



# Renewable Energy Programs and the Farm Bill: Status and Issues

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## Summary

U.S. Department of Agriculture (USDA) renewable energy programs have been used to incentivize adoption of renewable energy projects including solar, wind, and anaerobic digesters. However, the primary focus of USDA renewable energy programs has been to promote U.S. biofuels production and use—including corn starch-based ethanol, cellulosic ethanol, and soybean-based biodiesel.

The 2002 farm bill (Farm Security and Rural Investment Act of 2002, P.L. 107-171) was the first omnibus farm bill to explicitly include an energy title (Title IX). The energy title authorized grants, loans, and loan guarantees to foster research on agriculture-based renewable energy, to share development risk, and to promote the adoption of renewable energy systems. The 2002 farm bill was followed by two major energy bills (the Energy Policy Act of 2005, P.L. 109-58; and the Energy Independence and Security Act of 2007, P.L. 110-140), which established and expanded a national biofuels mandate along with several other renewable energy programs.

The 2008 farm bill (Food, Conservation, and Energy Act of 2008, P.L. 110-246) built on the 2002 farm bill as well as the previous renewable energy legislation, but refocused biofuels policy initiatives in favor of non-corn feedstocks, especially cellulosic-based feedstocks, in response to growing concerns about the emerging spillover effects of increasing corn use for ethanol production. Like the 2002 farm bill, the 2008 farm bill contains a distinct energy title (Title IX) that significantly expands the number and types of programs available to support renewable energy production and use. In addition, new renewable-energy provisions were included in the rural development (Title VI), research (Title VII), livestock (Title XI), and tax (Title XV) titles of the 2008 farm bill.

The 2008 farm bill authorized \$1.1 billion in mandatory funding for energy programs for FY2008 through FY2012, compared with \$800 million in the 2002 farm bill (FY2002-FY2007). Mandatory authorization in the 2008 farm bill includes \$320 million to the Biorefinery Assistance Program, \$300 million to the Bioenergy Program for Advanced Biofuels, and \$255 million to the Rural Energy for America Program (REAP). The Biomass Crop Assistance Program (BCAP) is authorized to receive such sums as necessary (i.e., funding is open-ended and depends on program participation). Discretionary funding in the 2008 farm bill totaled \$1.7 billion (including \$600 million for the Biorefinery Assistance Program), compared to \$245 million in the 2002 farm bill. However, all discretionary program funding is subject to the annual appropriations process, which may or may not appropriate funds due to budget constraints. Actual discretionary appropriations to Title IX energy programs have been substantially below authorized levels through FY2011.

Implementation of the farm bill's energy provisions is ongoing. President Obama, in May 2009, directed USDA and the Department of Energy (DOE) to accelerate implementation of renewable energy programs. Notices, proposed rules, and final rules have appeared in the *Federal Register* soliciting applications for those programs with available funding. The primary energy-related issue for the next farm bill is the expiration at the end of FY2012 and lack of baseline funding going forward for all major energy-related provisions of Title IX. In addition, the appearance of substantial redundancy across renewable energy programs at USDA and DOE, the slow development of the U.S. cellulosic biofuels sector, and concerns about the emerging spillover effects of increasing corn use for ethanol production are issues that are likely to emerge during the next farm bill debate.

## Contents

Overview.....	2
Origins of Federal Biofuels Policy .....	2
First Farm Bill Energy Title—2002.....	3
2008 Farm Bill Focus on Non-Corn-Based Biofuels .....	4
Funding for Agriculture-Based Energy Programs .....	5
Major Energy Provisions in the 2008 Farm Bill.....	6
Title IX—Energy Provisions .....	6
Section 9001: Definitions.....	6
Section 9002: Biobased Markets Program .....	7
Section 9003: Biorefinery Assistance Program (BAP) .....	8
Section 9004: Repowering Assistance Program (RAP) .....	9
Section 9005: Bioenergy Program for Advanced Biofuels .....	10
Section 9006: Biodiesel Fuel Education Program.....	11
Section 9007: Rural Energy for America Program (REAP).....	12
Section 9008: Biomass Research and Development Initiative (BRDI).....	15
Section 9009: Rural Energy Self-Sufficiency Initiative .....	16
Section 9010: Feedstock Flexibility Program (FFP) for Bioenergy Producers.....	16
Section 9011: Biomass Crop Assistance Program (BCAP).....	16
Section 9012: Forest Biomass for Energy .....	18
Section 9013: Community Wood Energy Program .....	18
Biofuels Infrastructure Study .....	19
Renewable Fertilizer Study .....	19
Title VII—Energy-Related Agricultural Research and Extension Provisions.....	20
Section 7205: Nutrient Management Research and Extension Initiative .....	20
Section 7207: Agricultural Bioenergy Feedstock and Energy Efficiency Research and Extension Initiative.....	20
Section 7526: Sun Grant Program.....	20
Title XI—Energy-Related Livestock Provisions .....	21
Sec. 11014: Study on Bioenergy Operations.....	21
Title XV—Energy-Related Tax Provisions .....	21
Sec. 15321: Credit for Production of Cellulosic Biofuel .....	21
Sec. 15322: Comprehensive Study of Biofuels.....	22
Sec. 15331: Modification of Alcohol Credit .....	22
Sec. 15332: Calculation of Volume of Alcohol for Fuel Credits.....	22
Sec. 15333: Ethanol Tariff Extension.....	22
Sec. 15334: Limitations on Duty Drawback on Certain Imported Ethanol.....	23
Additional Federal Renewable Energy Programs.....	23
Rural Development Agency (RDA), USDA.....	23
Natural Resources and Conservation Service (NRCS), USDA.....	24
DOE Renewable Energy Programs .....	24
Assessment of Federal Biofuels Policy .....	24
Energy Policy Issues for the 2012 Farm Bill.....	25
Program Expiration and Baseline Funding.....	25
Possible Redundancy Across USDA and DOE Energy Programs.....	25
Cellulosic Biofuels Slow Development.....	26

## **Tables**

Table 1. 2008 Farm Bill Authorized Funding for Energy Provisions, FY2008-FY2012.....	27
Table 2. 2008 Farm Bill Energy Provision Funding: Authorized and Available, FY2010 to FY2012 .....	29

## **Appendixes**

Appendix. Key Reports on Biofuels.....	31
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## **Contacts**

Author Contact Information.....	32
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### **Table of Acronyms**

