UNIT SEVEN

A resource for building climate resilience in Alberta

7 Action planning

What this unit will help you do

You have been directed to this unit because:

- You are looking to develop a complete Action Plan for your community through the full-day workshop; or
- You want to develop actions to manage *known* priority risks and opportunities and to select the most promising actions.

In either case, before starting this unit you must know with reasonable confidence the most important climate change risks and opportunities facing your community. If you do not have a list of priority risks and opportunities, you first need to go to Unit 6.

This unit contains four sections to help you:

Section 1: Understand the three-step process to formulating actions to manage priority climate risks and opportunities.

Section 2: Identify actions to manage priority risks and opportunities, which will include actions that your community is currently doing, adjustments to strengthen those actions, and additional actions that might be needed.

Section 3: Screen the identified actions to determine which are most effective, feasible, acceptable and equitable.

Section 4: Characterize the most promising actions in terms of their implementation costs, timeframe for implementation, and lead department, organization, team or individual.

At the workshop

The guidance and resources provided in this unit are used to support Session 4 at the workshop. An agenda with timings for Session 4 is presented in Table 1. In total, it is recommended that 100 minutes are allocated to this session, plus a 15-minute health break.

Time	Workshop activity
	Session 4 **Action planning**
10 mins	Facilitator to introduce Session 4 by stating the session objective: to determine the actions necessary to increase your community's resilience to priority climate change risks and take advantage of opportunities.
	Use **Slide 7-1** to explain what is meant by a climate resilient action by illustrating the broad categories of potential actions.
30 mins	Group exercise: Facilitator to introduce the goal of the group exercise and outline what is involved. Use **Slide 7-2** through **Slide 7-5**. Detailed instructions are provided with the slides below.
15 minutes	**Health break** (in full-day workshop)
40 mins	After 30 minutes, facilitator to introduce the second part of the exercise. Participants will tackle the next part of the exercise in the same groups. Use **Slide 7-6** to explain the need to screen actions and the criteria for doing so. Use **Slide 7-7** and **Slide 7-8** to outline the information required for the most promising actions as an input to decision-making during implementation.
20 mins	Facilitator to ask each group to report back, providing an overview of their chosen actions along with the rationale. Other participants are invited to comment and discuss.

Table 1: Agenda with timings for Session 4 at the workshop

Section1: Overview of process

The objective of Session 4 at the workshop[1]—and this unit—is to identify and select the most promising actions to manage the identified priority risks and opportunities, with a view to establishing priorities for the climate resilience action plan ("Action Plan"). This is achieved through three, sequential tasks as shown in Figure 1. The three tasks are:

1: Build an inventory of actions needed to manage priority risks and opportunities—whether improvements to existing actions, new actions, or a combination of both;

2: Screen these actions to generate a short-list of the most promising actions for inclusion in the Action Plan—i.e., those actions anticipated to be most effective, most feasible, most acceptable, and most equitable; and

3: Collate some basic information on the most promising actions to support decision-making for implementation, including approximate capital and annual recurring cost estimates, timelines for implementation, as well lead personnel, departments or other groups.

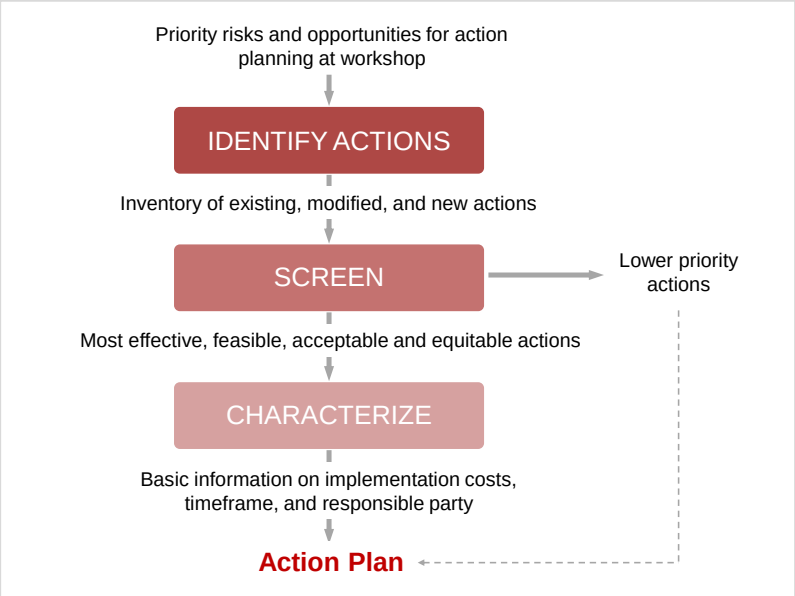


Figure 1: Climate Resilience Express action planning process

[1] Step 2 of the climate resilience planning process explained in Unit 1.

