Oregon
Theodore R. Kulongoski, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1266
503-986-0900
FAX 503-986-0904

MEMORANDUM

TO: Water Resources Commission

FROM: Phillip C. Ward, Director

SUBJECT: Agenda Item I, February 25, 2009
Water Resources Commission Meeting

Adoption of a Climate Change Policy

I. Issue Statement

Public and private sector activity around climate change adaptation has increased in Oregon, as more data become available about the likely impacts that climate change will have on the state's natural resources, native and invasive species, built environment, and human population.

Much work remains in this area, and the state has recently established a Climate Change Research Center, housed at Oregon State University and Directed by Dr. Phil Mote. The Water Resources Department will have an opportunity in the coming months to request applied climate change research from the Center, to further evaluate the likely impacts that Climate Change will have on Oregon's Water Resources.

This paper describes the climate change efforts already undertaken by the Water Resources Department in recent years and concludes with a recommended "Climate Change Policy" that the Commission may wish to adopt, in order to emphasize its commitment to Climate Change research and adaptation. This is an action item.

II. Background

The backdrop for this Climate Change agenda item is the development of an "Integrated Water Resources Strategy," which is the focus of a legislative proposal (SB 193) and budget item (WRD Package #102) in Oregon's 75th Legislative Assembly. As the Water Resources Commission and Department move forward, developing scenarios and public policy options for the future of Oregon's water resources, climate change will play a significant role in these discussions.

The Water Resources Department ("Department") has undertaken a number of climate change initiatives during the past two years, in order to develop better data, to begin to develop a public policy toolbox that will help Oregon's water resources adapt, and that will continue to keep the Department linked to broader state-wide and nation-wide efforts.

A Focus on Mid-Level Snowpack. In 2007, OWRD partnered with the Innovations and Climate Leadership Initiative at the University of Oregon to assess the impacts of climate change on municipal water providers. OWRD paid for the development of a map that depicts areas in Oregon that are most sensitive to mid-elevation snowpack. The Climate Impacts Group at the University of Washington constructed the map through a contract with the University of Oregon. Appendix A contains the resulting map, demonstrating just how important snow pack is to Oregon's water supply.

The areas in red indicate the areas of the state that are dependent on mid-level, or "transition," snow pack that melts in the spring and provides much of the state's irrigation water). The areas in the red are not snowpack itself, but the areas that are dependent on snow pack; this area covers about 57 percent of the state's land mass. The other areas depend on rain or ground water. Mid-level snowpack is what the climate change forecasts are highlighting as most vulnerable to climate change.

Most likely, that precipitation will continue to arrive—but as rain instead of snow. That changes the volume of natural storage, the timing of the run-off, the volume of ground water recharge, and the subsequent availability of water during the irrigation season. It also may cause a significant change in stream flow, which would affect water levels for fish and wildlife, municipalities, irrigated agriculture, and other Oregon communities and businesses.

During the next 50 to 80 years it is expected that spring run-off may shift up to two months earlier, reflecting heavy rainfall instead of snowpack melt. All of this is significant to agriculture, especially those segments of agriculture that depend on run-off for their "live-flow" irrigation requirements. The area in red illustrates the majority of Oregon's prime agricultural areas—the Willamette Valley, Umatilla Basin, and the Eastern side of Oregon.

Columbia River Tributaries. Also in 2007, OWRD contracted with the Climate Impacts Group at University of Washington to assess the impacts of climate change on the Columbia River Basin. Oregon specifically funded work to assess the impacts of climate change on Columbia River tributaries that originate in Oregon. OWRD provided the Climate Impacts Group with a list of 52 tributaries that have the hydrologic criteria necessary to be part of the study. The study is scheduled for completion in March 2009.

Developing an Adaptation Toolbox.

Inventory of Potential Water Storage Sites. In 2008, the Department conducted an inventory of potential water storage sites in Oregon, with the idea that if naturally occurring storage (i.e., snowpack) declines in future years, one adaptive measure may be to develop or expand additional above- or below-ground storage.

