

5 COMMON MISTAKES IN WOOD PROCUREMENT

... AND HOW TO FIX THEM

SMALL & MEDIUM SIZED BIOMASS SYSTEMS: SUPPLY CHAIN RISK SERIES



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Mistake #1 : Don't Worry, the Wood Fiber Feedstock is "Typical"

In 2011, a fortune 500 company purchased a large woody biomass combustor to heat and cool its factory in North Carolina. It expected to be able to utilize "typical hog fuel" or "whole tree chip". The manufacturer confirmed the wood spec, and the company issued an RFQ to local wood suppliers. In the end, the project could only burn "clean paper quality" chip - the handling and conveying system kept blocking up.

The ongoing premium to burn the higher grade wood chips is over \$10 per ton - more than \$300,000 each and every year.

These kinds of failures happen over and over in new bioenergy builds. It is a fact that the vast majority of bioenergy project failures occur due to feedstock related issues. A RAND study on bioenergy feedstock indicates that most new bioenergy projects

are running at less than 50% of capacity and that in over 80% of the cases, this is due to feedstock issues.

Woody biomass can have particular handling problems because it can act like a liquid (and flow) but in many situations (like with increased moisture, or under pressure) it can act as a solid (and stick).

The wide variances in woody biomass feedstock mean that significant thought needs to be put into the feedstock handling system. Ecostrat sits on the advisory board of Idaho National Lab's National Biomass Feedstock User Facility (www.inl.gov/bfnuf/) which is the largest testing facility for biomass feedstock in the country. INL can set up to mimic your handling system (or the one you intend to purchase) and help you understand problems *before they occur*.

"A good feedstock study will help avoid costly system modifications and feedstock cost premiums"

It is important to understand that with a proper approach, these issues are almost always preventable. So...

1. Design the combustor/gasifier for the feedstock - not vice-versa. One of the most common and costly errors is to pick a bioenergy system and to plan to procure feedstock that fits the spec. Once you know the feedstock that you can get on a consistent and reliable basis, find the bioenergy system that works with that feedstock.

2. Don't take the equipment manufacturer's feedstock spec and assume that you can procure that spec from local suppliers. Rather, preferred suppliers should provide

samples which are independently tested by a lab of the buyer's choosing. The equipment manufacturer should confirm that the system will work with that spec.

3. Get a good feedstock study. A good feedstock study will look at the expected variabilities in sizing, moisture content, CV, ash content and other factors that can affect system performance over the course of the year.

Remember, bioenergy plants are expensive... but it is far more expensive to change a feedstock handling system to accommodate "typical" local feedstock afterwards - and more expensive still to pay a "forever" premium to acquire the specific type of feedstock that "makes the system work".



Mistake #2 : Paying a Higher Premium (Than Necessary) for Tighter Specification

It is always better to use the same specification for wood fiber as the large buyers in the woodshed.

Pulp and paper companies and large wood fired power plants can utilize a wide variety of feedstock - large variances in size, moisture and ash content are often permitted.

But often this is not possible. Smaller facilities tend to have tighter feedstock specifica-

tions. And this often results in higher feedstock cost.

Each clause you add to your contract that is not typical in the broader market adds perceived risk and drives fiber price up. And this is normal: to the extent that your contract terms need to be different, suppliers will justifiably charge more. But the truth of the matter is that premium is often excessive.

However... it is important to understand how much is too much.

Small projects tend to overpay for feedstock - even given additional restrictions like delivery times and tighter sizing and moisture specs. We often see *suppliers changing premiums of 50% or more over market prices* and justifying their premiums on the basis of "tight specifications", "tight delivery times", "long discharge time" or other terms in the supply contract.

Buyers need to understand whether these premiums are justified. To do so, it is imperative that buyers achieve a comprehensive understanding of the supply market. One of the best ways of doing so is to engage an expert to carry out a proper wood fuel study. (www.ecostrat.com/consulting/products-services/).

A good study will answer questions like:

- **Who main competitors are and what they pay for fiber.**
- **Who top suppliers are. How they rank in terms of reliability and quality.**
- **What are typical contract terms in the region? What is a fair premium for "more restrictive" contract terms?**

Mistake #3 : Paying Flat Fees for Truckloads of Wood Fiber

In over 20 years of helping smaller bioenergy companies optimize their supply chains, you would be surprised at how often we see projects charged a flat fee per load delivered by suppliers of wood fiber. This usually happens at smaller bioenergy facilities where an on-site weigh scale is not available. A flat fee per load is sometimes seen as a way of getting around the problem.

Unfortunately, our analysis of hundreds of projects over two decades shows that *in over 20% of these cases, customers are charged full rate for loads that are, on average, only 85% full.*

If you don't have on-site scales, then in the supply contract *you should have the right to direct any load at your discretion to an independent weight scale.* And you should do so for random loads several times a year. Know what a "full-load" weighs, on average. Comparing these independent weights with the suppliers' scale tickets can go a long way to making sure that you not getting less wood than you have paid for.

