



## **CLIMATE ASSESSMENT: NEAR 100 PERCENT CHANCE NW SUMMER FLOW REDUCTIONS BY 2050, MAY PROMPT LESS HYDRO**

Posted on Friday, January 25, 2013 (PST)

“Evidence for climate change abounds, from the top of the atmosphere to the depths of the oceans. This evidence has been compiled by scientists and engineers from around the world, using satellites, weather balloons, thermometers, buoys, and other observing systems,” according to a new report prepared for the U.S. government with the contributions of more than 1,000 individuals.

“The sum total of this evidence tells an unambiguous story: the planet is warming,” the new “National Climate Assessment” says. Much of that climate change is driven by humans with the ever-increasing emission of gases into the atmosphere, and could only likely slowed by a reduction in such emissions, the report says.

Climate change, as projected by scientists, means significant changes for human life and the environmental processes that support it, according to a new report.

The Pacific Northwest, with its heavy reliance on the timing and quantity of water deliveries from Mother Nature, figures to be affected considerably by a warming climate. Some of the key messages noted by authors of the Northwest section of the report are that:

- Changes in the timing of streamflow related to changing snowmelt are already observed and will continue, reducing the supply of water for many competing demands and causing far-reaching ecological and socioeconomic consequences.
- In the coastal zone, the effects of erosion, inundation, threats to infrastructure and habitat, and increasing ocean acidity collectively pose a major threat to the region.
- The combined impact of increasing wildfire, insect outbreaks, and diseases is virtually certain to cause additional forest mortality by the 2040s and long-term transformation of forest landscapes. Almost complete loss of subalpine forests is expected by the 2080s.
- While the agriculture sector’s technical ability to adapt to changing conditions can offset some of the adverse impacts of a changing climate, there remain critical sector-specific concerns with respect to costs of adaptation, development of more climate resilient technologies and management, and availability and timing of water.

The Northwest section was authored by experts from Oregon State University and the University of Washington, as well as the University of Idaho, the Idaho Department of Water Resources, the National Wildlife Federation and the Cascadia Consulting Group.

“Reservoir systems have multiple objectives, including irrigation, municipal and industrial use, hydropower production, flood control, and preserving fish habitat. Modeling studies indicate, with near 100 percent likelihood, that reductions in summer flow will occur by 2050 in basins with significant snowmelt,” according to the report’s Northwest chapter. The report cites numerous studies.

“Combined with summer increases in heat-driven electric power demand for cooling and evaporative demand from crops and forests, these reduced flows will require tradeoffs among objectives of the whole system of reservoirs.

“For example, reductions in hydropower production of as much as 20 percent by the 2080s could be required to preserve in-stream flow targets for fish in the Columbia River basin,” the report says. “Springtime irrigation diversions increased between 1970 and 2007 in the Snake River basin, as earlier snowmelt led to reduced spring soil moisture. In the absence of adaptation, annual hydropower production is much more likely to decrease than to increase; economic impacts of hydropower changes could be substantial, on the order of hundreds of millions of dollars per year.

“Several aspects of hydrologic change, such as increased flooding in mixed rain-snow basins, region-wide increased winter flows and summer temperatures, and decreased summer flows, will threaten many freshwater species, particularly salmon, steelhead, and trout. Rising temperatures will increase disease and/or mortality in several iconic salmon species, including spring/summer chinook and sockeye, especially in the interior Columbia and Snake River basins,” the report says, although some streams are less sensitive to warming because of the temperature buffering provided by snowmelt and groundwater. By the 2080s, suitable habitat for the four trout species of the interior western U.S. is projected to decline 47 percent on average compared to 1978-97.”

The National Climate Assessment was prepared for a committee of independent advisers to the U.S. government. The 400-page document is a synthesis of scientists’ current understanding of climate change and its potential impacts in the United States.

The Global Change Research Act of 1990 calls for an NCA to be produced at least every four years; the last came out in 2009.

The draft NCA is a scientific document -- not a policy document -- and does not make recommendations regarding actions that might be taken in response to climate change, according to a blog posted on the White House web site by John P. Holdren, assistant to the president and director of the White House Office of Science and Technology Policy, and Jane Lubchenco, administrator of the National Oceanic and Atmospheric Administration

“Today is the first time the government has been presented with this draft and the administration will be one of a number of entities that will begin the process of reviewing it. When completed about a year from now, however – after considerable inputs from the public and expert reviewers -- it will represent the most thorough, rigorous, and transparent assessment ever of climate change and its U.S. impacts.”

The new NCA draft version reflects the efforts of individuals from the public and private sectors and academia who have been compiling data since 2010.

A public review period started Jan. 14. Comments will be accepted through April 12.

The document will also be reviewed by the National Academies.

Ultimately, towards the end of this year, a final NCA will be presented to the United States Global Change Research Program, which coordinates global-change research activities across the federal government. USGCRP will use the assessment to help pinpoint knowledge gaps and develop research priorities.

The blog stresses that the NCA is expected to be used widely by public and private stakeholders who need information about climate change in order to thrive -- from farmers deciding which crops to grow, to city planners deciding the diameter of new storm sewers they are replacing, to electric utilities and regulators pondering how to protect the power grid.

To maximize its practical usefulness, the draft document breaks down the impacts of climate change across eight regions of the United States and more than a dozen sectors of the U.S. economy and society, including: energy, transportation, agriculture, health, urban infrastructure, coastal zone development, and water resources.

While the specific findings of the draft NCA are still subject to revision in response to inputs from the public, the National Academies, and the 13 federal departments and agencies that make up the USGCRP, the document released Jan. 11 sets a new standard of scientific integrity, user relevance, and stakeholder inclusiveness, the Holdren-Lubchenco blog says.

It was developed with input from more than 240 contributing authors under the leadership of 60 independent expert advisors. More than 1,000 volunteers across the nation helped build it from the ground-up by organizing regional workshops and contributing technical reports.

In a parallel effort, USGCRP recently launched "NCAnet," a growing network of more than 60 stakeholder organizations committed to engaging broad and diverse audiences on the topic.

To access the draft National Climate Assessment, please visit [www.ncadac.globalchange.gov](http://www.ncadac.globalchange.gov)

For detailed background information about sea level rise and climate trends, please visit: <http://scenarios.globalchange.gov/>

For detailed information about coastal changes, please visit: <http://www.globalchange.gov/what-we-do/assessment/nca-activities/available-technical-inputs>

