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Biomass Crop Assistance Program (BCAP):

Analysis of Proposed Options for “Matching Payments” for the Collection, Harvest, and Transport of Forest Biomass

by

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College of Natural Resources Policy Analysis Group – University of Idaho

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Issue Briefs are timely summaries of research reports relevant to current natural resource topics.

“Current market values for biomass fuel generally will not pay for all associated costs of harvesting, collection, size reduction [grinding], and transportation, except under perhaps the most favorable conditions.”¹

Introduction

The Biomass Crop Assistance Program (BCAP) is authorized by the Food, Conservation and Energy Act of 2008 (the 2008 Farm Bill) and has two general objectives. First, to support the establishment and production of crops, including woody biomass, for conversion to bioenergy; this part of BCAP is called “establishment of annual payments” and is not discussed herein. Second, to assist with the collection, harvest, storage and transportation of eligible material for use in biomass conversion facilities; this is called “matching payments.” BCAP is part of the U.S. Department of Agriculture (USDA) effort in response to a presidential directive to accelerate development of advanced biofuels.

To improve problem situations that have arisen during early implementation of BCAP, new applications for “matching payments” were suspended in February 2010 until new rules can be adopted. The USDA is taking public comments on proposed rules through April 9, 2010. We provide an overview of the proposed rules, and comment on them to assist others in formulating their own opinions. In short, we support BCAP’s “matching payments” approach and believe in government subsidies for the removal and utilization of forest biomass because such action creates a triple win for society by 1) improving forest conditions and wildfire resiliency, 2) providing renewable energy feedstocks, and 3) revitalizing rural communities. In addition, using forest biomass as an energy source has more favorable environmental impacts than piling and burning it in the woods. As research in Montana’s Bitterroot Valley demonstrates, carbon dioxide emissions are reduced by 40%, particulate matter by 60-90% depending on whether boilers have emissions controls, and the net energy return averages 21 units of bioenergy produced for each unit of diesel fuel energy used to collect, grind, and transport forest biomass.²

Public Comment Period

Comments on the proposed BCAP rules will be accepted through April 9, 2010. The proposed changes in BCAP implementation have been published in the *Federal Register* and are available as a 25-page PDF download at the first URL below, or an easier-to-read 104-page document at the second:

www.fsa.usda.gov/Internet/FSA_Federal_Notices/bcap_prm_2_8_2010.pdf

www.fsa.usda.gov/Internet/FSA_File/bcap_prm_on_public_display_ofr.pdf

¹ Nicholls, David L.; Monserud, Robert A.; Dykstra, Dennis P. (2008) “Biomass utilization for bioenergy in the western United States.” *Forest Products Journal* 58(1/2): 6-16.

² Jones, Greg; Loeffler, Dan; Calkin, David; Chung, Woodam (2010) “Forest treatment residues for thermal energy compared with disposal by onsite burning: Emissions and energy return.” *Biomass and Bioenergy* (in press).

Perhaps the easiest way to comment is via email: cepdmal@wdc.usda.gov
As per instructions in the *Federal Register*, begin your comments by stating that they pertain to the Proposed Rule for the Biomass Crop Assistance Program (BCAP), *Federal Register*, Vol. 75, No. 25, pages 6264-6288, February 8, 2010.

Unintended Consequences

Although using federal funds to convert wood into energy seems like a good idea, unintended consequences have surfaced during early BCAP implementation, including driving up timber prices and undermining an industry that long has used sawdust and wood shavings to make affordable cabinetry.³ Among the various types of woody biomass, mill residues are the “low-hanging fruit” for conversion to energy. Tom Julia, president of the Composite Panel Association, represents 40 makers of particleboard, medium-density fiberboard and hardboard. He asked, “What is the future of wood? Do we use it to build things or burn it?” He said, “We are on the cusp of a major public policy direction on the future use of wood, and we’ve got to get it right.”⁴

In addition to market effects on composite wood products, the BCAP subsidy available to qualified parties (buyers and sellers) has had similar effects noted by suppliers and purchasers of wood fiber for conversion to pulp-based paper and packaging products. At facilities already consuming hog fuel to make steam and electricity, clean chips can be redirected from pulp manufacturing to energy production. In short, BCAP improperly applied has the potential to distort existing, traditional markets that already efficiently utilize wood products manufacturing residuals.

