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Foreign Markets Drive U.S. Biomass Demand

Biomass demand from other countries, especially wood pellets, prompts quick growth in exports.

By DeAnna Stephens Baker
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Although woody biomass still has its dissenters, it has gained acceptance around the globe as a reliable source of renewable energy.

But despite the ramping up of demand in other countries as part of meeting renewable energy goals, consumption of wood-based energy in the United States is not increasing as quickly, a fact that many blame on regulatory and policy issues. Because of this reality, a majority of increased demand for U.S. biomass is expected to continue to come from other countries.

Domestic Demand

Consumption of wood-based energy in the U.S. is expected to see only small increases or even decline slightly in most energy sectors. The total usage of woody biomass by all energy sectors is expected to be 1.977 quadrillion Btu (quad) in 2014, according to the U.S. Energy Information Administration's (EIA) most recent Short-Term Energy Outlook. This is an increase of less than 1% compared to 2013. Next year is not expected to be much better, with a forecast of 1.999 quad.

The one significant exception to this trend is the electric power sector which is expected to be the biggest driver behind domestic consumption of wood-based energy. The EIA predicted that the electric power sector will consume 0.266 quad of woody biomass this year, which is a 27% increase over last year. The EIA expects around 120,000 megawatt hours (MWh) per day of electricity to be generated from woody biomass in 2014 and 123,000 MWh per day in 2015.

At first, these numbers don't seem to add up when taking into account the number of biomass plants and projects that recently have been announced or are in the works in the United States. If all of the currently planned projects were to come online, they would consume an estimated 122.6 million green tons (MGT) of wood by 2023, according to Forisk Consulting. However, many of these projects may not ever actually start production. Based on its screening method that estimates the viability of projects by availability of needed technology and by status, Forisk predicted that viable projects will consume only 80.9 MGT of wood by 2023.



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Wood Pellets

Out of 80.9 MGT of wood expected to be consumed by viable projects, wood pellet production is expected to hold the largest share at 34.2 MGT, most of which is expected to be exported. Electricity generation comes in second at an expected 32 MGT, combined heat and power (CHP) places third at 14.2 MGT and thermal places fourth at almost 0.5 MGT. This anticipates that liquid fuel will not consume any wood, as the technology is still not commercially viable.

“Pellet plants in the U.S. today have two primary markets: domestic U.S. home heating and European industrial markets for electricity and cogeneration,” said Amanda Lang, senior consultant at Forisk Consulting. “While a surge of proposed domestic projects occurred in 2009 and 2010 to take advantage of pellet use from increased petroleum prices, most recent investments have supported pellet plants intent on exporting to the European Union, especially the United Kingdom. These projects are larger than their domestic counterparts, consuming hundreds of thousands to over one million tons of wood per year, versus the typical fifty to two hundred thousand tons per year for domestic plants.”

Exports

Exports of wood pellets have grown quickly, especially to Europe which has more than doubled since 2011. As of November, the United States had exported 2.5 million tons of wood pellets in 2013 compared to 1.75 million tons exported over the same period in 2012, according to the U.S. Department of Agriculture’s Foreign Agricultural Service (FAS). Total wood pellet exports are expected to triple between 2013 and 2018. The largest increase has of course been to the United Kingdom, where analysts expect that the majority of future pellet development will be centered. During the first 11 months of 2013, the United States exported 1.5 million tons of wood pellets to the United Kingdom, 60% of total exports and almost triple the amount of wood pellets exported there during the same period in 2012.

The quickly rising demand is a result of the U.K.’s 2012 renewables obligation certificates (ROC) rules which are issued to power generators for producing renewable energy. The rules are favorable to dedicated biomass power generation, awarding two ROCs for dedicated biomass electricity generation with combined heat and power and 1.5 ROCs for dedicated biomass electricity generation, but only 0.5 ROC for co-firing. Several power plants in the country, including its largest coal-fired power station have already been converted from coal to biomass or are in the process of doing so.

Demand has been ramping up and analysts expect it to continue increasing over the next few years. Most of the demand is being met by imports; due to the limited supply of domestic raw material, the power stations have no choice but to import most of their biomass material.

Many of the new biomass facilities that have been announced in western Europe will be coming online by 2016, after which demand may start leveling out.

Renewable Energy Standard

Though domestic demand is not growing at the rate seen in Europe, things are happening that could trigger a rise in biomass use within the United States. Many analysts and industry members agree



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that one of the top ways for biomass to grow here would be passage of a federal renewable electricity standard (RES).

“Biomass would be a crucial renewable energy source under any RES,” said Bob Cleaves, president and CEO of the Biomass Power Association (BPA). “This is because biomass is a baseload energy source that produces consistent, around-the-clock power independent of weather conditions, as opposed to some other renewables which are intermittent. Also, biomass technology is already developed and does not need significant R&D.”

A federal RES is currently being considered in Congress. An RES was proposed in the Senate in October and a similar bill was introduced in the House of Representatives in December. The Renewable Electricity Standard Act of 2013 (H.R.3654), would require utilities gradually increase renewable energy production over the next twelve years from 6% by 2014 to 25% by 2025.

