



# Oregon

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## Water Resources Department

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### MEMORANDUM

TO: Water Resources Commission

FROM: Barry Norris, State Engineer

SUBJECT: Agenda Item L, November 20, 2009  
Water Resources Commission Meeting

#### Climate Change Update

##### I. Introduction

In 2007 the Oregon Water Resources Department joined other partners in funding a research project to study the impacts of climate change on the Columbia River Basin. The study is being completed by the Climate Impacts Group (CIG) at the University of Washington. The study is in the final stages of completion and will provide considerable information about what researchers believe are the trends for evolutionary change over this century. This report to the Water Resources Commission (Commission) provides a preliminary look at some of the information that will come from the investigation.

##### II. Background

The CIG is investigating the effect climate change over this century will have on the Columbia River Basin. Partners in funding the study include the Washington Department of Ecology, Bonneville Power Administration, Northwest Power and Conservation Council, Oregon Water Resources Department and the British Columbia Ministry of the Environment. Collaborative partners include the Montana Department of Natural Resources, Idaho Department of Water Resources, United States Bureau of Reclamation Boise Regional Office and United States Army Corps of Engineers Portland and Seattle Districts.

Objectives for the study include:

- Providing comprehensive hydrologic data bases to support water planning at a range of spatial and temporal scales in the Columbia River basin and Pacific Northwest;
- Improving spatial resolution of hydrologic models to capture smaller basins relevant to planning; conducting pilot studies using fine-scale hydrologic simulation tools and comparing them to macro-scale tools that are currently more widely implemented;

- Improving the range of products and services available, and constructing tools and data processing methods to make future updates easier (and less expensive) to produce.

Essentially, the work products from this study are intended to enable operational people to use the data for planning purposes.

OWRD provided the CIG a list of 50 locations on Columbia River tributaries in Oregon to consider for inclusion in the final product. The list is included in this report as Attachment 1. Although only 25 sites were originally guaranteed for investigation, it is likely that most if not all of these sites will be analyzed and information will be provided that will predict changes in precipitation, evapotranspiration, snow water equivalent, soil moisture, runoff, probable flood events and probable low flow events. Additionally, general information for the Pacific Northwest will be provided that addresses climate impacts to minimum/maximum temperature, precipitation, soil moisture, evapotranspiration, and snowpack. A website will be developed that will provide the information to users. Although preliminary information is becoming available, final completion is targeted for the end of 2009.

### **III. Discussion**

Information from the CIG indicates that during the next century temperatures in the northwest may increase 6 degrees Fahrenheit. Precipitation is expected to increase overall, between 1 to 2 percent, with a decrease during the summer. Snowpack is expected to decrease approximately 60 percent. The largest impact on snowpack will be seen at lower to mid-range elevations. In some locations, flood risks are likely to increase due to a warming trend and an increase in extreme storm events. In other locations there will be a reduction in spring flood risk due to a loss in spring snowpack accumulation.

In many locations, especially where water availability has depended on melting snowpack, water users will be forced to adjust for earlier water availability and a sharp reduction in late summer/fall streamflow.

### **IV. Conclusion**

This is an informational item. No Commission action is requested.

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Attachment 1: List of Columbia River Tributaries Provided to the CIG Study