Biomass Crop Assistance Program (BCAP): Status and Issues

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April 19, 2011

Congressional Research Service
7-5700
www.crs.gov
R41296

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

The Food, Conservation, and Energy Act of 2008 (P.L. 110-246, 2008 farm bill) created the Biomass Crop Assistance Program (BCAP). The two main purposes of BCAP are (1) to support the establishment and production of eligible crops for conversion to bioenergy in selected areas, and (2) to assist agricultural and forest land owners and operators with collection, harvest, storage, and transportation of eligible material for use in a biomass conversion facility. BCAP is intended to assist with the bioenergy industry's hurdle of continuous biomass availability.

The U.S. Department of Agriculture's (USDA's) Farm Service Agency (FSA) implemented one portion of BCAP—the Collection, Harvest, Storage, and Transportation (CHST) matching payment program—on June 11, 2009, through a Notice of Funds Availability in the *Federal Register*. The partial implementation created a possible unintended consequence of market competition for wood shavings, wood chips, sawdust, and other wood "scraps" between traditional purchasers—namely landscapers and particleboard manufactures—and facilities that convert biomass to energy. The issuance of the BCAP proposed rule on February 8, 2010, suspended CHST program enrollment and proposed rules for the implementation of the remainder of the BCAP program.

USDA issued the BCAP final rule on October 27, 2010, implementing both program components. The two main components of BCAP are split into two forms of payments: annual and establishment payments, which share in the cost of establishing eligible biomass crops and maintaining production; and matching payments, which share in the cost of the collection, harvest, storage, and transportation of biomass to an eligible biomass conversion facility. The payments have different eligibility and sign-up requirements, payment rates, and contract lengths. Funding for the program is mandatory through the Commodity Credit Corporation (CCC) and was originally authorized at a "such sums as necessary" level. Recent congressional actions have capped the program in FY2010 and FY2011. In response to these reductions, USDA has temporarily suspended the matching payment portion of the program. The annual and establishment payment portion of BCAP is still accepting proposals.

While BCAP is in the early stages of implementation, concerns regarding eligibility, sustainability, and funding continue to be discussed. These issues could shape future congressional action on the program in the context of budgetary measures and possible reauthorization in the next farm bill.

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The Food, Conservation, and Energy Act of 2008 (P.L. 110-246, 2008 farm bill) created, eliminated, and amended various agriculture-based energy programs.[1] One of the potentially largest programs created under the energy title was the Biomass Crop Assistance Program (BCAP).[2] Congress authorized BCAP to support the establishment and production of eligible crops for conversion to bioenergy in selected areas, and to assist agricultural and forest land owners and operators with collection, harvest, storage, and transportation of eligible material for use in a biomass conversion facility.

On June 11, 2009, the U.S. Department of Agriculture (USDA) implemented one portion of BCAP, the Collection, Harvest, Storage, and Transportation (CHST) matching payment (now known as the BCAP matching payment).[3] The partial implementation was in response to a May 5, 2009, presidential memorandum requesting the Secretary of Agriculture to accelerate investment in and production of biofuels. That memorandum specifically listed energy programs in the 2008 farm bill, including "guidance and support for collection, harvest, storage, and transportation assistance for eligible materials for use in biomass conversion facilities."[4] USDA's notice eventually raised concern about possible market competition between the matching payments program and existing wood manufacturing industries.[5] On February 8, 2010, USDA issued the BCAP proposed rule,[6] suspending CHST program enrollment and proposing rules to implement the remainder of the BCAP program. USDA issued the BCAP final rule on October 27, 2010.[7] The final rule adopted many of the provisions outlined in the proposed rule, made further revisions, and responded to the more than 24,000 comments received on the proposed rule.

Program Overview

Federal policy plays a key role in the development of the bioenergy sector. Through the Energy Independence and Security Act of 2007 (EISA, P.L. 110-140), Congress established a goal of 36 billion gallons of biofuel production by 2022, including 16 billion gallons of cellulosic biofuels. One ongoing hurdle for cellulosic biofuels development and manufacturing is the need for a constant supply of available biomass. Investors are reluctant to invest in an as-yet unproven technology—the conversion of cellulosic biomass to biofuels on a commercial scale. Meanwhile, producers are unwilling to devote land and resources to planting a crop without a market. The development of a cellulosic biofuels industry hinges on effective use and availability of new feedstocks. While BCAP does not provide the initial investment funding for production facilities, it is intended to assist with some of the biomass supply challenges.

[1] For more information on the 2008 farm bill energy title, see CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*.

[2] BCAP is authorized by Sec. 9001 of the Food, Conservation, and Energy Act of 2008, which created a new Sec. 9011 within the Farm Security and Rural Investment Act of 2002 (P.L. 107-171; 7 U.S.C. §8111, et seq.).

[3] USDA, Commodity Credit Corporation, "Notice of Funds Availability (NOFA) for the Collection, Harvest, Storage, and Transportation of Eligible Material," 74 *Federal Register* 27767-27772, June 11, 2009.