In the remainder of this unit you are provided with guidance on how to perform each of these tasks within the workshop, in order to identify actions for inclusion in the Action Plan.

If you want to know more about approaches to formulating actions to manage priority climate risks and opportunities, look at:

- ✓ Alberta Sustainable Resource Development, 2010, Climate Change Adaptation Framework Manual, Edmonton, AB. [Pages 27-29.]
- ✓ Black, R., et al, 2010, Adapting to Climate Change: A Risk-based Guide for Local Governments, Volume 1. [Pages 18-19.]
- ✓ Bowron, B. and Davidson, G., 2011, Climate Change Adaptation Planning: A Handbook for Small Canadian Communities, Canadian Institute of Planners, Ottawa, Canada. [Pages 33-38.]
- ✓ ICLEI, Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation ICLEI Canada, Toronto, ON. [Pages 46-57 and Worksheets 9 and 10.]
- ✓ UKCIP, Identifying Adaptation Options, UK Climate Impacts Program, Oxford, UK. [Pages 12-31.]

If you want to learn more about approaches to identifying and screening risk management actions in general, look at:

- ✓ Australian Government Attorney-General's Department, 2015, Australian Emergency Management Handbook Series, National Emergency Risk Assessment Guidelines: Practice Guide, Canberra, AUS. [Pages 56-67.]

Section 2: Task 1 - identify climate resilience actions

The goal of Task 1, for each priority risk and opportunity identified in Session 3 at the workshop, is to answer two questions:

1: What actions are currently planned or being implemented to manage the priority risk or opportunity?

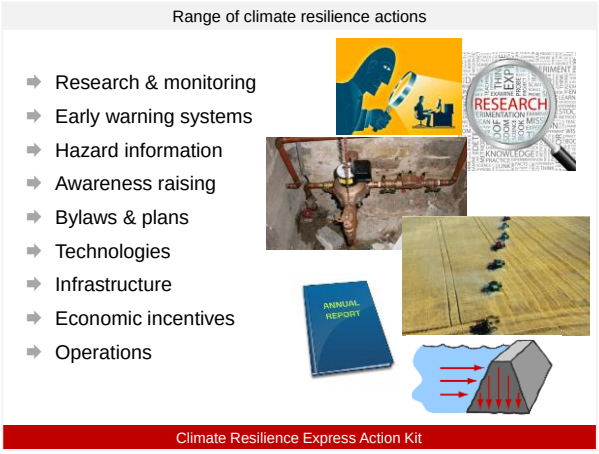
2: What improvements to these actions, or what new actions, are needed, or may be needed in the future, to more effectively manage the priority risk or opportunity?

These questions are answered at the workshop following the agenda in Table 1 and using, in sequence, **Slide 7-1** through **Slide 7-5**.

➡ Workshop slide: What are climate resilience actions

The starting point for the exercise is the list of 3-5 priority risks and opportunities identified for action planning by workshop participants at the end of Session 3.

Slide 7-1	Narrative



Slide 7-1 illustrates the range of potential types of actions that could be implemented to manage climate risks and opportunities.

Before participants begin the group exercise it is important that they realize effective actions to manage climate risks and opportunities are not limited to building infrastructure, like structural flood defenses, and can include a wide range of strategies.

Moreover, in many cases climate risks and opportunities are managed by making minor adjustments to things the community is currently doing.

ABC

Climate resilience actions: Actions taken by a community in response to actual or projected climate-related impact events that lead to a reduction in risk (e.g., avoiding the risk, reducing the likelihood, reducing the consequences, sharing the risk), or a realization of benefits.

You may want to highlight the presentation with a few examples from the following:

Research or monitoring:

Includes actions to help improve your understanding of a specific risk and how it might be affected by climate change, such as monitoring your water sources or leakage in your water supply system.

Early warning systems:

Includes actions to warn residents and local businesses of potential risks should they occur, such as a wildfire or flood threatening the community.

Hazard information:

Includes actions to increase your knowledge of exposure to a particular risk, such as flood or wildfire hazard maps.

