CLIMATE PROJECTIONS FOR THE CAPITAL REGION

APRIL 2017

**General Climate Projections**

The capital region can expect noticeable changes to our climate in the coming decades. At a high level, the region can expect:

1. Warmer winter temperatures
2. Fewer days below freezing
3. More extreme hot days in summers
4. Longer dry spells in summer months
5. More precipitation in fall, winter, and spring
6. More intense extreme events

These changes will not always happen consistently over the region or over time, as seasonal and yearly variations will occur. For most variables, projected change appears somewhat different from the past by the 2050s. By the 2080s, projections indicate substantial changes, resulting in a very different lived experience than the capital region of today. This is particularly true for the temperature-related variables, as the projected change is larger, compared to the year-to-year variability, for temperature than for precipitation.

 EXECUTIVE SUMMARY

Temperatures in the capital region are warming. Global climate models project an average annual warming of about 3°C in our region by the 2050s. While that may seem like a small change, it is comparable to the difference between the warmest and coldest years of the past. The purpose of this report is to quantify, with the most robust projections possible, the related climate impacts (including changes to climate extremes) associated with warming. This climate information will then inform regional vulnerability and risk assessments, decision-making, and planning in the capital region, with a goal of improving resilience to climate change. For this reason, this report focuses on the “business-as-usual” emissions scenario and the 2050s timeframe. By the end of the 21st century, projected warming and associated impacts are even larger. However, the amount of warming by the end of the century will depend more highly on the amount of greenhouse gases (GHG) emitted and captured over the next few decades.

As our climate warms, our region can expect the number of summer days above 25°C to triple, from an average of 12 to 36 days per year. The 1-in-20 year hottest day’s temperature is projected to increase from 32°C to 36°C by the 2050s. These rising temperatures will result in a 22% increase in the growing season length and a 49% increase in growing degree days by the 2050s. This projected warming will have implications for regional ecosystems, watersheds, agriculture and horticulture, and communities. Warmer winters mean the region will experience a 69% decrease in the number of frost days, significantly impacting the natural environment, and heating demand for buildings will decrease. The “new normal” is a climate that is almost entirely frost-free at lower elevations.

Annual precipitation projections are a modest 5% increase by the 2050s and 12% by the 2080s. Projections indicate the fall season will see the greatest increase in precipitation. This precipitation is expected during increasingly extreme events, with about 31% more precipitation on very wet days (95th percentile wettest days precipitation indicator) and 68% more on extremely wet days (99th percentile wettest days precipitation indicator). Despite the projected increased intensity of wet events, the amount of rain in summer is expected to decrease by about 20%, while the duration of dry spells will lengthen by about 20%.

Most of the projected climate changes described in this report will be felt more or less uniformly throughout the region. Certain impacts, however, may differ substantially between the Eastern Region (where the majority of the population and agriculture is situated, and the Southern Gulf Islands), the Western Region (Juan de Fuca Electoral Area), and the Greater Victoria Water Supply Area. In particular, the wettest areas in the mountains on the west coast will become even wetter. However, with warmer temperatures and more precipitation falling as rain, the April 1 snowpack depth, at the higher elevations in the region, is projected to decrease by more than 90% by the 2080s.

This document is intended to support decision making throughout the region and to help community partners better understand how their work may be affected by our changing climate.