Proposed BCAP Rules

To achieve its stated purposes without undue market distortions, rules for determining the BCAP “matching payment” subsidy need to be amended. In response to early implementation and associated controversy, on February 3, 2010, the USDA published proposed new rules for BCAP, and initiated a 60-day public comment period. Pending a decision on final implementation rules, applications for new biomass suppliers were suspended. The draft rules provide details on three options for “matching payments.” The proposed rules also redefine appropriate uses of wood manufacturing residuals and wood chips and sharpen BCAP’s focus on bioenergy feedstock sources other than wood products mill residues, including forest biomass. An edited overview of the key provisions in the new rules by the *Forest2Market* newsletter team is provided in the **Sidebar** on the next page. Additional details are also available in another section of the same newsletter.⁵

³ Eilperin, Juliet (Jan. 10, 2010) “The unintended ripples from the biomass subsidy program.” *Washington Post*: <http://www.washingtonpost.com/wp-dyn/content/article/2010/01/09/AR2010010902023.html>

⁴ Hsuan, Amy (Mar. 21, 2010) “Biomass subsidies threaten Oregon wood plants’ supplies.” *The Oregonian*: http://www.oregonlive.com/business/index.ssf/2010/03/biomass_subsidies_threaten_ore.html

⁵ “Biomass Crop Assistance Establishment Cost and Annual Payment Program.” *Forest2Fuel* newsletter (2/8/10): www.forest2market.com/f2m/us/f2m1/free/forest2fuel-archive/story/2010-Feb-BCAP-Part2

Sidebar – Proposed BCAP Rules Summary*

Eligible Material. The proposed rules preclude “matching payments” for mill wastes and residues used to produce higher value products, including clean chips that result in “black liquor” residues after being pulped, and sawmill residues that can be used to make composite products.

Amount of Payments. The most significant proposed change is the amount of the § 1450.106 Payments (i.e., “matching payments”). The draft rules describe three options, all on a dollar-for-dollar per bone dry ton (BDT) basis to an eligible material owner (i.e., supplier) of eligible biomass material to a qualified biomass conversion facility. Options 1 & 2 are described differently in two parts of the document (pages 6267 & 6285). The numbering scheme on page 6285 is used below:

1. Payment up to but not exceeding \$45/BDT for suppliers to cellulosic ethanol production facilities, and payment up to but not exceeding \$16/BDT for suppliers to facilities converting eligible biomass to heat, power, or biobased products other than cellulosic ethanol.
2. Payment up to but not exceeding \$45/BDT for suppliers to any qualified biomass conversion facility, **except** for use of wood residues converted to heat or power, no payments may be made unless the material is converted to heat or power above a facility’s historical baseline for heat or power production.
3. Payment up to but not exceeding \$45/BDT for suppliers to three types of biomass conversion facilities: those that a) fully convert from fossil fuel consumption to renewable biomass feedstocks; b) show exceptional promise for producing innovative advanced biofuels, renewable energy, or biobased products; and c) biomass consumption above an established historical baseline. This option also allows payment up to but not exceeding \$16/BDT for suppliers to facilities that do not increase renewable biomass consumption over a historical baseline.

Other Rule Changes. Several other changes are in the draft rules, but are likely to get less feedback:

- Originally, suppliers were eligible for matching payments for up to two years after they filed their first application; under the new rules, the two-year clock starts ticking when suppliers receive their first payment.
- The original rule called for measuring the moisture content of each load of biomass; the new rule accepts industry standards for measuring moisture content, including random sampling and the use of historical statistical data.
- The proposed rules slightly modify the requirement for “arms-length transactions.” The program still precludes payments for “related-party transactions” but allows facility stockholders or cooperative members to participate.
- The original rules required that forest biomass be harvested in accordance with a forest stewardship plan. The proposed rule has expanded the types of plans acceptable to include the American Tree Farm Program, the Sustainable Forestry Initiatives Program, and State Best Management Practices Programs.

