Third Party Business Perspectives - Relationship between Biomass Buyer and Seller

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Our company -- BioResource Management, Inc. (BRM)

• Based in Gainesville, Florida
• Specializes in procurement of biomass for energy.
• Over thirty years’ experience
• Staff includes certified foresters and environmental scientists.
BRM has helped developed, started up and supplied biomass for many facilities since 1982

- 7.5 MW biomass plant, FL.
- 25,000 tons per year-to FL state prison.
- 40MW biomass plant in FL, delivery of 150,000 tons annually.
- 74.9 MW biomass power plant in Florida, delivery of 350,000 tons per year.
- 17.8 MW biomass power plant in MA, delivery of 180,000 tons per year.
- 18.0 MW biomass power plant in NY, delivery of 160,000 tons per year.
- Developing dedicated energy in LA, FL, TX.
In June 2011 BRM was awarded long-term contract to manage all biomass for the 100 MW biomass power facility in Gainesville, FL. Project cost $500 million and will receive 1 million tons per year.
Overview of Discussion

• Perspectives of the Biomass Buyer
• Perspectives of the Biomass Seller
• Intersection of Parties’ Interests
• Where Things Often Go Wrong
• Other Considerations in Contracting
The Biomass Buyer

- Generally the project owner or its agent
- Often has specific technology that requires specific feedstock

Uses one or more biomass types:
  - Dedicated Crops
  - Forestry related material
  - Mill residues
  - Urban Wood Waste
  - Agricultural Residues
Buyer’s Perspectives in Biomass Contracting

1. Lowest **cost** material meeting **specification** in sufficient **volume**;  
2. Dependable, predictable biomass supply; and  
3. Supply that is financeable and sustainable.  

The Buyer needs to demonstrate they have the ‘right’ feedstock to outside parties—engineers, bankers, investors, regulators, and “other interested parties”.
The Biomass Seller

- Seller can be a-
  - Landowner
  - Generator
  - Processor/Harvester
  - Transport Company
  - Aggregator/Dealer

or a combination of all of the above.
The Seller’s Perspectives-

• Can I make **money** producing biomass?
• What happens if the Buyer doesn’t take it?
• Is this the *best* opportunity to make money and/or use the assets (land, equipment, resources) that I have?
The Major Intersections of the Two Parties

• Costs and Pricing
• Reliability to produce and receive
• Ability to meet specification

Not coincidentally, these are also the most common things to go wrong.
Biomass Costs - three main items:

- Production and Procurement
- Processing
- Delivery
PRODUCTION AND PROCUREMENT
Payment to the landowner, grower, or recipient of biomass materials-
GAINING TITLE
PROCESSING-
Includes harvesting, collecting and sizing to meet Buyer’s specifications
Delivery

• All costs associated with loading, transport to Buyer’s location, and in some cases off-loading material meeting specification.
So what can possibly go wrong?

• Bad Assumptions
• Incorrect Information
• Letting Hope Substitute for Judgment
The top list of “things that go wrong”, from thirty years’ experience:

- Biomass Specifications
- Under-estimating costs
- Interruptions of deliveries or receiving
Biomass Specifications

• Three primary specifications:
  – Chemistry - what is the stuff
  – Particle Size - requirements for the technology
  – Moisture Content
CHEMISTRY

• Nature of biomass. Related to
  – Species
  – Plant age
  – Portion of plant (crown, bole, stump, etc)
  – Growing micro-environment (soil, water, etc).

In general, once committed, neither Buyer or Seller can significantly manage or change chemical content of contracted feedstock. Analyze carefully!
Particle Size- requirement is often not understood by either the Buyer or the Seller.

“I told you to bring me this!”  “I told you I was bringing you this”!
Particle Size requirement is one of the Key Parameters of Processing Cost

If this size costs $X$ to size reduce... then this size could cost 2$X$ or 3$X$ to size reduce.
What do you mean not acceptable—just a couple of oversize pieces!
Cost Assumptions- “Hauling biomass is just like hauling anything else”.

Volume required to haul same weight of biomass
Moisture Content- a bigger issue than Seller and Buyer realize

• As-received weight (green tons) doesn’t capture potential benefits for efficiency.
• Combustion facilities want to buy BTUs, biofuels facilities want to buy usable carbohydrates.
• Purchasing by the dry ton helps to capture actual value of the feedstock.
Moisture Content has large impact for Buyer

<table>
<thead>
<tr>
<th>Moisture Content</th>
<th>Btu Wood</th>
<th>Btu Water</th>
<th>Net BTU Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>4,250</td>
<td>(600)</td>
<td>3,650</td>
</tr>
<tr>
<td>47%</td>
<td>4,505</td>
<td>(564)</td>
<td>3,941</td>
</tr>
<tr>
<td>44%</td>
<td>4,760</td>
<td>(528)</td>
<td>4,232</td>
</tr>
<tr>
<td>41%</td>
<td>5,015</td>
<td>(492)</td>
<td>4,523</td>
</tr>
<tr>
<td>38%</td>
<td>5,270</td>
<td>(456)</td>
<td>4,814</td>
</tr>
<tr>
<td>35%</td>
<td>5,525</td>
<td>(420)</td>
<td>5,105</td>
</tr>
<tr>
<td>32%</td>
<td>5,780</td>
<td>(384)</td>
<td>5,396</td>
</tr>
</tbody>
</table>

Reducing the moisture content from 50% to 32% is a weight loss of 18%, but an increase in BTU value of 40%
The Seller can also capture more value per truckload.

<table>
<thead>
<tr>
<th>Moisture Content</th>
<th>Dry Tons per Load</th>
<th>Value per Load</th>
<th>Transport Cost/Dry Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>14.00</td>
<td>$560.00</td>
<td>$16.80</td>
</tr>
<tr>
<td>45%</td>
<td>15.40</td>
<td>$616.00</td>
<td>$15.27</td>
</tr>
<tr>
<td>40%</td>
<td>16.80</td>
<td>$672.00</td>
<td>$14.00</td>
</tr>
<tr>
<td>35%</td>
<td>18.20</td>
<td>$728.00</td>
<td>$12.92</td>
</tr>
<tr>
<td>33%</td>
<td>18.76</td>
<td>$750.40</td>
<td>$12.54</td>
</tr>
<tr>
<td>31%</td>
<td>19.32</td>
<td>$772.80</td>
<td>$12.17</td>
</tr>
<tr>
<td>29%</td>
<td>19.88</td>
<td>$795.20</td>
<td>$11.83</td>
</tr>
<tr>
<td>27%</td>
<td>20.44</td>
<td>$817.60</td>
<td>$11.51</td>
</tr>
<tr>
<td>25%</td>
<td>21.00</td>
<td>$840.00</td>
<td>$11.20</td>
</tr>
</tbody>
</table>

Using a selling price of $40.00 per dry ton, $.14 per mile haul cost for a 60 mile haul, and a 28 ton load, a seller can gain a value of $168.00 per load by delivering at 35% MC instead of 50%.
Other Biomass Contracting Elements

- The Buyer: Buy at the lowest price, but there is no benefit from having an economically weak supplier.
- Seller: Don’t over-commit on price and specifications. Plan to be forced to supply.
- Buyer: Longest fixed term the better.Seller: Need a long enough term to pay off investment.
QUESTIONS OR COMMENTS?

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