CALIFORNIA FOREST STEWARDSHIP PROGRAM

# Forestland Steward

FALL 2010

## What can we do with the excess biomass?

Forest management often involves thinning some of the dense growth, whether for fire safety, habitat restoration, or other management objectives. But finding a dependable market or other use for that material has proven difficult.

Woody biomass utilization—ways to use the excess woody material from the forest—is a major issue today for numerous reasons. There are economic reasons: If biomass can be sold it can help pay for forest treatments or provide income for landowners. There are environmental reasons: Burning excess biomass may cause air quality and other problems. However, if it sits in the forest it has the potential to go up in a catastrophic fire, to the benefit of no one. And there are energy reasons: Biomass is a form of stored energy that can be considered carbon neutral (with caveats, see p. 5). This has implications for climate change, as well as our dependence on foreign oil.

However, there are still many aspects to be resolved. Although there may be excess biomass in the forest, utilization facilities are often too far away to be economically feasible. Many of the promises of biomass energy are still in the research stages; sophisticated wood to fuel technology is not yet viable. And in many cases the public is wary about constructing new facilities, and about the impacts of biomass removal on the forest ecosystem.

In this issue we look at biomass utilization—the challenges and potential. Finding ways to use the excess biomass in our forests has many benefits: it could help mitigate climate change, improve the health of our forests, decrease fire risk, provide income to forest landowners, create jobs, and obviate some of the need for fossil and foreign fuels. Let's work on solutions.

## Inside

Forestland Steward

Forestland Steward is a joint project of the CA Dept of Forestry and Fire Protection (CAL FIRE), Placer County Resource Conservation District, UC Cooperative Extension, and USDA Forest Service to provide information on the stewardship of private forestlands in California.

California Forest Stewardship Program
P.O. Box 944246
Sacramento, CA 94244
(916) 653-8286
Fax (916) 653-8957
ceres.ca.gov/foreststeward

**Editorial Committee**
Jeff Calvert, CAL FIRE
Jane La Boa, SAF
Yana Valachovic, UC

**Editor**
Laurie Litman, InfoWright

**Governor**
Arnold Schwarzenegger

**Secretary for Resources**
**Natural Resources Agency**
Lester Snow

**CAL FIRE Director**
Del Walters

*Forestland Steward* was produced under a grant from USDA Forest Service. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age or disability.



# Frequently Asked Questions

## *What is woody biomass?*

Technically, woody biomass is all of the trees and woody plant material in the forest. However, when we talk about woody biomass here we are specifically referring to the low-quality waste material—small-diameter and other non-merchantable trees, tops, limbs, slash, and sawdust—that is the by-products of activities such as forest restoration, fuels reduction, logging, and wood processing.

## *What is woody biomass utilization?*

Woody biomass utilization is the "harvest, sale, offer, trade, or utilization of woody biomass to produce bioenergy and the full range of biobased products including lumber, composites, paper and pulp, furniture, housing components, round wood, ethanol and other liquids, chemicals, and energy feedstocks" (*—MOU on Policy Principles for Woody Biomass Utilization for Restoration and Fuel Treatments on Forests, Woodlands…*).

## *How can woody biomass be utilized?*

The waste from forest operations can be used in a host of ways. There are numerous products created from small-diameter wood (poles, veneer, etc.) or it can be converted to energy in a woody biomass facility.

## *What is a woody biomass facility?*

A woody biomass facility can transform wood waste material into energy through a technological conversion process. There are a number of technologies available, some proven and others emerging. Woody biomass can be burned to create electricity, compressed into pellets or bricks, heated to turn it into bio-oil and biochar (charcoal), and converted using microorganisms in anaerobic digesters into products such as biogas and fertilizer. There are also tried and true uses for biomass: landscaping products, animal bedding, posts and poles, etc. Facilities can be scaled from small mobile units to large industrial plants.

## *What are the benefits of using biomass for fuel?*

The benefits are numerous and significant. Taking excess woody biomass out of the forest can improve forest health and benefit many kinds of wildlife while increasing fire safety. At the same time, biomass can displace some of the fossil fuels we use for energy today, which has far-reaching ramifications for climate change, global security, and the health of rural economies.

## *What are the challenges?*

There are a number of challenges, the biggest being the economics of biomass. It's expensive to remove woody biomass from the forest and often the material must be hauled long distances to be processed, which makes it economically unfeasible. Small-diameter wood generally makes inferior lumber so it must be broken down and reconstituted to be used in products such as paper or particleboard. Many of the promising new conversion technologies are not yet viable, so the market for woody biomass is limited.

## *What about the environment?*

As with any harvest activity, biomass utilization needs to be designed to minimize impacts to wildlife, biodiversity, soils, and other resources. Furthermore, it must be carefully designed to address the sustainability of the site. Many of these issues are addressed under the Forest Practice Act. While at the processing facility or biomass plant, air emissions and water use must be appropriately monitored and managed.

## *How can biomass help the local economy?*

Many rural communities with forest-based economies are suffering from unemployment. Local biomass facilities could help stabilize the forest industry by creating jobs at all steps of the process: forest management, harvest, transport, and jobs at the plant. Biomass facilities would also provide local tax revenues. The benefits are economic, environmental, and social.

## *How much woody biomass is available in California?*

According to the California Biomass Collaborative, forestry could provide nearly 10 million BDT/yr (*see page 8 for definitions*) on an annual sustainable basis.