*This is an edited version of “BCAP Part One Suspended; 60-day Comment Period on New Rules Begins.” *Forest2Fuel* newsletter (Feb. 8, 2010): <http://www.forest2market.com/f2m/us/f2m1/free/forest2fuel-archive/story/2010-Feb-BCAP-Suspended>

Fiscal Impact

The 2008 Farm Bill did not set a specific limit for BCAP funding. Instead, the USDA's Farm Service Agency added up the quarterly feedstock needs of all the facilities it had approved as qualified for the subsidy. Under current rules, now suspended pending adoption of new rules, biomass suppliers to any qualified biomass conversion facility were eligible for a dollar for dollar matching payment, up to \$45/bone dry ton (BDT). This led to an estimate of \$2.1 billion in expenditures for FY2010, and in its first three months of implementation, more than \$500 million will have been expended by March 2010. Under the proposed new rules, between now and the end of 2013 BCAP costs are estimated at \$2.6 billion, including \$2.1 billion on "matching payments." How the amount of matching payment is priced is a key feature of the new draft rules, which offer three options (see **Sidebar** on page 3). Most of the comments below focus on these three options, and also on eligible materials and federal lands.

Authors' Comments

The authors are Co-chairs of the Biomass Utilization & Energy Production Subcommittee, Western Governors' Association Forest Health Advisory Committee. We were asked by Ann Walker, WGA Forest & Rangeland Health Program Director, to provide this analysis for other Forest Health Advisory Committee members. The following comments are based on our individual analyses of BCAP implementation and the rules that have been proposed to improve it.

We are both hopeful that with appropriate implementation rules BCAP could help improve the economics of moving low-value forest biomass (logging slash and pre-commercial thinnings) out of the woods to an energy production facility. We therefore encourage people who share that hope to comment on the proposed BCAP rules. The following comments are things you may want to consider as you form your own opinions about BCAP and shape your comments for the USDA, which are due by April 9, 2010 (see **Public Comment Period** above).

Jay O'Laughlin

During the past three years most of my waking hours have been spent studying, writing, and talking about how forests can be managed sustainably while helping meet society's needs for renewable energy and reducing carbon emissions. In my role as chair of the Forestry Task Force for the Idaho Strategic Energy Alliance, I published a report identifying opportunities and challenges in converting woody biomass to energy.⁶ In 2009 I gave 19 off-campus presentations on wood bioenergy to a wide variety of audiences, and several more on forest carbon sequestration.

The following comments on the BCAP subsidy are based on integrated concerns

⁶ O'Laughlin, Jay (2009). *Wood Bioenergy: Homegrown Reliable Baseload Energy for Idaho*. Forestry Task Force report, Idaho Strategic Energy Alliance, Boise, ID.
http://www.energy.idaho.gov/energyalliance/d/forest_packet.pdf

about forest conditions, wildfire policy, and the economic factors that constrain foresters from doing the right thing: reducing fuel loads on federal lands in the western United States. Removal of low-value forest biomass that poses a wildfire hazard cannot be done without some form of subsidy, and there are only two choices; a) remove larger, high-value timber with the forest biomass, or b) provide a financial subsidy, either direct cash payment or an indirect tax credit. The States of Oregon and Washington recently have taken the tax credit subsidy route. BCAP offers cash dollar-for-dollar “matching payments.”

Exclusion of Mill Residues and Clean Pulp Chips. By excluding from BCAP subsidy the by-products of lumber manufacturing that could be used to produce composite wood products or pulp-based paper and packaging products, some of the market distortion problems that have arisen during early BCAP implementation could be eliminated. The proposed rules (§ 1450.103(c)(3)) do this indirectly for clean pulp chips by excluding material used to produce black liquor, and black liquor itself, which is a by-product of pulp manufacturing. I interpret this as any woody biomass used in pulp manufacturing, and perhaps such a statement should be added. A specific new section at that point in the rule should be added to reflect the discussion on page 6266 that the USDA is proposing to exclude mill residues used in higher value-added production of composites or other wood products.

Inclusion/Exclusion of Federal Lands. The proposed rule seems flexible enough to include forest biomass from federal lands for the BCAP subsidy (§ 1450.2 *Renewable biomass*) except those for old-growth maintenance, restoration, and management direction of sections 102(e)(2), (3), and (4) of the Healthy Forests Restoration Act of 2003 (16 U.S.C. 6512) and large-tree retention provisions of subsection (f). If it is desirable to exclude other federal lands, the type of exclusion should be carefully defined and made as specific as possible. If, for example, “mature forests” were excluded, then most of the forest biomass from federal lands would not be eligible for the BCAP subsidy. Rather than having courts try to interpret vague or unspecific terms like “mature forests,” it is preferable to be specific in the implementation rules.

