Climate change impacts in Chelan County

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Dealing with climate change means...

Addressing the root cause

Reduce atmospheric greenhouse gases



Preparing for the consequences

Reduce vulnerabilities and build resilience

Climate Matters: Embedded Expectations



















Observed Changes



The average year in the NW is 1.54°F warmer than during the first half of the 20th century.



The coldest day of the year is 4.78°F warmer.



NCA, 2018

1986–2016 relative to 1901-1960

Washington Cascades snowpack decreased ~25% between the mid-20th century & 2006.



Peak streamflow from snowmelt is occurring up to 20 days earlier (1948-2002) in the Northwest.



The number of large fires and area burned in the Northwest increased from 1973 to 2012.



Source: Westerling 2016

The question is no longer *if* climate is changing but *how fast* & *how much*.





Projected climate changes in WA state





Less snow, earlier melt



Wetter winters, drier summers



Streamflows: Higher highs Lower lows



Natural variability



More wildfire

Snover et al. 2013, Mauger et al. 2015.





April 1 Snow Water Equivalent





2020s









Elsner et al. 2010



2080s





















Greater Potential for Flooding





Relative to 1971 to 2000, climate model ensemble average. Source: Integrated Scenarios 2015.

Increased Wildfire Area Burned



X 2 by 2020s X 4 by 2040s

M/X 2 by 2040s

Relative to 1980-2006 average; moderate greenhouse gas scenario

Littell et al. 2010, 2012







Greater Potential for Wildfire



Twice as many extreme fire danger days by the 2050s, relative to 1971 to 2000.

Source: Climate Toolbox











Agriculture

Climate impacts on WA agriculture depend on location, season & crop





For the Columbia basin in the 2030s Irrigation **supply increases** overall Irrigation **demand decreases** overall



% change in 2030s irrigation demands compared to historical













Infrastructure













Recreation





Health & Well-Being



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