Industry Prepares for Increased Biomass Demand

By DeAnna Stephens Baker

As the demand for renewable energy has increased around the globe, biomass has emerged as the top player on the renewable energy landscape. Now, with the deadlines for various existing Renewable Portfolio Standards (RPS) getting closer, new ones being passed and government incentives increasing, the expected increase in global biomass demand cannot be ignored.

Around 77% of the world’s renewable energy, or 10% of the world’s total energy, already comes from biomass with over 85% of that coming from trees and woody plants, according to the International Institute for Energy and Development (IIED). This makes woody biomass the source for over 8% of the world’s total energy mix. Biomass demand is expected to grow by leaps and bounds based on the number of facilities in construction and those on the drawing board start producing energy. Though numerous new bioenergy facilities have already been built and more are in the process of being built, plans for even more continue to be announced on a regular basis. At the end of September, 467 wood bioenergy projects were operating or had been announced in the U.S., according to Forisk Consulting. With all the new and proposed facilities gearing up to start production, the higher demand is expected to hit the market with a bang.

“There’s going to come a point when all of these projects start to come online and hit markets with half to one million tons of wood demand all at once and it may or may not be easy going,” said William Perritt, executive editor of RISI’s Wood Biomass Market Report.

Based on the number of new or planned wood energy facilities, Perritt expects to see a significant growth in wood demand between 2007 and 2015.

“The North American region, between wood pellet plants, wood energy plants and cellulosic biofuel projects, could bump up wood demand by almost 100 million green tons on an annual basis,” he said. “Most of that new capacity has yet to start. Some have come online, but the big energy production facilities are the ones that haven’t really started up yet.”

Market and Regional Differences

Pellet production and electric generation are anticipated to cause the majority of the boost to demand. Out of the 467 new projects, 169 are electric generating projects and 178 are pellet production projects. Still, the degree and main source of the demand will vary between regions in the United States.

About half of the new demand is projected to occur in the Southern regions of the United States as a result of both pellet and energy production. The biggest demand increase is expected to come from wood pellets being exported to Europe.

“On the pellet side you have large new mills located near port facilities and they’re going to be producing industrial grade wood pellets for export to European countries,” Perritt said. “That is a huge potential demand there.”

The prospective pellet demand from Europe is so much more promising than domestic demand due to the fast expansion it is currently seeing and the fact that European countries are more established in terms of feed-in tariffs and carbon markets. As a result, wood demand is predicted to see an increase of as much
as 80 million green tons across Europe from 2007 to 2015. Much of that growth is going to happen in the United Kingdom which will not be able to meet its own projected need.

“I think we’re looking at something on the order of 45 to 50 million green tons annually, and just under 10 million tons a year. So you can see from that that they are no where close to having the sort of production capacity needed to supply the biomass, whether it’s in the form of pellets or hogmills, to these new mills.”

The southern United States is projected to maintain a large market share of the pellets exported to Europe owing to several strategic benefits that other parts of North America do not have. Not only does the region have a sustainable supply of timber resources, but the climate allows year-round harvesting, unlike northern regions that have to deal with wet weather slow downs. It also has fast timber rotation and a close proximity to Atlantic ports which gives it a competitive advantage over competitive areas such as British Columbia which has to transport products down the west coast and through the Panama Canal to export to Europe.

While the South, will lead the country in pellet exports, the Northeast is expected to lead in increased biomass demand due to electricity generation. Almost half of the new and announced biomass projects are in the North. It is already the major use of wood for bioenergy in the region. In Maine, New Hampshire, Vermont and Ohio, wood is one of the two most important renewable sources of electricity. A recent Forest Service study expects the increased woody biomass demand from it to be considerable. In terms of biomass consumption, the most significant projected annual increase will likely come from power plants in Ohio (3.7 million tons), Massachusetts (1.95 million tons), New Hampshire (2.5 million tons) and Connecticut (0.8 million tons). The North’s lead over the South in renewable electricity production can be at least partially contributed to the fact that most Northern states have Renewable Electricity Standards (RES) and few Southern states do.