[4] U.S. President (Obama), "Memorandum on Biofuels and Rural Economic Development," *Daily Compilation of Presidential Documents*, vol. DCPD200900328 (May 5, 2009).

[5] "CPA says USDA Biomass Program a Threat to Wood Products Industry," *Wood and Wood Products*, Trends and News, December 2009.

[6] USDA, Commodity Credit Corporation, "Biomass Crop Assistance Program," 75 *Federal Register* 6264, February 8, 2010.

[7] USDA, Commodity Credit Corporation, "Biomass Crop Assistance Program," 75 *Federal Register* 66201, October 27, 2010.

BCAP has two main statutory purposes:

- to support the establishment and production of eligible crops for conversion to bioenergy in selected areas, and
- to assist agricultural and forest land owners and operators with collection, harvest, storage, and transportation of eligible material for use in a biomass conversation facility.

The first purpose of BCAP is intended to assist the biomass industry with establishing the production of eligible crops for conversion (e.g., dedicated biomass crops), thus encouraging longer-term investment though multi-year contracts and annual payments. The second purpose of BCAP is to assist with additional supply challenges, including the collection, harvest, storage, and transportation of biomass, through temporary measures (two-year contracts and matching payments). BCAP is administered by USDA's Farm Service Agency (FSA)[8] and receives mandatory funding through the Commodity Credit Corporation (CCC).[9]

As outlined in USDA's final rule, the two main components of BCAP are split into two forms of payment: annual and establishment payments, and matching payments.[10] The purpose of the annual and establishment payments would be to assist producers with establishing new dedicated biomass crops for bioenergy production and to cover possible income forgone and additional risk associated with shifting away from traditional crop production. Annual payments would be made to eligible producers of biomass crops within a specific project area. Establishment payments would cover the cost associated with "establishing" these crops (i.e., clearing, planting, and seeding) within a project area. The purpose of the matching payment would be to provide incentives for collecting underutilized biomass for bioenergy production. This would remove existing biomass where it might not currently be profitable to do so (e.g., crop residue or forest undergrowth). Through a matching payment, USDA would pay dollar-for-dollar, up to $45 per ton, of the price to collect, harvest, store, and transport eligible material to biomass conversion facilities. These payments include different eligibility and sign-up requirements, payment rates, and contract lengths. **Table 1** highlights some of the main differences between the payment types, which are further explained in the following sections.

[8] For additional BCAP information, see the Farm Service Agency's website, http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap.

[9] The CCC is the funding mechanism for the mandatory payments administered by various agencies of USDA. It is a wholly owned government corporation that has the legal authority to borrow up to $30 billion at any one time from the U.S. Treasury (15 U.S.C. §714 et seq.). It repays most of the funds it borrows with appropriations within the annual Agriculture appropriations law, usually as an indefinite "such sums as necessary" appropriation. Under Sec. 9001 of the 2008 farm bill, BCAP is funded with CCC funds using "such sums as are necessary for each of fiscal years 2008 through 2012." This authorization was limited in FY2010 and FY2011 through the Supplemental Appropriations Act of 2010. This is discussed further in the "Budget Concerns" section, below.

[10] Because annual payments and establishment payments have similar eligibility requirements and limitations they are discussed together and referred throughout this report as "annual and establishment payments."

Table 1. Differences Between Annual and Establishment Payments and Matching Payments in the BCAP

	Annual and Establishment Payments	Matching Payments
Location	Project areas only	Nationwide
Eligible Lands	Private lands	Federal, state, tribal, and private lands
Who participates	Eligible producers	Eligible biomass material owners
Eligible for payments	Eligible biomass crop	Eligible biomass material
Contract vs. Agreement	Contract with producers; agreement with project area sponsors	Agreement with biomass conversion facilities; material owner must apply
Contract or agreement period	5-15 years	2 years
Payment type	Annual payments at the market rate plus incentives and payments for establishing the initial crop	Matching payment for the collection, harvest, storage, and transportation of eligible material
Payment limit	75% of the cost to establish the crop	Up to $45 per ton matching payment
Payment Reduction	Annual payments are reduced if crop is sold for any other purpose, including BCAP matching payments, or for contract violation	Payments are reduced for contract violations

Source: CRS and USDA, Commodity Credit Corporation, "Biomass Crop Assistance Program," 75 *Federal Register* 6264, February 8, 2010.

In response to recent funding reductions through the appropriations process (see "Budget Concerns" discussion below), FSA has temporarily suspended the matching payments portion of the program. An announcement is expected this summer regarding the availability of matching payment funds, if any, for FY2011. The deadline for submitting project area proposals for annual and establishment payments is May 27, 2011.[11]

Following is a brief description and overview of the program as outlined in USDA's final rule.

Annual and Establishment Payments

Producer eligibility under BCAP's annual and establishment payments is limited to approved project areas. Project areas are to be proposed by project sponsors and are limited to a specific geographic region if determined eligible. Project proposals are accepted by FSA on a continuous basis and, if the project is approved, producers within the project area could be eligible for annual payments and establishment payments. Establishment payments could cover up to 75% of the cost to establish eligible non-woody and woody perennial biomass crops. These costs could include, but are not limited to, seed and perennial stock purchase, site preparation, and planting. Previously established crops and annual crops are not eligible for establishment payments. Annual payments would support up to 15 years of eligible woody crop production and five years of non-woody crop production. These payments would assist with the additional risk and possible forgone income associated with shifting away from traditional crop production.