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<b>ARRA</b>	American Recovery and Reinvestment Act of 2009 (P.L. 111-5)
<b>BAP</b>	Biorefinery Assistance Program
<b>BCAP</b>	Biomass Crop Assistance Program
<b>BRDB</b>	Biomass Research and Development Board
<b>BRDI</b>	Biomass Research and Development Initiative
<b>CCC</b>	Commodity Credit Corporation
<b>CHST</b>	Collection, Harvest, Storage, and Transportation
<b>DOE</b>	U.S. Department of Energy
<b>DOT</b>	U.S. Department of Transportation
<b>EI</b>	Energy Efficiency Improvement
<b>EERE</b>	Office of Energy Efficiency & Renewable Energy, DOE
<b>EISA</b>	Energy Independence and Security Act of 2007 (P.L. 110-140)
<b>EPA</b>	U.S. Environmental Protection Agency
<b>FFP</b>	Flexible Feedstock Program
<b>FR</b>	Federal Register
<b>NIFA</b>	National Institute of Food and Agriculture
<b>NOCP</b>	Notice of Contract Proposal
<b>NOFA</b>	Notice of Funds Available
<b>NOSA</b>	Notice of Solicitation of Applications
<b>OCE</b>	Office of the Chief Economist, USDA
<b>OEPNU</b>	Office of Energy Policy and New Uses, OCE, USDA
<b>RAP</b>	Repowering Assistance Program
<b>RBCS</b>	Rural Business and Cooperative Service, RDA, USDA
<b>RDA</b>	Rural Development Agency, USDA
<b>REAP</b>	Rural Energy for America Program
<b>REDA</b>	Renewable Energy Development Assistance
<b>RES</b>	Renewable Energy Systems
<b>RFS</b>	Renewable Fuel Standard
<b>USDA</b>	U.S. Department of Agriculture
<b>VEETC</b>	Volumetric Ethanol Excise Tax Credit

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## Overview

Agriculture-based renewable energy can take several forms, including biofuels such as corn-based ethanol or soy-based biodiesel, wind-driven turbines located on farmland or in rural areas, anaerobic digesters that convert animal waste into methane and electric power, or biomass harvested for burning as a processing fuel or to generate heat as part of an industrial activity.

Since the late 1970s, U.S. policymakers at both the federal and state levels have adopted a variety of incentives, regulations, and programs to encourage the production and use of agriculture-based renewable energy (mostly biofuels).<sup>1</sup> In particular, the two most widely used biofuels—ethanol produced primarily from corn starch and biodiesel produced primarily from soybean oil—have received significant federal support in the form of tax incentives, loans and grants, and regulatory programs.<sup>2</sup> By early 2008, total federal and state biofuels subsidies were estimated in the range of \$5.5 to \$7 billion per year.<sup>3</sup> Motivations cited for these legislative initiatives include energy security concerns, reduction of greenhouse gas emissions, and raising domestic demand for U.S.-produced farm products.

This report focuses on those policies contained in the 2008 farm bill (the Food, Conservation, and Energy Act of 2008; P.L. 110-246) that support agriculture-based renewable energy, especially biofuels. The introductory sections briefly describe how these policies evolved and how they fit into the larger context of U.S. biofuels policy. Then, the policies specific to the 2008 farm bill are defined in terms of their function, goals, administration, funding, and implementation status. Finally, a section reviews the major emerging issues related to U.S. Department of Agriculture (USDA) energy programs, particularly as related to their possible inclusion in the next farm bill.

Two tables at the end of this report present data on 2008 farm bill energy provision funding. The first table shows the budgetary authority of the 2008 farm bill (**Table 1**), while the second table compares the 2008 farm bill funding authority with the actual funding available for FY2010 through FY2012 (**Table 2**).

For a side-by-side comparison of energy-related provisions in the 2008 farm bill with those of the 2002 farm bill (the Farm Security and Rural Investment Act of 2002; P.L. 107-171), see CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*. For a side-by-side comparison of energy-related provisions in the 2008 farm bill with those of the 2007 energy bill (the Energy Independence and Security Act of 2007, P.L. 110-140), see CRS Report RL34239, *Biofuels Provisions in the 2007 Energy Bill and the 2008 Farm Bill: A Side-by-Side Comparison*.

## Origins of Federal Biofuels Policy

Renewable energy production plays a key role not just in agricultural policy, but also in energy, tax, and environmental policy. As a result, many of the federal programs that support renewable energy production in general, and agriculture-based energy production in particular, are outside

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<sup>1</sup> For a list of federal incentives in support of biofuels production, see CRS Report R40110, *Biofuels Incentives: A Summary of Federal Programs*.

<sup>2</sup> See CRS Report R41282, *Agriculture-Based Biofuels: Overview and Emerging Issues*.

<sup>3</sup> CRS estimates based on ethanol production data and congressional appropriations.

the purview of USDA and have origins outside of omnibus farm bill legislation. For example, the three principal federal biofuels policies were all established outside of farm bills as follows.

- The Renewable Fuel Standard (RFS) mandates an increasing volume of biofuels use and has its origins in the Energy Policy Act of 2005 (P.L. 109-58). The RFS was expanded in EISA and divided into four distinct, but nested categories—biodiesel, cellulosic, advanced, and total—each with its own mandated volume.<sup>4</sup>
- The volumetric ethanol excise tax credit (VEETC), originally established in the American Jobs Creation Act of 2004 (P.L. 108-357), provides a tax credit of \$0.45 per gallon of pure ethanol blended with gasoline.<sup>5</sup>
- The ethanol import tariff (a most-favored-nation duty of \$0.54 per gallon) is intended to offset the blending tax credit and was originally established by the Omnibus Reconciliation Act of 1980 (P.L. 96-499).<sup>6</sup>

In addition to the RFS, VEETC, and import tariff, several additional tax credits that originated outside of farm bills are available for biodiesel production as well as for small producers (less than 60 million gallons per year per plant) of ethanol and biodiesel.<sup>7</sup> A substantial number of federal programs also support renewable energy sources other than biofuels.<sup>8</sup> In addition to federal programs, many states offer additional support to biofuels producers, blenders, and consumers.<sup>9</sup>

An awareness of the non-USDA federal programs is important for appreciating the role envisioned for the energy title of the 2008 farm bill, which is designed to provide incentives for the research and development of new agriculture-based renewable fuels, especially cellulosic-based ethanol, and to expand their distribution and use.

## **First Farm Bill Energy Title—2002**

The 2002 farm bill (Farm Security and Rural Investment Act of 2002, P.L. 107-171) was the first omnibus farm bill to explicitly include an energy title (Title IX). The energy title authorized grants, loans, and loan guarantees to foster research on agriculture-based renewable energy, to share development risk and to promote the adoption of renewable energy systems.<sup>10</sup> Since enactment of the 2002 farm bill, interest in renewable energy has grown rapidly, due in large part to a strong rise in domestic and international petroleum prices and a dramatic acceleration in domestic biofuels production (primarily corn-based ethanol).

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<sup>4</sup> See CRS Report R40155, *Renewable Fuel Standard (RFS): Overview and Issues*.

<sup>5</sup> For a brief history of the ethanol tax credit, see CRS Report R41282, *Agriculture-Based Biofuels: Overview and Emerging Issues*.

<sup>6</sup> Ethanol imports are also subject to a 2.5% ad valorem tariff. For the origins and history of the import duty, see CRS Report R40110, *Biofuels Incentives: A Summary of Federal Programs*; for a discussion of exemptions from the import duty, see CRS Report RS21930, *Ethanol Imports and the Caribbean Basin Initiative (CBI)*.

<sup>7</sup> See CRS Report R40110, *Biofuels Incentives: A Summary of Federal Programs*.

<sup>8</sup> For a complete listing of federal programs that support all types of renewable energy, see CRS Report R40913, *Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs*.