## *How much energy is generated per ton of wood?*

A general estimate is approximately 17 million BTU (*p. 8*) per dry ton of wood. Another general rule of thumb is that 1 ton of dry wood (or 2 tons of green wood) = 1 MW/hour. These depend on moisture content and quality of the wood.

# Biomass Utilization 101

Biomass is suddenly at the center of some very important issues: forest health, local job development, energy independence, and climate strategies. While biomass utilization may not be a silver bullet solution, it has a role to play in all of these issues.

## Biomass in context

The excess woody biomass in our forests is largely a result of fire exclusion policies for more than 100 years. In the absence of periodic fire forests in California and much of the west have become dense with undergrowth. This growth is affecting habitat for plants and animals.

One result of these overly dense conditions is an increased danger from wildfire. When these overcrowded forests burn, they are likely to burn at a much greater intensity, impacting watersheds, large trees, and adjacent communities..

To reduce this critical wildfire danger, fuels reduction projects are implemented to remove excess biomass, in the hope that this will cause future fires to burn at a lower intensity.

Removing some of the excess biomass can also improve wildlife habitat by opening up the forest to light and growth.

## Some more reasons for utilizing biomass

When forests are thinned the material is traditionally chipped and spread on the forest floor or piled and burned. Chipped biomass can be a good thing in small amounts as it acts as a mulch and adds nutrients to the forest, however in large amounts it can create problems, smothering plants and creating a fire hazard. Burning impacts air quality and can put hazardous particulate matter into the air.

## Economics of biomass harvest

There are plenty of good reasons to remove excess woody biomass. The problem is that it's seldom economically practical to do so. Woody biomass removal, whether for fuels management or habitat restoration, is costly.

When biomass is removed as part of a timber harvest, landowners can use the sale of sawlogs to offset the costs of treatments. But timber harvest requires a costly timber harvest plan, a process that many small private landowners are unable to afford.

Biomass removal from fuels treatments or habitat restoration projects may not include high-value material to sell. Without income from sale of the biomass or a subsidy to offset costs these important projects are often not feasible.

*Many forests in California are overcrowded and would benefit from thinning to reduce fuels and restore habitat. There are many types of equipment that harvest this small material and chip it for transfer to biomass facilities.*

*Photos from John Shelly, Gareth Mayhead, Mike De Lasaux, and Laurie Litman*

The biggest cost is transporting biomass material from the forest to a facility where it can be utilized. Generally, 50 miles is considered the maximum haul distance before costs outweigh benefits (of course there are a lot of variables in this figure). This is a problem since power plants and other biomass facilities are few and often far away from the site where biomass is removed. Portable facilities that process biomass onsite are one possible solution being explored.

A biomass utilization infrastructure is lacking. Without an easy and inexpensive way to move biomass from the forest to a utilization facility we are stuck in the status quo.

## One man's trash…

Another way to look at excess biomass

*Cogeneration (cogen) plants are a tried and true way to utilize biomass. These facilities burn woody biomass to generate electricity and also harness the heat that is a byproduct of the process. This works especially well when the cogen plant is associated with a sawmill. The sawmill waste can be burned and the heat used to dry the lumber. Cogen facilities need to develop consistent and predictable sources of biomass. Some of this feedstock may come from landfills, also from forest and agricultural activities.*

is as a potential economic opportunity. There is a huge amount of untapped value in the "waste" material from the forest, if only we can find a way to use it economically. A lot of research and creative entrepreneurial energy is focused on this effort.

## Sustainable use

Woody biomass in the forest provides many important ecological functions such as soil organic matter, nutrient cycling, hydrological functions, and dead wood for wildlife habitat. These ecological factors must be considered when deciding what is surplus biomass and what should be removed. If done right, biomass removal will stimulate the forest to grow faster and healthier. This, in turn, can increase the uptake of CO2 from the atmosphere to help mitigate climate change. If woody biomass is harvested in an unsustainable manner, it can exacerbate all these issues, impacting ecosystem services and increasing carbon in the atmosphere.

At this point in time biomass is not very valuable, but there are concerns that if it becomes more lucrative there will be pressure to intensively harvest the material to the detriment of the forest ecosystem. Several states are developing Biomass Harvesting Guidelines (***http://www.forestguild.org/publications/research/2010/FG_Biomass_Guidelines_NE.pdf***) to make sure that woody biomass is removed with minimal impacts to ecosystem services.

In California, the Forest Practice Act contains some of the most comprehensive forest management regulations in the world. While it doesn't specifically address biomass removal, there are regulations in place designed to protect wildlife habitat, water, soil, and other considerations.

## A matter of scale

The size and scale of a biomass project is extremely important. There is an economy of scale so that larger plants are less expensive to build per MW (enough electricity to support 800 to 1,000 households; *see p. 8*). However, small-scale facilities also have significant advantages. Smaller plants can get a reliable supply of wood from nearby sources, which helps keep hauling costs down and jobs in the community. Smaller facilities are also more able to withstand fluctuations in the economy and feedstock availability since their biomass needs are more modest than larger plants. In most rural communities more and smaller facilities may be a better solution than fewer, larger plants.

## Climate change connection

One of the major drivers of biomass utilization is its potential to replace some of our fossil fuel needs and dependence on foreign oil with a local and essentially carbon neutral substitute. If a long-term goal is to become energy independent using renewable technologies, woody biomass is one important component to that goal.