“Matching Payment” Amount. Three options are proposed for determining the “matching payments” subsidy amount for collection, harvest, storage and transport of eligible biomass (§ 1450.106 Payments; see **Sidebar** on page 3 herein).

Option 1 is adequate as written. It seems to be the fairest way to encourage cellulosic ethanol production (\$45/BDT), and new renewable energy production of all other forms (\$16/BDT) without penalizing existing facilities producing renewable energy from woody biomass. It also would be the easiest option to administer.

Option 2 is unsatisfactory. The problem here is existing facilities producing renewable energy from woody biomass would receive no payments, except for new production above a facility’s historical baseline. Rationale: – Existing facilities do good things for society by using wood to generate energy, and it would be unfair to

encourage new plants to come on line with a feedstock subsidy while simultaneously prohibiting existing wood-fueled energy producers from the subsidy, as it would put them at a competitive disadvantage for a limited feedstock resource. As one example, when the 50 MW wood-fueled biopower plant at Kettle Falls, Washington, began operations in 1983, there was enough mill residue within 100 miles of the plant to run it. Now material is being hauled 250 miles and more. The plant ran at about half capacity in 2009 due to lack of affordable fuelwood. As another example, Clearwater Paper's 65 MW co-gen plant at Lewiston, Idaho is also running at less than capacity due to a shortage of affordable feedstocks. The mill is burning natural gas instead of wood to generate steam for process operations.

Option 3 is my preferred option. It would likely produce more biomass-based renewable energy than the other two options. It is particularly good because it provides up to \$45/BDT for biomass to facilities that "fully convert" from fossil consumption to renewable biomass feedstocks. However, "fully convert" should be changed to "Convert" and then a clause added at the end to the effect that the majority (51%) of energy output of the facility should be provided by biomass. Rationale: The University of Idaho since 1989 has been heating approximately 90% of our campus with woody biomass residues from local sawmills, saving Idaho taxpayers an average of \$2 million per year compared to heating the campus with natural gas. There is a need, however, to retain back-up capability to use natural gas, especially on very cold days. The University nevertheless should qualify for the BCAP subsidy, otherwise we will be at a competitive disadvantage with new bioenergy facilities in the region for the limited biomass feedstocks.

Carbon-based "Matching Payments." The USDA has asked for comments on developing a payment rate based directly on the value of lowering carbon emissions. Because carbon emissions do not have a market value, using this approach to value biomass feedstocks for renewable energy production is speculative at best. A flat rate of up to \$16/BDT is preferable to a carbon-based price, and certainly would encourage the transport of some logging residues out of the woods to an energy production facility.

Uncompensated Social Benefits and Avoided Costs Provide Adequate Rationale for BCAP "Matching Payments" Subsidy. Lest we forget, there are many benefits from removing forest biomass, including improved forest conditions, increased resilience to wildfire, and avoided costs of wildfire suppression and post-fire site rehabilitation. In addition, air pollution, primarily particulate matter, is reduced considerably compared with open burning. The additional jobs in collecting and transporting forest biomass will help revitalize many rural communities in the western states. Analysis by the WGA Biomass Task Force pointed out that the sum total of these benefits, not including employment, exceeds the value of the electricity produced by utilizing forest biomass. In addition, a 10 MW biopower plant provides 20 jobs at

the plant, and 40-50 jobs collecting and transporting forest biomass.⁷

The U.S. Forest Service produced data for the WGA identifying forest biomass (logging slash and fire hazard reduction thinnings) available for energy production. At \$30/BDT roadside, roughly 10 million tons/year are available in the western states, with one-third of that logging residues at \$10/BDT roadside (**Table 1**). The WGA supported analysis to provide county-level estimates, and such data for all the western states will be available soon on the WGA website.