[11] USDA, FSA, *BCAP Funding and Project Proposal Submission and Review*, Notice BCAP-22, Washington, DC, April 19, 2011, http://www.fsa.usda.gov/Internet/FSA_Notice/bcap_22.pdf.

Project Areas

Project areas are proposed by project sponsors, likely a group of producers or a biomass conversion facility. The USDA final rule makes no restrictions on who may sponsor a project. Sponsors could include biomass conversion facility owners, such as federal entities, private entities, state or local government agencies, schools, or nongovernment organizations. The statute authority requires project area sponsors to include the following as part of the proposal:[12]

- a description of the eligible land and eligible crops of each producer that will participate in the proposed project area;
- a letter of commitment from a biomass conversion facility that the facility will use the eligible crops intended to be produced in the project area;
- evidence that the biomass conversion facility has sufficient equity available, if the facility is not operational at the time the proposal is submitted; and
- any other appropriate information about the biomass conversion facility that gives reasonable assurance that the plant will be in operation by the time eligible crops are ready for harvest.

Proposals are evaluated on a set of statutorily defined criteria, including the volume of crops proposed to be produced; the volume of biomass from sources other than those grown on contract acres; the anticipated economic impact to the project area; the opportunity for local producers to participate in ownership of the facility; the impact on soil, water, and related resources; the variety of biomass production approaches within the project area; and the range of eligible crops among project areas. Proposals meeting these criteria would be considered eligible for BCAP as project areas.

Land

As defined in statute, only private agricultural and nonindustrial private forest lands are considered eligible under the annual and establishment payment portion of BCAP. Federal and state-owned lands are ineligible. Lands enrolled in existing land retirement programs for conservation purposes—the Conservation Reserve Program, the Wetlands Reserve Program, and the Grassland Reserve Program—are also ineligible. To address the concern of native grassland conversion, any land considered "native sod" as of the date of enactment (June 18, 2008) is also considered ineligible.[13]

Eligible Producer

Producers within the selected BCAP project area would be eligible to receive annual and establishment payments after entering into a BCAP contract. According to the USDA final rule, producers with established eligible crops would be unable to collect an establishment payment but would remain eligible for annual payments. The project sponsor would also be eligible to

[12] Sec. 9011(c)(2) of the Food Security and Rural Investment Act of 2002 (7 U.S.C. 8111 et seq.), as amended.

[13] Sec. 9011(a)(5)(B)(ii) of the Farm Security and Rural Investment Act of 2002, (7 U.S.C. 8111 et seq.) as amended by Sec. 9001 the Food, Conservation, and Energy Act of 2008 (P.L. 110-246).

collect annual and establishment payments, so long as the land is eligible and not federal, state, or government owned.

Eligible Crop

The 2008 farm bill defines the term "eligible crop" under the annual and establishment payment portion of BCAP as a crop of renewable biomass (see text box below).[14] This is different from the matching payment portion of BCAP, which includes a separate definition for "eligible material." Although both eligible crops and eligible material are defined as renewable biomass, exclusions for the two differ. Eligible crops under the annual and establishment payment portion of BCAP may not include crops eligible for payments under Title I of the 2008 farm bill[15] or any plant that is invasive or noxious or has the potential to become invasive or noxious.

Contract

BCAP contracts for annual and establishment payments vary in length: 5 years for non-woody perennial crops and 15 years for woody perennial crops. All contracts are required to have an active and current conservation plan or forest stewardship plan, depending on the type of crop grown. These plans seek to address environmental concerns of potential impact on soil, water, and related resources. Participants must also be in compliance with highly erodible and wetland conservation requirements.[16]

Agreement

Agreements for annual and establishment payments may be made between USDA and a project area sponsor. Agreements specify the qualified project area sponsor's plans and how the sponsor will support the establishment and production of eligible crops for conversion to bioenergy in the BCAP project areas. This could include the type of biomass that will be used for the project, the intended use of the biomass and type of energy produced, and any new or proposed uses for the biomass.

Payment

Establishment payments may cover up to 75% of the cost of establishing a perennial crop, including woody biomass. These costs may include the cost of seeds and stock for perennials; the cost of planting the perennial crop; and, for nonindustrial private forestlands, the cost of site preparation and tree planting. Previously established biomass crops, crops established using other

[14] For additional discussion about biomass definitions, see CRS Report R40529, *Biomass: Comparison of Definitions in Legislation Through the 111th Congress.*

[15] As defined in the USDA final rule, these include whole grain derived from a crop of wheat, corn, grain sorghum, barley, oats, or rice; honey; mohair; oilseeds such as sunflower seed, rapeseed, canola, safflower, flaxseed, mustard seed, crambe, soybeans, and sesame seed; pulse crops such as dry peas, lentils, or small chickpeas; peanuts; sugar; dairy products; wool; and cotton boll fiber.