**Renewable Electricity Standards**

Though the United States does not have a federal RES in place, 29 states and the District of Columbia do. Several have non-binding goals, but most are mandatory. They range from 10% to 33% of power being sourced from renewable energy over the next two to 20 years. It’s not a lack of trying that has kept the federal government from passing a RES and it’s only a matter of time before one is. Federal legislation has been proposed multiple times with varying percentages of power, up to 25%, to come from renewable sources by 2025.

**Biofuels**

The impact that biofuels could have on demand remains as one of the largest uncertainties in regards to biomass demand. Though significant advances have been made, the sector is still very much in its infancy and will require a large amount of new capital investment to become a mainstream energy source.

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**Biomass Boom and Its Impact on the Pallet and Low Grade Lumber Markets**

With a potential boom in demand for wood biomass brewing in the industry, forward-thinking companies must consider the potential impact on their raw material supply as well as markets for their waste material. It looks like it could be both a blessing and a curse depending on your local market.

Many wooden pallet companies have limited options when it comes to making money off their waste stream. Smart pallet recyclers have ground up old pallets for years turning it into mulch, animal bedding or boiler fuel. Biomass for commercial energy offers another good market for waste wood. This could possibly increase the financial return that recyclers see on this waste material. That largely depends on the local market. Most biomass facilities draw from a 50-75 mile radius for material. You can’t transport wood biomass too far and make it work unless the material is in a highly dense form, such as a pellet.

If you happen to operate in an area where there are a number of paper mills and biomass facilities, you might see increased competition for scrap material and pulp. One trend that may occur is that slash (branches and brush left on logging sites) may be harvested more frequently as a good source for biomass. This is already done to a greater degree in other parts of the world, especially Europe.

What about the impact on the low grade lumber and used pallet markets? It is highly unlikely that wood biomass will reach the point that it can compete for material against other industrial users of low grade lumber and even used pallets. It could occur in isolated pockets. But the conditions would have to form a perfect storm of sorts.

Such a situation seems to exist in the United Kingdom where pallet recyclers are competing against biomass facilities for used pallets. Renewal energy initiatives pushed by the government have made it cost effective to take perfectly good used pallets and burn them instead of resuse them as pallets.

John Dye, the president of Timber Packaging & Pallet Confederation (TIMCON), said, “By diverting essential supplies from manufacturing, subsidies also damage the economy, dramatically increasing the price of essential and environmentally friendly products, such as timber pallets and packaging. We are alarmed to see predictions that if demand subsidized by the biomass industry grows to the size forecast, the price of timber could rise to more than double current levels in the near to medium term.”

The current U.K. situation shows what could happen in isolated regional markets in the United States given the right set of conditions. But the current situation here is very different from that in Europe, especially the United Kingdom. For starters, the United States has a much larger overall forest products industry and wood resource to use. Currently, very little slash is removed in this country whereas timber tracts in Europe frequently look as if they have been picked clean. Also, the Europeans have mandated and pushed renewable energy initiatives to an extent not likely to be duplicated in the United States, which is rich in coal and natural gas.

Smart pallet and lumber companies must keep all these factors in mind as they plan for the future.
in the research stage of processing of biomass into fuel. Though there are many demonstration facilities running on a small scale, no cellulosic ethanol production facility has yet reached a commercial scale. None of these developmental facilities are ready to convert biomass into a biofuel to the market, according to Perritt. Some demonstration facilities that attempted to transition to commercial production have already failed. For this reason, biofuel production remains a subsidy-driven sector as the government continues to award research and development (R&D) money.

“It seems right now that if you tell the federal government that you have a plan to squeeze gasoline out of a log then they are more than ready to step up with R&D money,” said Perritt.

A study on the viability of the wood-based transportation fuel sector in the United States found that it will be at least another 10 years before wood-based biofuels will be commercially viable on a wide-spread basis. Some projects show promise, such as the gasification technology under development for diesel and/or jet fuel by several firms or projects producing drop-in fuels. Generally, it is believed that major technical hurdles will likely disrupt commercialization for most technologies under development.

