City of Kelowna

# Climate Vulnerability and Risk for Agriculture

Presentation to the AAC, September 8

# Okanagan Climate Projections

WARMER TEMPERATURES YEAR ROUND

LONGER GROWING SEASON

HOTTER SUMMERS

INCREASED PRECIPITATION EXCEPT IN SUMMER

DRIER SUMMERS

SHIFTING SEASONS

# 2018 Climate Action Plan

- 5-year strategy to reduce emissions
- Nearing end of life
- New strategy to focus on:

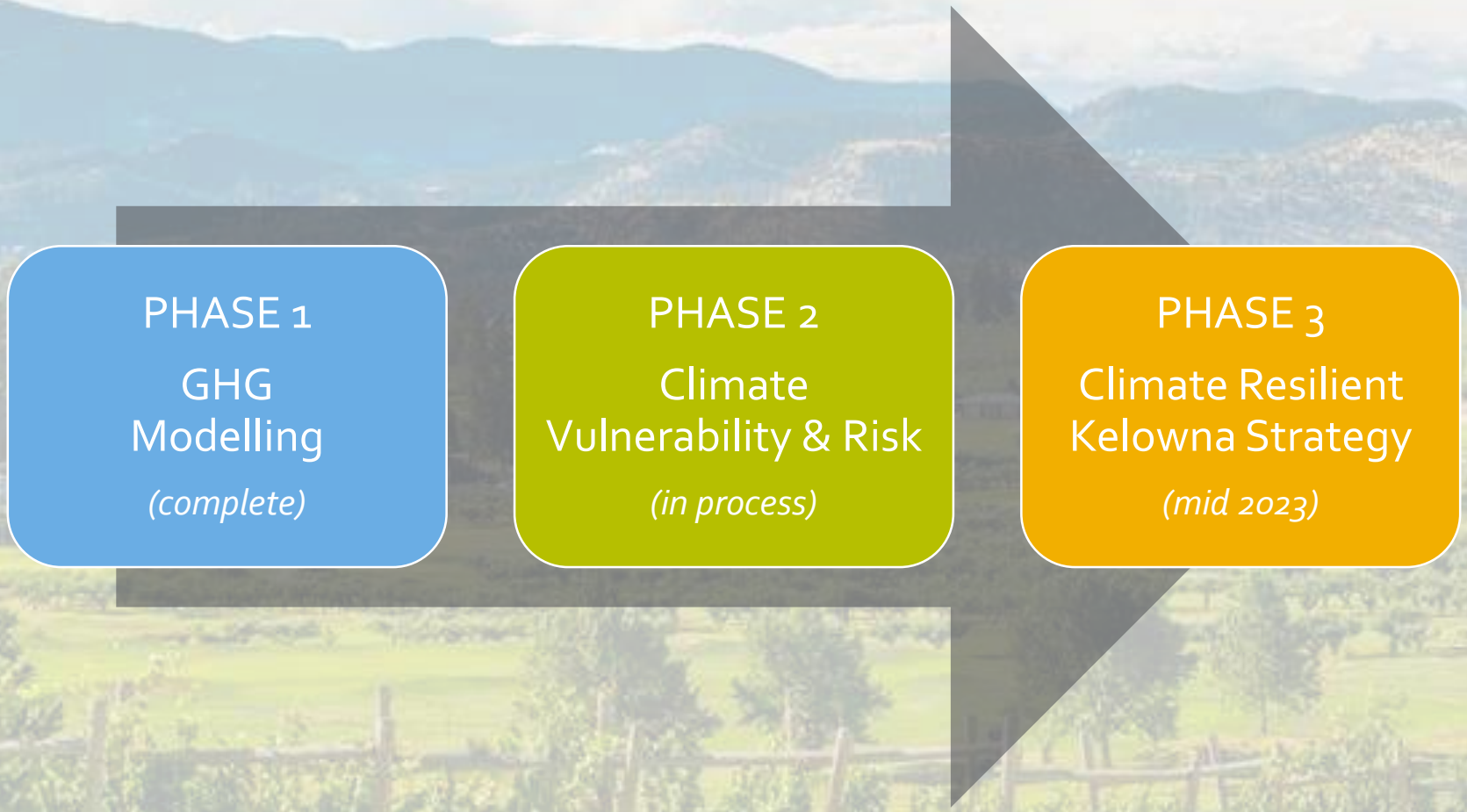
**Reducing emissions**

**+**

**Adapting to climate change**

**CLIMATE RESILIENT KELOWNA**

# Climate Resilient Kelowna Strategy



# PHASE 1: GHG Modelling


- Technical assessment
- Modelled how community emissions could reduce to align with senior government and IPCC targets
- Conclusion: Council directed staff to update targets to:

