



# A Balanced Definition of Renewable Biomass

INCLUDING BOTH A BROAD DEFINITION AND SUSTAINABLE RESOURCE USE

Using biomass to generate renewable electricity can decrease carbon emissions, reduce our dependence on and importation of coal and liquid natural gas, and create new markets for farmers and forest owners. For biomass to deliver these and other benefits, policy must balance the need for efficient biomass harvesting with protecting the capacity of farms and forests to provide biomass and other ecological services. This balance can be struck through enacting a definition of renewable biomass that 1) includes a broad range of biomass resources from federal and non-federal lands and that 2) contains reasonable safeguards to protect critical lands and flexible sustainability standards.

## Need for woody biomass sustainability standards

Markets for agricultural residues like corn stover and wheat straw are common, such as for animal feed and bedding. To reduce erosion and maintain fertility, farmers generally leave a certain percentage of residues on fields, depending on soil and slope. In forestry, where residue or biomass markets are less common, Best Management Practices (BMPs) were developed to address forest management issues, especially water quality, related to traditional products and harvest levels. But the development of new biomass markets will entail larger biomass removals from forests, especially forestry residues and small diameter trees.<sup>1</sup> Current BMPs may not be sufficient under higher levels of biomass harvesting.

However, because woody biomass is often a low-value product that can't even "pay its own way out of the woods," sustainability standards must be relatively inexpensive to implement and verify. Thankfully, we can improve the sustainability of biomass harvests with little added cost to forest owners.

## Consensus on a flexible 'menu' of options for forest owners

In the spring of 2009, UCS and the Southern Alliance for Clean Energy (SACE) convened Southeast stakeholders to find middle ground between the RFS and the "farm bill" biomass definitions, particularly related to woody biomass from private

lands. Forest owners, foresters, biomass developers and environmental groups agreed on: a broad range of woody biomass types; safeguards for critical lands; and flexible sustainability standards implemented through a "menu of options" from which forest owners would choose, including 1) biomass BMPs, 2) certification or 3) forest management plans.

By using existing state-based and private programs, sustainability standards can be added to the biomass definition without significantly increasing costs on large or small forest owners.

**State-based biomass Best Management Practices (BMPs) or guidelines.** Missouri, Minnesota, Pennsylvania, Maine and Wisconsin developed biomass harvesting guidelines to avoid negative impacts of biomass removals. Other states and regions, including Southern states, are developing similar biomass guidelines. Developed through collaborative stakeholder processes, BMPs are practical enough to be used by foresters and loggers.

**Third-party forest certification.** Certification can also be used to verify the sustainability of biomass harvests. Between them, the Forest Stewardship Council, the Sustainable Forestry Initiative, and Tree Farm have certified nearly 275 millions of acres of industrial and private forestland in the U.S. Certification programs already address, or are being updated to address, concerns related to biomass harvests.

**Forest management plans written by professionally-accredited foresters.** Foresters can help anticipate and therefore minimize impacts of additional biomass removals. Although a minority of smaller forest owners have management plans, forest owner associations have long recommended that more forest owners have them written to better achieve their financial and other objectives. Forest owners who have management plans stand to make more money than if they lacked such plans. To avoid out-of-pocket costs, proceeds from biomass sales could cover the cost of writing management plans.

## Key indicators of sustainability

Whether implemented through BMPs, certification or management plans, sustainability standards should minimize short-term impacts and avoid long-term degradation of water quality, soil productivity, wildlife habitat, and biodiversity—all key indicators of sustainability. Science and local conditions need to be used in determining the standards. For example, fire-adapted forests will likely require retention of less woody biomass than forests adapted to other disturbances such as hurricanes. Sustainability standards should ensure nutrients removed in a biomass harvest are replenished and that removals do not damage long-term productivity, especially on sensitive soils. Coarse woody material that could be removed for biomass energy also provides crucial wildlife habitat; depending on a state's wildlife, standards might protect snags, den trees, and large downed woody material. Biodiversity can be fostered through sustainability standards that encourage retention of existing native ecosystems and forest restoration. Lastly, sustainability standards should provide for the regrowth of the forest—surely a requirement for woody biomass to be truly renewable.

Taken together, sustainability standards provide assurance that biomass removals will not deplete either above- or below-ground forest carbon stores and reduce biomass' potential to significantly reduce lifecycle carbon emissions, whether in dedicated combustion or gasification plants or in co-firing with coal.<sup>ii</sup>

## The role of the federal government

Forestry on non-federal lands is primarily regulated by the states. New biomass markets should be based on existing relationships between states and federal government. When applied, biomass BMPs, third-party certification and forest management plans should minimize negative ecological impacts of biomass removals. However, if states do not implement their biomass BMPs, the federal government would need to take action—as it does with states that have not implemented water-quality BMPs under the Clean Water Act.

## Safeguards for critical lands

A balanced biomass definition must safeguard critical lands, private and public, that aren't suited for biomass harvests.

Within the federal land system, Wilderness, old-growth, Wilderness Study Areas, Inventoried Roadless Areas, components of the National Landscape Conservation System, National Monuments, National Conservation Areas, Designated Primitive Areas, or Wild and Scenic River corridors should be protected from biomass harvests. On private lands, safeguards are necessary to protect critically imperiled, imperiled, or vulnerable areas (as defined by a State Natural Heritage Program or by Natureserve). Also, native prairies and diverse natural forests should not be converted to grow energy crops or plantations. These critical lands represent a very small percentage of the nation's land base, contain a small proportion of our biomass resources and would release significant carbon stores if harvested or converted. We can develop a large and growing biomass industry without imperiling critical lands or our carbon-reduction goals.

## Biomass Removal Can Support Good Forestry and Ecological Restoration

Biomass harvests can help land managers restore fire-adapted forests, improve productivity through the removal of low-quality material, and reduce accumulated fuels. Many forest management plans call for the removal of small, unhealthy, or poorly formed trees to open up more growing space for larger, higher-value trees or new seedlings; but these types of removals often cost money rather than generate income. By establishing a market for low-value materials, biomass markets can provide land managers with tools to improve land conservation—while helping reduce carbon emissions and the threat of climate change.

### More Information

**UCS Bioenergy Principles** online at:

[http://www.ucsusa.org/assets/documents/clean\\_energy/ucs-bioenergy-principles.pdf](http://www.ucsusa.org/assets/documents/clean_energy/ucs-bioenergy-principles.pdf)

**Forest Guild** good biomass removal projects online at:

<http://biomass.forestguild.org/example.html>

<sup>i</sup> Woody biomass usually refers to material that has a low economic value and cannot be sold as sawtimber or pulpwood. As wood processing technologies and markets change, however, different sizes and qualities of wood will be used for renewable energy. We use "woody biomass" to refer to logging slash, small-diameter stems, tops, limbs, or trees that otherwise cannot be sold as higher-value products, such as sawtimber.

<sup>ii</sup> RL Bain, et al. 2003. Highlights of Biopower Technical Assessment: State of the Industry and the Technology. NREL. Online at: <http://www.nrel.gov/docs/fy03osti/33502.pdf>

Find additional information online at [www.ucsusa.org](http://www.ucsusa.org)

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