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Comments on Fundy Tidal Energy

It has been the dream of many Nova Scotians to harness the Bay of Fundy to produce electricity. However, older technologies such as the tidal barrage method were considered too expensive and too damaging to the environment to pursue on such a large scale. I feel that tidal in stream energy conversion (TISEC) presents the best opportunity to take advantage of the energy contained within the tides of the Bay of Fundy. Since the technology is relatively new and its full environmental impacts are unknown I believe that development of this technology should proceed carefully.

The “Background Report for the Fundy Tidal Energy Strategic Environmental Assessment” prepared by Jacques Whitford, clearly states that not enough research has been done to quantify the potential environmental risks posed by such development. The risks change from potential site to potential site, for instance the Minas Passage, which has the greatest electrical potential in the Bay of Fundy and the most likely site to be developed, has many environmental issues. For myself, the greatest of these is the effect that large scale farms will have on the tidal current/velocities in and out of the Minas Basin. The last thing I want to see is a causeway style effect occurring with resulting sedimentation issues in such a large body of water. Obviously this would be very damaging to the ecosystem and probably alter it permanently. I strongly urge that the appropriate research be carried out and develop the necessary hydrodynamic models so that this question can be resolved. In regards to animal migration, I don’t feel there are significant impacts for fish and marine mammals navigating around the turbines unless there are vibration issues that affect or confuse their senses. The risk of an actual collision must be fairly small. The blades of the turbine can not be rotating very fast due to the density of the fluid. An incoming tidal velocity of 3 meters per second and a turbine radius of 10 meters only results in an angular velocity of 0.3 radians per second which means that a full rotation of that turbine blade would take 21 seconds. If pilot projects will aid in this research then I support their construction.

I believe that TISEC can be developed in Bay of Fundy with very little disruption to fisheries because the placement of the turbines occurs in areas with high tidal currents. In most cases these areas are not traditional fishing grounds with the exception of lobster fishing around the Minas Passage. I do expect that there will be exclusion zones around turbines which could alter the fishing grounds slightly. During construction some habitat will be destroyed but I do not think that is significant or permanent, in some cases it is actually enhanced. For instance the healthy relationship between lobster and the scour protection for the Confederation Bridge is well documented.

Overall I doubt there will be significant job creation. The whole point of pursuing this technology is to offset coal fired electricity production within Nova Scotia so I think there will be a shifting of jobs from that sector to tidal. Even though these jobs will shift to the rural areas around the Bay of Fundy, I doubt that tidal will directly employ the local population to any significant amount because the specialized skill sets required to construct and maintain a TISEC. There is the potential to create a world class expertise on TISEC if it becomes fully developed in the province. The provincial government should continue to support initiatives such as this and fund research and development at local universities. If this occurs then there could be some overall economic development benefits associated with this technology.

In order to answer a lot of environmental questions surrounding this technology, pilot projects are a must. Obtaining actual operational data is critical and is absolutely necessary as a basis for extrapolation for large scale TISEC farms. I think the critical items to monitor during these pilot projects are sediment suspension, sediment transport, scour effects at the TISEC foundation and fish & marine mammal behaviour in the presence of a TISEC development and electromagnetic fields. One of the key guiding principles in constructing and maintaining a TISEC development should be minimizing their environmental footprint. Construction techniques like the monopile should be mandated as well as the use of biodegradable lubricants.

I urge cautious development of this technology. Ensure that the necessary research is completed and understood before proceeding with any large scale operation. This renewable resource with its predictable energy output combined with our tidal expertise due to the Annapolis Generating Station has the potential to offset a significant amount of coal production in this province. The province wide benefits of reducing green house gas and air pollution emissions offset some disruption of the ecosystem contained within the Bay of Fundy.