## Carbon neutrality

When woody biomass is burned it is considered carbon neutral, that is, there is no net increase in carbon in the atmosphere. This may seem counterintuitive since burning woody biomass obviously transforms it into a different state that includes carbon in the form of carbon dioxide (CO2) that enters the atmosphere.

The difference between woody biomass and fossil fuels (oil, coal, natural gas) is that the carbon in trees is already accounted for in the current carbon cycle, whether it is in the trees or the atmosphere. A tree can only release the amount of carbon it has stored and so it doesn't add to the total carbon in the cycle when it is burned.

Fossil fuels, on the other hand, are tied up (sequestered) in the earth for eons. When they are extracted from their long-term storage and released into the atmosphere, their carbon is ***added*** to that already in the cycle, a net gain of greenhouse gases that can cause climate change. When woody biomass is used for heating or power ***instead*** of fossil fuels, it avoids the release of that fossil carbon.

There are a couple of caveats to the claim of carbon neutrality. The carbon from harvesting and transporting biomass must be added to the equation, which increases the carbon cost. It also assumes that biomass is harvested sustainably so that the remaining trees grow and take up the carbon released through utilization. Removing biomass stimulates growth; it is essentially a thinning treatment that releases the remaining trees from competition for water, light, and space. Tree growth removes carbon from the air and stores it for decades or longer.

What is significant here is the timescale. There is a strong benefit to the atmosphere since biomass utilization can increase the amount of carbon sequestered in trees over the long term.

## A vision for the future

Biomass utilization is important—to our forests, rural communities, climate future, and domestic security—for all the reasons discussed above. In the future, we hope to see a biomass infrastructure that allows efficient and economical use of excess woody biomass, which is removed in a sustainable manner to improve forest health. Biomass will play a part in replacing fossil fuels for energy while healthy forests sequester more carbon from the atmosphere. Finally, biomass utilization will help stabilize and sustain local rural communities.

# What can you do with it?

The technology exists to make a wide range of products from woody biomass. These include (from lowest value/least processing to highest value/most processing):

- Soil additives and amendments (mulch, compost, etc.)
- Firewood and fuelwood
- Combustion fuel for biomass power plants
- Solid wood products (lumber and roundwood)
- Densified fuels such as wood pellets and fire logs
- Non-structural composite products including wood/plastic lumber and wood/cement products
- Composite products such as particleboard and medium density fiberboard (MDF)
- Engineered wood products such as laminated veneer lumber (LVL) and oriented-strand board (OSB)
- Pulp chips for paper products
- Organic chemicals including alcohol (ethanol, methanol), cellulose-based compounds, turpentine, tannins, pharmaceuticals, fragrances, and the basic building blocks for many plastics

***—http://groups.ucanr.org/WoodyBiomass/Woody_Biomass_Utilization_2/Technology.htm***

# Site-driven biomass utilization project

Biomass solutions are uniquely local. Each community has its own environmental, economic, and social needs and concerns; biomass availability varies; and biomass facilities differ, with different requirements and impacts.

Throughout the state, community groups are looking for ways to use excess woody biomass to allow for fuels treatments and restoration activities. There is a vast array of possibilities to explore as they look for the best fit for their area.

*All biomass solutions by the Mendocino County WBWG are based on the 3 E's:*
- *Environmental Integrity*
- *Economic Viability*
- *Social Equity*

The Mendocino County Woody Biomass Working Group (MCWBWG) has a new and unique approach to their search for an appropriate biomass utlization facility. Rather than look for a site for a known facility, they are investigating multiple sites and using the attributes of each to drive the technology choices.

*The Mendocino County Woody Biomass Working Group has been working on biomass solutions since summer 2009.*

In fact, they are looking to do more than site a biomass facility. Their goal is to create "an environmentally and economically sustainable biomass infrastructure in the county."

The group, which consists of community members with a wide range of interests and expertise, is highly committed to selecting sites based on what they call the 3 E's: Environmental Integrity, Economic Viability, and Social Equity. Their mission statement and operating principles guide all their decisions (*see sidebar at right*).

The MCWBWG believes that by following their mission and principles, and by their overall approach, they can "achieve our goals of maximizing the benefits of biomass utilization and mitigating the environmental, economic, and social concerns."

There are two parts to the work at present: a feasibility study and a demonstration facility.

## Feasibility Study

The purpose of the Woody Biomass Feasibility Study is to lay the groundwork to help attract investors to develop a biomass infrastructure in Mendocino County. The study will assess 5–10 locations, and set up defined characteristics in a matrix to make general recommendations about the appropriate type and scale of biomass facility for each site. The feasibility study will include the following:

1. **Site Identification:** Identify 5 to 10 industrially zoned sites that are appropriate for a woody biomass facility based on developed criteria.
2. **Fuel Resources:** Study the woody biomass (fuel) resources that are available within an economically viable distance from each site. Biomass shortages have caused other biomass facilities in California to close. A guaranteed steady biomass supply will greatly reduce the risk of investing in a woody biomass facility.
3. **Environmental Characteristics:** Study the environmental characteristics of each location, including water availability, existing air quality issues, etc.
4. **Feasibility Matrix:** Create a matrix showing the amount of fuel that can be delivered and the environmental stress that can be sustained by each location. The matrix will allow general statements about appropriate technology.
5. **Scale and Technology:** Based on the Feasilibity Matrix, general recommendations will be made about scale and technologies appropriate for each site. For example, a hypothetical site C would require a technology that uses no more than X amount of water, has emissions lower than Y, and uses no more than Z bone dry tons (BDT) of woody biomass per day.
6. **Economic Impacts:** Estimate the job creation potential based on the total number of BDT possible processed at each location.