The Department collected as much existing information as possible about above- and below-ground storage sites, and created an on-line, interactive clearinghouse for this information. The Department posted this information so that communities can avoid "reinventing the wheel," in

terms of site investigation. No attempt was made to assess the ecological or economic feasibility of these projects, but in the future this information could help the state identify and prioritize possible future projects.

This storage inventory was conducted as part of a larger project, funded by the 2007 Oregon Legislature, called the Oregon Water Supply and Conservation Initiative (OWSCI). OWSCI provides a basic set of tools that are needed to adapt to climate change, and includes an initial inventory of local water conservation opportunities as well.

Inventory of Potential Water Conservation Projects. More than 96 respondents participated, from the agricultural community (18 respondents), municipalities (79), and other categories (4). Among them, they identified 135 projects—36 agricultural and 96 municipal. Agricultural projects tended to focus on capital constructions (93 percent of potential agricultural projects), and municipal projects tended to focus on programmatic options (65 percent of potential municipal projects). Although agriculture uses about 80 percent of the water diverted in Oregon, only 27 percent of the potential conservation projects came from agricultural users, leaving significant opportunity for the Department to work with irrigated agriculture to identify and pursue additional conservation and efficiency efforts in the future.

Inventory of Oregon's Stream Gage Network. The Department is currently evaluating Oregon's stream gage network to determine its strengths and weaknesses related to monitoring long-term climate trends. The Department is evaluating stream gages that have at least 30 years of record, particularly those located on relatively pristine streams (i.e., containing minimal storage and diversions) that will be used for long-term operations. The Department is interested in monitoring and analyzing streams fed by either snowmelt/run-off or ground water, in order to track the effects of climate change on stream flow. During 2009, staff will make recommendations, identifying which gages are best placed to monitor climate change, and where the Department should place additional gages to help monitoring efforts. The analysis will include gages operated by the U.S. Geological Survey (USGS).

Linking the Department to State, Regional, and Nationwide Efforts. Director Ward serves as an ex-officio member of the Global Warming Commission, a state-wide group appointed by the Governor in 2008 to continue the work begun by his Climate Change Task Force. The mandate of the Global Warming Commission is to develop the policies and programs Oregon will need in order to mitigate and adapt to the effects of Climate Change. The Chair of the Commission, Angus Duncan, along with some members of the Commission, have expressed an interest in helping shape the climate change-related budgets and policies of the state's natural resources agencies in the coming years.

Director Ward co-chairs the Commission's Water Subcommittee, along with Joe Whitworth of Oregon Trout. Together, the co-chairs hosted a series of presentations during the Summer of 2008, designed to gauge what Climate Change researchers are saying about Climate Change effects on water resources in the Pacific Northwest, particularly Oregon. The co-chairs prepared a memo to the full Global Warming Commission, dated September 15, 2008, outlining a range of adaptation and preparation options available to the state—including long-range planning, data

collection, water conservation, demand reduction, and environmentally responsible storage. Appendix B contains the September 15, 2008 memo to the full Global Warming Commission.

The Department also tracks a number of nation-wide efforts through its participation in other organizations. The Western Climate Initiative (WCI) is a collaborative effort among western states and two western Canadian provinces to reduce greenhouse gases. WCI requires program partners to set goals to reduce greenhouse emissions, develop market-based mechanisms to help achieve those goals, and also participate in a cross-border greenhouse gas registry.

The Western State Governors' Association has been developing its public policy response to Climate Change for several years now, and has produced a series of reports that evaluate opportunities for climate change mitigation and adaption in the following areas: energy, emissions, transportation fuel, carbon sequestration, wildfires, and water. Through its Western States Water Council, the Association first produced its water report, "Water Needs and Strategies for a Sustainable Future," in June 2006, and followed up with a "Next Steps" report in 2008. Even before the advent of climate change the reports, note, western water resources have become increasingly scarce. Climate change poses additional stresses, and the authors recommend that western states improve their data collection systems, capacity for climate change modeling and assessment; state-wide planning; and on-going coordination and information sharing among scientists, policy-makers, and water users.

