Pacific NW Climate Change

Alison Blake

The past hundred years has revealed disturbing shifts in global temperatures and these trends ar projected to continue.The average surface temperature in the Puget Sound Region is supposed to rise between 0.5°F/decade and 0.9°F/decade through 2040, rising at currently unpredictable rates thereafter. This rise in temperature has potentially major impacts on the region, especially in regards to annual snowpack and the seasonal availability of water. The region might also experience changes in precipitation patterns over the next hundred years. Possible spheres of impact include plants, fish and wildlife (overall ecosystem function), hydropower, air and water quality, recreational opportunities, and water levels. It is believed that at least half of the predicted climate change can be directly attributed to human causes. In the future there will be a need to adapt to changing conditions, while at the same time changing practices so that those changes will hopefully be minimized. There are numerous design and planning strategies that can help sustain and potentially improve environmental function throughout a changing climate. With thoughtful design, it is also feasible that the built environment can facilitate a regional culture and lifestyle that mitigates against the more dramatic climate change predictions.

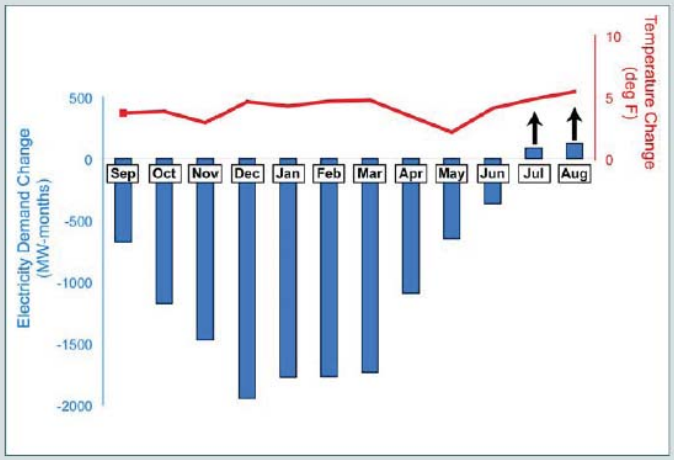
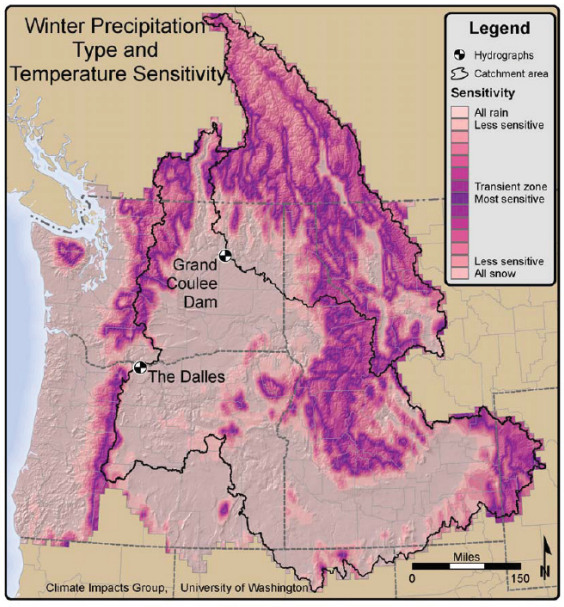


Figure 14. Projected 2040 monthly temperature increases (degrees F) and the estimated impact on electricity demand (megawatt-months). The red line shows the projected average temperature increase from four climate models for the PNW. Blue bars indicate the corresponding changes in electricity demand. For most months, the increase in temperature will likely reduce the need for space heating and electricity demand. Small increases in demand are projected for June and July; however, the arrows indicate that these are considered underestimates by the study's authors. The analysis does not account for increases in the availability of air conditioning, which will likely increase summer demands. Reproduced with permission from NWPCC (2005).[4]



Potentially impacted areas

Seasonal Water Supply
Hydroelectricity
Energy Consumption
Winter Sports
Flooding
Fish & Wildlife
Pests & Insects
Agriculture
Forestry
Air & Water Quality
Human Health
Stream Temperatures
Sea Levels