*The Demonstration Project envisioned by the MCWBWG will be a small-scale temporary biomass unit located on the Usal Redwood Forest. The stand above, one possible site for the project, is adjacent to an existing fuel break and contains large oaks.*

## Demonstration Project

To show the community how a small biomass facility could work on the ground, the MCWBWG is planning to set up a small-scale temporary biomass unit on the Usal Redwood Forest, owned by the Redwood Forest Foundation. This project will demonstrate how a biomass unit can help offset costs of restoration while improving forest health. The plan is to remove small diameter trees and sell the biomass to create energy. Depending on the site, this activity may also extend a shaded fuel break and create an acorn harvesting area.

## A Model for Other Communities

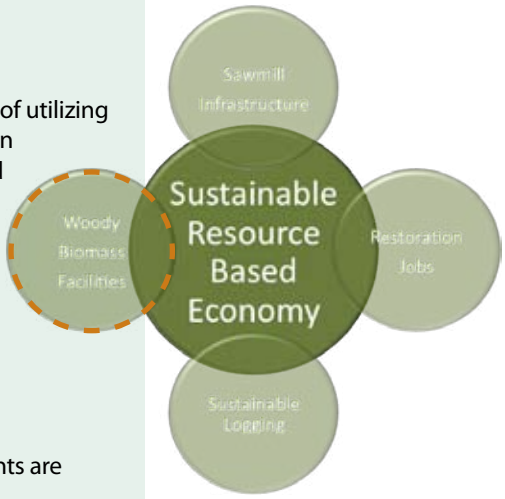
The work undertaken by the MCWBWG will provide a model of one approach to local biomass utilization. The group is currently applying for grants for the feasibility study, working with the Redwood Forest Foundation to create a strong proposal for the demonstration project, and conducting outreach meetings with the public for information and feedback.

For more information, visit the MCWBWG website at ***http://cemendocino.ucdavis.edu/Forestry/Biomass_Feasibility_in_Mendocino_County/***, or contact project coordinator Judith Harwood at Judith@rffi.org or 707-984-8969.

# Guiding Principles

### MISSION STATEMENT:

Our mission is to study the feasibility of utilizing woody biomass for energy production and economically viable value-added products by developing strategies for biomass projects that are consistent with community needs/values, that promote environmental health, and that strengthen our economy.




### OPERATIONAL PRINCIPLES:

1. Our work will be locally oriented
2. We recognize that diverse viewpoints are important to our success
3. We will utilize public involvement strategies that build common understanding and ownership of the work before official public hearings
4. We will focus on long term environmental, economic, and social sustainability—only promoting projects that fulfill the following environmental, economic and social equity criteria:

**Environmental:**

- We will seek economically feasible state-of-the-art, Best Available Control Technology (BACT) to minimize the impacts on air quality, water use, forest, overall public health, and community quality of life
- We will ensure that we are carbon neutral
- We will maintain the carbon sink to counteract global warming,

**Economic:**

- The project will be viable and able to give the developer the likely possibility of getting a fair return on his/her investment
- The project will likely be viable as the economy changes
- There will be a sufficient, reliable stream of woody biomass products to sustain the project long term (foreseeable future)
- The project will not compete with or undercut the existing economic base of the County (fruit/wine production, tourism, recreation, etc.)

**Community Equity:**

- The project will provide well paying jobs
- The project will create long term improvement of the forests
- The community will be enthusiastic/proud that this is happening in their community
- The community will be empowered by this initiative, thereby creating a catalyst for other related initiatives.

*For more information visit the MCWBWG website, http://cemendocino.ucdavis.edu/Forestry/Biomass_Feasibility_in_Mendocino_County/, or contact the project coordinator, Judith Harwood, Judith@rffi.org or 707-984-8969*

## Common Conversion Factors

1 BDT = 2 GT (assuming a moisture content on a wet basis of 50%)

1 BDT of chips = 200 cubic feet (a.k.a 1 unit of chips)

1 ccf (hundred cubic feet) roundwood = 1.0 BDU chips

1 ccf roundwood (logs) = 1.2 BDT chips

1 ccf roundwood (logs) = 1.2 cords roundwood (@ 85 cu. ft.wood/cord)

1 GT of logs = 160 BF of lumber

1 MBF = 6 GT of logs

1 standard chip van carries 25 green tons, or approximately 12.5 BDT at 50% MC

1 BDT ~ 1 MWH

- 1 BDT burned in a typical commercial boiler fuel will produce 10,000 lbs. of steam
- 10,000 lbs. of steam will produce about 1,000 horsepower or generate 1 megawatt hour (MWH) of electricity

*Woody Biomass*

# Definitions and Conversions

**Biomass:** Organic matter in trees, agricultural crops and other living plant material.

**Board Foot (BF):** Wood measuring 1 inch thick, 12 inches long, and 12 inches wide.

**Bone Dry Ton (BDT or DT)** = 2,000 lbs of woody material at 0% moisture content

**Bone Dry Unit (BDU)** = 2,400 lbs of wood chips at 0% moisture content

**British Thermal Unit (BTU):** The quantity of heat required to raise the temperature of one pound of water, 1 degree F (Fahrenheit).