[16] Highly erodible lands compliance may be found under Subtitle B of Title XII of the Food Security Act of 1985 (16 U.S.C. 3811 et seq.) and wetlands compliance may be found under Subtitle C of Title XII of the Food Security Act of 1985 (16 U.S.C. 3821 et seq.).

federal sources, and annual crops are not eligible for establishment payments but may still be eligible for annual payments.

BCAP annual payments are on a per-acre basis and would use market-based rental rates determined by FSA. Rental rate calculations are similar to those used for the Conservation Reserve Program (CRP).[17] Annual payments may be reduced for several reasons, including

- if an eligible crop is delivered to the biomass conversion facility:
  - for conversion to cellulosic biofuels (payments reduced by 1% of the total sale price);
  - for conversion to advanced biofuels (payments reduced by 10% of total sale price); or
  - for conversion to heat, power, or biobased products (payments reduced by 25% of total sale price);
- if an eligible crop is used for purposes other than conversion to heat, power, biobased products, or advanced biofuels (payments reduced by 100% of the total sale price);
- if the producer receives a BCAP matching payment (payments reduced by 100% of the matching payment);
- if the producer violates a term of the contract; or
- under other circumstances determined by USDA.

Matching Payments

Matching payments under BCAP are intended to assist agricultural and forest land owners and operators with collection, harvest, storage, and transportation of eligible material for use in a biomass conversion facility. Unlike the annual and establishment payments discussed above, the matching payments do not define eligible facilities by project areas. BCAP matching payments are made at the rate of $1 for each $1 per dry ton equivalent of biomass provided by the eligible biomass conversion facility. Payments may not exceed $45 per ton for a two-year period.

Conversion Facilities

A biomass conversion facility is defined in statute as a facility that converts or proposes to convert renewable biomass into heat, power, biobased products, or advanced biofuels. To become a BCAP qualified biomass conversion facility, the facility must enter into an agreement with USDA within the state it is located.[18]

[17] For more information, see CRS Report RS21613, *Conservation Reserve Program: Status and Current Issues*.

[18] FSA makes the list of qualified biomass conversion facilities publicly available on its website: http://www.fsa.usda.gov/Internet/FSA_File/bcapfacilitieslist.pdf.

Land

Unlike under the BCAP annual and establishment payments, land is not a limiting factor. If the material is determined to be eligible, then the land from which it comes is not an issue. According to the USDA final rule, eligible material may be harvested or collected from certain National Forest System and Bureau of Land Management lands; from nonfederal lands, including state and locally held government lands; and from tribal lands held in trust by the federal government.[19]

Material Owner

A material owner must first apply and be approved as eligible by FSA before deliveries to qualified biomass conversion facilities are eligible for matching payments. For materials collected on private lands, an eligible material owner could be the landowner, the operator or producer of the farming operation, a biomass conversion facility that owns or operates eligible land, or a person designated by the landowner. For public lands, material owners must have the right to harvest or collect material through a permit, contract, or agreement with the appropriate agency or government entity. Federal government entities are not eligible.

Material

Similar to eligible crops under the annual and establishment payments, eligible material is also defined as renewable biomass. However, the exclusions to renewable biomass differ for eligible materials as compared with eligible crops. Eligible material does not include crops eligible to receive payments under Title I of the 2008 farm bill; animal waste and byproducts (including fats, oils, greases, and manure); food waste and yard waste; and algae. Invasive and noxious species are considered eligible material. According to the final rule, eligible material must be collected directly from the land, separated from a high-valued product (such as a Title I crop), and collected according to an approved conservation plan, forest stewardship plan, or equivalent plan. This requirement is intended to prevent high-value products from becoming eligible for matching payments.

Agreement

Agreements for matching payments may be made between USDA and an eligible biomass conversion facility. According to USDA's final rule, these agreements include items such as the obligations of the facility to provide a purchase list, receipts, and scale tickets for the eligible material owners; maintain accurate records of all eligible material purchases; calculate the dry ton weight equivalent of tonnage delivered; pay fair market value for eligible material regardless of the material owner's eligibility for BCAP matching payments; and make the facility's address and contact information publicly available.

Payment

Eligible material owners must notify FSA following delivery to an eligible biomass conversion facility. Once delivery is verified by FSA, payments are made based on total actual tonnage

[19] Some restrictions do apply to the harvesting times, methods, and levels from nonprivate land.

delivered, total payment received, and certification from the conversion facility. BCAP matching payments are limited to $1 for each $1 per dry ton equivalent provided by the biomass conversion facility, not to exceed $45 per ton. Payment terms are limited to no more than two years beginning on the date of first payment by USDA.

Selected Issues

Initial BCAP matching payments[20] raised questions and concerns about the BCAP program as a whole. Although BCAP has a limited window for implementation (authorization expires in FY2012), concerns regarding eligibility, sustainability, and funding continue to be discussed. These issues could shape future congressional action on the program in the context of budgetary measures and possible reauthorization during the next farm bill debate.