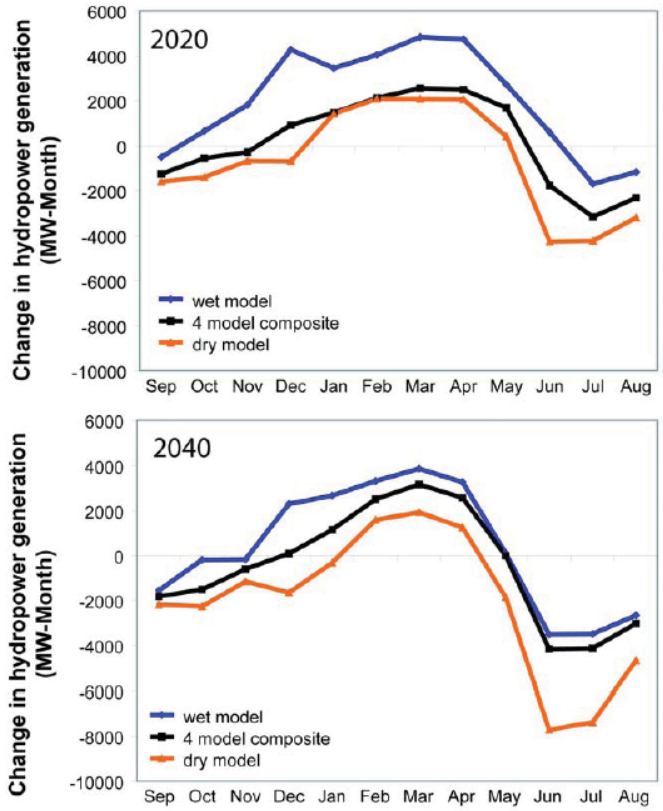


Figure 15. Projected climate impacts on hydroelectricity generation for the 2020s and the 2040s. The graphs show estimated changes in hydropower generation for three sets of climate models. The blue line corresponds to a relatively wet climate model; the orange line represents a relatively dry climate model; the black line represents the average of four climate models (one wet, one dry, one cool, and one warm) and represents a "middle of the road" projection. Increased generation will likely be possible during the winters; while the summers may experience reduced generation. The magnitude of the increases are contingent on the direction of the precipitation change. All models show especially large reductions in generation for the summer by the 2040s. Figure adapted from NWPCC (2005).[5]

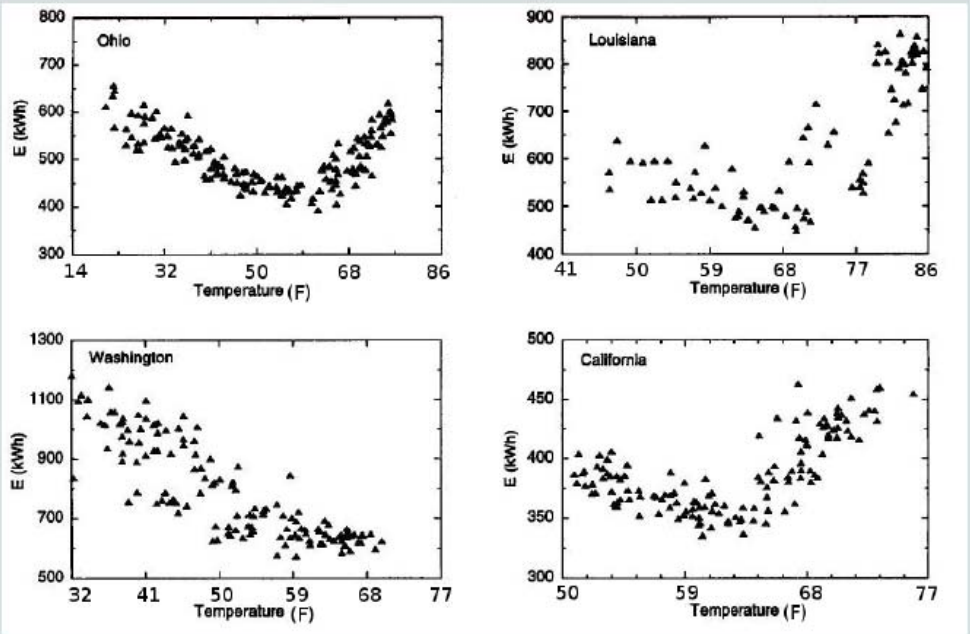


Figure 13. Residential and commercial per capita electricity consumption (kWh) and monthly average air temperature. Based on data for 1984-1994, most states show an increase in electricity consumption once monthly average temperatures surpass 68°F (20°C), most likely because of air conditioning. However, Washington's average monthly temperatures generally stay below this threshold, indicating that climate change could increase air conditioning and summer electricity demand. Reproduced with permission from Sailor et al. (1997).[3] Temperature values converted to degrees F.

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