Twenty-nine states already have renewable generation standards, but some believe that the chances of a federal RES being passed in the near future are slim.

“A federal RES would be a significant step forward but is probably not likely any time soon given the political climate,” said Cleaves.

Tax Parity

An issue that many industry members believe has a chance moving forward soon is tax reform. Right now, other forms of renewable energy are eligible for tax credits that exclude wood-based energy.

The thermal biomass sector is pushing for the passage of the Biomass Thermal Utilization (BTU) Act of 2013 (H.R. 2715, S. 1007). The BTU ACT would recognize biomass thermal technologies within the renewable energy provisions of the tax code. One provision would make high-efficiency biomass heating technology eligible for the residential renewable energy 30% investment tax credit. Another provision is a tiered tax credit for 15% or 30% of the installed cost of biomass-fueled heating (or cooling) systems for commercial or industrial applications. These are temporary tax credits that would expire at the end of 2016 intended to provide a jump-start to an energy source that has high upfront equipment costs, according to Joseph Seymour, executive director of the Biomass Thermal Energy Council (BTEC).

“We’re promoting parity just to get the industry over that critical point of market saturation,” said Seymour. “A tax credit would be able to reduce the price of the appliance and mainstream it.”

If put into place, the BTU Act would cause an increased demand for wood fiber, but according to an analysis by BTEC, it would only be a modest amount. The analysis, which covers the forecast for growth in biomass demand over the three years that the tax credits would be in place, forecast that the new demand for biomass by 2016 would be about 400,000 tons per year, which is well below sustainable harvesting limits.

Efforts to achieve tax parity for biomass have been ongoing for several years now, and have met with limited success. However, several recent events at the federal level signal that biomass is starting to



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receive recognition as a renewable energy that can help the country reach alternative energy goals. In December, a memorandum from President Obama called for 20% of the federal government's power consumption to come from renewable sources by the year 2020, including biomass. Earlier in the fall, the

U.S. Department of Agriculture (USDA) signed an agreement with several biomass associations and organizations to collaborate on ways to promote energy from wood.

Emissions Regulations

Another issue that the industry is watching closely is the treatment of emissions from biomass conversion energy. The EPA is in the middle of a rule-making on how it will count emissions from commercial and industrial sources. How this plays out is critical as some have promoted the idea that biogenic emissions should be treated the same as emissions from fossil fuels.

"In the U.S. biomass carbon emissions are, and would be in the future, overwhelmingly offset by biomass regeneration and growth," said Roger Sedjo, director of the forest economics and policy program at Resources for the Future, an environmental, energy and natural resource research organization. "This is because biomass carbon emissions flow in a closed loop, generating no net emissions into the atmosphere and therefore should be treated as carbon neutral. To provide the same treatment for biomass emissions, which are carbon neutral, as we do for fossil fuels would be a serious mistake. Indeed, such treatment would provide incentives in the wrong direction, that is, in the direction of promoting net carbon emitting fossil fuel use and against carbon neutral biofuels."

Other Challenges

Legislation and government policy are not the only issues that create difficulties for wood-based energy. The socio-cultural issues may be the hardest to address, according to Bill Cook, a forester and biologist at Michigan State University's Biomass Innovation Center,

"Among the socio-cultural challenges, the toughest three may be: One, too many people think cutting trees is bad; two, misperceptions of the economic and environmental impacts; three, humans are innately resistant to change," Cook said.

Concern about environmental degradation is often cited when trees are cut, usually because it causes a visual change, despite the fact that visual quality is not a scientific measure of ecological integrity."

"The notion persists that cutting trees is inherently bad," said Cook. "Errant perspectives such as this are not based on knowledge of science. They come from elsewhere."

Other misplaced concerns often voiced in opposition to wood energy include the ideas that wood energy facilities create significant air pollution and that forests will be devastated. Some of these misconceptions are the result of the public simply not knowing how far biomass technology has advanced.

"People often have misconceptions of what biomass energy is and immediately think of old



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antiquated technology belching out smoke at very low efficiency,” said Adam Sherman, a consultant with the Biomass Energy Resource Center (BERC).

In addition to public misconceptions, some biomass industry struggles are due to there being little coordination between the different sectors, especially when addressing policy issues. This is something that many in the industry would like to see changed as they believe that more could be accomplished if all parts of the industry banded together.

“There’s a need for broader industry collaboration through trade associations and recognizing that a rising tide floats all boats,” said Sherman. “Right now in the biomass sector, there are a lot of different camps and oftentimes there is not a whole lot of coordination amongst the various camps that all have more common purposes than they have differences. Also, the forestry and fuel supply sector is rarely working in lockstep with the energy project, finance and engineering end. There needs to be better collaboration and integration within the industry between the sourcing, grading and processing – the whole supply chain of the fuel.”

Richard P. Vlosky, Ph.D.
Director Louisiana Forest Products Development Center
Crosby Land & Resources Endowed Professor of Forest Sector Business Development
Room 227, School of Renewable Natural Resources
Louisiana State University
Baton Rouge, LA 70803
Phone (office): (225) 578-4527
Fax: (225) 578-4251
Mobile Phone: (225) 223-1931