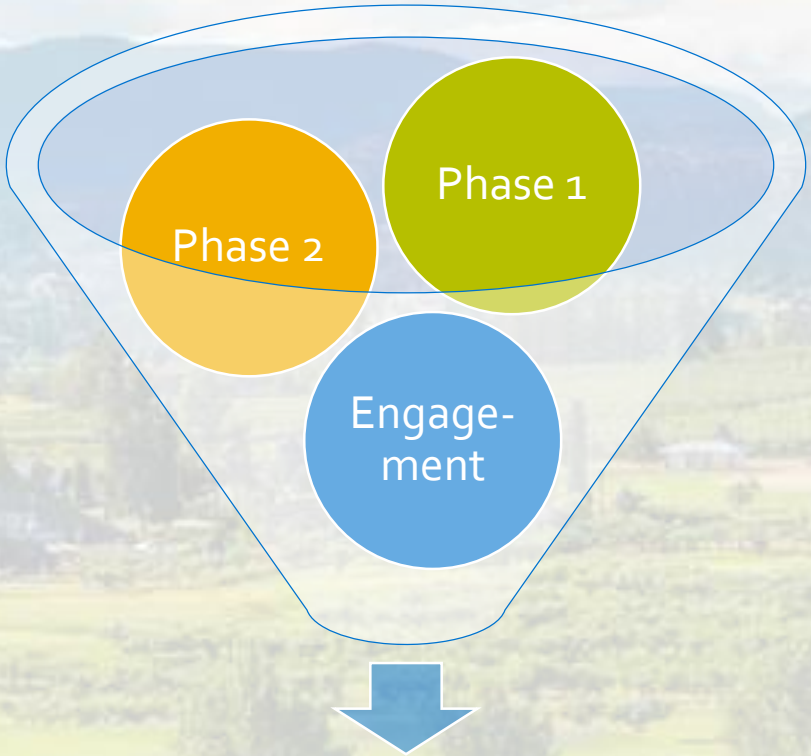
  - **40% emissions reduction by 2030**
  - **Net zero emissions by 2050**

# PHASE 2: CVRA


- Technical analysis to examine
  - Climate changes Kelowna is exposed to
  - Community's sensitivity to these changes
  - Potential impacts
  - Local capacity to adapt

- Results to inform other plans
  (e.g. 2040 Infrastructure Plan)

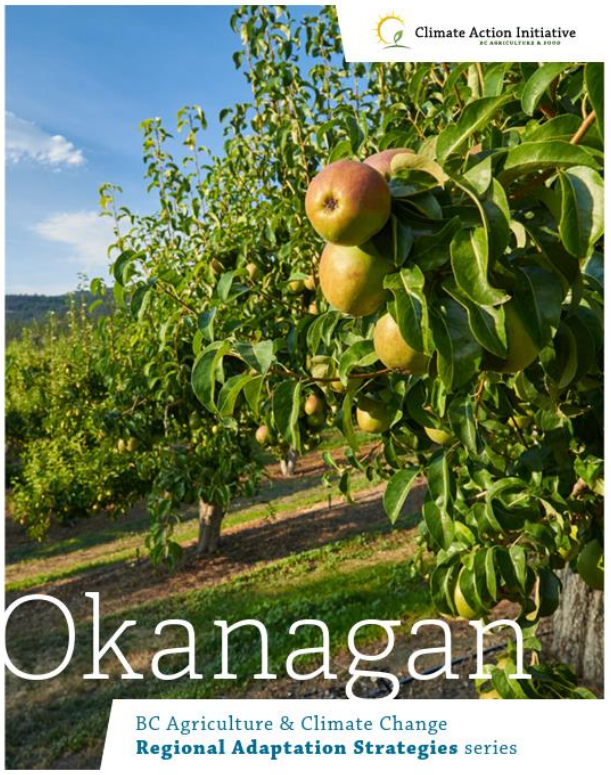
# PHASE 3: The Strategy


**Climate Resilient Kelowna Strategy**

# BC Agriculture & Climate Change

- Strategy released for Okanagan in 2016
  - Priority climate hazards affecting Okanagan agriculture
  - Climate hazards impacts to agriculture
  - Strategies and actions for priority impact areas
- Update released in 2018
  - Summarized progress to date



# AAC Input: Priority concerns

| Projected climate hazard | Top priorities for Okanagan Strategy | Top priorities for Kelowna |
|---|---|---|
| Warmer & drier summers | ✓ | |
| Extreme precipitation events (includes flooding) | ✓ | |
| Changing crop suitability ranges | | |
| Changes in pests, diseases, invasive species | ✓ | |
| Increase in extreme heat events | | |
| Increasing variability (e.g. unpredictable seasonal conditions) | | |
| Increasing wildfire risk | ✓ | |
| Changing ecosystems and wildlife populations | | |
| OTHER CONCERNS? | | |

# AAC Input:

How has climate change already impacted your agricultural practices?

