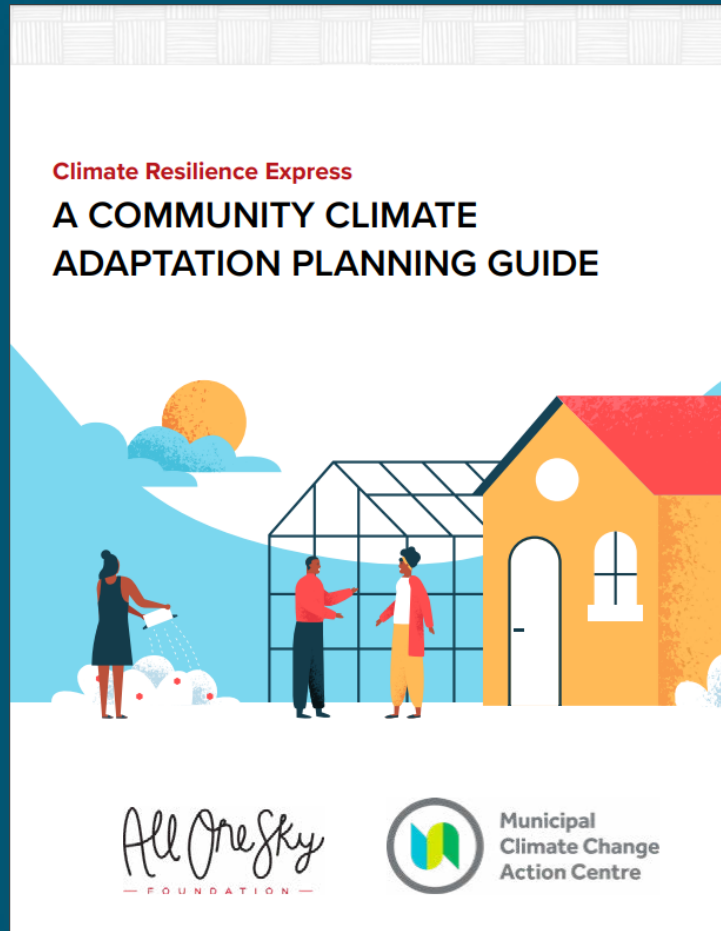


Pre-qualified contractors are listed here in alphabetical order:

- AECOM Canada
- All One Sky Foundation in partnership with ClimateWest, Associated Engineering, ESSA Technologies
- ICLEI Canada
- Kerr Wood Leidal in partnership with Diamond Head Consulting, RDH Building Science
- Morrison Hershfield in partnership with Nodelcorp, Shared Value Solutions
- QUEST in partnership with the Centre for Indigenous Environmental Resources (CIER)
- Stantec
- Urban Systems
- WSP

This document contains one-page abstracts for each pre-qualified contractor. The abstracts include details on the primary contact, a description of supports offered, and the approach they would take with communities.

Climate Resilience Express Planning Guide



Climate Resilience Express – Assess risks & opportunities | 10

Below is an example likelihood assessment scale which can be tailored to your community needs and existing risk management systems.

Score	Descriptor	Recurring climate events	Single climate events
1	Rare	Annual probability <1% (Less than 1:100-year event)	Event is almost certain not to occur (probability < 1%)
2	Unlikely	Annual probability 1 – 2% (1:50 to 1:100 year event)	Event is not anticipated to occur (1% - 33% probability)
3	Possible	Annual probability 2 - 10% (1:5 to 1:50 year event)	Event is just as likely as not to occur (33% - 66% probability)
4	Likely	Annual probability 10-50% (1:1 to 1:5 year event or less)	Event is expected to occur (66% - 99% probability)
5	Almost Certain	Annual probability > 50% (once every two years or more)	Event is virtually certain to occur (probability > 99%)

Your climate impact statements will likely include a mix of recurring (or discrete) events and single (or chronic) events. The likelihood scoring scale needs to allow for the assessment of both types of impacts.

Recurring events are those with the potential to happen (return) multiple times over a given time frame, such as severe storms, flooding and heat waves. Climate change may affect the frequency, intensity and duration of these events.

Single events, in contrast, occur when a specific threshold is reached in the future as a result of ongoing, gradual shifts in the climate. For example, the loss of a species, an irreversible shift in an Ecoregion, the permanent loss of a winter recreation opportunity (like outdoor skating), or a change in streamflow timing of the temperature of a water body.

The figure below shows how climate change can increase the likelihood of some climate events, such as extreme heat, occurring in the future.

Frequency

Current Climate
 Future Climate

Impact threshold (e.g. 30°C)

- likelihood of exceeding 30°C threshold under the current climate
- increase in likelihood of exceeding 30°C threshold because of climate change
- likelihood of exceeding 30°C threshold under future climate conditions

Climate variable (e.g. maximum summer temperature)



Additional supports

More:

- Education opportunities through the Action Centre
 - [Feb 28 Webinar - Planning for climate resilient communities with the Summer Village of Ghost Lake](#)
- Library of resources in our Learning Centre
- Community of Practice
- Project Showcases for program participants

THANK YOU



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