<sup>9</sup> For information on state programs, see “Database of State Incentives for Renewables & Efficiency (DSIRE),” at <http://www.dsireusa.org/index.cfm>.

<sup>10</sup> For an overview of the 2002 farm bill’s energy title, see CRS Report RL33037, *Previewing a 2007 Farm Bill*.



## **2008 Farm Bill Focus on Non-Corn-Based Biofuels**

Annual U.S. ethanol production has expanded rapidly since 2001, rising from under 2 billion gallons to over 10 billion gallons by 2010.<sup>11</sup> Similarly, corn use for ethanol has grown from a 12% share of the U.S. corn crop in 2001, to an estimated 41% share of the 2010 corn crop. In 2007 (during the 2008 farm bill debate), about 23% of the U.S. corn crop was used for ethanol and projections had ethanol's corn-use share rising rapidly, sparking concerns about unintended spillover consequences of the policy-driven expansion of U.S. corn ethanol production. Dedicating an increasing share of the U.S. corn harvest to ethanol production evoked fears of higher prices for all grains and oilseeds that compete for the same land, resulting in higher livestock feed costs, potentially higher food costs, and likely lower U.S. agricultural exports.<sup>12</sup> In addition, several environmental concerns emerged regarding the expansion of corn production onto non-traditional lands, including native grass and prairie land. As a result of these concerns, policymakers sought to refocus biofuels policy initiatives in the 2008 farm bill in favor of non-corn feedstocks, especially cellulosic-based feedstocks.

Renewable energy policy in the 2008 farm bill became law six months after the enactment of the Energy Independence and Security Act of 2007 (EISA, P.L. 110-140). A key component of EISA was a significant expansion of the renewable fuels standard (RFS), which mandates the increasing use of "advanced biofuels" (i.e., non-corn starch biofuels), whose minimum use must grow from zero in 2008 to 21 million gallons by 2022.

The energy provisions of the 2008 farm bill were intended to reinforce these goals and EISA's programs via a further refocusing of federal incentives toward non-corn sources of renewable energy. Key biofuels-related provisions in the enacted 2008 farm bill include<sup>13</sup>

- expansion of the existing bio-based marketing program to encourage federal procurement of bio-based products (Sec. 9002);
- expansion of the federal bio-products certification program (Sec. 9002);
- additional support for biorefinery development (Sec. 9003);
- grants and loan guarantees for advanced biofuels (especially cellulosic) production (Sec. 9005);
- an education program to promote the use and understanding of biodiesel (Sec. 9006);
- support for rural energy efficiency and self-sufficiency and biofuels marketing infrastructure (Sec. 9007);
- reauthorization of biofuels research programs (Sec. 9008) within USDA and the Department of Energy (DOE);

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<sup>11</sup> For a discussion of the rapid growth of the U.S. biofuels sector, see CRS Report R41282, *Agriculture-Based Biofuels: Overview and Emerging Issues*.

<sup>12</sup> For a discussion of growing concerns associated with rapid biofuels expansion, see the section entitled, "Potential Issues with the Expanded RFS," in CRS Report R40155, *Renewable Fuel Standard (RFS): Overview and Issues*.

<sup>13</sup> Parenthetical section numbers 9002 through 9011 refer to the amended 2002 farm bill sections.



- a new program to incentivize the production, harvesting, storage, and transportation of cellulosic ethanol feedstock (Sec. 9011);
- reauthorization of Sun Grant Initiative programs that coordinate research on advanced biofuels at land-grant universities and federally funded laboratories (Sec. 7526);
- establishment of a new cellulosic ethanol production tax credit (Sec. 15321),
- reduction of the blender tax credit for corn-based ethanol (Sec. 15331);
- studies of the market and environmental impacts of increased biofuels use (Sec. 15322); and
- continuation of the import duty on ethanol (Sec. 15333).

The potential development of a cellulosic-based ethanol industry is presently impeded by the state of cellulosic conversion technology, which still is expensive relative to corn-based production and has yet to be successfully developed at a commercial scale. However, the enormous potential supply of low-cost cellulosic plant material available in the United States makes it a possibly attractive prospective feedstock.<sup>14</sup>

## **Funding for Agriculture-Based Energy Programs**

In general, two types of funding are authorized by Congress in a farm bill—mandatory and discretionary. Some farm bill programs identified as receiving mandatory funds are automatically funded at levels “authorized” in the farm bill unless Congress limits funding to a lower amount through the appropriations or legislative process. For many of these programs, mandatory funding is provided through the borrowing authority of USDA’s Commodity Credit Corporation (CCC).<sup>15</sup> The farm bill may also specify a certain funding amount as “authorized to be appropriated” for discretionary program; however, actual discretionary funding is determined each year through the annual appropriations process.

The 2008 farm bill authorized a total of \$1.1 billion in mandatory funding for energy programs for FY2008 through FY2012, compared with \$800 million in the 2002 farm bill (FY2002-FY2007). Mandatory authorizations in the 2008 farm bill included \$320 million to the Biorefinery Assistance Program, \$300 million to the Bioenergy Program for Advanced Biofuels, and \$255 million to the Rural Energy for America Program (REAP). The Biomass Crop Assistance Program (BCAP) was authorized to receive such sums as necessary (i.e., funding is open-ended and depends on program participation). Discretionary funding in the 2008 farm bill totaled \$1.7 billion (including \$600 million for the Biorefinery Assistance Program), compared to \$245 million in the 2002 farm bill. However, actual discretionary appropriations to Title IX energy programs have been substantially below authorized levels through FY2011.

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<sup>14</sup> See the section entitled “Potential Issues with the Expanded RFS” in CRS Report R40155, *Renewable Fuel Standard (RFS): Overview and Issues*; and see CRS Report R41106, *Meeting the Renewable Fuel Standard (RFS) Mandate for Cellulosic Biofuels: Questions and Answers*.

<sup>15</sup> The CCC is the funding mechanism for the mandatory payments that are administered by various agencies of USDA, including all of the farm commodity price and income support programs and selected conservation programs. For more information on mandatory versus discretionary authorizations, see CRS Report R41964, *Agriculture and Related Agencies: FY2012 Appropriations*.

Since the enactment of the 2008 farm bill, the renewable energy programs authorized under the energy title (Title IX) have invested more than \$460 million in biorefineries and renewable energy and energy efficiency systems through mandatory funding for grants, loan guarantees, and assistance payments.<sup>16</sup> In addition, more than \$243 million was spent on BCAP during FY2009 and FY2010. However, many of the discretionary programs never received any funding or received lesser amounts than originally authorized in the farm bill.

**Table 1**, at the end of the report, illustrates the mandatory and discretionary spending levels for renewable energy programs authorized in the 2008 farm bill. **Table 2**, also at the end of the report, provides a list of provisions in the 2008 farm bill's energy title, and selected energy programs in the research title, for FY2008 through FY2012, along with their funding as authorized in the 2008 farm bill and as provided under budget authority by Congress.