**Chips:** A generic term used to describe woody materials broken down into small particles by mechanical means.

- **Pulp chips:** bark free, produced by chippers that produce a uniform sized particles
- **Fuel chips:** particles produced by hammermills, chippers, or grinders of varying sizes and shapes
- **Furnish:** particle sizes defined specifically for a type of manufacturing process

**Cogeneration:** The combined generation of both heat and power at one facility using the same fuel source. Typically the heat is used to generate steam that is utilized on site (process steam). Power generated is in the form of electricity that is utilized on site or sold to a local utility.

**Gasification:** A thermochemical conversion of organic solids and liquids into a producer or synthetic gas (syngas) under very controlled conditions of heat and strict control of air or oxygen.

**Green Ton (GT)** = 2,000 lbs of fresh cut woody material at a "green" moisture content

**Hog Fuel:** Biomass fuel that is made from grinding up different types of wood. It could include mill scrap, bark, slash, and sawdust. Generally hog fuel refers to variable low-quality fuel.

**Kilowatt** = 1,000 watts, a watt is the measure of the rate of energy use at any moment (a 100 watt bulb uses 100 watts at any given moment)

**Kilowatt-hour** (kWh) = amount of energy used in an hour, a 100 watt light bulb burning for one hour uses 1Wh. Ten 100 watt light bulbs burning for one hour uses 1,000 watts or 1 kWh

**MBF** = 1,000 BF, MMBF = 1,000,000 BF

**MC dry basis:** mass of water in wood divided by the oven dry mass of wood (0 – 150%)

**MC wet basis:** mass of water in wood divided by the original (green) mass (0 – 100%)

**Megawatt** = One thousand kilowatts or enough electricity to support 800 to 1,000 households.

**Moisture Content:** A measure of the amount of water in wood, expressed as a percentage. The forest products industry general uses a dry wood basis, the energy industry uses a wet wood basis.

**Roundwood:** Wood in its original round (or near round) form, such as small logs, branches, etc.

**Sawlog:** A log that meets minimum standards of diameter, length, and defect for sawing into lumber.

**Small Diameter:** Logs generally less than 10-inches in diameter at the large end

**Therm:** Unit of heat energy equivalent to 100,000 BTU, which is about the amount obtained from burning 100 cubic feet of natural gas.

**Volume (Gross):** Measurement of log without any deduction for defect.

**Volume (Net):** actual amount of merchantable wood in after deductions for defect.

**Volume measure:** amount of wood measured in cubic feet, board feet, or cubic meters

**Weight measure:** Amount of wood measured in pounds or tons (Kg or mt)

**Woody Biomass:** Trees, shrubs, bushes, or products derived from these woody plants that accumulate to an amount that is a hazard or disposal problem

*—adapted from John Shelley, UC Forest Products Lab*

# Biomass cost share and other grant opportunities

Government grants for biomass utilization are limited and constantly changing. Keep abreast of current opportunities at ***http://groups.ucanr.org/WoodyBiomass/Grants_2/***.

### USDA Forest Service TMU Woody Biomass Utilization Grant Program

This is a national program that runs on an annual basis. It is managed by the State and Private Forestry Technology Marketing Unit (TMU) located at the Forest Products Laboratory in Madison, WI. These funds are targeted to help communities, entrepreneurs, and others turn residues from hazardous fuel reduction and forest health activities into marketable forest products and/or energy products. For more information see the TMU homepage, ***http://www.fpl.fs.fed.us/research/units/tmu/index.shtml***.

### CA Association of Resource Conservation & Development Councils (RC&DC) Biomass Technical Assistance Grant

This grant is aimed at biomass conversion technologies that use large amounts of wood fuel from national forests and other areas to reduce wild fire hazards, especially in the wildland urban interface. Grant assistance and applications are available through your local RC&D Council. Contact details can be found at ***http://www.californiarcandd.org/***. This program ends in the Fall of 2010 and funds are almost fully committed.

### USDA Farm Service Agency Biomass Crop Assistance Program (BCAP)

BCAP provides financial assistance to producers or entities that deliver eligible biomass material to designated biomass conversion facilities for use as heat, power, biobased products or biofuels. Initial assistance will be for the Collection, Harvest, Storage and Transportation (CHST) costs associated with the delivery of eligible materials. This program is currently on hold.

### Other potential grant opportunities

- American Recovery and Reinvestment Act (ARRA)
- CEC energy demonstration programs
- CSREES SBIR Program
- Community Wood Energy Program (not funded yet)

## Nov 12 is grant deadline for NRCS Conservation Programs

November 12, 2010 is the deadline for applying for the Fiscal Year 2011 Farm Bill conservation programs funding from the USDA Natural Resources Conservation Service (NRCS) in California.

The deadline includes all California Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Incentives Program (WHIP) priorities, except the EQIP Organic Initiative.

NRCS's EQIP program priorities eligible for this sign up include, but are not limited to:

- Water Quality—Animal Feeding Operations (AFO)
- Water Conservation / Drought Response
- Wildlife Habitat Improvements
- California Air Quality
- Grazing Lands Management
- Forest Lands Management

To date in 2010, California NRCS has obligated over $74 million in EQIP funds for over 5,600 contracts and 821,000 acres statewide. However, the number of applications received this past year far exceeds the amount of funding available.

