

# GLOBAL WARMING IMPACTS IN THE NORTHWEST

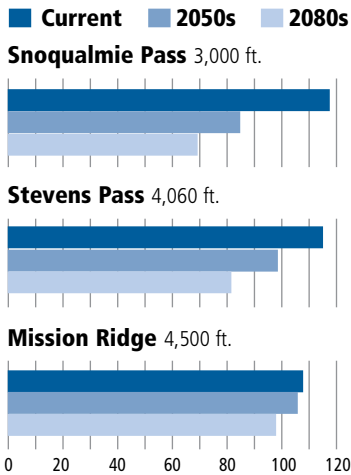
What more carbon dioxide and warmer temperatures may mean for the region:

## MOUNTAINS

- ▶ Glaciers continue to melt, contributing to a rising sea level.
- ▶ More precipitation falls as rain rather than as snow, resulting in less snow for skiing.
- ▶ Less snowpack to melt in the spring and replenish streams and lakes.
- ▶ Snowpack melts earlier in season, reducing summer water supplies – including water for drinking and irrigation.

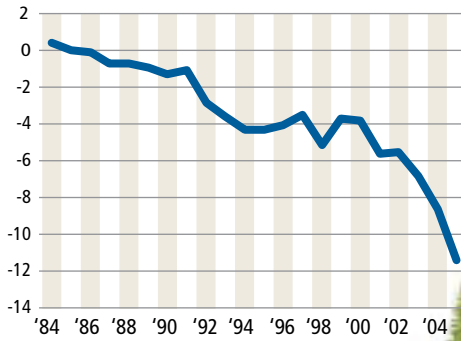
### Projected ski seasons

Number of days open per season



## North Cascades glacier decline

Annual average glacier depth converted from snow and ice into its equivalent in water, measured in meters



## OCEANS, LAKES AND STREAMS

- ▶ Less water in streams reduces hydro-electric power production in summer.
- ▶ Warmer water temperatures stress cold-water fish, such as salmon and trout.
- ▶ Carbon dioxide makes oceans more acidic, disrupting plankton populations at the base of the food chain.
- ▶ More evaporation causes more intense and frequent rain storms.
- ▶ Oceans warm and expand, raising sea level.
- ▶ Increased flooding with rising sea levels.

Sources: University of Washington Climate Impacts Group; North Cascade Glacier Climate Project; Washington Economic Steering Committee and the Climate Leadership Initiative; Institute for a Sustainable Environment at the University of Oregon

## FORESTS

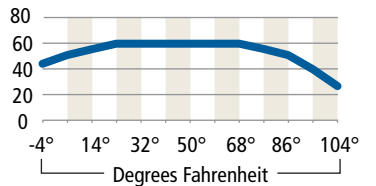
- ▶ Drier, hotter summer conditions lead to more forest fires.
- ▶ Tree-killing bugs reproduce faster and spread farther.
- ▶ Increased drought stress makes trees more vulnerable to insects and disease.
- ▶ Decreased growth in trees where water is limited.
- ▶ In the longer term, fewer trees for logging, wildlife and carbon dioxide absorption.

## FARMS

- ▶ Snowpack melts earlier, reducing summer water supplies for irrigation.
- ▶ A longer growing season and faster growing plants (where irrigation is available).
- ▶ Cows produce less milk in warmer temperatures.

### Dairy cows and hot weather

Estimated pounds of milk per day



NOTE: Estimates are for a 1,300-pound cow producing an average of 60 pounds of 3.7% fat milk per day.

## CITY

- ▶ Shorelines erode with rising sea levels.
- ▶ With rising seas, cities spend to redesign waterfronts.
- ▶ More mold in homes (caused by increased flooding) and more pollen (from rapidly growing plants) result in more cases of asthma and allergies.
- ▶ More cases of West Nile virus owing to more mosquitoes.
- ▶ More heat-related illnesses and deaths, fewer cold-related illnesses and deaths.

### Seattle water supply and demand projections

In millions of gallons per day, assumes no change in water management

