PFI Commercial Fuels Committee Vision Document
May 2009

This document is intended to summarize the results of the PFI's Commercial Fuels Committee discussions during the month of April 2009.

Biomass – Supply and Demand:

The pellet fuels industry has suffered from imbalances in the supply and demand of pellets. Regional pellet fuel shortages have resulted from:

1. Improper distribution of pellets across North America (example - excess production in the west, insufficient production in the east).
2. Consumers buying two years worth of fuel instead of what they need now.
3. Insufficient pre-buying by retailers during summer months.
4. Reduced amounts of traditional feedstock materials due to economic recession (i.e. depressed lumber industry).
5. Competition from other industries making feedstock materials more expensive or harder to find.

As a result of these imbalances in supply and demand, concerns have been raised as to how this industry thinks it can grow as well as evolve into a central heating/bulk utilization market if it has so much trouble find a way to supply the demand of its current residential bagged market.

A challenge for this committee would be to help identify ways to overcome each of these supply and demand imbalance issues in order to confidently grow this industry without suffering from issues in supply and demand of pellets.

Are supply issues related to how much wood/biomass is available?

Historically, pellet production has relied on wood residuals. Many production facilities have been configured around the wood residuals that they have available to them and are therefore unable to adapt to other forms of woody biomass (i.e. whole trees). It is therefore important to note that if a pellet production facility indicates that it can't get enough feedstock materials it may be due to its configuration rather that due to the overall supply of woody biomass.

Due to the economic slowdown, many regions with forestry resources are seeing depressed markets for paper, press boards, lumber, and other forest products. Due to this economic slowdown, forestry resources are in vast abundance and at historically reduced prices. Most states currently appear to have pulpwood prices of approximately $30 - $40 per green ton. These prices are down from what has historically been reported (typically $30 - $50 per green ton with a high of $100 per green ton under specific market pressure).

A general conclusion of our discussions was that mills that are **<u>currently</u>** not able to get the amount of feedstock material they need for optimum production are either not configured in such a way that they can take advantage of other feedstock materials that are available, or they are unable to get the feedstock materials at a cost that will meet the end cost expectations of their customers. It is not the result of unavailability of biomass.

<u>Are pellets the best use of our biomass resources</u>?

It can often be heard in biomass discussions that utilizing biomass for fuel places a low value on the biomass resource. While this is likely true for other biomass utilization models, pelletization for direct thermal conversion does provide some rather nice numbers. Dutch Dresser of Maine Energy Systems provided the committee with two papers comparing the economics of biomass utilization. One was provided by the paper industry, which showed that inefficient processes really may not be the best utilization of our pulpwood resources, however a second paper provided by Bill Strauss (an economist with Future Metrics) indicated that pelletization followed by direct thermal conversion was much more economical.

Our discussions lacked input from other industry experts on what other renewable energy technologies may compete for these same resources. It is key to ultimately understand how this market will be affected as coal fired power plants switch to biomass, cellulosic ethanol comes on line, biorefineries are developed, etc.

<u>Does everyone need premium or can we start developing lower grade pellets</u>?

This topic definitely got mixed responses. In Maine, Dutch Dresser reported that consumer expectation requires the utilization of premium grade pellets. Consumers in his region appear to have little tolerance for equipment maintenance and needs to focus on premium for all applications including bulk utilization/central heating systems. Bob Ryan of Sunrise Agra Fuels painted a different picture. Sunrise Agra Fuels produces a standard grade pellet. Their market is different in that forestry resources are not as abundant so agricultural products are what is available. It contains higher ash, but since the region is based on agriculture consumers appear to tolerate the higher ash because it supports the industry they know (agriculture).

It is very likely that customer expectation and tolerance for maintaining their appliance will vary region by region and will likely be very dependent on the economics of various industries in their region. **A challenge for this committee would be to find some way to educate the various regions on how to best utilize the biomass they have in their back yard**. **This is likely through identifying appliances that will burn what they have the best**. (i.e. when in Door County Wisconsin burn cherry pits, as long as you can find an appliance that burns them effectively).