NRCS is anticipating similar funding for 2011. Farmers and ranchers are encouraged to start their application process as soon as possible to ensure consideration for this funding cycle.

NRCS invites agricultural, forestry and livestock producers to apply before the November 12, 2010, deadline by visiting a local NRCS office or USDA Service Center. Driving directions and contact information for the Service Centers are available on the Web at ***http://www.ca.nrcs.usda.gov/contact/***.

# Resources

### Biomass Tweets

UC Cooperative Extension is now posting woody biomass news and information at ***http://twitter.com/WoodyBiomass***. Follow them @ *WoodyBiomass*.

### Woody Biomass Desk Guide and Toolkit

***http://www.nacdnet.org/resources/guides/biomass/***

### Wood Heat Solutions: A Community Guide to Biomass Thermal Projects

***http://groups.ucanr.org/WoodyBiomass/documents/InfoGuides15246.pdf***

# For more information

One of the best sources of information on woody biomass utilization in California is the UC Cooperative Extension **Woody Biomass Utilization** site at ***http://ucanr.org/WoodyBiomass***. There you can find background discussion, workshop announcements, powerpoint presentations from past workshops, grant info, a document library, links, and much more. There is also a list of community groups interested in biomass issues (*see sidebar at right*).

Another great resource is the **California Biomass Collaborative** at ***http://biomass.ucdavis.edu/***. This is a statewide collaboration of government, industry, environmental groups, and educational institutions administered by UC Davis. Sponsored by the California Energy Commission and other agency and industry partners, the Collaborative works to enhance the sustainable management and development of biomass in California for the production of renewable energy, biofuels, and products.

See also the US Forest Service **Woody Biomass Utilization** site at ***http://www.fs.fed.us/woodybiomass/*** for more about the national strategy for biomass utilization.

## Find a "BUG" near you

**Siskiyou Biomass Utilization Group (SBUG,)** Rhonda Muse, rmuse@sisqtel.net, (530) 468-2802

**Mendocino Co Woody Biomass Utilization Group,** Judith Harwood, judith@rffi.org; (707) 984-8969

**Willow Creek Fire Safe Council,** Humboldt Co; Rebecca Cape, rcape@fs.fed.us, (530) 629-2118 x321

**Watershed Research and Training Center,** Hayfork, Trinity Co; Nick Goulette, nickg@hayfork.net, (530) 628-4206

**Quincy Library Group**, Plumas Co; Mike De Lasaux, mjdelasaux@ucdavis.edu, (530) 283-6125

**Amador-Calaveras Consensus Group/CHIPS,** Brandon Sanders, bsanders@sierranevada.ca.gov, (530) 823-4709

**Northern Sierra Biomass Task Force,** Nevada/Sierra Counties; Keith Logan, loganandassociates@gmail.com, (530) 913-4720

**North Fork**, Madera Co; bsanders@sierranevada.ca.gov, (530) 823-4709

# Technical Assistance

*Many agencies are available to provide technical assistance, referrals, information, education, land management plan assistance, and advice.*

**California Stewardship Helpline**
1-800-738-TREE; ncsaf@mcn.org

**California Dept of Forestry & Fire Protection**
Forest Landowner Assistance Programs
Jeffrey Calvert
916-653-8286; jeff.calvert@fire.ca.gov

**Forestry Assistance Specialists**
Guy Anderson (Mariposa/Madera/Merced) 209-966-3622 x218
Jan Bray (Amador) 530-647-5212
Herb Bunt (Redding) 530-528-5108
Jill Butler (Santa Rosa) 707-576-2935
Ed Crans (Placer/Yuba/Nevada) 530-889-0111 x128
Brook Darley (Tehama/Glenn) 530-528-5199
Mary Huggins (S. Lake Tahoe) 530-541-1989
Patrick McDaniel (El Dorado) 530-647-5288
Dale Meese (Plumas) 530-283-1792
Jonathan Pangburn (San Benito/Monterey) 831-333-2600
Alan Peters (San Luis Obispo) 805-543-4244
Jim Robbins (Fortuna) 707-726-1258
Tom Sandelin (Fresno/King) 559-243-4136

**California Association of RCDs**
916-447-7237; staff@carcd.org

**California Dept of Fish & Game**
Tina Bartlett
916-653-9834; tbartlett@dfg.ca.gov

**U.C. Cooperative Extension Advisors/Specialists**
Mike De Lasaux, Plumas-Sierra counties
530-283-6125; mjdelasaux@ucdavis.edu

Greg Giusti, Mendocino-Lake counties
707-463-4495; gagiusti@ucdavis.edu

Susie Kocher, Natural Resources Advisor
530-542-2571; sdkocher@ucdavis.edu

Gary Nakamura, Natural Resources Advisor
530-224-4902; nakamura@berkeley.edu

Rick Standiford, Forest Management Specialist
510-643-5428; standifo@berkeley.edu

Bill Stewart, Cooperative Extension Specialist
510-643-3130, billstewart@berkeley.edu

