POLIS Project on Ecological Governance
watersustainabilityproject

Creating a Blue Dialogue Webinar Series

Summary of Webinar #4—The Water-Energy Nexus

Webinar Date: March 19, 2012

Attendance: Approximately 100—local government, provincial government, researchers, students, not-for-profit NGOs, private companies

About the Series

Hosted by the POLIS Water Sustainability Project at the University of Victoria, *Creating a Blue Dialogue* brings together expert water practitioners and thinkers, as well as emerging water leaders, to engage with innovative ideas on water policy and governance in Canada. By creating an online community of interest, the webinar series serves to strengthen the national capacity to engage with and solve problems, and raises awareness about emerging Canadian water issues, best practices, and policies.

Introduction

This webinar explored the interconnections and interdependencies between water and energy—known as the "water-energy nexus." This relationship is quickly becoming a priority area of focus in British Columbia, and across Canada and North America, as local, regional, and federal governments must face the impacts a changing climate has on water resources, and deal with increasing demands for water and electricity. The guest speakers addressed the water-energy nexus in B.C.'s energy sector, explored water conservation and efficiency as a possible path to realizing future energy savings for municipalities in Ontario, and discussed water requirements for electricity generation in the American West.

Guest Speakers

Ben Parfitt
Resource Policy Analyst, Canadian Centre for Policy Alternatives B.C. Office
Research Associate, POLIS Water Sustainability Project

Carol Maas
Innovation and Technology Director, POLIS Water Sustainability Project

Heather Cooley
Co-Director of Water Program, Pacific Institute

Key Points of Webinar Presentations

- The water used to produce energy, and the energy used to produce water-related services (e.g. water heating, pumping, or treatment) have together been coined the "water-energy nexus."
- In B.C., an increasing population, rise in industrial water and energy demands (particularly in the natural resource sector), new sources of hydroelectric power coming on stream, and a changing climate, are all putting increased pressure on provincial water and energy sources.
- B.C.'s electricity primarily comes from hydroelectric sources. However, the potential for energy to be produced from pulp mills or waste recovery is being explored and is on the rise.
- The shale gas industry in B.C. is a significant user of water and electricity. A big question in B.C. is whether the construction of the Site C hydroelectric project on the Peace River will be realized, and where the electricity it generates will be used. The expansion of the shale gas industry will require significant new sources of electricity to operate liquefied natural gas (LNG) facilities.
- Current research being done by the POLIS Project, in partnership with the Canadian Centre for Policy Alternatives, will identify "hot spots" where energy and water use intersect in B.C.—looking at problem areas as well as success stories.
- The 2010 POLIS study *Ontario's Water-Energy Nexus* mapped out how and where energy is used for all water energy services in Ontario, by economic sector (e.g. residential, commercial, industrial) and also by activity (e.g. water pumping, treatment, heating, steam generation).
- Total energy consumed for water-related services in Ontario is estimated to be 976 Petajoules per year. Powering pumps, treatment plants, hot water heaters, and boilers consumes 12 per cent of Ontario's total demand for electricity and 40 per cent of its natural gas demand.

- The linkages between water and energy represent a real opportunity for collaboration between the water and energy sectors, and for the creation of a holistic way for accounting that will encourage water and energy savings.
- In the Intermountain West region of the United States, concerns are mounting about how water availability threatens energy supply in an increasingly changing climate. With a business-as-usual approach, these threats will intensify as the population increases, thereby increasing demand for energy and water.
- Key findings from the 2011 Pacific Institute report *Water for Energy: Future Water Needs for Electricity in the Intermountain West* include:
    - If a business-as-usual approach to electricity generation in the Intermountain West continues, there will be an increase in water withdrawals across the region.
    - If electricity generation shifts to renewable sources (e.g. solar, wind), there will be a dramatic reduction in water required for energy production in the future.
- Next steps involve looking at water requirements for the entire fuel cycle, and the water quality impacts associated with electricity generation.

Key Concepts from Webinar Discussion Period

Water "footprinting"—calculating the total volume of water used to produce a good or service—is an essential concept when discussing the water requirements of electricity generation. As a changing climate impacts the availability of water resources, it will become increasingly critical to understand the role that water plays in electricity generation of any kind. Conducting a "life-cycle analysis" for water use in electricity generation would provide a deeper understanding of how changes in water availability will impact power production. In the context of shale gas development in northeast B.C., water requirements will vary depending on the characteristics of the shale formation, as well as the number of wells per fracking pad. For multi-well pads, water use per pad is approximately equivalent to the volume of water needed to fill 600 Olympic swimming pools.

Additional Resources

Cooley, H. (2012, January). The Energy Implications of Desalination. In D. S. Kenney & R. Wilkinson (Eds.), *The Water-Energy Nexus in the American West* (pp. 136–152). Northampton, U.S.: Edward Elgar Publishing, Inc.

Cooley, H., Fulton, J., & Gleick, P. (2011, November). *Water for Energy: Future Water Needs for Electricity in the Intermountain West*. Oakland, U.S.: Pacific Institute.

Maas, C. (2010, April). *Ontario's Water-Energy Nexus*. Victoria, Canada: POLIS Project on Ecological Governance at University of Victoria.

Maas, C. (2009, March). *Greenhouse Gas and Energy Co-Benefits of Water Conservation*. Victoria, Canada: POLIS Project on Ecological Governance at University of Victoria.

Parfitt, B. (2012, February 14). Slow and easy will win energy race. *Times Colonist.*

Interested in More Webinars?

To view past webinars in POLIS' *Creating a Blue Dialogue* series visit www.youtube.com/POLISWaterProject. Previous topics include "What Canada Can Learn from EU Water Governance," "The Public Trust Doctrine," and "Recognizing Aboriginal Rights: Towards a New Water Ethic in Canada."

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