

Notes for a Presentation to National Council of Women on Water-Energy Nexus

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1) Impacts of Our Energy Decisions on Great Lakes:

- a. Hydro Power: Vast limitless waters of Great Lakes are controlled at St. Mary's River, Niagara River and St. Lawrence River to allow for hydro production.
 - i. St. Mary's River impact: has slowed the flow of water through the St. Mary's rapids to a trickle. This disrupts a major fish spawning ground.
 - ii. Niagara River impact: slowed flow of water over falls to the extent that at night there is hardly any water going over the falls.
 - iii. St. Lawrence River at Cornwall-Massena impact: Is shredding the endangered American Eel that must swim through the river twice in their lifecycles as they go between their spawning grounds in the Atlantic Ocean and their feeding grounds in Lake Ontario.
- b. Coal-generated Power: The two largest air polluters in the Great Lakes basin are coal-fired power plants in Nanticoke, Ontario, and Monroe, Michigan. These are major sources of mercury emissions.
- c. Nuclear-power reactors: Tonnes of radioactive wastes lie around the shores of the Great Lakes and are seeping into the lakes.
- d. Alternative fuel impacts: These are not without concerns for the Great Lakes. Siting wind turbines in the Great Lakes will raise concerns. Growing biofuels such as corn will create problems for the Great Lakes; corn is a heavy water user and also uses a lot of fertilizers and pesticides, which will create a new competitor for scarce water and increased contamination sources.

2) Impacts of Water Use on Energy Demand: We tend to focus on negative consequences of our energy use for water. But it is important to realize that our use of water creates energy issues.

- a. This may be at the point of use: For example, taking long showers results in increased energy use to heat the water.
- b. This may be impacts on our ability to generate power: For example, Ontario Power Generation raises concerns about proposals to divert water for inland use out of places like Georgian Bay because it would reduce the amount of water going to Niagara Falls and reduce their ability to generate hydro power.
- c. But the more important energy issue is getting the water from its source to the place we use it and sending it back through the sewage treatment

systems. The decisions we make on that can have significant implications for energy use. The rest of this presentation focuses on that.

- 3) **Energy Demands in Water System:** Pumping of water is a major user of electricity. In California, 20% of all electricity use is for moving and treating water. In some Canadian municipalities, 30% of their electricity bill is for the movement and treatment of water. Some of the factors that affect the need to pump are:
 - The more centralized the system is the more that pumping is needed. Unfortunately, there is a movement towards more centralization of systems as a water safety measure, especially in the aftermath of the Walkerton tragedy.
 - Increasingly municipalities are going beyond their local boundaries to find a new water source. This means more pumping of waters through pipelines. Waterloo Region, for example, is planning to build a pipeline 80 kilometres to Lake Erie. But nowhere in the assessment of this option do they address the issue of energy needed to pump the water. Diversions between lakes over the height of land is even more expensive because of pumping costs. London takes most of its water from Lake Huron, which is in a different water basin.
 - Climate change will bring more calls for water pipelines from the Great Lakes.
 - Population growth will also result in increased water demand and calls for more water pipelines from distant places.
 - Agricultural irrigation is predicted to increase in Great Lakes basin

- 4) **Energy-Water conflicts will escalate with climate change:**
 - Peak water and energy demand times now coincide – summertime – which will escalate the energy crisis
 - Dropping water levels in the Great Lakes will threaten hydro generation
 - Where do we take into account the needs of wildlife?

- 5) **We can solve this problem through water conservation and recycling:**
 - We need a policy that looks at energy and water simultaneously. Water decisions should take into account energy implications just as energy decisions should take into account water impacts.
 - In the 1970's the Great Lakes were a laboratory for using new methods of addressing toxics, lessons that spread around the world. Let's now make the Great Lakes be the laboratory for joint planning of water and energy.