Biomass Utilization Communications Tool

Background Information

Air Quality

Benefits accrue to the Society as a whole. Values are estimated by Dr. Gregg Morris of the Green Power Institute, and are documented in the seminal NREL report: *The Value of the Benefits of U.S. Biomass Power* (NREL/SR-570-27541). Values are relative to open burning of biomass or accumulation in the forest (eventually to be burned or decomposed and retuned to the air as methane and other emissions) and are estimated to be 9.39 cents per Kilowatt hour.

> *Potential benefits*: maintaining good air quality by reducing wildfire and prescribed fires emissions; carbon trading and/or emission reduction credits; reducing greenhouse gas production

Societal Benefits

There are many public benefits from biomass utilization which protects communities from wildfires while retaining forest and woodland scenery. These benefits accrue to the society as a whole; we all benefit from a strong and productive economy, healthy and safe citizens, and access to local recreational opportunities.

Rural Jobs:

Representative data from the Western Governor's Association (Source: page 24 of the WGA Biomass Task Force Report): 4 to 5 jobs per megawatt of installed capacity (1 MW = 1,000 kilowatts, or enough electricity for the continuous use of 1,000 average homes). These are living wage jobs, which are capable of supporting an entire family in our forest-dependent communities: areas most at risk of economic instability.

> *Potential benefits*: economic stability to rural, forest-dependent communities

Recreation/Scenic:

No specific values has been placed on these benefits, however, they can be significant, especially in nationally-significant recreation areas such as Florida [here is a quote from an article by Butry, Mercer, Prestemon and Holmes, published in the Journal of Forestry, November 2001: "*We modeled and analyzed the economic impacts of the six weeks of large, catastrophic wildfires in northeastern Florida in June and July 1998, among Florida's most devastating in recent history. The result of the unusually strong El Niño–Southern Oscillation (ENSO) in 1998, the Florida wildfires produced economic impacts of at least $600 million…*"]

> *Potential benefits*: Improved recreation and scenic values vs. catastrophic wildfire; continued opportunities for hunting, fishing and camping; tourism and rural community impacts

Public Health:

No specific values have been placed on these benefits. Lives can be lost or health permanently impaired from the smoke; firefighters and citizens can directly be killed or injured by the wildfire or during panicked escapes and evacuations.

> *Potential benefits*: Lives saved (potential due to public health and wildfire losses) and public health maintained

Lost Productivity:

No specific values have been placed on these benefits. Business, schools and public facilities can be temporarily shut down due to smoke or the threat of wildfire; roads or public

infrastructure (water, electricity and other utilities) may be impaired, thus forcing longer evacuations as these are brought back into service.

> *Potential benefits*: Avoidance of lost productivity (due to smoke or damage to infrastructure)

Waste to Energy

Landfill Diversion:

The land acquisition, permitting and construction of public and private landfills has become a very tedious, controversial and expensive proposition. Diverting materials from landfilling, or using green waste in a productive manner, such as for biofuels or power generation will extend the landfill life and reduce the emissions. No specific values has been placed on these benefits, however, they can be significant, often driving the choice to divert green debris (personal communication, Donna Perla, Senior Advisor, Office of Research and Development, EPA, 10/6/06).

> *Potential benefits*: reducing landfill quantities; avoiding new landfill development (acquisition, siting, permits, construction costs); ease of recycling

Energy Security:

There are significant national and economic security benefits from domestic, renewable energy production. No renewable resource has greater potential to address these issues than biomass, which can provide power (electricity), heat and transportation fuels on a year-round basis. At the March 2007 25x'25 Summit, Gen. Charles Wald (Ret.), a member of the Energy Security Leadership Council and former Deputy Commander of US European Command, stated that the United States has spent up to $60 billion per year since 1980 for military operations that "assure the free flow of oil from the Persian Gulf," not including the costs of the war in Iraq. He said that translates to approximately $6.50-$7.00 per gallon of gas, indicating a high subsidization of the cost of gasoline. Developing biofuels from cellulosic ethanol (which could include wood as a feedstock) not only reduces this national security and trade imbalance, it provides long-term economic for the US economy (see 25x'25 web blog at: http://64.130.50.222/blog/)

Renewable energy values include commonly accepted commercial electricity rates of 5.3 cents per Kilowatt hour and renewable energy credits of at least 1.0 cents per Kilowatt hour [reference is Bill Carlson, President of the US Biomass Power Producers Alliance, personal communication 10/6/06].