Awareness raising:

Includes actions to help residents and businesses better understand either the nature of a particular risk or opportunity, or the need for action—e.g., education campaigns, mandatory or voluntary climate risk disclosure in real estate transactions, etc.

Bylaws and plans:

Municipal Development Plans, Area Structure Plans and Parks, Open Space and Trails Master Plans could be updated to include climate resilience policies, such as consideration of climate changes in future development decisions.

Technologies:

Includes the purchase and use of technologies to manage risks and opportunities, such as smart water meters and leakage detection devices to address water supply shortages, roof sprinkler systems to address wildfire, etc.

Infrastructure:

Includes “hard” (structural) and “soft” engineered solutions to manage risks and opportunities—e.g., scaling-up flood protection measures, changing the design of storm-water systems, building more resilient buildings, installing irrigation systems, creating wetlands or using green roofs to manage flood risk.

Economic incentives:

Includes insurance products and the use of economic instruments and other financial incentives to encourage the adoption of risk mitigation technologies or practices—e.g., a rebate program to support residents in purchasing water-saving appliances or technologies, or fire-proofing their home and property.

Operations:

Includes actions to modify day-to-day operational tasks, such as increasing the frequency of storm-water maintenance and cleaning, or road and sidewalk clearing and salting.

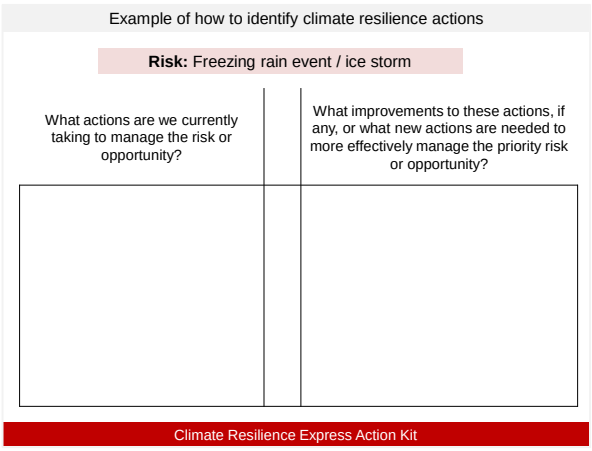
The use of economic instruments to promote the adoption of sound climate resilience actions is an emerging area of research. If you want to know more the use of economic instruments to manage priority climate risks and opportunities, look at:

- ✓ ACT, 2015, Paying for Urban Infrastructure Adaptation in Canada: An Analysis of Existing and Potential Economic Instruments for Local Governments, Adaptation to Climate Change Team (ACT), Simon Fraser University, Vancouver, BC.
- ✓ Boyd, R., et al, 2015, Economic Tools for Climate Change Adaptation: Private Real Estate Decisions, All One Sky Foundation, Calgary, AB.
- ✓ Hotte, N. and Nelson, H., 2015, Economic Instruments for Adaptation to Climate Change in Forestry, Forestry, University of British Columbia, Vancouver, BC.

➡ Workshop slides: Identifying climate resilience actions

Slide 7-2 through **Slide 7-5** outline the small group exercise for developing actions to manage the identified priority risks and opportunities. This approach worked best at the pilot workshops.

Slide 7-2



Narrative

Slide 7-2 shows the recommended framework for approaching the action planning exercise.

To illustrate the process the next few slides present an example for the recurring risk of freezing rain / ice storm.

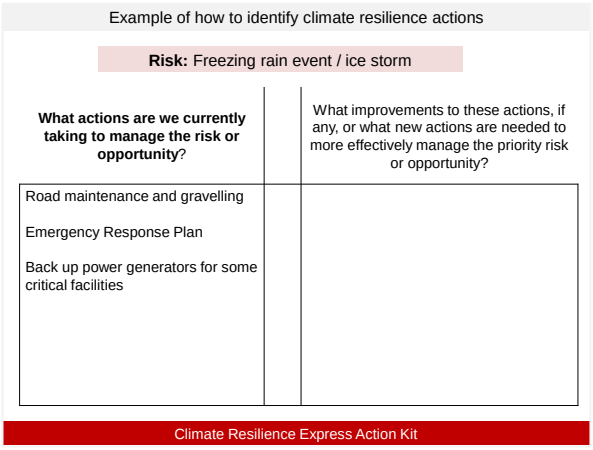
Instructions for the exercise are provided below, but it essentially involves:

1 Listing actions that the community is currently taking to manage freezing rain / ice storm.

2 Suggesting how those actions could be improved to more effectively address the risk, if necessary.

3 Identifying new actions that may be needed to more effectively address the risk.

Slide 7-3



Narrative

First, ask the question:

What actions are we currently taking to manage freezing rain events / ice storms?

