



FutureMetrics LLC

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Industrial Wood Pellet Export Projects

How to Identify a Good Prospect

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The industrial pellet manufacturing sector is growing very rapidly in the US and Canada. United Kingdom and European demand is forecast to increase by a factor of at least four in the next few years. Exports from North America, currently at around 4 million metric tonnes per year, by many forecasts, will exceed 20 million tonnes per year by 2017.

As a result, there is something like a gold rush in the industrial pellet export sector. And like the California gold rush, the sector is attracting “prospectors” of all types who see fortunes to be made from simply turning wood fiber into wood pellets.

FutureMetrics has produced a number of pre-feasibility analyses for prospective pellet export projects. Unfortunately in some cases the analysis came a bit late in the process; **time, resources, and a lot of money was wasted chasing some prospectors’ dreams for that pot of gold**. We know what to do first before the serious money is committed.

This brief document will focus on how FutureMetrics can provide assistance in defining if a project is feasible (the pre-feasibility work, which we call Phase-Zero). “Phase-zero” is a low cost “baby step” that the “prospector” funds to prove the viability of the concept. FutureMetrics plays the role of gatekeeper. FutureMetrics will deliver a detailed pre-feasibility analysis that may or may not provide a foundation for a serious project.

The process of developing a project for manufacturing and delivering industrial wood pellets has two fundamental components: (1) optimal location and (2) reliable and consistent production technology.

The production technology is well established. There are continual improvements being made in drying, milling, and pressing technologies and new projects would be expected to incorporate the industry’s best proven practices to achieve lowest operating costs and highest reliable and consistent outputs.

Offtake agreements, while essential to project financing, are assumed to be attainable at competitive rates if the project is feasible.

The hard ceilings on prices that UK and EU buyers can pay for wood pellets demands that the entire supply chain for industrial wood pellets be optimized for lowest cost. Thus the importance of making sure a prospective project can deliver optimal costs throughout the supply chain.



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The location of the project is the key to an optimal cost structure. Location determines wood costs, transportation costs, and utility costs, as well as defining other hurdles that have to be overcome to build a successful project.

The ability for a project to source sustainable volumes of wood fiber at prices that support the business model is obvious. Wood supply is a critically important input to the success of the project; but there are other important **location-defined** characteristics. The checklist below shows the important criteria that need to be defined and priced for a project to be vetted and deemed feasible (we strongly advise that an option for site acquisition be in place).

- ✓ Wood basket
 - Volume and price
 - Current wood flows and forestry operations
 - Sustainability criteria
- ✓ Access to road, rail, and/or barge transportation
 - For inbound wood supply
 - For outbound pellets
- ✓ Distance to port
 - Cost per ton to get from mill to port
- ✓ Port terminal capability
 - Inbound freight logistics
 - Storage and loading infrastructure
 - Cost per ton for storage and loading
 - Vessel size
 - Draft and wharf restrictions
 - Estimated cost per ton for shipping (determined by location and vessel size) to estimate the FOB price for pellets stowed onboard
- ✓ Utility connectivity
 - Sufficient and nearby power
 - Utility rates
 - Water and waste water
 - Natural gas (for RTO operations if needed)
- ✓ Zoned land
- ✓ Ability to permit the facility
 - Air emissions (VOC's, particulates)
 - Land use (wetlands, etc.)
 - Water use
- ✓ Availability of workforce
- ✓ Local acceptance
- ✓ Federal / state / local incentives
 - Tax Increment Financing)
 - New Market Tax Credits
- ✓ Other factors that may arise as the project's location and scope is developed



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Overview of “Phase-Zero” Services provided by FutureMetrics:

Site Wood Study – Experts from our partner firm, Innovative Natural Resource Solutions LLC (www.inrslc.com) will conduct a preliminary assessment to estimate the available volumes, feedstock characteristics, and pricing into the pellet manufacturing operation. The wood study will quantify the sustainable fiber supply (accounting for other existing demand), estimate marginal cost curves to get the fiber over the gate, and estimate the average price for pellet feedstock. The data will determine the maximum feasible production output for the operation based on the boundaries for wood procurement.

High-Level Site Analysis – Our team will make sure that permitting, zoning, and other siting issues will not be a major hurdle. We will make sure that sufficient power is nearby and will estimate costs for interconnection and average rates. We will locate other vital utilities if needed.

Pellet transportation, Port Storage, and Ship Loading – Our team will engage with the port(s) management to determine if it is feasible to build (or use existing) storage infrastructure and ship loading infrastructure at the port(s). If so we will estimate storage and loading costs. We will determine maximum vessel size and estimate shipping costs to derive an estimated FOB pricing for the pellets. We will also determine the best transport pathway(s) and estimate the per ton cost of transporting pellets from the site to the port.

Financial Analysis – We will use the estimated wood costs and other key operating costs (electricity, dryer heat fuel, air emissions control, other), downstream transport and shipping costs, and forecasted pellet pricing to analyze the project’s financials and present key decision metrics to show the expected profitability of the project. The report will identify and quantify critical project risks. The analysis will also show the expected project development costs and timeline (permitting, legal, engineering, consulting, etc.) to get the project to the point at which it can be financed for construction.

FutureMetrics will provide a detailed report that will show why the “prospect” is worth developing or should be passed over. In some cases the project may be viable but not in the format originally proposed. If the project is feasible, the report will also contain an estimated project development budget and timeline.