## Major Energy Provisions in the 2008 Farm Bill

Like the 2002 farm bill, the 2008 farm bill (P.L. 110-246) contained a distinct energy title (Title IX) that significantly expanded the number and type of programs available to support biofuels production and use—including corn starch-based ethanol, cellulosic ethanol, and biodiesel.<sup>17</sup> The enacted 2008 farm bill's Title IX served as a substitute amendment to the 2002 farm bill Title IX and consisted of three sections. The first section, 9001, contained 13 new provisions that effectively replaced the provisions of the 2002 bill. Sections 9002 and 9003 directed studies and reports on biofuels infrastructure and renewable fertilizer, respectively. Research provisions relating to renewable energy were in Title VII and tax and trade provisions were in Title XV. In addition, Title VI (Rural Development) included several programs to facilitate rural renewable energy production and development.

### Title IX—Energy Provisions

The following is a summary of the authorities found under Section 9001 in Title IX of the 2008 farm bill, including (where applicable) a brief description of each program, funding levels, and the status of program implementation. Section numbers 9001 through 9013 refer to the amended 2002 farm bill sections.

#### Section 9001: Definitions

As part of its effort to refocus federal biofuels incentives away from traditional food and feed crops, the 2008 farm bill explicitly created new definitions or added more specificity to the definition of several essential terms related to renewable energy, including

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<sup>16</sup> Judith Canales, Administrator, Rural Business Service, and Juan Garcia, Deputy Administrator, Farm Service Agency, USDA, "Testimony before the House Agriculture Subcommittee on Conservation, Energy, and Forestry at an Agricultural Program Audit: Examination of USDA Energy Programs," July 20, 2011; hereafter referred to as USDA Testimony at House Agr. Subcom. on Cons. Energy, and Forestry, Audit of USDA Energy Programs, July 20, 2011.

<sup>17</sup> For a side-by-side comparison of previous law with the energy provisions of the 2008 farm bill, see CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*.

- **“advanced biofuels”**—fuel derived from renewable biomass other than corn kernel starch, including ethanol derived from other plant starches (e.g., sorghum, sugar, as well as cellulosic biomass or organic waste), organically derived biogas, butanol or other alcohols, and biodiesel;
- **“biobased product”**—a commercial or industrial product (other than food or feed), or an intermediate ingredient in such a product, that is composed, in whole or in significant part, of biological products;
- **“biomass conversion facility”**—a facility that converts renewable biomass into heat, power, biobased products, or advanced biofuels; and
- **“renewable biomass”**—any organic matter available on a renewable or recurring basis from nonfederal land except under very strict conditions.<sup>18</sup>

## **Section 9002: Biobased Markets Program**

**Function:** The 2008 farm bill renamed the federal biobased products procurement preference program as the Biobased Markets Program. It requires federal agencies to establish a program with specifications for procuring biobased products including a national registry of biobased testing centers, and authorizes a voluntary labeling program under which producers of biobased products may use the label “USDA Certified Biobased Product.” (7 U.S.C. § 8102)

Under the Biobased Markets Program, federal agencies and their contractors are required to purchase biobased products when the cumulative purchase price of procurement is more than \$10,000 or when the quantities of functionally equivalent items purchased over the preceding fiscal year equaled \$10,000 or more. Each federal agency and contractor must procure biobased products at the highest content levels within each product category unless the agency determines that the items are not reasonably available, fail to meet applicable performance standards, or are available only at an unreasonable price.

**Administered by:** Office of Energy Policy and New Uses (OEPNU), Office of the Chief Economist (OCE), USDA.

**Funding:** Mandatory Commodity Credit Corporation (CCC) funding of \$1 million for FY2008 and \$2 million for each of FY2009-FY2012 for biobased products testing and labeling was authorized. Discretionary funding of \$2 million was authorized to be appropriated for each of FY2009-FY2012; however, no discretionary funding has been appropriated for the Biobased Markets Program through FY2011.

**Implementation Status:** The Biobased Markets Program was originally established under the 2002 farm bill as a federal procurement preference program that required federal agencies to purchase biobased products under certain conditions. USDA refers to the program as the BioPreferred® Program.<sup>19</sup> The final guidelines for the federal preferred procurement program were published on January 11, 2005 (70 *Fed. Reg.* 1792).<sup>20</sup> In addition to program guidelines,

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<sup>18</sup> For a discussion of issues related to discrepancies in the federal definition of “renewable biomass,” see CRS Report R40529, *Biomass: Comparison of Definitions in Legislation Through the 111<sup>th</sup> Congress*.

<sup>19</sup> OEPNU, OCE, USDA, *Metrics To Support Informed Decision Making for Consumers of Biobased Products*, by Marvin Duncan, Barbara C. Lippiatt, Zia Haq, Michael Wang, and Roger Conway, AIB No. 803, October 2008.

<sup>20</sup> This is an abridged citation for *Federal Register*, vol. 70, no. 7, pp. 1792-1812. This abridged format will be used (continued...)

USDA has promulgated six rounds of regulations for the BioPreferred® Program designating categories of biobased products for preferred federal procurement. As of July 20, 2011, there were 50 designated product categories.<sup>21</sup> USDA announced that a seventh designation rule with 14 product categories would be promulgated by the end of August 2011. Once published, the seventh round will result in 64 categories and almost 9,000 products approved for preferred federal procurement.

The final rule for the voluntary labeling program for biobased products was published on January 20, 2011 (76 *Fed. Reg.* 3790). More than 430 products from 150 companies have been certified to carry the USDA Certified Biobased label as of July 20, 2011.<sup>22</sup>

### **Section 9003: Biorefinery Assistance Program (BAP)**

**Function:** The Biorefinery Assistance Program (BAP) assists in the development of new and emerging technologies for advanced biofuels.<sup>23</sup> BAP provides competitive grants and loan guarantees for construction and/or retrofitting of demonstration-scale biorefineries to demonstrate the commercial viability of one or more processes for converting renewable biomass to advanced biofuels. Biorefinery grants can provide for up to 30% of total project costs. Each loan guarantee is limited to \$250 million or 80% of project cost. (7 U.S.C. § 8103)

**Administered by:** Rural Business and Cooperative Service, Rural Development Agency (RDA), USDA, in consultation with DOE.

**Funding:** Mandatory CCC funding of \$75 million in FY2009 and \$245 million in FY2010 (to remain available until expended) was authorized for loan guarantees. Discretionary funding of \$150 million annually was authorized for FY2009-FY2012 for grants. No discretionary funding has been appropriated for BAP through FY2011.

**Implementation Status:** BAP was newly established under the 2008 farm bill. Mandatory funds are used for the loan guarantee portion of BAP whereas discretionary appropriations are to be used to fund grants. However, since Congress has not appropriated any discretionary funds for BAP during the life of the 2008 farm bill, USDA has only moved forward with the loan guarantee portion of BAP. The interim rule for the BAP's guaranteed loans was published on February 14, 2011 (76 *Fed. Reg.* 8404).

For loan guarantees, project lenders (not prospective borrowers) must submit the application.<sup>24</sup> Each loan guarantee application undergoes at least three rounds of review within USDA (including review by the Rural Development Agency, the National Renewable Energy Laboratory

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throughout this report.

