

Idaho Climate-Economy Impacts Assessment

Snapshot: Water

Water, Climate, and Idaho's Economy

Idaho's mountains accumulate snowpack in the winter months, which feeds Idaho's watersheds in the spring and summer months. The gradual melting and runoff during the spring and summer provide streamflow and replenish groundwater for the warmer, drier months. Several major aquifers in Idaho provide significant storage of groundwater. These groundwater resources are vital to the water supply for food production and processing, as well as commercial, household, industrial, and municipal needs. As changes in climate increase, the pattern of water availability for Idaho's economy also will change.

Changes in Climate Impact Idaho's Water Quantity and Quality

Drought

Decreasing snowpack, greater precipitation variability (rain and snow), and increasing temperatures lead to unstable and unreliable water sources. Some of these impacts are already occurring. In 2021, the Magic Reservoir experienced its shortest season since 1977—only 27 days of irrigated water. Climate projections show a continued increase in drought conditions, putting users at greater risk for economic loss associated with lack of water.

Floods

For high elevation regions in southern Idaho, rain-on-snow events may be more intense due to increased spring rain with warming temperatures. Rain-on-snow events can cause rapid snowmelt and runoff, leading to a higher risk for severe flooding.

Habitat and health

Increasing water temperatures and changes in seasonal concentrations of organic matter and contaminants in streams, lakes, and reservoirs pose risks to aquatic species' habitat, such as Idaho's fish populations. Additionally, cyanobacteria and harmful algae blooms create health risks for humans and other species.



Impacts to Coeur d'Alene Lake

The Coeur d'Alene Lake Basin is culturally important for the Coeur d'Alene Tribe. High streamflow rates from rain-on-snow events increase sedimentation and the presence of excessive organic matter and metals in the lake. This is of particular concern to the local community and the Coeur d'Alene Tribe with respect to contamination of cultural resources for indigenous populations, including freshwater fish and water potatoes.

Preparing Idaho for Impacts to Water Quantity and Quality

Over the last several decades, peak streamflow in Idaho has advanced 1 to 2 weeks earlier in the year. This is leading to higher than normal flows in the winter and lower flows in the summer, ultimately compressing peak runoff into a shorter period of time. These changes in water dynamics put several key economic sectors at risk.

- The ability to adapt to greater power demands during the warmer and drier portions of the summer will become increasingly important. Demand for air conditioning peaks in the residential and commercial sectors at the same time that more power is required for irrigating crops. The timing of this increasing demand also coincides with lower summer streamflow, and negatively impacts the ability to generate hydropower, a primary source of electricity for Idaho.

- Rain-on-snow events increase flood risk. Additional flood control measures, such as management plans and water diversion methods, likely will be necessary to reduce impacts to Idaho's economy. Potential impacts include transportation delays, road and bridge collapse, and flooding of residences and businesses in flood plains.

- When peak runoff occurs earlier in spring, it is not aligned with historic water demands for irrigation. Additional water storage and water recharge may be needed to capture increased water runoff in the winter and early spring to prevent flooding, meet water use demand, and offset water shortages in the warmer months. Improving soil health and switching to less water intensive crops are also options to help mitigate the change in water supply timing.

Wildfires and industries, such as agriculture, forestry, mining, aquaculture, and manufacturing, as well as urban runoff, impair water quality in Idaho. Primary water pollutants are temperature (thermal), sediment, nutrients,