Budget Concerns

As BCAP becomes fully implemented, many are watching the overall cost of the program. BCAP was originally authorized to be funded with "such sums as necessary" from the CCC. In short, USDA could use a virtually unlimited amount of funding from the CCC to implement BCAP, until the program's authority expires on September 30, 2012. Because funding is mandatory and paid through CCC, no annual appropriations are required for BCAP.

The BCAP matching payments issued under USDA's notice represent only partial implementation of the full program. These initial BCAP matching payments generated more interest than expected when the 2008 farm bill was enacted, and spending quickly exceeded the initial 2008 projections of program costs by the Congressional Budget Office (CBO). When the farm bill was enacted in 2008, CBO originally estimated combined outlays for FY2009 and FY2010 to be a total of $9 million, and $36 million during the authority of the program (FY2008-FY2012).[21] Actual spending in FY2009 and FY2010 was $244 million following implementation of only the BCAP matching payment portion of the program.[22] In its March 2011 baseline, CBO projected that BCAP will have projected outlays of $141 million in FY2011 and $248 million in FY2012.[23]

To date, BCAP outlays are more than initially projected, and for only partial implementation of the program. As a result of negotiations during the 2008 farm bill, BCAP does not include "baseline" budget spending beyond 2012.[24] Based on current budgetary requirements, the

[20] Formally referred to in USDA's notice as the CHST matching payment program.

[21] Congressional Budget Office, "Food, Conservation, and Energy Act of 2008—Conference Agreement," March 2007 CBO baseline (modified to reflect subsequent enacted legislation), May 12, 2008.

[22] USDA, FSA, *BCAP CHST Summary Report: FY2009 and FY2010*, October 19, 2010, http://www.fsa.usda.gov/Internet/FSA_File/bcap_chst_summary_report.pdf.

[23] Congressional Budget Office, "CBO March 2011 Baseline for CCC & FCIC," March 2011.

[24] As with all federal programs, the farm bill debate is influenced by budgetary constraints imposed by Congress. The baseline establishes how much authorizers may spend on a bill without having to seek offsets elsewhere. Calculating the baseline assumes a continuation of current policies under expected economic conditions; therefore, if a program does not have a baseline, is not expected to continue in future years. Section 257 of the Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177, 2 U.S.C. §907), as amended, specifies that expiring mandatory spending programs are assumed to continue in the budget baseline if they have outlays of more than $50 million in the current year and were established before the Balanced Budget Act of 1997. Programs established after that date are not automatically assumed to continue, and are assessed program by program in consultation with the House and Senate (continued...)

authorizing committees could potentially need to secure offset funding if BCAP were to be reauthorized in the next farm bill. This could prove difficult given tight budgetary constraints and the more recent and higher projections of the program's cost compared to its initial cost estimates.

The Supplemental Appropriations Act of 2010 (P.L. 111-212) limited mandatory spending on BCAP, allowing no more than $552 million in FY2010 and $432 million in FY2011.[25] The FY2011 appropriations act (P.L. 112-10) further reduced BCAP funding by allowing no more than $112 million in spending for FY2011. In response to the reduced funding levels, FSA has temporarily suspended the matching payment portion of the program. An announcement is expected during the summer of 2011 regarding the availability of matching payment funds, if any, for FY2011.[26] Presently, no limit has been placed on FY2012 funding.

Eligible Crops and Material

Defining what is considered an eligible material or eligible crop under BCAP has become somewhat contentious. Concerns have surfaced about eligible material creating direct competition with existing uses through the matching payments.[27] Others have expressed concerns about allowing certain fast-growing non-native plants to be included as eligible crops.[28] Below is an expanded discussion on issues related to eligible material and eligible crops.

Wood Residue Competition

In early 2010, after USDA's 2009 notice on matching payments, some manufacturing and nursery industries that use wood shavings, wood chips, sawdust, and other wood "scraps" noticed an increase in price for their raw materials. This increase was linked, by some, to the BCAP matching payments, which offered a federal payment match for the same materials if delivered to a qualified biomass conversion facility.[29] The matching payment of up to $45 per ton created an incentive for material owners to sell to biomass facilities rather than to manufacturers that use the same raw materials for products such as composite panels, particle board, and fiberboard, or to nurseries and landscaping firms that use bark and wood chips for mulch.

(...continued)

Budget Committees. Although this rule expired in September 2006, CBO continues to prepare baselines following this methodology (CBO, *The Budget and Economic Outlook: Fiscal Years 2010 to 2020*, pp. 10, 63, and 144, at http://www.cbo.gov/ftpdocs/108xx/doc10871/01-26-Outlook.pdf).

[25] For more on these types of changes in mandatory program spending, see CRS Report R41245, *Reductions in Mandatory Agriculture Program Spending*. For more information on the 2010 supplemental, see CRS Report R41255, *FY2010 Supplemental Appropriations for Agriculture*.

[26] USDA, FSA, *BCAP Funding and Project Proposal Submission and Review*, Notice BCAP-22, Washington, DC, April 19, 2011, http://www.fsa.usda.gov/Internet/FSA_Notice/bcap_22.pdf.