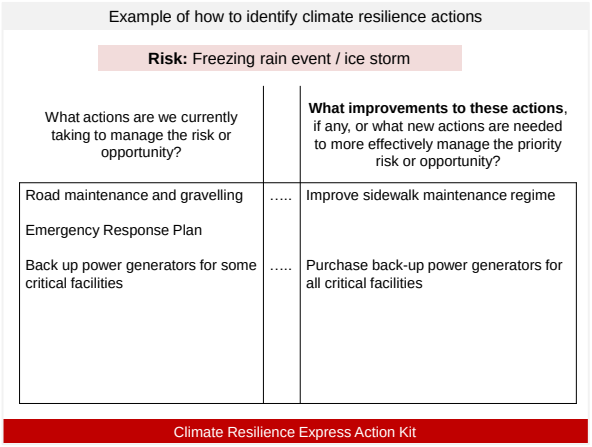
Current actions might include, for example:

1 Road maintenance and gravelling.

2 An Emergency Response Plan that covers these events.

3 The presence of back-up power generators at some critical facilities.

Slide 7-4



Narrative

Once you have listed actions the community is currently taking to managing freezing rain events / ice storms, next ask the question:

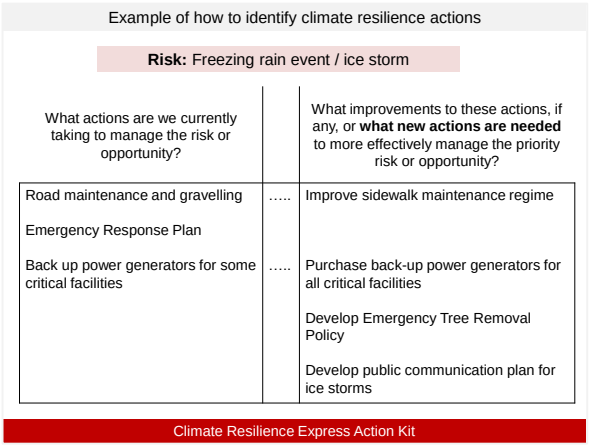
What improvements to these actions are needed, if any, to more effectively manage freezing rain events / ice storms?

Improvements to current actions might include, for example:

1 Improving the sidewalk maintenance regime.

2 Purchasing and installing back-up power generators at all critical facilities.

Slide 7-5



Narrative

Finally, ask the question:

What new actions are needed, if any, to more effectively manage freezing rain events / ice storms?

New actions might include, for example:

1 The development of an Emergency Tree Removal Policy.

2 Developing a public communication plan for freezing rain events / ice storms.

Examples of potential climate resilience actions identified by the four pilot communities are listed in Table 2. To provide participants with some ideas and to help them see the level of detail sought at this point, you could print this table and distribute it to each group.

First, identify which tables in the room, or which break out rooms if available, will work on which priority risk or opportunity. Clearly state which table or room will work on which risk or opportunity.

Second, ask participants to self-select into a group, based on their expertise, area of responsibility at work, or interest. Aim for groups of 3-5 people.

Instruct each group to take a sheet of flip chart paper and divide it into two columns—one for each question—so it looks like **Slide 7-2**. Write their risk or opportunity at the top.

Instruct each group to answer in sequence:

1. What actions are currently planned or being implemented to manage that risk or opportunity? List the actions in the first column.
2. What improvements to these actions or new actions are needed, or may be needed in the future, to more effectively manage the priority risk or opportunity? List the actions in the second column.

Remind participants to think broadly—recall the range of different types of actions a community can take to manage priority risks or opportunities (**Slide 7-1**).

After 30 minutes, stop the brainstorming around actions, and introduce the second part of the exercise (Task 2 below). Participants should stay in their groups.

Total time for this exercise is 30 minutes.

