

**WOODY BIOMASS:
Report from Session II
to Consider Investment Opportunities**

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**Summary Outcomes from a Gathering
Hosted by the USDA Forest Service and
the U.S. Endowment for Forestry and Communities**

By

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Introduction

The USDA Forest Service State & Private Forestry (USFS) and the U.S. Endowment for Forestry and Communities (Endowment) have partnered to advance sustainable use of woody biomass as a “green energy” source that would benefit forest health and provide additional management and revenue options for landowners. Both organizations are seeking targeted and appropriate investment opportunities that can be quickly assessed for learning and potential dissemination. Convening small, non-traditional groups in a roundtable format is part of the sensing process. The first group met in February 2010 (See [Woody Biomass: Report from a Session to Consider Near-term Investment Opportunities](#)). A second session with a different mix of experts met in June 2010. This summary of the discussion is intended to be a high-level overview, rather than a consensus statement that all organizations and/or individuals have ascribed to.

The Partnership emphasis includes targeted investments on the near-term potential of technologies, like torrefaction, and pathways to reducing financial risk and encouraging new procurement and landowner income generation mechanisms. Therefore, some areas, while important, will not be considered for investment such as small, community scale endeavors e.g. school boilers. Additionally, [Pyrolysis](#) may ultimately provide liquid fuel for the market place and become part of a low-carbon fuel standard, but the Partnership will not engage in this technology because the Department of Energy and others with significantly greater resources and a longer time horizon are engaged.

Woody Biomass Considerations: Policy, Financial Risk, Public Understanding

Frustration is running high as private investors seek opportunities to implement something many believe has verged on “being close” for thirty years, ranging from pellet mills and chipper operations to conversion technology and biomass power plants. Many complex barriers are at play. They could be broadly categorized under policy, financial risk and public understanding.

Policy

Until the government establishes biomass as a strategic energy source, complex policy implications and interactions will hamper significant progress. Among them:

- EPA’s proposed “Tailoring Rule” which will treat biomass boiler emissions the same as fossil fuels.
- A Woody biomass definition that differs regarding source.
- Carbon neutrality. The science very clearly states: *it depends*. Policy makers must settle on a workable definition of the conditions necessary for biomass to be considered carbon neutral. For example, should it come from a sustainably managed forest, an afforested area or from a current waste stream that is just being incinerated (like lots of the hazard trees in Colorado). Reports like the recently released Manomet study further confounds the debate by adding additional layers of “*if this then that but not this*” especially when cherry-picked by those with a specific view point. Complex carbon accounting threats dampen enthusiasm for biomass plant developers.
- Confusing, conflicting, and changing policy confounds markets, frustrates people -- e.g. Biomass (BCAP) Crop Assistance and unclear and unpredictable rules for accounting for green house gas emissions.

Financial Risk

- Biomass has traditionally been a low value by-product carried by primary products.
- Financial institutions don’t understand the biomass supply chain; therefore they have difficulty

assessing risk. They are so far unwilling to wade deeply into this market. Many also assume a coming raw material price escalation and have no idea of how to mitigate or consider this risk.

- Many assume biomass can't compete with other current means to generate electricity and liquid fuels, and thus are not operational in the near term. Unless natural gas, coal and other fossil fuel prices rise in relation to green energy or at least remain stable, they will likely always be cheaper to produce and transport.
- Biomass off the stump can be hard to store creating issues with lenders who may wish the producer to carry far too much inventory.
- The future cost of raw material is difficult to predict. Traditional contracts with wood on the stump used by pulp and paper may not be satisfactory. The cost of storing as torrefied or pelletized fuels often exceeds competitive rates.
- Power providers demand at least a ten-year predictable supply. There's no forward market in biomass leaving nothing to hedge prices against.
- Biomass, while the first developed energy source, is relatively new to the traditional world of mass energy production. This sector does not like investing in subsidized technology, and likes to keep rates competitive on at least a twenty-year horizon.
- Conversion to wood as an energy source involves unknowns in "sunk costs" and useful life of existing infrastructure and issues related to feed stock storage and handling.
- Increased biomass utilization for energy, including pellets, has created competition conflicts with existing users of biomass, such as pulp and paper, Oriented Strand Board (OSB), and particleboard.

Public Understanding

Few citizens or policy makers understand the multiple benefits of woody biomass as a component in achieving renewable energy goals, such as reduced smoke from open burning, carbon sequestration/cycles and waste reduction and forest health, much less the competitive positions and advantages of wood as compared to alternative products such as steel.