<sup>21</sup> USDA Testimony at House Agriculture Subcommittee on Conservation, Energy, and Forestry, audit of USDA Energy Programs, July 20, 2011; at <http://agriculture.house.gov/hearings/>.

<sup>22</sup> Ibid.

<sup>23</sup> For more program information, see "Section 9003: Biorefinery Assistance Program," Business and Cooperative Programs (BCP), Rural Development (RD), USDA, at [http://www.rurdev.usda.gov/BCP\\_Biorefinery.html](http://www.rurdev.usda.gov/BCP_Biorefinery.html).

<sup>24</sup> More information on the BAP loan guarantee applications is available at [http://www.rurdev.usda.gov/SupportDocuments/BCP\\_9003\\_ApplicationGuide0311.doc](http://www.rurdev.usda.gov/SupportDocuments/BCP_9003_ApplicationGuide0311.doc)

(NREL), and the Office of the Chief Economist (OCE)). Average processing time per application is about nine months. Application fees include both a guarantee fee and an annual renewal fee.

On November 20, 2008, a notice of funds available (NOFA) for \$75 million to support guaranteed loans under BAP in FY2009 was published (75 *Fed. Reg.* 70544). During FY2009, three projects were selected for BAP loan guarantees involving \$159 million in total approved leverage.<sup>25</sup> However, one project was dropped due to ineligibility (a biodiesel retrofit project in Minnesota), leaving \$134 million in approved coverage.

On May 6, 2010, a NOFA for \$150 million to support guaranteed loans under BAP in FY2010 was published (75 *Fed. Reg.* 25076). An additional four projects were selected during FY2010 with an approved value of \$255 million. Of the six current projects, four are cellulosic biofuel plants, one is an anaerobic digester, and one is an algae-to-diesel or jet fuel project.

On March 11, 2011, a NOFA for \$129 million to support guaranteed loans under BAP in FY2011 was published (76 *Fed. Reg.* 13351) requesting applications for funding support be received by May 10, 2011. On June 6, 2011, an extension of the NOFA applications deadline to July 6, 2011, was published (76 *Fed. Reg.* 32355). As of the closing date for applications (July 6, 2011), USDA had received 13 applications valued at \$1.3 billion in requested funding.

#### **Section 9004: Repowering Assistance Program (RAP)**

**Function:** The Repowering Assistance Program (RAP) makes payments to eligible biorefineries (those in existence on the date of enactment of the 2008 farm bill, June 18, 2008) to encourage the use of renewable biomass as a replacement for fossil fuels used to provide heat for processing or power in the operation of these eligible biorefineries.<sup>26</sup> Not more than 5% of the funds shall be made available to eligible producers with a refining capacity exceeding 150 million gallons of advanced biofuel per year. (7 U.S.C. § 8104)

**Administered by:** Rural Business and Cooperative Service, RD, USDA.

**Funding:** Mandatory CCC funding of \$35 million for FY2009 was authorized, to remain available until expended. Discretionary funding of \$15 million annually for FY2009-FY2012 was authorized to be appropriated; however, only \$15 million in FY2010 has been appropriated through FY2011.

**Implementation Status:** RAP was originally established under the 2002 farm bill as a grant program to help finance the cost of developing and constructing biorefineries and biofuels production plants to carry out projects to demonstrate the commercial viability of converting biomass to fuels or chemicals. The 2008 farm bill altered RAP's orientation to focus on converting fossil fuel burning plants to biomass or some other renewable fuel source for processing energy.

The proposed rule for the Repowering Assistance Program was published on April 16, 2010 (75 *Fed. Reg.* 20073). After a comment period and subsequent modifications, an interim rule was

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<sup>25</sup> Based on information received by CRS from Kelly Oehler, Branch Chief, Energy Division, RD, USDA.

<sup>26</sup> For more program information, see "Section 9004: Repowering Assistance Program," BCP, RD, USDA, at [http://www.rurdev.usda.gov/BCP\\_RepoweringAssistance.html](http://www.rurdev.usda.gov/BCP_RepoweringAssistance.html).



published on February 11, 2011 (76 *Fed. Reg.* 7916). Individual project awards are limited to \$5 million or 50% of total eligible project costs, whichever is less.

In three consecutive fiscal years (2008, 2009, and 2010), USDA published NOFAs announcing funding under RAP to support eligible plants in each respective fiscal year: June 12, 2009, \$20 million (74 *Fed. Reg.* 28009); May 6, 2010, \$8 million (75 *Fed. Reg.* 24873); and March 11, 2011, \$25 million (76 *Fed. Reg.* 13349).

### **Section 9005: Bioenergy Program for Advanced Biofuels**

**Function:** The 2008 farm bill established a new Bioenergy Program for Advanced Biofuels to support and expand production of advanced biofuels—i.e., fuel derived from renewable biomass other than corn kernel starch—by entering into contracts with advanced biofuel producers to pay them for production of eligible advanced biofuels.<sup>27</sup> The policy goal is to create long-term, sustained increases in advanced biofuels production. (7 U.S.C. § 8105)

**Administered by:** Rural Business and Cooperative Service, RD, USDA.

**Funding:** Mandatory CCC funding of \$55 million for 2009, \$55 million for FY2010, \$85 million for FY2011, and \$105 million for FY2012 was authorized to remain available until expended. Discretionary funding of \$25 million annually for FY2009-FY2012 was authorized to be appropriated; however, no discretionary funding has been appropriated through FY2011.

On June 16, 2011, the House passed an FY2012 appropriations bill (H.R. 2112) that limits FY2012 funding for the Bioenergy Program for Advanced Biofuels to \$55 million. Further action is pending.

**Implementation Status:** Originally created by a 1999 executive order during the Clinton Administration, the bioenergy program provided mandatory CCC incentive payments to biofuels producers based on year-to-year increases in the quantity of biofuel produced. Under the 2002 farm bill, mandatory CCC funding of \$150 million was available for each of FY2002 through FY2006; however, no funding was authorized for FY2007, effectively terminating the program.

The 2008 farm bill's Section 9005 revived the bioenergy program but refocused its funding to non-corn-starch biomass sources. Producers of advanced biofuels enter into contracts with USDA to receive payments based on the quantity and duration of production of advanced biofuels, the net renewable energy content of the biofuel, and other factors. Only one producer per refinery is eligible to apply. The interim rule for the Bioenergy Program for Advanced Biofuels was published on February 11, 2011 (76 *Fed. Reg.* 7936).

Producers must submit records to document their production of advanced biofuels. Payments will be made in two tiers. The first tier is based on actual production, while the second tier is based on incremental increases in production as an incentive to expand annual production on a sustained basis. Program funding is to be distributed according to the two tiers: in FY2010 the first tier receives 80% of available funds and the second tier receives 20%; in FY2011 the first tier receives 70%, the second tier 30%; in FY2012 the first tier receives 60%, the second tier 40%; in

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<sup>27</sup> For more program information, see "Section 9005: Bioenergy Program for Advanced Biofuels," BCP, RD, USDA, at [http://www.rurdev.usda.gov/BCP\\_Biofuels.html](http://www.rurdev.usda.gov/BCP_Biofuels.html).