Table 1. Forest biomass supply estimate for the western states, with logging residues at \$10/dry ton and thinnings at \$30/dry ton.⁸

State	Fire hazard thinning		Private land thinning	Logging residue		Unused mill residues	TOTAL
	Public	Private		Public	Private		
Arizona	93,473	23,713	92,144	10,785	8,298	1,351	230,036
California	772,567	734,489	1,311,498	43,430	611,694	65,087	3,538,764
Colorado	149,942	50,775	31,835	6,088	33,905	2,302	274,847
Idaho	516,992	152,042	54,388	94,310	515,094	6,005	1,338,801
Montana	651,643	222,509	76,430	14,657	442,951	9,137	1,417,237
Nevada	292	2,881	0	179	4,518	0	7,871
New Mexico	163,414	58,337	22,382	4,417	26,621	4,902	279,713
Oregon	86,623	186,781	542,082	14,401	765,288	16,316	1,611,490
South Dakota	16,817	0	0	69,540	19,368	2,294	108,020
Utah	59,703	12,730	6,146	3,464	11,879	4,438	98,360
Washington	131,595	158,969	458,699	129,275	617,317	21,446	1,517,302
Wyoming	73,982	23,477	17,313	3,800	31,077	34,014	183,664
TOTAL	2,717,043	1,626,673	2,612,917	394,346	3,087,670	167,292	10,606,105

More than 3.4 million BDT/year of logging residues are available, with almost 90% of that on private lands (**Table 1**). This quantity of biomass could generate roughly 340 MW of electricity. Doing so would create approximately 20,000 new jobs while generating enough electricity for 3 million homes. Compared to open burning, using biomass for energy would significantly reduce particulate matter (60-90%) and greenhouse gas emissions (40%); and for each unit of diesel fuel energy used to collect, grind, and transport forest biomass to a thermal energy facility, the net energy return could be about 20 units of bioenergy produced.⁹

⁷ *Biomass Task Force Report*. Clean and Diversified Energy Initiative, Western Governors' Association, Denver, CO. (2006, p.21):

http://www.westgov.org/index.php?option=com_joomdoc&task=doc_download&gid=92&Itemid=

⁸ Data produced by the U.S. Forest Service for the *Strategic Assessment of Bioenergy Development in the West: Biomass Resource Assessment and Supply Analysis for the WGA Region*. Transportation Fuels for the Future Initiative, Western Governors' Association, Denver, CO. (2008):

http://www.westgov.org/index.php?option=com_joomdoc&task=doc_download&gid=213&Itemid=

⁹ Jones, Greg, et al. (2010) *supra* note 2.

Rich Lane

I am providing three individual comments in areas where I have some experience. These comments only represent my perspectives regarding BCAP's impacts on woody biomass supply and the related effects on bioenergy production. I've attended numerous informational seminars regarding the BCAP rule changes. I serve on the Montana DNRC woody biomass committee. For 15 years I managed the wood fiber supply for a large paper mill and co-gen facility in the West. I've also talked extensively with suppliers receiving BCAP payments and quizzed consumers that are adjusting to the program's effects on wood fiber markets. Part of my interest in BCAP is to determine if my business can benefit from BCAP, or if BCAP is a potential threat. I also hope to identify how the program will enhance the production of biomass energy products in the Intermountain West and ultimately how it can be used to benefit forest health across the West.

I welcome complementary or disparate views from others directly involved in producing and buying woody biomass. Also, I especially encourage those responsible for representing their state or federal land management agencies to demonstrate how BCAP can address forest health issues affecting public forest lands. I believe that if BCAP really can increase woody biomass supply and/or enhance bioenergy production those agencies should somehow leverage the program's subsidy payments to achieve positive results on the ground they manage for the public good. Possibly the only benefit to those agencies may be reduced expenditures related to slash burning, but I suspect there are many other potential advantages that those involved in public land management can unveil.

Comment #1 – Wood Manufacturing Residuals. BCAP improperly applied has distorted existing, traditional markets that already efficiently utilize wood manufacturing residuals. According to several sources, BCAP has encouraged wood manufacturing facilities (sawmills, plywood plants, post & pole plants, log home plants) to divert their wood chips, shavings and sawdust away from pulp mills, particleboard plants and medium-density fiberboard (MDF) facilities to plants that produce thermal energy (heat) and electricity. I'm not aware of a situation where BCAP has increased the supply of feedstock to produce biomass derived transportation fuels, as the production of those types of fuels in the West is very minimal. This market distortion happens only because of the available federal subsidy and would not occur in an otherwise free market. A BCAP-qualified consumer can offer prices higher than prevailing markets with no negative effect on their cost structure. However the traditional consumer that experiences the loss of supply will be negatively affected. For these reasons, the revised BCAP rule will eliminate subsidies for manufacturing residues. I believe it is reasonable to support this change.