Flip chart paper

Markers

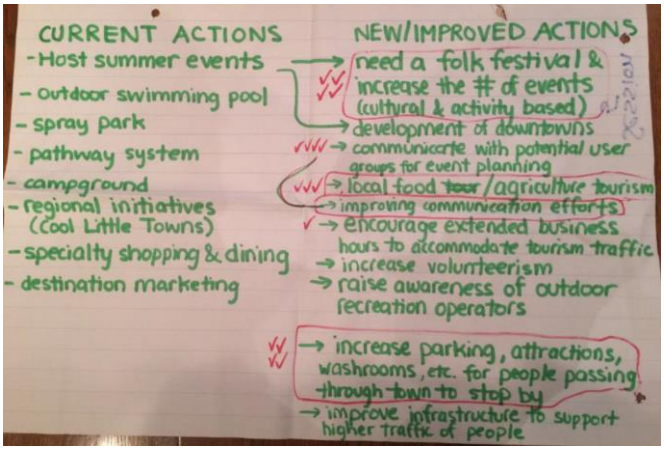


Figure 2: Example of completed flip chart sheet for identifying climate resilience actions

Table 2: Examples of potential climate resilience actions identified by the four pilot communities

Risk	Examples of climate resilience actions
Stormwater and creek flooding	○ Educate residents about storm-water drainage impacts and actions ○ Develop a bylaw to address residential discard of grass and yard clippings onto streets and into catch basins ○ Slope and clean critical storm-water drainage areas ○ Update storm-water engineering design standards to reflect current and projected future rainfall intensities ○ Upgrade (replace, resize or both) storm-water pipes based on updated and projected future rainfall intensity
Freezing rain / ice Storm	○ Review and update the disaster services policy ○ Review and update the snow and ice removal policy ○ Educate residents about impacts and actions to reduce impacts of freezing rain and ice storms ○ Improve road and sidewalk safety with additional lighting and sandboxes at strategic locations ○ Install backup generators at critical facilities including fire halls, designated emergency operations centers and water treatment facilities ○ Coordinate with the local utility provider to ensure fast and effective response to power outages caused by downed power lines
Water supply shortage	○ Develop a comprehensive Water Plan including an assessment of current water supply sources, public notification requirements, and potential partnerships with industry ○ Target future economic development towards low-water-use businesses ○ Conduct a study of potential future water sources ○ Update bylaws to reflect water usage and appropriate pricing for water use ○ Implement automatic water restrictions throughout the summer season ○ Develop water conservation education materials for residents and visitors ○ Encourage water users to utilize non-potable water for all permitted uses
Extreme wind storm	○ Increase budget and resources for tree pruning to remove dangerous limbs ○ Review current practices and develop a plan to reduce snow build-up and drifting on roads ○ Purchase a satellite phone(s) for emergency response communication ○ Update the Special Events Application Form to require applicants to have an emergency response and evacuation plan, including management of potential wind storms
Crop and forage loss from moisture deficit	○ Conduct research and experimentation with trapping spring runoff to provide additional irrigation for crops ○ Identify wetlands to preserve, and techniques for temporary water storage using wetlands

Risk	Examples of climate resilience actions
Loss of wetlands	○ Update the Municipal Development Plan and subdivision standards to ensure retention of wetlands in new developments ○ Conduct surface and groundwater hydrology mapping to better understand wetlands and water availability ○ Educate residents about the importance of wetlands and how they are being impacted ○ Develop a wetland monitoring and maintenance program to track wetland loss and restore natural wetlands
Wildfire	○ Enhance community education efforts about wildfire risks and mitigation ○ Update municipal landscaping standards to include requirements for planting fire resistant tree species ○ Purchase additional equipment to support wildland firefighting ○ Ensure generator backup on all pumping stations for wildfire water supply ○ Conduct prescribed burns on lands adjacent to the community ○ Enhance interface fuel reduction and vegetation management efforts ○ Update the Land Use Bylaw to include incentives for homeowners and developers to utilize FireSmart principles ○ Enhance wildfire forecasting, smoke modelling and fire hazard rating ○ Identify a defensible space around the Town boundaries ○ Improve response times by cross-utilizing firefighting equipment and personnel with adjacent communities and businesses ○ Hold additional table top exercises with all agencies to plan for large-scale wildfire ○ Upgrade local airport runways to facilitate landing of larger fixed-wing aircraft for water bombing ○ Enhance the Regional Municipal Emergency Plan to deal with increasing wildfire risk
Access disruptions from loss of winter ice roads	○ Purchase new and better products for road maintenance and de-icing ○ Improve ferry infrastructure and cross-river access ○ Obtain remote monitoring technology to increase awareness of potential transportation and access disruptions ○ Improve local medical facilities to avoid patients being stranded by transportation and access disruptions
Opportunity	**Examples of climate resilience actions**
Increase in summer tourism	○ Increase the number of cultural and activity-based events offered (e.g. folk festival) ○ Improve communications with potential event hosts and organizations to enhance event offerings ○ Explore opportunities to enhance summer tourism through local food sales and agri-tourism ○ Invest in facilities and infrastructure for tourists such as parking, washrooms and new attractions