FY2013 and beyond, each tier receives 50%. Payments are capped per recipient to ensure equitable distribution. Not more than 5% of the funds in any year can go to facilities with total refining capacity exceeding 150 million gallons per year. Solid advanced biofuels produced from forest biomass are ineligible for the second tier incremental payment and may not receive more than 5% of annual program funds.

USDA has made five notice of contract proposals (NOCPs) to make payments to biorefineries for the production of advanced biofuels under the Bioenergy Program for Advanced Biofuels: an initial FY2009 award of \$30 million (June 12, 2009, *74 Fed. Reg.* 27998); additional FY2009 awards of the remainder of \$30 million less the \$14.5 million awarded through early March 2010 (March 12, 2010, *75 Fed. Reg.* 11836); FY2010 awards of \$40 million (May 6, 2010, *75 Fed. Reg.* 24865);<sup>28</sup> a second FY2010 award announcement of \$80 million that superseded the May 6, 2010, NOCP (Feb. 11, 2011, *76 Fed. Reg.* 7966), and FY2011 awards of \$85 million (March 11, 2011, *76 Fed. Reg.* 13345). Through July 20, 2011, almost \$30 million in assistance payments have been provided to 141 advanced biofuel producers.<sup>29</sup>

### **Section 9006: Biodiesel Fuel Education Program**

**Function:** The Biodiesel Fuel Education Program awards competitive grants to nonprofit organizations that educate governmental and private entities operating vehicle fleets, and educates the public about the benefits of biodiesel fuel use. (7 U.S.C. § 8106)

**Administered by:** National Institute of Food and Agriculture (NIFA) and OEPNU, OCE, USDA.

**Funding:** Mandatory CCC funds of \$1 million are provided annually for FY2008-FY2012.

**Implementation Status:** Originally established under the 2002 farm bill, the Biodiesel Fuel Education Program was extended through 2012 in the 2008 farm bill. The program is implemented by USDA through continuation grants. The final rule for the program was published on September 30, 2003 (*68 Fed. Reg.* 56137).

On July 15, 2003, USDA published a request for applications for the Biodiesel Fuel Education Program for FY2003 (*68 Fed. Reg.* 41770). USDA awarded the original program grants to two entities: the National Biodiesel Board and the University of Idaho. Under the 2008 farm bill, NIFA obligated its funding to the same two entities for an initial period of one year, but has agreed to support their efforts through FY2012 contingent on the satisfactory progress of this project. The program is monitored by the USDA Biodiesel Education Oversight Committee, which includes a DOE representative.

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<sup>28</sup> The first FY2010 NCOPO was cancelled due to rural location and citizenship requirements. These requirements were removed in the interim rule of Feb. 11, 2011.

<sup>29</sup> USDA Testimony at House Agriculture Subcommittee on Conservation, Energy, and Forestry, Audit of USDA Energy Programs, July 20, 2011; at <http://agriculture.house.gov/hearings/>.



## **Section 9007: Rural Energy for America Program (REAP)**

**Function:** REAP provides financial assistance for:

- grants, guaranteed loans, and combined grants and guaranteed loans for the development and construction of renewable energy systems (RES) and for energy efficiency improvement (EEI) projects (eligible entities include rural small businesses and agricultural producers);
- grants for conducting energy audits and for conducting renewable energy development assistance (eligible entities include state, tribe, or local governments, land-grant colleges and universities, rural electric cooperatives and public power entities); and
- grants for conducting RES feasibility studies (eligible entities include rural small businesses and agricultural producers).

Renewable energy systems (RES) include those that generate energy from bioenergy (including flexible fuel pumps), anaerobic digesters, geothermal, hydrogen, solar, wind, and hydropower. Energy-efficiency improvement (EEI) projects typically involve installing or upgrading equipment to significantly reduce energy use. (7 U.S.C. § 8107)

**Administered by:** Rural Business and Cooperative Service, RD, USDA.

**Funding:** Mandatory CCC funds of \$55 million in FY2009, \$60 million in FY2010, \$70 million in FY2011, and \$70 million in FY2012, to remain available until expended, were authorized. Discretionary funding of \$25 million annually was authorized to be appropriated for FY2009-FY2012. Actual discretionary appropriations have been \$5 million in FY2009, \$40 million in FY2010, and \$5 million in FY2011.

On June 16, 2011, the House passed an FY2012 appropriations bill, H.R. 2112, which would reduce REAP mandatory funding to zero and discretionary funding to \$2.2 million, split evenly between grants and loan guarantees. The House also agreed, by a recorded vote of 283 to 128, to an amendment to H.R. 2112 (H.Amdt. 475) that would prohibit the use of funds for the construction of ethanol blender pumps or ethanol storage facilities. Further action is pending in the Senate.

On June 16, 2011, the Senate considered a similar amendment (S.Amdt. 411) to separate, unrelated legislation (S. 782) that would have prohibited the use of REAP funds for the construction of ethanol blender pumps or ethanol storage facilities. However, the amendment was not agreed to in the full Senate by a 41-59 vote.

**Implementation Status:** The 2008 farm bill combined elements of two existing programs from the 2002 farm bill—the Energy Audit and Renewable Energy Development Program and the RES and EEI Program—into a single program renamed the Rural Energy for America Program (REAP). Certain provisions of REAP have been operating since 2005 under 7 C.F.R. part 4280, subpart B. Regulations for operating grants and loan guarantees under the 2002 farm bill’s RES and EEI Program were published on July 18, 2005 (70 *Fed. Reg.* 41264). A series of *Federal Register* notices (cited below) were used to implement the REAP provisions in the 2008 farm bill (i.e., RES feasibility studies, energy audits, and renewable energy development assistance) until new regulations were implemented. On April 14, 2011, an interim rule for REAP was published (76 *Fed. Reg.* 21110) to consolidate the various REAP programs by including each part of the

program in a single subpart based on USDA experience under the 2002 farm bill energy programs. The interim REAP rule includes several changes to previous implementation methods: both U.S. citizenship and the rural area location requirements were removed, and flexible fuel (“blender”) pumps that dispense variable blends of petroleum and biofuels were included as viable renewable energy development projects.

### ***REAP Loan Guarantees***

The REAP Guaranteed Loan Program encourages the commercial financing of renewable energy (bioenergy, geothermal, hydrogen, solar, wind and hydropower) and energy efficiency projects.<sup>30</sup> Under the program, project developers work with local lenders, who in turn can apply to USDA Rural Development for a loan guarantee of up to 75% of the project’s cost (subject to a maximum of \$25 million and a minimum of \$5,000). The maximum percentage of guarantee (applied to the whole loan) is 85% of the loan amount for loans of \$600,000 or less with a declining percentage for higher loan amounts.

### ***REAP Grants***

The type of grants available under REAP are still distinguished by their 2002 farm bill origins with separate grant programs for EEI, Renewable Energy Development Assistance (REDA), and Feasibility Studies.