# AAC Input: Climate Change Challenges (Schedule B)

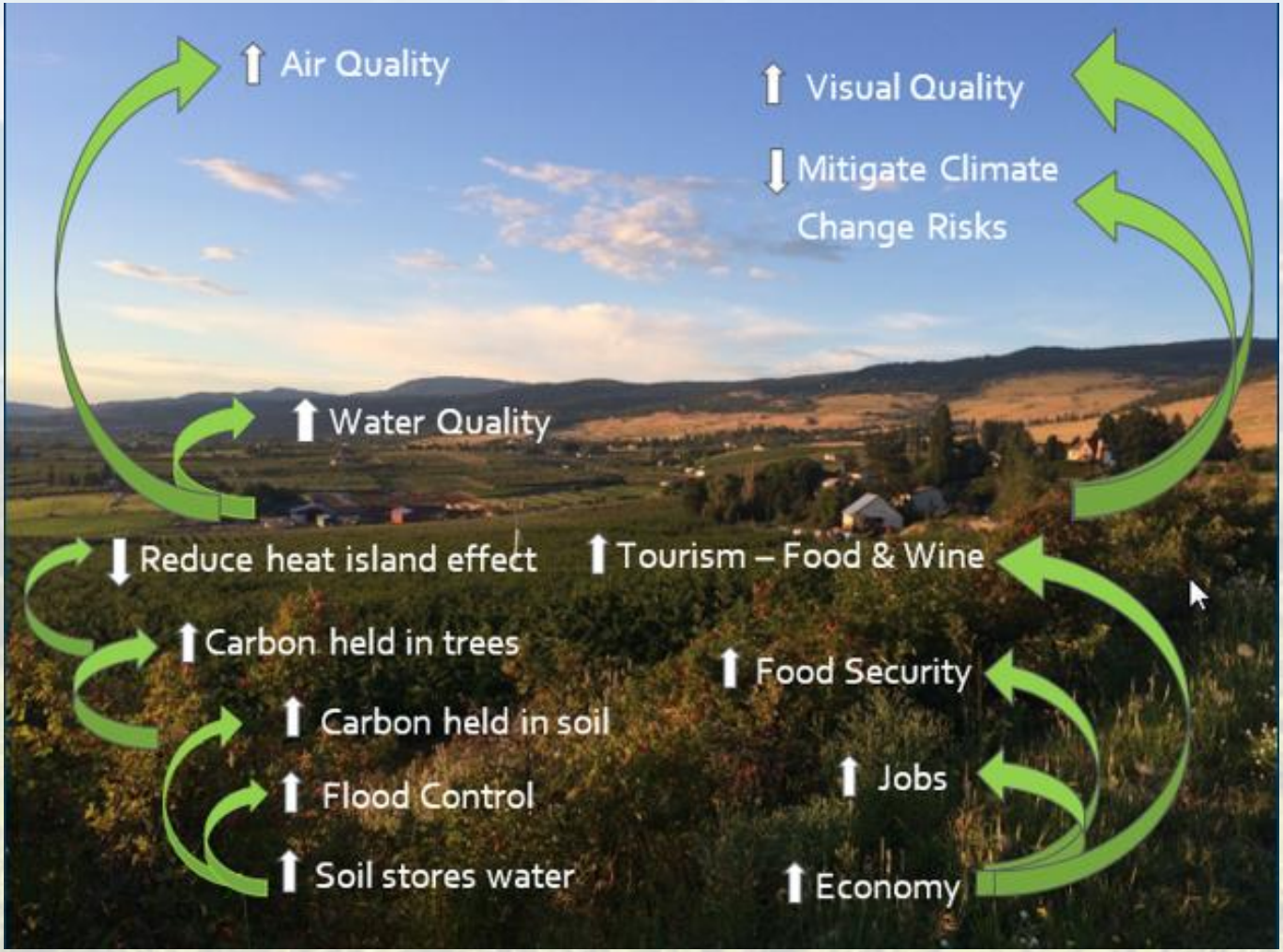
1. Are any agricultural impacts missing?