[27] U.S. Congress, House Committee on Agriculture, Subcommittee on Conservation, Credit, Energy, and Research, Representative Minnick's comments on BCAP, hearing, *To review the implementation of the 2008 Farm Bill energy title*, 111th Cong., 2nd sess., June 9, 2010.

[28] S. Raghu, R. C. Anderson, and C. C. Daehler et al., "Adding Biofuels to the Invasive Species Fire?," *Science*, September 22, 2006, p. 1742.

[29] Juliet Eilperin, "The Unintended Ripples from the Biomass Subsidy Program," *The Washington Post*, January 10, 2010, p. A03.

Renewable biomass harvested from the National Forest System and other public land is subject to a statutory provision that prohibits material that would otherwise be used for higher-value products.[30] This prohibition, however, does not necessarily apply to renewable biomass harvested from private land. According to USDA's proposed rule, because the 2008 farm bill (P.L. 110-246) did not specifically prohibit biomass that would have otherwise been used for higher-value products produced on private land, the biomass remained eligible for BCAP matching payments. Based on the initial reaction to the BCAP matching payments, USDA will now apply the public land restriction to private land as well. Therefore, all biomass material that would otherwise be used for higher-value products, from either public or private sources, is considered ineligible under USDA's final rule.

In an effort to enforce this division between higher-value products, USDA now requires that eligible material be directly harvested from the land in accordance with an approved conservation plan, forest stewardship plan, or equivalent plan; be separated from a higher-value product; and not be classified as a higher-value product by USDA. For example, wood chips are considered eligible material if they are collected directly from the land. Therefore, wood chips collected from delivered and processed trees after the trees are delivered to pulp and paper facilities do not qualify. However, wood chips created in the field from diseased trees for ease of transport to a biomass conversion facility are eligible for matching payments. Another example would be corn cobs as an eligible material. If corn cobs are separated from the higher-value product (i.e., corn kernels) in the field and the cobs are then collected as residue in accordance with a conservation plan and delivered to a conversion facility they are considered eligible for matching payment. If the corn cobs are collected at a vegetable processing facility after being delivered and separated from the higher-value product, they are not considered eligible. This is considered incidental to the normal marketing of the crop and not representative of the collection or harvesting of biomass that would not otherwise be collected.

[30] Under Sec. 9001(12)(A)(ii) of the Farm Security and Rural Investment Act of 2002 (P.L. 107-171), as amended by Sec. 9001 of the Food, Conservation, and Energy Act of 2008, the term "renewable biomass" includes material that would not otherwise be used for higher-value products, if from National Forest System lands and public lands.

Defining Renewable Biomass

The 2008 farm bill included a definition for renewable biomass under Title IX. Biomass has separate and distinct definitions on public and private lands. Biomass on public lands would typically come from tree and brush removal for fire prevention purposes, trees unsuitable for commercial harvest, invasive plant removal, and diseased, damaged, or immature tress culled in accordance with forest management practices. Biomass on private land is more broadly defined and includes other organic materials such as animal waste and byproducts, food waste, yard waste, and algae.

Federal Lands, including National Forest System land, as defined in Section 11(a) of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. § 1609), and public lands managed by the Bureau of Land Management, as defined in Section 103 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. §1702)—Renewable biomass includes materials, pre-commercial thinnings, or invasive species that:

(1) are byproducts of preventive treatments that are removed to reduce hazardous fuels, to reduce or contain disease or insect infestation, or to restore ecosystem health;

(2) would not otherwise be used for higher-value products; and

(3) are harvested in accordance with applicable law and land management plans and the requirements for old-growth maintenance, restoration, and management direction, and large-tree retention.

Private Lands, including nonfederal land or land belonging to an Indian or Indian tribe that is held in trust by the United States—Renewable biomass includes any organic matter that is available on a renewable or recurring basis, including:

(1) renewable plant material such as feed grains, other agricultural commodities, other plants and trees, and algae;

(2) waste material (crop residue, wood waste, wood residues, and other vegetative waste material);

(3) animal waste and byproducts such as fats, oils, greases, and manure; and

(4) food waste and yard waste.

For additional discussion on the definition of biomass, see CRS Report R40529, *Biomass: Comparison of Definitions in Legislation Through the 111th Congress*.

While manufacturing industries that use wood residue offered the greatest opposition to BCAP matching payments as published under the USDA notice, those in the lumber industry that were receiving higher prices also questioned the sustainability of the provision. Some in the biomass industry highlight the temporary nature of the BCAP matching payments (maximum two years), and hope that future implementation will focus on the BCAP annual and establishment payments, which are longer-term.[31] Others question USDA's ability to distinguish between high-value product material and renewable biomass material in the future, despite the language in the final rule requiring it to be harvested directly from the land. Some believe the fungibility of wood could continue to generate competition between wood-based product output and renewable energy production.[32]

Invasive and Noxious Species

Some have expressed concern that eligibility criteria for materials and crops under BCAP may conflict with practices aimed at limiting the introduction of invasive and noxious species. Others,

[31] Conference discussion at the Renewable Energy and Technology Conference, Washington, DC, February 4, 2010.