Development of biomass facilities unwittingly becomes connected with the highly politicized climate change and "Cap and Trade." Because the issue of capping carbon is conflicted and seen as having been politically manipulated, and because of comments from experts, legislators, and the President himself regarding necessary escalating power rates in a weak economy, communities are skeptical.

Opportunity Recommendations

The Partnership between the Endowment and S&PF can accelerate understanding of the promise and pitfalls around some key biomass to energy ideas. We hope to carefully select demonstration projects that create the methodology and constructs for future financially advantageous replication. Below are some of the recommendations made during the June session.

Modeling Investments

- Identify successful combined heat & power (CHP) or “community” scale biomass generation plants. Create a database of blue prints and success criteria to encourage replication.
- Promote “designing in” biomass use as an option with towns, prisons, schools, or any larger complex where appropriate via partnership with USDA Rural Develop (e.g. Colorado has a law that requires new schools to consider biomass options in the planning stage), Cooperative Research & Development Agreements (CRADA), Energy Saving Performance Contractors or Department of Energy Regional Biomass Partnerships. This involves tracking up-coming development projects and providing incentives and technical assistance.

Technology Advancement

Figuring out efficient and effective methods to increase caloric value (de-watering, densification, etc.) is the most basic of advances needed.

- CHP or the combination of wood in some form with coal applications stand to utilize the largest volumes of woody biomass with the least amount of technological cost and innovation as well as air quality risks. Location and reliable customers (e.g. government buildings) are critical factors such as where a school or prison is co-located near forests and sawmills.
- Support commercial demonstration of torrefied wood.
- Encourage utilities to co-fire by funding testing and other up-front costs.

Mapping Opportunity for the Private Sector

- Work with states that have Renewable Energy Standards (RES, RPS, EPS, etc.) that permit biomass and map factors that promote biomass such as where coal trains currently pass through biomass-rich areas on their way to coal plants, existing sawmills, scheduled upgrades within municipalities and other factors. The mapping could be done with existing Forest Service Geographic Information Systems (GIS) staff.

Government Purchased Green Power

- Connect the dots between power developers and the many mandates within the federal government to reduce the carbon footprint of its buildings and operations. Start with the Forest Service to lead by example.
- Get the federal government to buy green power not just renewable energy certificates (RECs)

De-risking the Supply Chain

- Offer “patient capital” to a select group of technologically feasible and community friendly power development projects leading to a long-term Revolving Loan Fund.
- Provide technical assistance and mentoring to trouble shoot complicated aspects of the process.
- Provide up front equity to create stock in biomass generation plants. Variables might include market rate, income and longevity of ownership. The model would be based on shared ownership for loggers, landowners, etc. versus a collective.
- Experiment with paying suppliers from a market index or “community owned biomass supply

- chain” to create a bridge between supply and generators.
- Create a feed stock index or an intermediary aid in price predictability.
 - Develop a model to transition subsidy of supply to work like a form of insurance.
 - Educate utility and co-ops on biomass.
 - Weigh in on harvesting guidelines or sustainability standards.
 - Help the Forest Service underwrite supply risk by scaling up Stewardship Contracting. Barriers include: 1) county payments issues (counties don’t gain a portion of revenues as they do with traditional timber sales), and 2) cancelation ceilings.
 - Develop basic cost evaluation of utilization versus open burning of wood/residues in the field.

Place Based Examples

In Vernonia, Oregon a flood devastated the town several years ago. With the help and encouragement of the Oregon state economic development office, the town is rebuilding around woody biomass power, including a wood based district heating system with centralized storage for pellets. The town is situated near both a pellet manufacturer and a sawmill that creates its own power with wood waste and meters a portion back to the grid. They are considering a scheme to use the carbon credits from various forestry efforts to pay the health insurance costs for landowners. Tapping into their wood heritage made sense. Woody biomass functioning as a central driving factor in community economic development and public health is certainly visionary.

North Star Energy has three proposed wood-to-energy projects in Georgia in various development stages. Each project is rated 20 Mw and will employ 100 people (25 on site; remainder as contractors). Since they are minor/area sources, environmentally, the projects take less than two years to develop and build. All are in Georgia Tier One Counties (most impoverished in the state.) They work exclusively with electric membership cooperatives (EMC) that want to support the projects but can’t afford to directly develop “green power.” Such projects in rural communities are as much about economic development as green energy production.

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