2. Are any agricultural impacts not applicable to Kelowna?

## SCHEDULE B – Potential Agricultural Impacts Due to Climate Change

| Projected climate effect | Potential Agricultural Impacts |
|---|---|
| **Warmer & drier summers:**<br>• More frequent and extended dry periods in summer<br>• Lower summer stream flow levels (more rapid and earlier spring melt) | • Reduction in water supply availability<br>• Increase in irrigation demand and draw down of water storage<br>• Impacts to crop yields and quality (particularly nonirrigated crops)<br>• Increase in plant stress/damage<br>• Impacts to livestock health/productivity<br>• Changes to timing and use of rangelands for grazing cattle<br>• Increase in costs associated with water (e.g., water supply infrastructure) |
| **Extreme precipitation events:**<br>• Increase in runoff<br>• Potential for more rain-driven flood events<br>• Increase in excess moisture | • Increase in risk of soil erosion and landslides<br>• Damage to riparian areas (e.g., erosion, washouts, silting)<br>• Damage to infrastructure (e.g., dams)<br>• Increase in site-specific flood risk and drainage issues<br>• Reduced windows for crop development and seasonal tasks (pollination, planting, germination and harvesting)<br>• Negative impact on crop productivity and quality<br>• Increase in crop damage and losses (e.g., hail storms) |
| **Changing crop suitability ranges:**<br>• Changing seasonal conditions<br>• Changing production windows | • Increase in suitability of late maturing varieties and decrease in suitability of early maturing varieties<br>• Expansion or relocation of some operations northward and to higher elevations<br>• Changes to irrigation needs and possible land use competition<br>• Inconsistent yield and quality of previously suitable crops<br>• Difficulty in identifying suitable varieties for crops with long time horizons as change continues (e.g., tree fruit) Potential opportunities:<br>• Increase in suitability for new varieties and new crops<br>• Opportunity for season extension and additional harvest of certain crops |
| **Changes in pests, diseases, invasive species:**<br>• Increasing winter survival rates<br>• Increasing number of cycles in a year<br>• Introduction of new pests and diseases | • More frequent and increased damage to crops<br>• Impacts to livestock health due to pests/diseases<br>• Reduction in forage quality<br>• Increase in costs for management of pests, diseases, invasive species<br>• Less effective pest models (i.e., pest models calibrated for past climate) |

# Agriculture and Climate Change



# AAC Input:

How is/will the agricultural sector adapt to climate change?

# AAC Input: Local government considerations for agricultural sector to adapt

**From the 2017 Agriculture Plan**

- **Action 2a**: Evaluate and monitor water pricing with the goal of sustaining agriculture
- **Action 2b**: Include agriculture in municipal climate change strategies and plans
- **Action 2c**: Create consistent water restriction /drought level messaging
- **Action 2d**: Work with the RDCO to enforce the Noxious Insect Control bylaw and Noxious Weed and Grass Control Bylaw
- **Action 2e**: Work towards ensuring sustainable, redundant and secure water for all agriculture
- **Action 2f**: Develop emergency plans (i.e. wildfire, drought) that are inclusive of agriculture
- **Action 3d**: As part of the Healthy City Strategy, complete the Healthy Food Systems theme area for Kelowna
- **Action 5a**: Continue to support OK Sterile Insect Release program (City support role)
- **Action 5e**: Encourage farmers to work with the Province to manage troublesome wildlife (City support role)


Questions?
City of
Kelowna

# Background: Okanagan Strategy


*Graphic representation of progress (2016-2018) within each strategy in the Okanagan Adaptation Strategies.*

| | | not started | partially addressed | fully addressed |
|---|---|---|---|---|
| **Strategy 1.1** | Support the agriculture sector's participation in drought planning | | | |
| **Strategy 1.2** | Develop and implement agriculture-specific drought outreach | | | |
| **Strategy 1.3** | Provide knowledge & technology transfer for agricultural water management | | | |
| **Strategy 1.4** | Undertake applied research and demonstration for practices and technologies to improve resilience to hot and dry conditions | | | |
| **Strategy 1.5** | Undertake education and outreach (for Okanagan residents) to increase understanding of agricultural water user and climate change | | | |
| **Strategy 2.1** | Enhance cross-commodity approaches to monitoring and management for critical insect pests | | | |
| **Strategy 2.2** | Improve linkages between climate change projects and weather and pest monitoring data | | | |
| **Strategy 2.3** | Strengthen partnerships and knowledge transfer for management of invasive species | | | |
| **Strategy 3.1** | Improve processes and supports for individual producers to implement runoff and erosion management and riparian rehabilitation activities | | | |
| **Strategy 3.2** | Strengthen cooperative runoff/erosion management and riparian on individual watercourses | | | |
| **Strategy 3.3** | Support knowledge transfer for effective management of runoff and erosion and riparian areas | | | |
| **Strategy 4.1** | Support cooperative approaches to fuel management activities | | | |
| **Strategy 4.2** | Support individual operations with planning for wildfire preparedness and mitigation | | | |
| **Strategy 4.3** | Support regional-scale planning and implementation for wildfire preparedness and mitigation [2] | | | |