[32] Roger A. Sedjo, *The Biomass Crop Assistance Program: Some Implications for the Forestry Industry*, Resources for the Future, RFF DP 10-22, Washington, DC, March 2010.

including USDA, praise invasive and noxious species' inclusion in BCAP as an incentive to further eradication efforts.[33] The 2008 farm bill provides separate definitions of eligible material and eligible crops. Eligible *crop* criteria apply to the annual and establishment payments portion of BCAP and eligible *material* criteria refer to BCAP's matching payments. Invasive and noxious species are considered ineligible as crops for BCAP's annual and establishment payments, but are not excluded as eligible material under BCAP's matching payments.

The inclusion of invasive and noxious species as eligible material has generated both concern and interest in the environmental community.[34] Some note that while the incentive for removal is praiseworthy, such removal could have the unintended consequence of perpetuating the species. USDA's final rule addresses this concern by excluding removal and transportation during reproductive periods and requiring removal be in accordance with a new or amended conservation plan, forest stewardship plan, or equivalent plan. If a material owner violates the current federal standards for noxious weeds,[35] then all matching payments must be repaid. According to USDA, removal costs associated with spreading or establishing an invasive or noxious species while carrying out the activities to receive a matching payment are "outside the scope of BCAP" and would rely on state and other federal laws for penalties.[36]

Several plant traits of an ideal biomass crop are also commonly found among invasive grasses: low energy requirements for maintenance; efficient use of light, water, and nutrients; perennial growth; and high yields.[37] Based on comments received from USDA's proposed rule, crops of species such as giant miscanthus, pennycress, and black locust may be considered eligible energy crops. Many of these are non-native, fast-growing, perennial grass or trees that some consider an ideal energy crop for many of the reasons stated above.[38] Others are concerned that nonsterile varieties can become invasive and noxious[39] or that genetically engineered (GE) varieties could result in hybridization with wild relatives, resulting in invasive or noxious species causing economic and ecological damage.[40] Some states include varieties of these species on statewide noxious weed listings. In these states, they would be ineligible as a crop under USDA's final rule; however, there is continued concern that the plant's introduction as a crop could have unintended consequences, given that the USDA final rule does not distinguish between the sterile varieties and nonsterile varieties. Even the BCAP Final Programmatic Environmental Impact Statement

[33] USDA, "Biomass Crop Assistance Program to Spur Production of Renewable Energy, Job Creation," press release, February 3, 2010, http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2010/02/0046.xml.

[34] Letter from Bruce Leopold, President, Wildlife Society, to Director of CEPD, USDA Farm Service Agency, April 9, 2010, http://joomla.wildlife.org/documents/BCAP_rule_comments.pdf.

[35] Executive Order 13112, "Invasive Species," 64 *Federal Register* 6183, February 3, 1999. Also see, CRS Report RL30123, *Invasive Non-Native Species: Background and Issues for Congress.*

[36] USDA, Commodity Credit Corporation, "Biomass Crop Assistance Program," 75 *Federal Register* 66222, October 27, 2010.

[37] Joseph M. DiTomaso, Jacob N. Barney, and Alison M. Fox, *Biofuel Feedstocks: The Risk of Future Invasions*, Council for Agricultural Science and Technology, CAST Commentary QTA2007-1, November 2007, http://www.cast-science.org/websiteUploads/publicationPDFs/Biofuels%20Commentary%20Web%20version%20with%20color%20%207927146.pdf.

[38] Dan Burden, *Miscanthus Profile*, Agricultural Marketing Resource Center, August 2009, http://www.agmrc.org/commodities__products/biomass/miscanthus_profile.cfm.

[39] USDA, NRCS National Plants Database, *PLANTS Profile: Miscanthus Andersson Silvergrass*, June 2010, http://plants.usda.gov/java/profile?symbol=MISCA.

[40] USDA, FSA, *Biomass Crop Assistance Program Programmatic Environmental Impact Statement*, Final, June 2010, pp. 4-52, http://www.fsa.usda.gov/Internet/FSA_File/bcapfinalpeis062510.pdf.

(FPEIS)[41] highlights potential issues associated with the introduction of GE species and non-native varieties for use as biomass crops. To prevent the spread of invasive or noxious species, USDA is relying on thorough, site-specific environmental evaluation of a project area prior to selection. This could potentially slow implementation of the program or impose costs on biomass producers.[42]

"Black Liquor"

Concerns have been raised about "black liquor" meeting the definition of renewable material under BCAP. Black liquor is a waste product from the paper production process composed of mostly organic lignin and inorganic pulping chemicals, and has long been used in the pulp and paper industry as a source of energy.[43] A biofuel tax credit in the 2008 farm bill became controversial when paper companies' use of black liquor qualified as a renewable fuel, thereby allowing the companies to qualify for the tax credit. A provision in the enacted health care bill (P.L. 111-148) disqualifies black liquor from eligibility. USDA's final rule states that black liquor is considered an industrial waste by-product and therefore is not eligible under BCAP. Despite this declaration, those in favor of black liquor's inclusion as an eligible source object to USDA's reasoning that black liquor is made from "inorganic" material, citing that "neither the statute nor the BCAP eligible materials list requires that eligible biomass actually originate directly from the land."[44]

