



Harbour Environmental Linkage Project
Feasibility Study

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Introduction

The Harbour Environmental Linkage Project (HELP) is the keystone for promoting a more sustainable and environmentally sound Victoria. In order to understand the costs and benefits of this project, Pacific Consulting has assessed the related feasibility issues. We will begin by summarizing the problems and benefits associated with each issue of the HELP. We will then close by discussing the HELP projects potential for obtaining sustainability for Victoria, B.C.

Jamey Stoddard is our Location Logistics Expert and will be discussing the issues associated with the project location. Kyle Pieti is our Feedstock Analyst and will be discussing the issues associated with feedstock for the plant. Stacey Glenewinkel is our Economics and Green Building Advisor and will be discussing the economic impacts of the project as well as alternative sources of electricity generation for the island. Finally, Dave Van Dyk is our Environmental Engineer. He will be discussing product usage and the associated impacts.

Feedstock

- * There is currently not enough yellow grease to recycle from restaurants on the island to support the quantity of bio-diesel production required. Raw feedstock will have to be shipped in from the mainland.
- * To meet the 200 million liter production target, an estimated 416,000 acres of canola would need to be allocated for this use.
- * There is currently no source of methanol on Vancouver Island. Bio-methanol can be produced using anaerobic digesters and biomass or methanol can be brought in from the mainland.

Problems:

- * Bringing feedstock to the island prevents the island from being completely self sufficient, as well as increases production costs.
- * 416,000 acres of canola allocated for bio-diesel reduces the food supply

Benefits:

- * Contracting with Canadian farmers to produce canola oil for the plant will keep the farming economy in Canada strong
- * Manufacturing methanol from island bio-mass will add to the sustainability factor.

Economics

* Vancouver Island is currently experiencing an economic boom, with unemployment levels at a 32 year low at 4.7%. There have been observed labor shortages in some industries. Roughly 350 indirect jobs will be required for construction of this project. Those workers will have to be brought in from other locations.

Problems:

- * This sends revenue off the island in the form of wages to outside workers.
- * Temporary housing and accommodations will need to be made for outside workers.
- * With an already perceived labor shortage in some areas, the price of labor may rise and there may be an increase in demand for good and services. This could lead to shortages of some goods and services as well as price inflation.

Benefits:

- * An increase in labor force and increase demand for goods and services, will maintain the currently robust economy, as long as shortages are only in the short run and price inflation is managed with effective government policy. Economic Development Minister Colin Hansen says it is "essential that we... provide important high-quality programs and services residents can rely on." This HELP Project would provide those programs and services.

*Government participation through subsidies will drive market growth for bio-diesel and stabilize the price against market fluctuations. The current incentives are a good starting point. Offering grants, loans, tax exemptions, tax credits and utility rebates will encourage support of bio-diesel. Tax credits for distributors based on the percentage blend will encourage distributors to make higher blends. We suggest \$.01 per 1% blend. (\$.50 tax credit per liter for B50).

Current incentives:

Accelerated depreciation of 30% per year on bio-diesel plants
No sales tax on bio-diesel between B5 and B50 – Per Ministry of Provincial Revenue
Emission Reduction Credits (ERC) – international markets forming soon

Location

Safety Issues:

- * Storage of methanol presents safety hazards to surrounding residents and businesses as well as plant workers. Having the transportation hub in the same proximity to the plant also poses safety risks to large numbers of travelers in the area. Risks of fire and explosion as well as leaks and spills must be mitigated though an effective EMS program to ensure public and environmental safety.
- * The harbor location presents additional environmental and safety hazards concerning wastewater and spills.
- * Since this is a capped brownfield location, the environmental impacts of drilling or otherwise piercing that cap presents safety and health hazards to surrounding residents and the environment as well. It will also require extensive permitting and significantly increased costs. Our estimates predict a \$20-30 million increase in costs.

