Technical Reports

BC Coastal Forest Sector Hem-Fir Initiative

Evaluating Options for Biofuel Production from Pyrolysis on the BC Coast

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Abstract

The purpose of this report is to explore the possibility of using pyrolysis oil produced on Vancouver Island as a renewable crude component (bio-crude) in the petroleum-refining process or as a drop-in fuel. During the course of the review it was determined that there were multiple options to obtain different grades of fuels from a thermochemical approach, so the review was widened to include pyrolysis-to-crude, pyrolysis-to-drop-in-fuel and super-critical-water-to-crude. The original supposition was that a crude feedstock-supplement would be produced from woody biomass and fed into refinery systems and power generating systems along the western coast of North America. As Vancouver Island is the proposed point of oil production, refineries and power stations along the British Columbia, Washington State, Oregon, and California coasts were originally considered.

As the report progressed, it became evident that a drop-in-fuel would be the best bet, particularly in the short-term. However, based on the information collected in this report it would still be considered high risk to proceed with a fuel-based technology on Vancouver Island. There are a number of uncertainties that would need to be addressed; foremost being demand by refineries or fuel blenders, feedstock costs and the technology maturity. Issues of scale and shipping could be overcome with effort.

In order to address the primary issues, the authors of this report would recommend the following:

1. Address Demand: the strongest option seems to be the possibility of a biorefinery plant on Vancouver Island producing a drop-in fuel. Issues surrounding logistics need to be addressed before considering exportation into the United States, and overall demand is uncertain. In order to proceed, the market for fuels on Vancouver Island, including the distribution chain, needs to be fully understood. Before moving forward with this option it is essential a fuel-distribution partner be identified and a feedstock-plan be resolved.
2. Address Technology: detailed reviews of the technology options should be completed (starting with KiOR and Envergent).
3. Address the Economics: at the time of this report the general feedstock economics indicated a need for biomass feedstock in the range of $60/oven-dry ton (odt). This is a significant hurdle that needs to be further explored and understood. Scenarios that would save distribution and refining costs might allow for a higher feedstock price, and this relationship needs to be fully understood.

There is significant work needed to open up the options of fuel production from woody biomass on the BC Coast. The investment to do this should be carefully measured against the full scale of the potential opportunity.

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