And the Water Utility Climate Alliance is a climate change initiative established in 2008 by eight of the nation's largest drinking water utilities: Portland Water Bureau, Denver Water, the Metropolitan Water District of Southern California, New York City Department of Environmental Protection, San Diego County Water Authority, the San Francisco Public Utilities Commission, Seattle Public Utilities, and the Southern Nevada Water Authority. Their purpose is to improve research into the impacts of climate change on water utilities.

III. Discussion

In addition to the Department's continued work in the areas described above, Oregon's new Climate Change Research Center will afford the Department additional opportunities to evaluate the local implications of Climate Change. The Water Resources Department, with guidance from the Commission will have an opportunity to request applied research from the Climate Change Research Center, posing research questions that will help Oregon's decision-makers prioritize and develop the necessary policies and programs for Climate Change adaptation.

In addition, Department staff will continue in their roles as part of the Global Warming Commission, Western States Water Council, and other associations who are in the midst of developing their own climate change policies. The Water Resources Commission, in its role as policy advisor, may want to adopt a "Climate Change Policy," that confirms its interest in the Department's research path, provides general guidance about the level of effort the Department expends, and suggests programmatic areas that the Department pursues regarding Climate Change. Below is a draft Climate Change Policy for the Commission's consideration.

Draft Climate Change Policy for Oregon's Water Resources Commission

Whereas the Water Resources Commission and Department have as co-equal goals "to restore and protect streamflows and watersheds in order to ensure the long-term sustainability of Oregon's ecosystem, economy, and quality of life, and to directly address Oregon's water supply needs"; and

Whereas, the Water Resources Commission and Department have a vital role in providing information, developing public policy, and leading Oregon's adaptation efforts with regard to Climate Change; and

Whereas, the Water Resources Department, Department of Environmental Quality and their respective Commissions, in close coordination with other state natural resources agencies, are embarking on a state-wide, integrated water resources strategy that must address climate change; and

Whereas, the Water Resources Commission and Department have commissioned a number of climate change forecasts from academic and governmental researchers; and

Whereas, Climate Change research and policies continue to evolve at all levels of government; and

Whereas, Climate Change may have a significant impact on Oregon's future water availability for identified beneficial uses; now, therefore,

Be It Resolved by the Oregon Water Resources Commission:

That Oregon's long-term water resources strategy should anticipate the potential effects of Climate Change on Oregon's water resources. Such a long-term strategy should directly increase the likelihood of fully achieving the co-equal goals of the Commission and the Department by:

- relying on current scientific data and research;
- monitoring the continuing effects on the amount of available water and the changing water needs of humans and natural systems;
- collaborating and leveraging other resources with Federal, state, local, and private partners who are also pursuing climate change mitigation and adaptation policies;
- ensuring adaptation and resiliency for Oregon's water resources and the natural function of the watersheds in which they reside;
- engaging other natural resource agency expertise as appropriate to develop and ensure an integrated approach to managing the state's water resources; and
- developing a policy toolbox that includes water conservation, streamflow enhancement, demand reduction, and water supply development, including natural and environmentally appropriate constructed storage.

IV. Alternatives

The Commission may consider the following alternatives:

1. Adopt the climate change policy language above.
2. Adopt modified climate change policy language.
3. Direct the Department to return with modified language.
4. Direct the Department to return with modified language that has developed as part of a state-wide, integrated water resources strategy.

V. Recommendation

The Director and staff recommend that the Commission follow Alternative 1 and adopt the Climate Change Policy language above.

Attachments: Appendix A – Map of Mid-Level Snowpack
Appendix B – Sept. 15, 2008 Memo to the Global Warming Commission

Brenda Bateman
(503) 986-0879

Appendix A
Map of Mid-Elevation Snowpack
University of Oregon, 2007