



Assurance of Long-term Sustainable Biomass Energy

With the development of renewable energy targets and incentives that rely on biomass, including forestry biomass, how can policy makers be certain that existing regulations and practices will safeguard the sustainability of America's forests? We contend that adequate, effective safeguards presently exist to protect the public's interest and ensure long-term sustainable forestry. Specifically:

- The existing regulatory framework assures long-term sustainable forest practices.
- Forest economics – the business of forestry – ensure long-term sustainable forest practices.
- The growth of new biomass markets will not happen overnight – they will develop in an orderly fashion dictated by availability of scarce capital and assurances of available supply.
- Landowners are committed to sustainable forestry.

Existing regulatory framework

Private forest owners are already subject to an extensive framework of laws, regulations, and non regulatory approaches to safeguarding environmental values – including sustainability - of forests. For example, all forested states have either Forest Practice Rules or Forestry Best Management Practices (BMPs). These state-developed efforts originated from the federal Clean Water Act and many have been expanded to address additional environmental objectives. States audit these practices because they must demonstrate to the EPA and the public that their practices are implemented and are effective at protecting clean water and other resources. This approach is called *adaptive management*: forestry practices are monitored to see how effective they are and, when problems or opportunities for improvement are identified, practices are modified or adapted to achieve better results. A good example of this is Forestry BMPs in Montana, where the State Forester has convened a biomass working group to evaluate the extent to which existing BMPs provide environmental safeguards when biomass is harvested from Montana's forests. When finished, the working group will prepare recommendations to the State Forester for BMP revisions and or the development of training and guidelines.

In addition to state forestry best practices, there are a range of other applicable regulations that are summarized in the paper [The Environmental Regulation of Private Forests](#) by the National Alliance of Forest Owners (NAFO). Also, the National Council on Air and Stream Improvement (NCASI) prepared a report, [Compendium of Forestry Best Management Practices](#), which compares forestry practices throughout North America and discusses the results of monitoring those prescriptions for effectiveness and compliance.

The economics of forestry

When combined with basic forest practices stewardship that is required under BMPs and forest practice laws (such as reforestation), basic forestry economics will protect against the overharvest of forests simply to meet governmental targets or new demand for low value biomass feedstock. Simply stated, landowners will act in their own economic self interest rather than unsustainably produce biomass material so that the government can meet its targets.

Lower value Biomass does not drive the forest harvest decision.

When forests are harvested, a number of co-products are produced that serve several markets. Generally the biggest part of the tree goes to the most valuable market. Woody fiber for energy markets generally comes from the smallest part of a tree (tops and branches) and is the least valuable co-product. Forest managers consider market prices for these co-products, forest growth rates, and the time value of money to determine the financially optimal time to harvest. The more valuable products drive the decision to harvest a stand of timber, not the lower value products such as biomass. Even where smaller landowners may not model this decision formally, there is the economic incentive to manage for more valuable products. Therefore, high demand for the least valuable product is not going to drive landowners to act against their own economic self interest and harvest trees that will soon grow into more valuable products.

It does not make economic sense for a landowner to harvest growing stock.

Establishing a stand of timber requires an investment of capital and effort. Newly established seedlings have no market value and as they grow they reach a point where they may have market value, but they are growing so fast that biological growth and the corresponding growth in value strongly compels the landowner to continue growing, clearly exceeding return rates of alternative investments. This timber is called *growing stock* and is the lifeblood of a profitable forest. At some point, growth slows enough that alternative uses of the timber's value begin to create a harvest opportunity. Harvesting growing stock is against the landowner's financial self interest as the forest is devalued by a much greater amount than the value obtained from a harvest.

The growth of new biomass markets

The abundance of announcements of new biomass facilities has created alarm that overharvesting will occur in order to serve these markets. But many times these prospective new sources of demand are competing for the energy opportunity in the very same supply basin, while only one will be constructed and consume that supply. Forisk Consulting LLC tracks the announcements of new energy demand for wood in the US south along with several parameters. They have a screening system that

predicts the likelihood of construction and have determined that a majority of newly announced projects will never be built. This may be because their technology is immature, because of financing hurdles, or because they were not a viable project to begin with. In all of these cases, it is because a prospect with a greater likelihood of success beat them to the supply.

Paper production was the first major market for forestry biomass (non-solid) fiber in the US. Initially, paper production was served by sawmill residuals as a feedstock. As the industry grew, it began to rely on biomass from forest harvests as a major supply component. Demand for pulpwood continued to grow until 1997. As demand grew, prices for pulpwood increased and landowners invested in forest productivity. Increases in productivity more than kept pace with demand increases. Thinning and other forest stewardship practices became more feasible and common. After 1997, paper demand began to decrease, which has continued to today and is projected to continue to decline. This is because of the increase in recycling as well the movement of paper production overseas. As prices for pulpwood dropped, new demand for the fiber sprung up to take advantage of low prices. This was primarily demand from a growing fiberboard industry. However, this new demand has not kept pace with declining paper demand.