> *Potential benefits*: Renewable energy – reduced fossil fuel use; domestic energy security (avoidance of foreign oil imports); market value of green power; national security issue when Alaska Oil Pipeline or a Army/Air Force base is temporarily closed

Grid Stability:

Since utility rates are based on distances and interconnections from "load centers," biomass is typically penalized relative to power generation near a metropolitan area. Biomass, by its nature, is located in rural areas, often far from the load centers, yet near local demand. Thus, biomass electricity production helps to stabilize the system and provide "firm capacity" and line voltage support, something which most other renewables are not able to maintain. No specific values has been placed on these benefits, however, they can be significant, often driving the developers desire to be energy independent (personal communication, Tad Mason, President of TSS Consulting, 10/6/06).

Potential benefits: distributed energy; line voltage support; off-grid systems; grid stabilization; firm capacity (24/7 availability)

Forest Health

Forestry:

Forest products and bioenergy feedstocks can be produced while improving forest health and protecting residual trees (including protecting old growth from competition and extending their potential life cycle). As representative data, the average biomass thinning project return on the Eagle Lake Ranger District, Lassen National Forest (1993-2005) is $267.36/acre (forest products and biomass). Note: GT is green tons; "Misc-Conv" is miscellaneous convertible products and includes all material smaller than 10.0 inches in diameter, including limbs, tops and small trees (55% of the tonnage sold in these 33 sales).

33 sales in total	271,700 G.T. Sawlogs 326,676 G.T. Misc-Conv 598,376 G.T. Total	15,940 Acres		
Averages Per Sale	8,233 GT Sawlogs 9,899 GT Misc. Conv 18,132 GT Total	483 acres	17.0 GT/Ac 20.5 GT/Ac 37.5 GT/ac	$267.36/acre

Potential benefits: reducing unnatural forest density; reducing risk of mortality to insect, disease or drought; increasing forest fiber production; timber and small wood products

Fire Management:

Average large fire (300-20,000 acre) suppression cost/acre is $856/acre (USFS data, 1994-2005, per Krista Gebert, Rocky Mountain Research Station, personal communication, 10/4/06). There are many other benefits, such as reduced need to rehabilitation of wildfire areas (due to fewer, less damaging wildfires); protection of private and public structures (worth billions of dollars annually); and reduced preparation and operation costs for prescribed fire application.

Potential benefits: property value protection (homes in a fire safe community); protecting critical infrastructure (schools, industry, utilities, etc); avoided costs of suppression; reduced costs for prescribed fire and reduced risk of escape

Wildlife:

Wildlife habitat can be improved or protected by use of biomass thinning. Specific habitat attributes and vegetative structures, such as multi-story stands, dense wildlife clumps, and downed logs and snags can be protected prior to prescribed fire operations and reduce the unintended consequence of accidental burning. No specific economic values have been determined for wildlife benefits.

Potential benefits: creating wildlife habitat (protection of snags, down logs and other desired habitat components, precise application of desired vegetative conditions)

Watershed Management:

Soil and watershed damage from catastrophic wildfire can result in significant economic losses. Through biomass thinning, the risk and damage potential is reduced. Presented as an example, representative data from a USFS press release on the Hayman Fire (137,760 acres, 2002, Colorado) indicates over $110 million in watershed damage. Only the $37 million in lost water storage capacity was used in the $268/acre figure (USFS Press Release, October 2, 2003)

Lost value of water storage capacity	$37 million
Fisheries losses	$297,000
Burned area emergency rehabilitation (BAER)	$23.71 million
NRCS Grants for state, county, and private rehab	$10.80 million
Denver water emergency rehabilitation	$2.23 million
Forest Service long-term rehab funding requested	$36.77 million
Total estimated cost for watershed and rehab of the Hayman Fire	**$110.8 million**

Potential benefits: watershed improvement (reduced risk of fire damage); reduced and avoided sediment delivery; reduced turbidity; water yield increases; stable flow patterns (providing more water later in the year due to less vegetation – a strategy employed by PG&E in California to increase summer water yields for hydroelectric use).