"Small to medium sized biomass projects tend to overpay for feedstock"

"In over 20% of cases, customers are charged full rate for loads that are, on average, only 85% full"



Mistake #4 : Bad RFQs

RFQs for wood fiber procurement are a different animal than other RFQs. It pays dividends to draft them correctly. Fiber suppliers tend to be smaller and more fragmented. They are often used to dealing on a handshake or a simple PO rather than a robust contract. They may be used to fluctuating prices which they negotiate on a monthly basis with the local market managers. And they often communicate, collaborate and sometimes even collude with one another to set prices.

We have seen RFQs with terms that are so atypical that no supplier even responded. We have seen RFQs that are withdrawn and then the next time they are issued, suppliers increase the cost because they suspect unreliability. In short, bad RFQs result in underperforming projects, feedstock quality issues, costly repairs and shutdowns, shortages/outages, and higher than necessary feedstock cost.

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Here are some basic RFQ rules to avoid costly mistakes:

1. RFQ terms should, as closely as possible, mirror the terms of the competing established buyers for fuel in the local market.

2. Engage suppliers early in the process. It is vital to understand local wood supply dynamics *before* you issue an RFQ. Learn about their business. Obtain samples. Go visit their operations. Involving suppliers early in the process builds relationships which are critical to successful ongoing operations. It also allows a deeper understanding of the types and specifications of biomass that are currently being produced and the contract terms suppliers are comfortable with.

3. *Structure operations to be supplier friendly.* Flexible delivery hours, ease of access, quick discharge times, resizing equipment on-site to handle oversize pieces, favorable payment terms and timely payments - these are all mechanisms to ensure your project is “supplier preferred” and will function to reduce overall feedstock cost.

4. *Have a contract that avoids onerous rejections or penalties clauses.* Issues will come up over the course of the contract term: quality will vary, deliveries may be late, wet or cold weather can cause shortages. How these issues are handled in the RFQ can have major impacts on your overall feedstock costs. Rejecting loads or seeking damages for non-performance can be a mechanism to mitigate short-term losses, but over the long-term, the consequences can be costly. A reputation as a difficult market will limit your supply base and drive prices up.

*“It is vital to understand local wood supply dynamics **before** you issue an RFQ”*



Mistake #5 : Not Having a Disruption Plan When Things Go Bad

Feedstock is the largest variable cost for bioenergy plants. Controlling feedstock price risk therefore is vital to project viability and contributes directly to the bottom line. *When it comes to woody biomass, supply disruptions are the highest source of additional cost to bioenergy plants.*

Disruptions can be the result of poor weather, equipment breakdown, competitive demand for scarce fiber by large local buyers, or just “bad luck”. Whatever the cause, *understanding the likelihood of a supply disruption occurring and setting up a plan to deal with it can result in tens or hundreds of thousands of dollars of savings a year.*

“Supply disruptions are the highest source of additional cost to bioenergy projects”

An Ecostrat SCD (Supply Chain Disruption) Plan is designed to mitigate the risks associated with biomass feedstock procurement. Development of, and ongoing adherence to, a SCD Plan can contribute directly and significantly to the bottom line by helping minimize many of the typical impacts that drive biomass procurement costs.

An Ecostrat SCD plan identifies risk events (such as supplier breach, or weather events), quantifies impact on the supply chain, and identifies strategies to mitigate those impacts. Prepared bioenergy feedstock buyers have a protocol in place (sufficient on-site / off-site inventory, redundant suppliers, variable quantity contracts at buyer’s discretion) so that they can act quickly to minimize a disruption’s impact on feedstock costs.

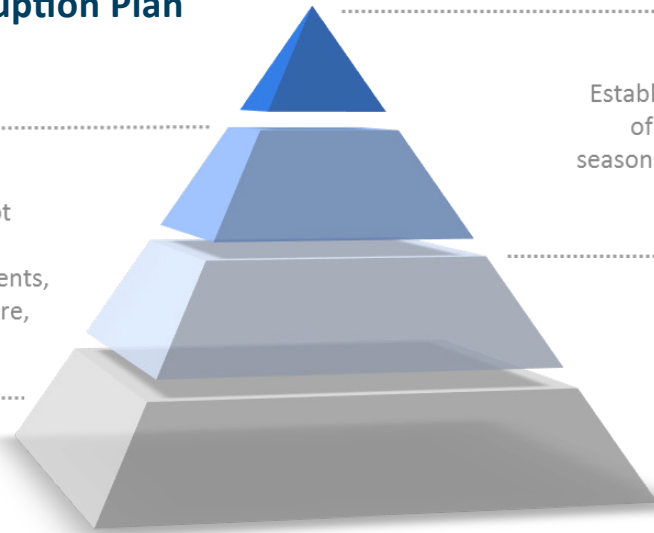
Biomass Supply Chain Disruption Plan

Assessment of Risk Events

Impact analysis of events that can disrupt feedstock supply (i.e. supplier breach or insolvency, feedstock quality, weather events, diesel cost, competition, equipment failure, policy changes).

Procurement Strategy Evaluation

Review, revision and approval of: Feedstock mix, material flows, supply management process, staffing, inventory management.



Risk Mitigation Protocol

Establish strategies to minimize the impact of risk events (i.e. supplier redundancy, seasonal inventory minimums,, cost indexes, contract terms, Supply Insurance).

KPIs

Create key performance indicators and measurement standards. Ensure feedstock costs are aligned with market price. Benchmark overall procurement performance.