

Fundy Tidal Energy Strategic Environmental Assessment

CPST 3030
Assignment 4
Due: March 9th, 2008

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The amount of energy generated through the utilization of fossil fuels will eventually be significantly reduced. This may come about as a result of rising prices or from the rapidly depleting global reserves of fossil fuels. The questions of what/where will our energy sources be generated from is one which plagues the minds of many. Energy generated from tidal in-stream technologies is one of the options being investigated. Developmental projects have already been undertaken within this field in Europe. Other alternative energy sources include wind, geothermal, hydro and nuclear generation. Each of these sources would enable the provinces of Nova Scotia and New Brunswick to provide efficient energy, with mitigated environmental impacts, as well as act to promote awareness and the consumption of renewable energy. These alternative energy sources would enable both provinces to meet the required amount of renewable low-impact energy by the 2010 enactment date, under the Renewable Energy Standard Regulations, Section 5 of the Energy Act. Tidal, geothermal, wind, solar, hydro and nuclear energy are currently not available in a widespread manner to consumers. As well, many of these sources require the implementation of developing technologies for which, not all of the environmental impacts are currently known.

Jacques Witford, the authors of the *Fundy Tidal Energy Strategic Environmental Assessment*, have presented their findings in a complete and informative manner. The report recommends that a comprehensive study is conducted and that a pilot program be developed to gather additional information; both will be necessary prior to the advancement of a full-scale project. Jacques Witford indicates large data gaps currently exist, and that further development of technologies and various pilot programs as well as research can aid in closing this gap. This is important to note because it is the opinion of this author that a proposed project cannot hold any validity until a complete and comprehensive study has been undertaken. This is required to ensure investors, shareholders, the government and the general public that no serious negative social, economic or environmental concerns will arise at a later date.

The report focuses on tidal-generated energy and it discusses both the expected environmental concerns and ideas to deal with some of the concerns. The Bay of Fundy is an incredible wealth of resources for developing tidal energy projects. The concerns and areas that are expected to be influenced by either a pilot or full-scale project include, but are not limited to:

- Marine benthic habitat and communities
- Fish and fish habitat
- Pelagic communities
- Marine mammals
- Marine birds and their habitats
- Aquaculture
- Marine transport
- Recreation & tourism

These areas are examined in depth in the report and the conclusion is reached that there is insufficient information available and that further research is required to conduct a true

environmental impact assessment. Considering that the technology presented, TISEC, has not been used extensively in the Bay of Fundy, this conclusion may seem fairly redundant.

It is the author's opinion that the development of any renewable energy source such as TISEC, will result in ecosystem disturbance within that area. The benefits of lower emissions of green house gases however will outweigh the negatives. Especially considering coal as the alternative source of energy. If coal was to be developed as an energy source today, is it possible that any environmental assessment conducted would have yielded a negligible environmental affect? The answer is certainly not. In Nova Scotia approximately 75% of the current energy being generated comes from a coal source. Wind turbines have been suspected to cause changes in the migratory patterns of birds, as well as been the source for a number of bird fatalities. Wind turbines are still in use in various regions of both Nova Scotia and New Brunswick. It is inevitable that there will be negative impacts on surrounding ecosystems but the idea is to be monitored; the scale of the pilot program should increase as information is gathered and a database is formed. The presence and movements of various aquatic organisms should be monitored, initially so as to provide a baseline, as well as post-construction. The construction stage of the project will present the most disturbances amongst local habitats conduct as much research and experimentation before such a program proceeds; so that all aspects may be evaluated.

It is the recommendation of the author that a pilot project be developed and implemented at one of the proposed project sites such as Minas Basin. A single turbine should be installed and its effects. The disturbance created by drilling and other phases of the project have the potential to be developed, to use less evasive means in hopes of reducing the presence of excessive angular sediments created via such processes. The deposition of additional sediment suspended in the currents and re-deposited elsewhere needs to be investigated to ensure that a negligible impact on aquatic life and the marine ecosystems is achieved. These studies do not require a full pilot program of TISEC to take place. The seabed composition is known in many of these areas and a smaller scale drilling operation can be undertaken to determine the amount and type of particulate matter that is generated from this operation. Research into the current velocities and directions has been conducted and may be helpful in determining sedimentation patterns and locations. The migratory patterns of the predominant North American Right Whale and other whales can be observed and turbines can be positioned so not to affect migratory paths and possible communication patterns. It is possible to collect additional data that will be useful in developing a pilot program, minimizing the number of potential unknown variables.

The development of prefabricated components on land prior to installation should also be investigated in order to decrease the construction time, since construction is one of the most environmentally detrimental stages of the project.

The main focus thus far has been on the environmental impacts of TISEC. Although the environment is an important consideration, negative social impacts are also imparted by

projects of this size and nature. These societal necessities and the resulting impact on them, will now be discussed. Tourism and recreation industries are concerned with the impacts that they will suffer as a result of projects such as TISEC. Although this concern may be valid, design measures may be taken to ensure that impacts are limited. A restricted access zone will house the project area to prevent people from traveling within the area of concern. Sea kayaking and canoeing excursions are available in many of the proposed project sites as well as boating and fishing activities. It is the author's opinion that there is plenty of access to such activities in surrounding areas. The Bay of Fundy, as an example, offers ideal conditions for technologies such as TISEC, and the importance of recreational activity should be far outweighed by the demand for development of renewable energy sources.

Another concern is the aesthetic appeal of the structures in their surroundings. Candidly speaking, if the aesthetic appeal of the TISEC technology is to be regarded seriously as a deciding factor, than neither the Nova Scotia nor New Brunswick governments have given serious consideration to the well-being of their inhabitants. The general public is not ignorant of the current global warming "crisis" nor to the need for renewable energy. People will understand and perhaps even commend their governments for pioneering renewable energies.

Overall it seems to be clear that with more research and development great things can come. Local economies will benefit with increases in construction work and with the operation of the TISEC technologies. Communities will benefit from cleaner energy and improved efficiencies. Although there will always be opposition to whatever is being presented, it seems that from preliminary studies this renewable tidal-energy could benefit Nova Scotia and New Brunswick in the long run, and that is what should really be considered. The overall benefits received through developing and operating renewable and readily available energy should be what it is most important. Opportunities such as those within the Bay of Fundy should not be cast aside because a few *Alosa sapidissima* may swim through the turbine or the infrastructure is not aesthetically pleasing. If that were the case then when the fossil fuel reserves are depleted there will be billions of people in the dark since other alternative renewable energy sources battle their own economic and environmental problems.