Section 3: Task 2 - screen actions

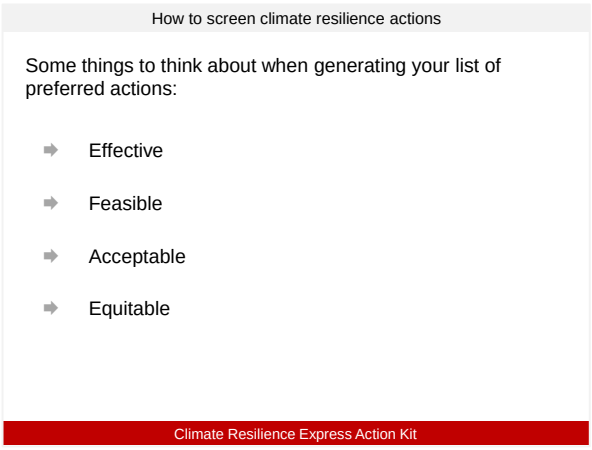
During Task 1 each group will have identified a range of climate resilience actions. Given the reality of limited (financial and human) resources faced by most communities, it is nearly always necessary to refine or prioritize actions and identify a preferred action or set of actions.

In Unit 1 we explained that the Climate Resilience Express employs a phased approach to the risk and opportunity assessment. The same phased approach also underlines the prospective evaluation of potential climate resilience actions. The evaluation of actions starts with a simple, qualitative screening assessment. The purpose of the screening assessment is to reduce the longer list of identified actions down to a workable short-list to take forward. More detailed, qualitative and quantitative analysis can subsequently be used to evaluate the smaller sub-set of actions, as warranted; this is discussed more in Unit 8.

The goal of Task 2 is thus to screen the actions identified during Task 1 to generate a list of preferred actions—specifically, which actions are most effective, feasible, acceptable and equitable.

➡ Workshop slide: Screening the identified actions

Slide 7-6 outlines the small group exercise to help participants identify a short-list of preferred actions.

Slide 7-6	Narrative
	**Slide 7-6** identifies the criteria each group should consider when screening actions to generate a short-list of preferred actions. **Effective**: Will the action significantly reduce the likelihood or consequences of a risk, or ensure the community benefits from an opportunity? **Feasible**: Are the necessary human, legal, knowledge, technical, financial and staff resources available to implement the action? **Acceptable**: Is the action likely to be supported by residents, decision-makers, and elected officials? **Equitable**: Are the costs and benefits of the action equitably distributed across the community, or does it place an unfair burden on a particular group or sector? Instructions for this part of the exercise are provided below.

While the group exercises for Task 2 and Task 3 are described separately, you may combine them at the workshop. That is, you could provide the instructions to both group exercises at the same time, allowing participants to simultaneously screen actions and characterize their top 3-5 actions. The agenda in Table 1 assumes both exercises are combined.

Use **Slide 7-6** to introduce the exercise, which participants will complete in the same groups they were in for Task 1.

Start by explaining the need for screening actions: the screening of actions is necessary due to the reality of scarce resources in most communities. It is unlikely that your community will have the staff time or budget required to implement all identified actions. As a result, it is nearly always necessary to screen actions against a number of criteria, to generate a short-list of preferred actions.

Instruct each group to review their list of identified actions, and identify 3-5 actions that perform best against the four criteria listed in **Slide 7-6**.

Remind participants that the short-list of preferred or top actions will form the basis of the community's climate resilience action plan.

Total time for this exercise is 20 minutes, including the introduction of the exercise.