Under REAP, the Renewable Energy Systems/Energy Efficiency Improvement Grants Program provides grants for energy audits and renewable energy development assistance.<sup>31</sup> It also provides funds to agricultural producers and rural small businesses to purchase and install renewable energy systems and make energy efficiency improvements. The grants are awarded on a competitive basis and can be up to 25% of total eligible project costs. Grants are limited to \$500,000 for renewable energy systems and \$250,000 for energy efficiency improvements. Grant requests as low as \$2,500 for renewable energy systems and \$1,500 for energy efficiency improvements can be considered. At least 20% of the grant funds awarded must be for grants of \$20,000 or less.

Under REAP, the Energy Audit and Renewable Energy Development Assist Grant Program also provides grants for energy audits and renewable energy development assistance.<sup>32</sup> The grants are awarded on a competitive basis and can be up \$100,000. Recipients of an energy audit are required to pay at least 25% of the cost of the audit. Only 4% of available funds may be used for energy audits.

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<sup>30</sup> For more program information, see “Section 9007: Rural Energy for America Program Guaranteed Loan Program (REAP LOANS),” BCP, RD, USDA, at [http://www.rurdev.usda.gov/BCP\\_ReapLoans.html](http://www.rurdev.usda.gov/BCP_ReapLoans.html).

<sup>31</sup> For more program information, see “Section 9007: REAP Renewable Energy Systems/Energy Efficiency Improvement Program (REAP/RES/EEI) Grants Program,” BCP, RD, USDA, at [http://www.rurdev.usda.gov/BCP\\_ReapResEei.html](http://www.rurdev.usda.gov/BCP_ReapResEei.html).

<sup>32</sup> For more program information, see “Section 9007: REAP SECTION 9007: Rural Energy for America Program Grants/Energy Audit and Renewable Energy Development Assist (REAP/EA/REDA),” BCP, RD, USDA, at [http://www.rurdev.usda.gov/BCP\\_ReapEaReda.html](http://www.rurdev.usda.gov/BCP_ReapEaReda.html).

The REAP/Feasibility Grant Program also provides grants for energy audits and renewable energy development assistance.<sup>33</sup> It also provides funds to agricultural producers and rural small businesses to conduct feasibility studies for a renewable energy system. The grants are awarded on a competitive basis and can be up to 25% of total eligible project costs. Grants are limited to \$50,000 for renewable energy feasibility studies.

### ***REAP Implementation and Legislative Action***

A series of *Federal Register* notices have been used to implement the REAP provisions in the 2008 farm bill. A notice of solicitation of applications (NOSA) for 4% of FY2009 funds (i.e., \$2.4 million) in grants for energy audits and renewable energy development assistance was published on March 11, 2009 (74 *Fed. Reg.* 10533). A NOSA for the remaining portion of FY2009 funds of \$60 million (\$55 million mandatory and \$5 million discretionary) for RES feasibility studies and to purchase renewable energy systems and energy efficiency improvements was published on May 26, 2009 (74 *Fed. Reg.* 24769).

For FY2010, USDA published three *Federal Register* notices to implement REAP. A NOSA published on April 26, 2010 (75 *Fed. Reg.* 21584), announced that about 88% of combined mandatory and discretionary REAP funding for FY2010 (\$100 million) was available for renewable energy system and energy efficiency improvement grants and guaranteed loans. On May 27, 2010, a NOFA was published (75 *Fed. Reg.* 29706) to announce \$2.4 million for grants for energy audits and renewable energy development assistance grants. Finally, a NOFA published on August 6, 2010 (75 *Fed. Reg.* 47525), announced \$3 million for grants to conduct feasibility studies of renewable energy systems.

For FY2011, a NOFA published on April 14, 2011 (76 *Fed. Reg.* 20943), announced funds available for financial assistance as follows: grants, guaranteed loans, and combined grants and guaranteed loans for the development and construction of renewable energy systems and for energy efficiency improvement projects; grants for conducting energy audits; grants for conducting renewable energy development assistance; and grants for conducting renewable energy system feasibility studies. The NOFA announced the availability of \$70 million of FY2011 budget authority to fund these REAP activities, which is expected to support at least \$42 million in grant program level and up to \$61 million in guaranteed loan program level. The FY2011 appropriations act (Department of Defense and Full-Year Continuing Appropriations Act, 2011; P.L. 112-10) reduced REAP discretionary funds from \$25 million to \$5 million, but left REAP's mandatory funding of \$70 million intact.

According to USDA, more than 6,100 awards have been made under REAP programs (and their predecessor) from FY2003 through FY2010, spanning all agricultural sectors in all states. According to the Environmental Law and Policy Center, more than \$281 million in grants and \$227 million in loan guarantees were made under REAP from 2003 through 2010.<sup>34</sup> On August 17, 2011, Secretary of Agriculture Vilsack announced more than \$11.6 million in REAP energy

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<sup>33</sup> For more program information, see "Section 9007: REAP Feasibility Study Grants," BCP, RD, USDA, at [http://www.rurdev.usda.gov/BCP\\_ReapGrants.html](http://www.rurdev.usda.gov/BCP_ReapGrants.html).

<sup>34</sup> Amanda Peterka, "USDA, groups urge lawmakers to fund farm bill's energy programs," *E&E News*, July 21, 2011.

grants to more than 900 agricultural producers and small businesses for projects to implement renewable energy and energy efficiency measures in their operations.<sup>35</sup>

### **Section 9008: Biomass Research and Development Initiative (BRDI)**

**Function:** BRDI—created originally under the Biomass Research and Development Act of 2000 (BRDA, P.L. 106-224)—provides competitive funding in the form of grants, contracts, and financial assistance for research, development, and demonstration of technologies and processes leading to significant commercial production of biofuels, biobased energy innovations, development of biobased feedstocks, biobased products, and other such related processes, including development of cost-competitive cellulosic ethanol. Eligibility is limited to institutions of higher learning, national laboratories, federal or state research agencies, private-sector entities, and nonprofit organizations.

BRDI provides for coordination of biomass research and development, including life-cycle analysis of biofuels, between USDA and DOE by creating the Biomass Research and Development Board to coordinate government activities in biomass research, and the Biomass Research and Development Technical Advisory Committee to advise on proposal direction and evaluation.<sup>36</sup> The 2008 farm bill moved BRDA in statute to Title IX of the 2008 farm bill and expanded the BRDI technical advisory committee. (7 U.S.C. § 8108)

**Administered by:** NIFA, USDA, and DOE, jointly.

**Funding:** Authorizes mandatory funding (to remain available until expended) of \$20 million for FY2009, \$28 million for FY2010, \$30 million for FY2011, and \$40 million for FY2012. Discretionary funding of \$35 million is authorized to be appropriated annually for FY2009-FY2012; however, no discretionary funding has been appropriated through FY2011.

**Implementation Status:** Since 2002 USDA and DOE jointly have announced annual solicitations and awards of funding allocations under BRDI.<sup>37</sup> Under the 2008 farm bill, applicants seeking BRDI funding must propose projects that integrate science and engineering research in the following three technical areas that are critical to the broader success of alternative biofuels production: feedstock development, biofuels and biobased products development, and biofuels development analysis. A minimum of 15% of funding must go to each area.<sup>38</sup> The minimum cost-share requirement for demonstration projects was increased to 50%, and for research projects to 20%.