Yana Valachovic, Humboldt-Del Norte counties
707-445-7351; yvala@ucdavis.edu

**USDA Forest Service**
Janice Gauthier
707-562-8875; jgauthier@fs.fed.us

# Calendar

## October 6, 13, 20, 27 (Four Wednesdays)

**Forest Health: Balancing Wildlife Needs and Fire Hazard Reduction in Northern California Forests**
**Location:** Shasta College Downtown Redding Campus, 1400 Market Street, Redding, CA
**Sponsors:** NorCal SAF, US Forest Service, Trinity RCD, USFWS, UC Coop Extension, CDFG, Wyntoon Chapter of the NorCal SAF
**Time:** 6:30 pm–8:30 pm
**Cost:** $25 for all sessions (includes refreshments and handouts).
**Registration:** Pre-registration is required. Go to http://norcalsafwildliferedding.eventbrite.com/ or contact Jane LaBoa at ncsaf@mcn.org or 1-800-738-TREE
**Webcast:** This workshop will be webcast and archived for those who can't attend. Go to http://ucanr.org/forestoct2010 and follow the directions.
**Notes:** Four consecutive evening sessions. Specialists will describe ways to reduce fuel loads while maintaining and potentially enhancing habitat for wildlife. Optional field trip included.

## October 18

**Densified Wood Fuels Workshop**
**Location:** Eureka, CA
**Sponsors:** UC Berkeley Center for Forestry, UC Cooperative Extension, USDA Forest Service
**Contacts:** Gareth Mayhead 510- 665-3662; Yana Valachovic 707-445-7351
**Cost:** No cost if you register by Oct 17
**Registration:** http://ucanr.org/EurekaOct10
**Note:** This is a follow-up to the Woody Biomass to Energy workshop held in Eureka in March 2010 (presentations online at http://ucanr.org/EurekaMar10_Energy) to help understand densified wood fuels and the opportunity for project development in No California. Presentations will look at the manufacturing principles, suitable feedstocks, markets and challenges. Products discussed will include pellets, fuel logs, and bricks

## October 21

**Woody Biomass Workshop**
**Location:** Yreka, CA
**Website:** http://groups.ucanr.org/WoodyBiomass/Workshops/
**Note:** Workshops raise awareness of woody biomass utilization issues and options in the local area.

## October 21

**SNAMP Annual Meeting**
**Location:** USFWS Sacramento Office, 2800 Cottage Way, Rm C1001-1003
**Contact:** Kim Ingram at kcingram@ucdavis.edu
**Registration:** Deadline is October 15. Register at http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=5074
**Website:** http://snamp.cnr.berkeley.edu/events
**Note:** The goal of the annual meeting is to promote shared understanding of the current status of SNAMP and its findings thus far. Public participation will help guide SNAMP teams for the upcoming year.

## November 2–4

**Board of Forestry Monthly Meeting**
**Location:** Resources Building, Sacramento
**Contact:** 916-653-8007
**Website:** http://www.bof.fire.ca.gov

## November 4

**Sierra Cascades Dialog Inaugural Session**
**Location:** McClellan Air Force Base, Sacramento
**Contact:** Mike Chapel, mchapel@fs.fed.us, 916-498-5323
**Cost:** $15 includes materials, lunch, refreshments.
**Registration:** http://www.cce.csus.edu/conferences/ccp/scds10/index.htm
Note: This will be the first in a series of dialogs on the future of the Sierra Nevada and Cascades, with a focus on the national forests. Open to all.

## December 7–9

**Board of Forestry Monthly Meeting**
**Location:** Resources Building, Sacramento
**Contact:** 916-653-8007
**Website:** http://www.bof.fire.ca.gov

## Workshop will be Webcast/Archived

Attend the popular October 6–27 Forest Health workshop from the comfort of your own home! The workshop will be webcast and archived. Go to ***http://ucanr.org/forestoct2010*** and follow the directions.

## Get the e-version with live links

Sign up for the e-version of *Forestland Steward*… it has live links! Plus, you'll see the newsletter about a month early. Send a note to llitman@pacbell.net and specify whether you want to receive the e-version instead of or in addition to the paper version.

## How can Forestland Steward newsletter serve you?

I'd like to see more information on _____

_____

My suggestions are _____

_____

❑ Add me to the mailing list / ❑ Change my address:

