October 26th Biomass Meeting in Ukiah California & October 17th Transition Towns Meeting in Casper California

WBWG Response to Questions and Concerns

Biomass Questions:

1) How do we measure sustainability over time in a complex forest system?

There is already a lot of information available that can be pulled together to start answering this question. The next step would be to identify gaps that require further research, or studies. The Biochar Demonstration Project has added a research component based on this question. We will use U.C. Berkeley to conduct a literature review on existing information related to biomass removal and forest health. In addition, the U.C. Cooperative Extension will conduct field research looking at changes in plant and animal diversity in the demonstration forest plots on the Usal Redwood Forest.

2) Could there be a certification process to assure sustainable forest practices?

There are several certification processes in the world that claim to certify sustainable forest practices. Forest Stewardship Council is the gold standard and supported by most international environmental organizations. It is also prevalent in the Redwood Region.

3) What are the controls on private property harvesting of biomass?

The only control on harvesting of biomass, is the California Forest Practice Act (CFPA), which dos not guarantee sustainability. Compliance with a certification process such as Forest Stewardship Council, or the placement of an easement on the property specific to harvesting of biomass are ways to exert more control than the CFPA requires. With the emergence of a carbon market, the sale of carbon is another way to control removal of biomass.

4) How proven is the approach that we are taking, are there built in constraints?

The Biochar Demonstration Project is unique- to our knowledge.. The technology itself and the market for biochar are proven on a small scale. The specific benefits that this project will have environmentally, socially and economically can only be estimated at this time. There are constraints in that any biomass removal must comply with timber harvest rules, however we expect to go far beyond these requirements. The Woody Biomass Working Group have signed onto principles and committed to 3-E beneficial projects that will provide major guidance and could be considered a built in constraint. We have to be

prepared to make honest mistakes. Scale is important, in that it allows flexibility to learn from mistakes and change practices before our principles are violated.

5) Could we set up natural canaries in the coal mine, i.e. rare plants, lichen, fish species (indicator species), including social indicators (sentinel indicators) etc?

The Woody Biomass Working Group in collaboration with the U.C. Cooperative Extension will be conducting a plant and animal diversity study to look at the impact of biomass removal on plant and animal diversity. Additional funding for research would allow an even more in-depth look at these natural canaries, but at this point there is only funding for the diversity study.

6) How real or proven are the technologies that we are looking at?

The only specific technology that we are looking at right now is a machine that converts biomass into biochar. Making charcoal or biochar from plant material has been practiced since ancient times. Historically this was a resource consuming and labor intensive process that produced substantial smoke emissions.

Modern charcoal production can be significantly cleaner, offer more efficient carbon conversion and produce other valuable byproducts. Several different approaches are now being commercialized. For example;

- Microwave conversion by Carbonscape http://carbonscape.com/
- Flash Carbonization developed by University of Hawaii http://www.hnei.hawaii.edu/bio.r3.asp#flashcarb
- Small scale continuous carbonization by Biochar Engineering http://www.biocharengineering.com/

The challenge is to select a conversion system that is of a suitable scale, clean, cost effective, and to commercialize the production of a new forest product here.

Other technologies will be considered in our countywide feasibility study, but until the study is completed we do not know what technologies will be recommended for specific sites. Proven technologies are likely to be the only economically feasible choices.

7) As technology changes how will the decision be made about BACT for air emissions quality? What is BACT?

A privately owned biomass facility must follow all emissions regulations at the time that it is built. As technologies improve and regulations become more stringent, in most cases there is no law forcing facilities to upgrade technologies in order to reduce emissions. With a private investor, the local community has no say in which technological upgrades are made. If *our community* was able to invest in a biomass facility, we could choose through a community process what technologies to use and when those technologies should be upgraded. Through processes such as the WBWG, the community can have great influence in what types of industrial facilities are built here, but community ownership would

ultimately be the only way to ensure that community preferences are considered in long-term operation (private companies such as Mendocino Redwood Company have made great efforts to include the community in their decisions- but this is not a guarantee).

8) How will best technologies for the least amount of emissions be determined?

This can be determined through a simple environmental economic equation. You can write a profit equation for different technologies that are being considered and include a cost variable for emissions that will increase the cost of operation as emissions increase. Solving this equation for the different technologies will determine the most profitable technology for least amount of emissions (if this technology is to be supported by the WBWG it will have to be with in the 3-E parameters laid out in our feasibility study for any given location).

9) Are the areas being studied in the feasibility study suitable for light industry?

Yes.

10) Are oak woodlands under some regulatory status/ chaparrals (as far as biomass removal or logging)?

In Mendocino County there are currently no regulatory statutes that specifically limit the extent or type of harvesting activity can occur on oak woodlands or chaparral. This is not true in other counties that may have grading ordinances or specific ordinances to conserve these resources. However, other tangential laws may apply e.g. stream alteration permits (1600 permits) if appropriate for the site.

11) What are the local impacts of a biochar facility i.e. noise, smoke, emissions etc.?

Local impacts are similar to a small milling operation and are dependent on facility scale. A small biochar facility might well be operated in conjunction with an existing mill. Trucking of feedstock, trucking of char, dust from feedstock storage area, noise from material handling and emissions that meet Mendocino County permitting requirements can be anticipated.

Biomass Comments:

1) What happens to the native plant and animal diversity when biomass is removed?

This depends upon how the biomass is removed. Under the California Forest Practice Act, native plant and animal diversity should not be significantly impacted. Forest Stewardship Council certification is a way to further insure there will be minimal impact.Additional studies by education and government institutions will help to evaluate the impact. The biochar demonstration project now includes components that look at changes in plant and

animal diversity before and after biomass removal in the Usal Redwood Forest. This should help answer the question for biomass removal techniques that will be used in the demonstration project.

2) Is there enough resource over time to sustain a process?

Depending upon the scale of the technology, there is enough resource over time to sustain a process. For example, if you remove one branch from a million acres of growing forest per year, there will be more than enough growth on the million acres of trees to replace that removal of biomass. The question is how many branches should be removed from a sustainability perspective, and what scale of a biomass facility will insure that we do not exceed sustainable removal rates? The work that the Mendocino County Woody Biomass Group is doing is to gather the pertinent information to help the community and potential biomass investors make the appropriate decision about scale.

3) What happens to forest aesthetic when biomass is removed?

Whether or not the aesthetic of a forest is changed for the better or worse when biomass is removed is subjective. To some, a park like setting is ideal, and to others it is not. Because of this subjectivity, the change in forest aesthetic when biomass is removed is nearly impossible to measure.