“Ultimately, investors must think hard about allocating capital to projects that require 10+ years of technological development and rely on EPA renewable fuel mandates, which are essentially moving targets,” said Dr. Brooks Mendell, co-author of the study.

**Existing Market Impact**

As the biomass demand increases, many in the forest products industry wonder what it will mean for them and their suppliers. The impact that future biomass demand will have on existing wood products markets depends on several issues. With the U.S. housing market in a slump and sawmills shutting down across the country, wood residuals that are usually used in pellets, such as sawdust, are currently running low. However, a weakening in traditional biomass-using industry may offset that somewhat.

A U.S. Forest Service study of the wood-based energy and heating industries in the Northeast concluded that the ongoing decline in the production of pulp and paper along with an apparent decline in other traditional woody biomass-using industries will relieve the pressure on the woody biomass resource in the region.

“Assuming a normal and expected evolution of events, woody biomass consumption in the region will increase by roughly 25% over the next decade,” the study said.

However, the authors noted that the future direction of electricity production from wood and co-firing of wood in coal power plants is the variable that could most affect the woody biomass resource, especially in Pennsylvania, West Virginia, and Ohio.

Localized regions where the traditional wood products industry is not very large may see localized shortages or upward market pressure on prices as existing wood residues may not be sufficient to supply the demand from new electricity-generating facilities. For example, in Massachusetts the demand for woody biomass is expected to increase from 0.3 million tons/year to around 2.25 million tons/year to meet the anticipated increase
in electricity generation, according to the Forest Service study. However, since Massachusetts’ traditional wood products industry is relatively small, existing wood residues from within the state will not be sufficient to supply the new electricity-generating facilities. In general though, shortages are not expected to be the issue. Prices are. “The wood is there. That’s not the issue,” said Perritt. “The cost is going to be the issue.”

Though there is a diminishing amount of mill residues available, unused logging residues still exist in fairly large quantities. If the housing market recovers and lumber and wood panel production expands in the coming years, logging residues could supply a considerable portion of the growth in U.S. demand with small impact on other forest products markets. However, if the future output of traditional forest products does not see enough of an increase, the expansion of the woody biomass market will likely be more disruptive to other wood markets. It could also result in an opportunity for a new revenue stream arising for those who already grind used pallets. Wood pellets are made out of sawdust, and pellet facilities may be willing to purchase ground pallet residue, particularly if local resources are tight. The biggest thing that is not quantifiable at this point is how far different facilities will go to keep others from tapping into their source of wood. Competition between mills and other facilities could drive prices up as they try to keep other companies from drawing from their wood basket, Perritt said.

Though the demand for biomass is going to increase due to RES requirements and European demand, the full extent of the demand is still unknown as many of the announced projects may never start commercial-scale production. Important steps for forest products companies to be taking right now include building relationships with suppliers, firming up supply lines to prepare for potential price increases, and seeking out potential new revenue sources. Companies that are already set up to grind used pallets and other wood waste should consider making contact with new bioenergy projects in their area.

In addition, companies interested in getting involved in the commercial bio-

mass market should educate their employees about the environmental benefits of using biomass so that they are prepared to answer questions from members of the public who may have been fed incorrect information.

“In my experience, the biggest obstacle (in addition to what the government might or might not do) to expanded use of woody biomass is ignorance on behalf of the general public and environmentalists who do not want to see trees cut,” said Dr. Daniel Cassens, a wood products specialist and professor of at Purdue University. “There is a lot of misinformation being presented.”

Hysterical claims that all forests in proximity to a new plant will be clear-cut show how little people outside of the wood industry understand the price difference between wood waste or residuals and sawlogs. Unfortunately, the countless lawsuits around the United States to block the building of biomass energy facilities based on claims of environmental harm prove that the public does not understand the true environmental impacts and benefits of using woody biomass for energy.