Comment #2 – Forest Residue. BCAP can increase the supply of woody biomass derived directly from the forest (logging slash & thinning of pre-commercial trees). As an additional supply source, this type of woody biomass has not been historically utilized on a large scale, but is capable of producing significant additional amounts of

bioenergy products, if affordable. Logging slash/pre-commercial trees must be mechanically processed and transported from the forest to a consumer in order to be utilized. The cost of those activities often precludes affordable forest biomass utilization.

Thus, BCAP payments help bioenergy producers acquire sufficient supply needed to operate their facilities. For instance, the Avista 50-megawatt biomass electrical generation plant in Kettle Falls, Washington, is currently buying forest residue (hog fuel) from forest grinding contractors in northwestern Montana. That material was being sold to the Smurfit-Stone pulp and paper mill in Missoula while it was operating. Prior to BCAP that feedstock source was not available to Avista at an economical price due to its location – the BCAP subsidy enables the utilization of forest biomass to produce additional amounts of bioenergy.

The same type of effect is occurring in central Montana on a 10-year BLM stewardship contract. The small-diameter roundwood and forest residue was being sold to Smurfit-Stone. Now, BCAP has enabled the forest residue to be transported to Basic American Food (BAF) in Rexburg, Idaho, where it is combusted to make process steam for potato products. Without BCAP, in this case the stewardship contracting project may have been terminated due to the market changes.

This feedstock sourcing activity also provides two other benefits – it keeps contractors working at a time when they are struggling to transition after the closure of Smurfit-Stone and it utilizes woody biomass that otherwise would be burned in an uncontrolled forest setting.

I believe it is reasonable and prudent for BCAP to subsidize the utilization of forest biomass for existing biomass energy plants, including heat, electricity, and wood pellet manufacturers. The payment amounts needed to generate the benefits of forest biomass utilization are beyond the scope of this analysis and should be reviewed and/or determined at the individual state or sub-state level.

Comment #3 – New Investments in Bio-Energy Production. Not being a farmer, I don't really understand crop subsidies, but my father-in-law says they are a good thing. He plants and harvests his wheat once a year – those subsidies are long-established.

The present BCAP expires at the end of federal FY2012 and may or may not be extended. I'm telling my bioenergy clients that their proposed multi-million dollar projects better not depend upon on the receipt of BCAP subsidies. They might benefit from a couple years of feedstock supply enhancement but in the long-run they need dependable long-term fiber supply agreements. I understand supply and demand and in my opinion BCAP as currently proposed for revision will not result in increased utilization of biomass over the long run. Investors will not invest based on a short term subsidy, although they might benefit for the next couple years. Nor would I recommend to forest grinding contractors that they expand their business based on BCAP unless they can recoup their investment in the next couple years. Unless there

is some long-term security build into the system, I would rather see the money spent on BCAP be invested into enhanced levels of sustainable forest management on public lands. Programs to address forest health and fuels mitigation, restore forest ecosystems, enhance wildlife habitat, and protect community watersheds.

We all know feedstock supply is a critical issue – perhaps the critical issue – for new electrical generation plants or bio-refineries. In the West, most of that supply is on federal lands and the availability of that supply is a big question. By way of explanation, I would not advise a client to build a new sawmill needing only 10 MMBF/year of logs if it depended solely upon federal timber supply. If they can't be sure they can acquire just 65,000 green tons each year (6.5 tons/MBF) to support a (very small) sawmill, then I know they will have serious doubts about signing a power purchase agreement with a major utility. In fact, they could not get a power purchase agreement (or the capital to build a plant) if their feedstock supply depended upon federal lands. I suggest continued emphasis on that issue with those who manage federal lands or fund the budget requests. For now, tweak and enjoy BCAP, leverage BCAP to get short term benefits, but don't build renewable energy systems based on it. And for sure, don't base our energy independence efforts on it either.