

Boise residents may be noticing differences in the Treasure Valley's climate: hotter days in the summer, lower water levels in Lucky Peak Reservoir in the fall and winter recreation starting later in the season. Residents may also be more aware of increased frequency and severity of wildfires that have impacted our air quality. These changes in our local climate are consistent with trends occurring across the country and around the world.

To prepare for future changes and enhance our resiliency, the City of Boise initiated the Boise Climate Adaptation Assessment. Researchers from the University of Idaho, Boise State University and the Langdon Group, developed the assessment to provide the city with a understanding of local climate impacts. Details from the assessment allowed the City of Boise to begin planning for impacts to decrease our vulnerability to climate changes.

CLIMATE RISK ASSESSMENT



The assessment determines the most significant climate change related impacts that Boiseans will experience over the next 60 years. Based on scientifically-credible climate models, the following impacts were examined:

- ▶ **HEAT STRESS DAYS:** The frequency of Moderate Risk days (heat index greater than 91 degrees F) for heat extremes will increase from a historical baseline of around 16 days per summer to 66 days per summer by the mid-21st century. High Risk days (heat index greater than 103 degrees F) have been exceedingly rare in Boise; however, such days will become more common during the 21st century.
- ▶ **HEAVY PRECIPITATION DAYS:** The occurrence of these events (daily total exceeding 0.7") is projected to increase in Boise by approximately 50% by the early 21st century and nearly 100% by the mid-21st century.
- ▶ **IRRIGATION DEMANDS:** Climate change will increase evaporative demand and irrigation requirements during the warm season. An increase of approximately 2 inches of irrigation is projected by the early 21st century, and 4 inches of irrigation by the mid-21st century.
- ▶ **DROUGHT FREQUENCY:** Moderate drought which currently occurs in 1 of every 4 years, on average, is projected to occur in 1 of every 2 years, on average, by the mid-21st century. Drought frequency is projected to increase despite increases in heavy precipitation events due to increased evaporative demand with warming. Likewise, exceptional drought that historically occurs, on average, 1 out of every 12 years, is projected to occur in nearly 1 of every 3-4 years by the mid-21st century.
- ▶ **POOR AIR QUALITY DAYS:** The duration of the summer period under which forests and high desert landscapes are predicted to be critically dry is projected to increase 40-100%, and the odds of very large fires in the Boise airshed region is projected to increase by 400% by the mid-21st century. These changes suggest increased potential for chronic air quality problems within the metropolitan area.
- ▶ **SEASONAL STREAM FLOWS:** Seasonal shifts in river levels for the Boise River are projected, resulting in more runoff in the winter and spring and less during the summer months.
- ▶ **FLOODING DANGER:** No overall change in river flooding is projected. However, a greater proportion of high streamflow events are projected to occur during the fall through winter as a consequence of changes in snow and snowmelt timing on upstream watersheds and more winter precipitation falling as snow and directly running off.
- ▶ **WATER QUALITY:** Earlier mountain snowmelt, increased evaporative demand and extended period of warm and dry conditions during the summer months are projected to result in further declines in low flows in the Boise River. Conditions that are detrimental to water quality and aquatic life are expected to increase substantially, with a 400% increase the frequency of what are historically considered low flow levels by the mid-21st century.