Location Benefits:

- * The central harbor location allows easy access for delivery of materials needed for construction of the project as well as for feedstock when production begins.
- * Refueling municipal and public transportation vehicles will be easy because of the proximity of the transportation hub to the bio-diesel plant
- * The central location offers a tourist attraction as well as a demonstration of Vancouver's commitment to sustainability

Community Relations Issues:

- * The public may consider the bio-diesel plant an eyesore or a safety hazard. Their concerns should be heard through public meetings and comments. Misconceptions about bio-diesel should be addressed and educational opportunities should be made available. Once the plant is constructed, education for community awareness of sustainability, how the plant works and benefits the island is recommended.
- * Developers and land owners surrounding the area could be affected by property value changes. The bio-diesel plant could reduce property values, while the transportation hub will likely increase property values. Working with land owners will be an important step in maintaining a positive relationship with community members and support of the sustainability goals.

Product Use and Impacts

Market

- * If the government develops legislation requiring that all public transportation and municipal vehicles are switched to bio-diesel and then set up contracts with distributors to supply this fuel to the city, it would ensure a market for the product. All port generators, harboring barges, public ferries and pleasure craft should also be required to switch to B-20, as well as municipal vehicles. This combined use of bio-diesel instead of regular diesel will reduce air pollution by an estimated 30%.

Air Quality Impacts

- * The combined use of B-20 bio-diesel instead of regular diesel in the vehicles mentioned above will reduce air pollution by an estimated 30%. Specifically unburned hydrocarbons would be reduced by 14%, carbon monoxide and particulate matter would each be reduced by 10%, and sulfur would be reduced by 20%. Nitrogen oxides would increase but only by 2%. WISE Energy Co-Op, 2004

Marine Quality Impacts

- * The use of biodiesel blends in marine craft has the potential to offset marine pollution.

Tourism Impacts

- * Reduced pollution will result in increased visibility, better air quality and a cleaner environment. These things encourage visitors. The transportation hub will make it easy for tourists to get around the city and the plant will be a sustainability icon. This will lead to increased tourism.

Energy Targets

In order for Vancouver Island to generate 75% of its own power by 2020, we propose investing in alternative forms of energy such as wind, wave, solar and biomass technologies. B.C. Hydro is currently supplying about 77% of the island's power and is aware of the need to retire the underwater transmission lines. They have been researching alternative energy ideas and support attempts to incorporate innovative, renewable energy technologies for the island's future power needs.

In B.C. Hydro's 2000 Executive Report on the Green Energy Study for B.C., wind and wave power were both found to be strong potential sources of electricity. The wind source was only studied on high elevation forested terrain. The remote location and rugged terrain presented issues with installation, but it was estimated that 650 MW of power could be generated from on-shore wind. We believe that off-shore wind generation has a much higher generation capacity than on-shore. A 1223 square mile off-shore wind farm, built 3 miles out has the potential to produce 3000 MWh of electricity each year and is an energy source that should be considered. Wave power was also found to be a good source of energy as well. On the west coast of Vancouver Island it was estimated that 200 MW of power could be produced.

Together these two sources of electricity will help Vancouver Island to meet the 2020 target of 75% energy independence.

Conclusion

The HELP Project could be an icon of sustainability for Victoria B.C. Like any major undertaking involving innovative ideas, there are many issues that need to be considered. Once these issues are recognized and strategic plans are put in place for dealing with them, the project can move forward with great success. Producing bio-diesel for all the public and municipal vehicles on the island, right in the heart of the city is a major step forward in reducing pollution. Offering tourists and residents a multi-modal, state of the art, green transportation hub in the heart of the city will welcome visitors and make it more enjoyable to get around for everyone in Victoria. Producing 75% of the island's own power from clean, renewable technologies by 2020 will give the island more self-sufficiency and greater sustainability. These three components will demonstrate to the world that Canada is making real attempts to do their part to curb green house gas emissions and make the environment cleaner and better for everyone.