What could happen if too much demand is developed compared to supply?

Since private capital markets rigorously verify biomass supply before financing the construction of a wood fiber plant, oversubscription of available supply is unusual. When over subscription of supply does occur, market observations show that the following sequence takes place:

- Market prices increase as competition seeks a fixed or moderately elastic supply.
- Market prices cap at the point of inelasticity, where additional price increases render the wood fiber product unprofitable.
- Plant capacity is rationalized to adjust to a fixed supply.
- Ultimately, investments that did not properly scope out supply availability will fail. It is this very risk that creates the need for a high level of due diligence concerning raw material supply.

Landowners do not act against their own financial interests by harvesting simply to keep the plant open.

What happens when demand for forestry fiber disappears?

When demand increases, so do prices and investment in forest productivity. When demand goes away, the existing market becomes oversupplied and fiber prices drop. Harvests decline or marginally profitable biomass is excluded from harvests. This can allow forest stands to become too crowded and subject to disease or fire. Investments in forest productivity drop, forestry profitability drops, and other uses for the land begin to compete with forestry.

This simple narrative in forestry economics demonstrates that, in addition to the existing regulatory and forest practices framework, and in addition to the growth of conservation initiatives by private land owners, that strong markets are an important component in the sustainability of American forests.

Landowner commitments to sustainability

US Landowners have demonstrated a strong willingness to exceed legal requirements and provide an additional measure of sustainability in the management of their land. This may be done to meet its mission and charter, to acquire access to valuable forest product markets that desire sustainability assurance or to increase the value of their land. Frequently, it is all of these together.

Today over 90% of US forestland owned by corporate entities is managed in accordance with one of the three major sustainable forest certification programs (the Sustainable Forestry Initiative, the Forest Stewardship Council, and the American Tree Farm System). These programs certify practices that are designed to assure sustainable forest management and include requirements for formalized harvest level planning. All of these programs have recently investigated the potential effects of increased biomass harvesting that may occur as a result of increasing interest in renewable biomass energy, and have made revisions to their requirements as a result.

20% of US forests are protected by some form of conservation initiative such as conservation easements, habitat conservation plans and other similar initiatives. This practice by landowners is becoming increasingly common.

Notable facts: American forests are resilient, renewable, and have a track record of sustainability. Consider the following:

- The number of acres of forest land in the US has remained constant for the last 100 years.
- US forest growth has exceeded harvest for the last 50 years resulting in an increase in standing volume of 49% from 1952 to 2006, in spite of increases in demand for forest products and resulting harvest level increases.
- The annual rate at which forest-occupying species are listed as endangered or threatened has decreased five-fold

Supporting literature:

[The Environmental Regulation of Private Forests in the US](#). NAFO. David Garman. February 2009. 9 pages. A discussion of the existing framework of regulations, policies, and best practices that already exist to safeguard forest sustainability.

[Compendium of Forestry Best Management Practices for Controlling Non-point Source Pollution in North America](#). NCASI. September 2009. 230 pages. This report compares forestry best practices and discusses monitoring of those practices as well as compliance and effectiveness rates.

[A Developing Bioenergy Market and its Implications on Forests and Forest Products Markets in the United States](#). Clutter, Abt, Greene and Siri. NAFO. April, 2010. 10 pages. Addresses forest bioenergy supply and relationship to pricing.

[A Practical Guide for Tracking Wood-Using Bioenergy](#). Forisk Consulting. April, 2010. 10 pages. This report discusses the methodology used by Forisk in their report, "[Wood Bioenergy South](#)" to identify the number of proposed and announced bioenergy plants in the US South and to quantify why only a minority percentage of announced plants will ever be developed.

[Wood Biomass Energy](#). Forest2Market. 2009. 3 pages. Importance of forest markets to forest sustainability. Retained by NAFO. See [NAFO summary](#).

[Ecological Implications of Biomass Policies for Private Forests in the United States](#). Al Lucier. NCASI. April 2010. 9 pp. This paper discusses the regulatory, social, and economic frameworks that have developed during the history of this country and how they limit the ecological risks associated with policies that encourage the use of biomass.

[The State of America's Forests](#). Society of American Foresters. 2007. 76 pp. A summary of the history, condition and current status of the forests of the United States.

[NAFO: Our Commitment to Sustainable Forest Management](#). NAFO. 2008. 1 p. A statement of the commitment of National Alliance of Forest Owners to managing private forests sustainably. NAFO membership encompasses over 75 million acres of private forest ownership in 47 states.