Sustainability

BCAP has a dual purpose of establishing new dedicated biomass crops for bioenergy production (annual and establishment payments) and increasing the collection of existing and underutilized biomass for bioenergy production (matching payments). The latter purpose—incentives for biomass removal in areas where it is possible but not currently profitable—is a key factor for the forestry sector. The removal of hazardous wildfire fuels and invasive species could provide biomass for renewable energy conversion rather than being disposed of in ways that contribute additional carbon to the atmosphere.[45]

In addition to biomass removal from forestland, crop residue is also considered to be viable biomass for renewable energy production. Following harvest, the remaining plant, or residue, can be left on the ground for soil health, erosion and weed control, water quality, and nutrient management. The amount of residue left behind depends on the location, crop, and other locally driven factors. The research on crop residue removal varies in the amount that can be sustainably removed, ranging between 25% and 70%.[46] Many federal conservation programs provide

[41] Ibid.

[42] Jody M. Endres, Timothy A. Slating, and Christopher J. Miller, "The Biomass Crop Assistance Program: Orchestrating the Government's First Significant Step to Incentivize Biomass Production for Renewable Energy," *Environmental Law Reporter*, vol. 40 (2010), p. 10076.

[43] For additional information, see the "Black Liquor" section in CRS Report 96-397, *Canada-U.S. Relations*.

[44] Letter from Paul Noe, Vice President for Public Policy at the American Forest and Paper Association, April 8, 2010, http://www.regulations.gov/search/Regs/contentStreamer?objectId=0900006480ad3920&disposition=attachment&contentType=xml.

[45] See CRS Report R40811, *Wildfire Fuels and Fuel Reduction.*

[46] Several research articles exist on this subject. An example of lower residue estimates is, H. Blanco-Canqui and R. Lal, "Corn Stover Removal for Expanded Uses Reduces Soil Fertility and Structural Stability," *Journal of American*
(continued...)

financial assistance for practices that increase crop residue retention on the land, because of the environmental benefits.[47] The BCAP payments to remove this residue for bioenergy production have caused some to question whether this is a duplication of the federal effort and is counterproductive. Soil scientists in particular are concerned that the benefits to bioenergy would not outweigh the potential soil and environmental concerns associated with the removal of crop residue and caution against removing too much residue in sensitive areas.[48]

Dedicated biomass crops, such as switchgrass, hybrid poplars, and hybrid willows, are considered by many to be more desirable crops because they have a short rotation (re-grow quickly after each harvest) and use fewer resources, such as water and fertilizers, than traditional field crop production. Compared with field crops such as corn, dedicated biomass crops are also thought to have less impact on available food supplies.[49] Despite potential environmental benefits, concerns persist about the additional use of fertilizers and water resources that could be required to increase the per-acre yields to become economically feasible.[50] Also, the continued demand for biomass supply could generate additional land use pressures for expanded production, possibly in direct competition with current land conservation programs, such as the Conservation Reserve Program.[51]

Two Programs in One

Because BCAP has two distinct payment mechanisms—annual and establishment payments and matching payments—many view BCAP as two separate and unique programs in one. Different definitions and exclusions between the two payment types could create confusion as the program is implemented. Furthering this confusion was USDA's partial rollout of BCAP by implementing the matching payment portion of the program through a notice in June 2009, before the overall annual and establishment payment portion was proposed in February 2010. The unanticipated popularity of BCAP matching payments, combined with higher than expected obligations and unintended consequences from product competition, generated concern among many BCAP supporters that the program was drawing too much negative criticism before the whole program was fully implemented.[52] While many support the idea of assisting both dedicated biomass crops and the increased collection of existing biomass, Congress might consider modifying BCAP during the next farm bill debate in 2012 based on the ongoing implementation of the program.

(...continued)

Soil Science, vol. 73 (2009), pp. 418–426. An example of higher removal estimates is J. Sheehan, A. Aden, and K. Paustian et al., "Energy and Environmental Aspects of Using Corn Stover for Fuel Ethanol," *Journal of Indian Ecology*, vol. 7 (2004), pp. 117-146.

[47] For more information on available agricultural conservation programs, see CRS Report R40763, *Agricultural Conservation: A Guide to Programs*.

[48] Rattan Lal, "Is Crop Residue a Waste?" *Journal of Soil and Water Conservation*, vol. 59, no. 6 (Nov/Dec 2004), pp. 136A-139A.

[49] Bruce A. Babcock, *Breaking the Link between Food and Biofuels*, Briefing Paper 08-BP 53, July 2008, Center for Agricultural and Rural Development, Iowa State University, http://www.card.iastate.edu.

[50] Institute for Agriculture and Trade Policy, *Growing a New Crop for a New Market*, August 2009, http://www.iatp.org/iatp/publications.cfm?refid=106612.

[51] Loni Kemp and Julie M. Sibbing, *Growing a Green Energy Future*, National Wildlife Federation, March 2010.

[52] Conference discussion at the Renewable Energy and Technology Conference, Washington, DC, February 4, 2010.

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