Name_____

Organization_____

Address_____

City, Zip_____ Phone_____

email _____

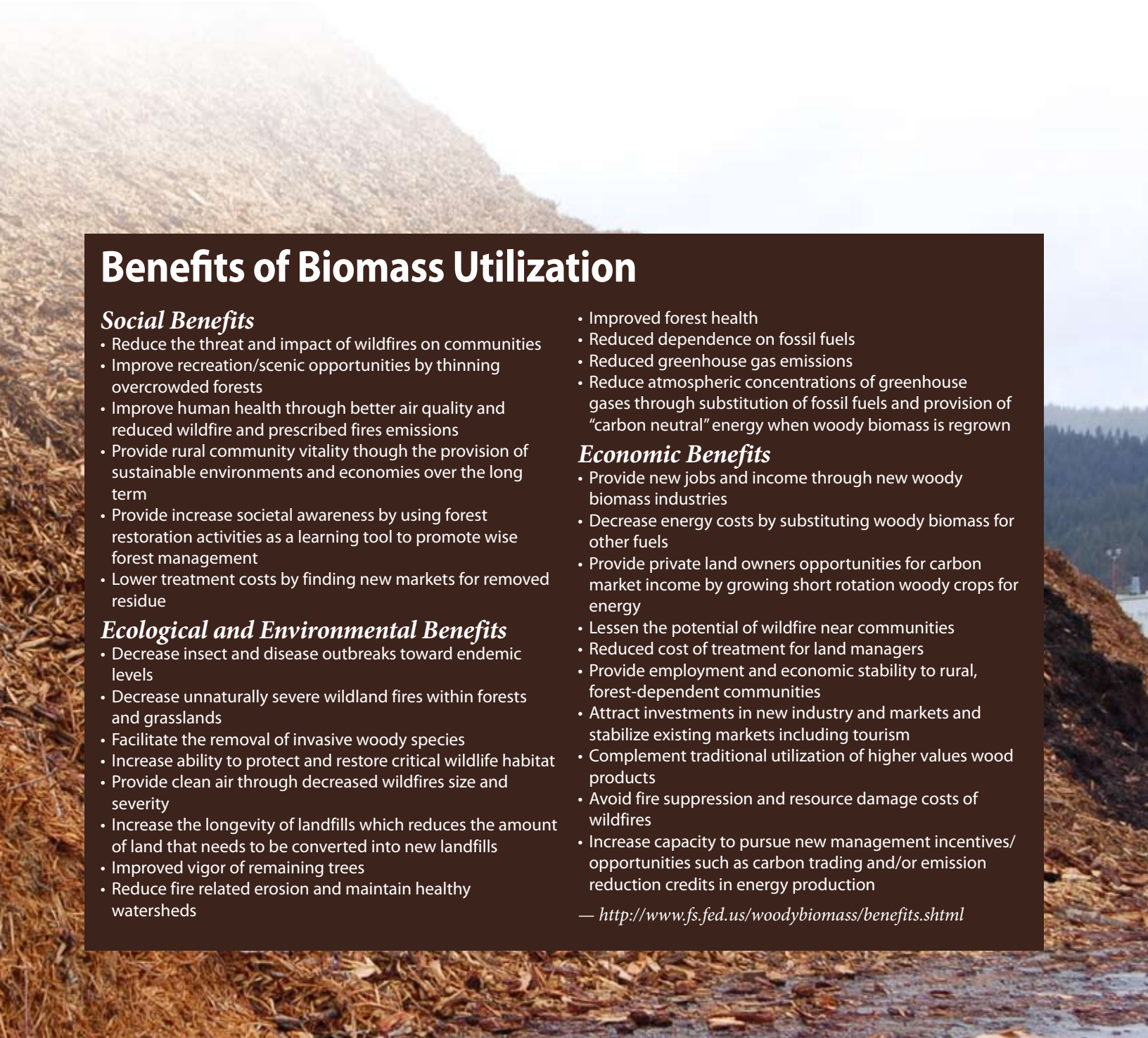
❑ To save on printing costs and paper, we encourage you to get the internet version of Forestland Steward. Check here for an email copy of each issue instead of a hard copy.

Fill out this box and send it to CAL FIRE, Forestry Assistance, P.O. Box 944246, Sacramento, CA 94244-2460. Fax: (916) 653-8957; email: jeff.calvert@fire.ca.gov
For address changes, please send this box or contact Jeff Calvert via e-mail, standard mail, or fax…be sure to reference Forestland Steward newsletter.

**CAL FIRE & Placer County RCD**
Forest Stewardship Program
c/o P.O. Box 162644
Sacramento, CA 95816

**ADDRESS SERVICE REQUESTED**





# Benefits of Biomass Utilization

## *Social Benefits*

- Reduce the threat and impact of wildfires on communities
- Improve recreation/scenic opportunities by thinning overcrowded forests
- Improve human health through better air quality and reduced wildfire and prescribed fires emissions
- Provide rural community vitality though the provision of sustainable environments and economies over the long term
- Provide increase societal awareness by using forest restoration activities as a learning tool to promote wise forest management
- Lower treatment costs by finding new markets for removed residue

## *Ecological and Environmental Benefits*

- Decrease insect and disease outbreaks toward endemic levels
- Decrease unnaturally severe wildland fires within forests and grasslands
- Facilitate the removal of invasive woody species
- Increase ability to protect and restore critical wildlife habitat
- Provide clean air through decreased wildfires size and severity
- Increase the longevity of landfills which reduces the amount of land that needs to be converted into new landfills
- Improved vigor of remaining trees
- Reduce fire related erosion and maintain healthy watersheds
- Improved forest health
- Reduced dependence on fossil fuels
- Reduced greenhouse gas emissions
- Reduce atmospheric concentrations of greenhouse gases through substitution of fossil fuels and provision of "carbon neutral" energy when woody biomass is regrown

## *Economic Benefits*

- Provide new jobs and income through new woody biomass industries
- Decrease energy costs by substituting woody biomass for other fuels
- Provide private land owners opportunities for carbon market income by growing short rotation woody crops for energy
- Lessen the potential of wildfire near communities
- Reduced cost of treatment for land managers
- Provide employment and economic stability to rural, forest-dependent communities
- Attract investments in new industry and markets and stabilize existing markets including tourism
- Complement traditional utilization of higher values wood products
- Avoid fire suppression and resource damage costs of wildfires
- Increase capacity to pursue new management incentives/ opportunities such as carbon trading and/or emission reduction credits in energy production

*— http://www.fs.fed.us/woodybiomass/benefits.shtml*