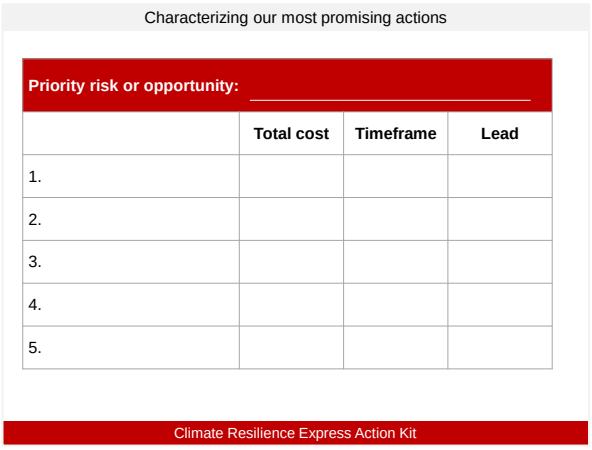
Section 4: Task 3 – characterize preferred actions

The goal of Task 3 is to collect some basic information on the preferred set of actions to support decision-making during implementation, including:

- Total implementation costs (i.e., capital and first-year recurring costs);
- Timelines for implementation; and
- Staff, departments or other groups likely to lead implementation.

➡ Workshop slides: Characterizing the top actions

Slide 7-7



Narrative

Slide 7-7 shows the worksheet that each group is asked to complete for their top 3-5 actions.

For each of their preferred actions, groups will provide basic information on:

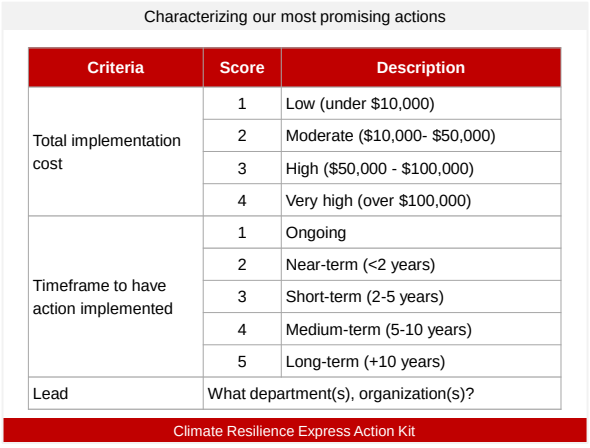
1 Total implementation costs, which includes first-year investment costs (where relevant) plus first-year annual recurring costs (where relevant).

2 The timeframe for completing implementation – how soon does the action need to be operational.

3 Staff, departments, or other groups likely to lead implementation.

To assist groups with defining costs and timeframes consistently, a qualitative scale is provided (**Slide 7-8**).

Slide 7-8



Narrative

Slide 7-8 shows the qualitative scale provided to each group to help them consistently define implementation costs and timeframes.

There are four categories for total implementation costs, and 5 categories for implementation timeframes.

As noted above, this group exercise could be combined and performed simultaneously with the exercise for Task 2.

Depending on the size of your community, and your preference, you may wish to include additional information in the characterization of actions or modify the descriptors for total cost, timeframe, or both. For example, in a larger community, a “very high” cost could be described as over $500,000 or over $1 million, rather than over $100,000. In this case the intermediate dollar values on the 4-point scale would also need to be adjusted accordingly.

Use **Slide 7-7** to introduce the exercise, which participants will complete in the same groups.

Start by explaining the need to collect some basic information on the top 3-5 actions: to support decision-making and priority setting during development and implementation of the Action Plan.

Instruct each group to use the blank worksheet provided to indicate, for each preferred action, the total implementation cost, the timeframe to complete implementation, and the staff, department, or other group likely to lead implementation.

First, in the space provided, ask each group to write down the priority risk or opportunity that the actions address. Next, in each row, provide a full description of the action, a score from 1-4 corresponding to estimated total implementation costs, a score from 1-5 corresponding to the anticipated implementation timeframe, and the name of the likely group to lead implementation within the community.

Stop the exercise after 20 minutes. Ask each group to report back in plenary, providing an overview of their 3-5 chosen actions along with the rationale for their selection. You should encourage groups to explain why they chose the actions presented, with reference to the screening criteria on **Slide 7-6**. Invite other participants to comment and discuss.

Total time for this exercise is 20 minutes, including the introduction of the exercise. Also, allow a further 20 minutes for the groups to report back.

Worksheets for recording the scores for total cost and implementation timeframe, and lead department or organization (one per group)

Pens

A blank worksheet for recording the required information on preferred actions is provided in Appendix M.

You now have a list of promising actions for managing a selection of priority climate risks and opportunities facing your community.

You are now ready to prepare a climate resilience Action Plan for your community. Go to Unit 8.

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