Leveling the Playing Field?

One of the biggest factors in producing pellets is finding feedstock materials at a price that will allow you to produce a pellet that meats the cost expectations of your customer. That can be very difficult if the playing field is not balanced. Currently, utilities and cellulosic ethanol receive a $50 per megawatt hour tax credit ($60 per dry ton credit). The pellet industry does not. The Government Affairs Committee of the PFI as well as the Biomass Thermal Energy Council are actively lobbying for a production tax credit for the biomass fuels industry**. This tax credit is extremely important if the pellet fuel industries if to be able to compete with other biomass industries that already have this advantage. We need everyone to support these efforts (Government Affairs – Please tell us how and when).**

Manufacture & Transport:

In general, it appears as though very few production facilities have bulk load out capabilities. Based on other manufacturers that have already set themselves up, it costs approximately $250,000 to get set up. The mill will need a 30 – 40 ton silo (can be on the ground or on a stand), a scale, and a load out spout, and of course a delivery truck. Do not use bucket conveyors to load the silo. They are very damaging to the product.

It sounds as though a number of producers have started out doing bulk delivery by delivering 40 pound bags and then cutting the bags open to fill the hopper. The general consensus was that bulk delivery is not profitable at first, but as the number of customers increases it eventually passes a point at which it can be profitable. The most profitable form of bulk delivery is to deliver to large scale users who can receive an entire 25 ton load. For residential applications a smaller truck is better (approx. 12 ton capacity truck).

In Europe 50% of the production facilities provide their own bulk delivery. The other 50% rely on independent distributors to provide delivery services. In Europe, pellet conveyance is almost exclusively pneumatic. About 95% of the delivery trucks are low pressure trucks set to 0.3 bar (4.35 psi). The other 5% are high pressure trucks set to 1.5 – 2.0 bar (21.75 – 29.0 psi). In the US, less than 1 psi is generally considered low pressure, 1 – 8 psi is considered medium pressure, and above 10 psi is considered high pressure.

In Europe, low pressure trucks typically have 8 ton cells (the cells are not pressurized). Pellets flow through a valve at the bottom of the cell into a conveying pipe that is pressurized to 0.3 bar. At low pressure, it generally takes about 40 minutes to load a 15 ton silo. High pressure trucks pressurize the entire cell to 1.5 – 2.0 bar. High pressure trucks unload faster, however there is much more damage to the pellets. The standard hose is a 4" hose and the standard receptacle is a 4" chemlock. In the US it is generally recommended to use as low of pressure as possible to minimize damage to the pellets.

Despite the pressure the process is very noisy

<u>Consumer Applications</u>:

In Europe, approximately 50% of the end users design their own pellet bunker out of plywood or whatever. The other 50% are using flexible silos. Very few people store pellets outside. Residential silos are typically up to 6 tons

Approximately 80% of European systems use a vacuum to bring the pellets from the pellet storage to the appliance. The remaining 20% use a screw conveyor.

There are approximately 100 different pellet boiler systems in Europe. Pricing ranges from $4,000 to $18,000. Only a few of these systems are being brought to US. In order to bring an appliance over they must have an ASME stamp. This is a very difficult and time consuming process. In addition, the exchange rate between the dollar and the Euro makes it cost prohibitive. Overall, the vast majority of European manufacturers do not see a market in the US so most are not willing to invest the cost and jump through the hoops necessary to enter the US market. **The EPA needs to recognize and utilize the European standards to verify that they meet the standards in the US.**

Current pellet appliance retailers can't install central heating systems. **HVAC system and boiler installation companies need to be the ones to learn how to install these systems**.

General consensus was that in order for consumers to switch to central heating pellet burning appliances fuel prices need to be high, the appliance must be very convenient, and there must be a very stable supply of pellets. All three of these are still questionable. It is likely that the adoption of this technology will have to come in stages. **Need to Define These Stages. (get peoples with stand alone pellet appliances to switch to central heating systems, those without a system at all may need to switch to a stand alone first before buying into a central heating application, etc.) Need to better define the profile of the consumer.**