From FY2002 through FY2010, more than \$202 million has been awarded to 110 projects, including \$91.5 million from USDA and \$111.1 million from DOE. On May 5, 2011, Secretary

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<sup>35</sup> USDA Press Release No. 0365.11, Office of Communications, USDA, August 17, 2011. A complete list of recipients is available at <http://www.rurdev.usda.gov/SupportDocuments/RDREAPGrantsAug162011.pdf>.

<sup>36</sup> For more information on the Biomass Research and Development Board, the Technical Advisory Committee, and project selection, visit: <http://www.usbiomassboard.gov/>.

<sup>37</sup> For BRDI current FY2011 and historical (FY2002-FY2010) solicitations and awards visit: [http://www.usbiomassboard.gov/initiative/past\\_solicitations.html](http://www.usbiomassboard.gov/initiative/past_solicitations.html).

<sup>38</sup> For details on BRDI technical areas see [http://www.nifa.usda.gov/nea/plants/in\\_focus/biobased\\_if\\_brdi.html](http://www.nifa.usda.gov/nea/plants/in_focus/biobased_if_brdi.html).

Vilsack (USDA) and Secretary Chu (DOE) announced a total of \$47 million in new FY2011 awards to fund an additional eight research and development projects.<sup>39</sup>

### **Section 9009: Rural Energy Self-Sufficiency Initiative**

**Function:** The Rural Energy Self-Sufficiency Initiative assists rural communities with community-wide energy systems that reduce conventional energy use and increase the use of energy from renewable sources. Grants are available to assess energy use in a rural community, evaluate ideas for reducing energy use, and develop and install integrated renewable energy systems. Grants are not to exceed 50% of the total cost of the activity. (7 U.S.C. § 8109)

**Administered by:** Rural Business and Cooperative Service, RD, USDA.

**Funding:** Discretionary funding of \$5 million annually is authorized to be appropriated for FY2009-FY2012; however, no funding has been appropriated through FY2011.

**Implementation Status:** Rural Development, USDA, has not yet announced any regulations for this program.

### **Section 9010: Feedstock Flexibility Program (FFP) for Bioenergy Producers**

**Function:** The Feedstock Flexibility Program requires that USDA establish (in FY2008) and administer a sugar-for-ethanol program using sugar intended for food use but deemed to be in surplus. USDA would subsidize the use of sugar for ethanol production through federal purchases of surplus sugar for resale to ethanol producers. USDA would implement the program only in those years where purchases are determined to be necessary to ensure that the sugar program operates at no cost to the federal government. (7 U.S.C. § 8110)

**Administered by:** Farm Service Agency (FSA), USDA.

**Funding:** Mandatory CCC funds of such sums as necessary are to be made available.

**Implementation Status:** The program is on standby status until such time as the CCC acquires an inventory of sugar, which currently does not exist.

### **Section 9011: Biomass Crop Assistance Program (BCAP)**

**Function:** The Biomass Crop Assistance Program (BCAP) provides financial assistance to owners and operators of agricultural land and non-industrial private forest land who wish to establish, produce, and deliver biomass feedstocks.<sup>40</sup> BCAP provides two categories of assistance:<sup>41</sup>

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<sup>39</sup> For a NIFA news release, see [http://www.nifa.usda.gov/newsroom/news/2011news/05052\\_brdi.html](http://www.nifa.usda.gov/newsroom/news/2011news/05052_brdi.html). For information on the BRDI grant application process, see <http://www.nifa.usda.gov/fo/fundview.cfm?fonum=2660>.

<sup>40</sup> For more information, see CRS Report R41296, *Biomass Crop Assistance Program (BCAP): Status and Issues*.

<sup>41</sup> Farm Service Agency, USDA, "Biomass Crop Assistance Program (BCAP), "Fact Sheet," at [http://www.fsa.usda.gov/Internet/FSA\\_File/bcap\\_update\\_may2011.pdf](http://www.fsa.usda.gov/Internet/FSA_File/bcap_update_may2011.pdf).



1. **establishment and annual payments**, including a one-time payment of up to 75% of cost of establishment for perennial crops, and annual payments (i.e., rental rates based on a set of criteria) of up to 5 years for non-woody and 15 years for woody perennial biomass crops; and
2. **matching payments**, up to \$45 per ton, which may be available to help eligible material owners with collection, harvest, storage, and transportation (CHST) of eligible material for use in a qualified biomass conversion facility.

Establishment and annual payments are available to certain producers who enter into contracts with USDA to produce eligible biomass crops on contract acres within designated BCAP project areas. Eligible land for BCAP project area contracts includes agricultural land and non-industrial private forestland, but does not include federal or state-owned land, land that is native sod, or land enrolled in the Conservation Reserve Program, Wetlands Reserve Program, or Grassland Reserve Program. Generally, crops that receive payments under Title I (the commodity title) of the farm bill (e.g., corn, wheat, rice, and soybeans) and noxious weeds or invasive species are not eligible for annual payments.

BCAP assistance for establishing and producing biomass crops is available within designated project areas. BCAP project areas are specific geographic areas where producers may enroll land to grow specified biomass crops.<sup>42</sup> Participants may be eligible to receive financial and technical assistance as well as annual payments to establish these crops. Project areas are established based on proposals submitted to FSA by either a group of producers or an entity that converts biomass to heat, power, a biobased product, or an advanced biofuel. Those interested in submitting a proposal are encouraged to contact their FSA state office for details. Upon designation of a project area, certain producers within the project area are then eligible to enroll land into the program.

Matching payments are available to eligible material owners who deliver eligible material to qualified biomass conversion facilities. Eligible material must be harvested directly from the land and separate from a higher-value product (e.g., Title I crops). Invasive and noxious species are considered eligible material and land ownership (private, state, federal, etc.) is not a limiting factor to receive matching payments. (7 U.S.C. § 8111)

**Administered by:** FSA, USDA.

**Funding:** Mandatory CCC funds of such sums as necessary are made available for each of FY2008-FY2012. Outlays depend on the number of participants. The 2010 Supplemental Appropriations Act (P.L. 111-212) limited BCAP funding to \$552 million in FY2010 and \$432 million in FY2011. The Department of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10), further reduced BCAP funding for FY2011 to \$112 million.

The President's FY2012 budget proposed to limit funding for CHST to \$70 million. The remaining annual and establishment payment portion of BCAP would remain at such sums as necessary (SSAN). On June 16, 2011, the House passed an FY2012 appropriations bill (H.R. 2112) that would eliminate funding for BCAP for FY2012. Further action is pending in the Senate.

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<sup>42</sup> See FSA, USDA, "BCAP Project Area Information," at <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap-pjt>.

**Implementation Status:** On May 5, 2009, President Barack Obama issued a directive addressing a variety of advanced biofuel priorities including the implementation of matching payments for CHST of eligible materials for biomass conversion. On June 11, 2009, USDA published a NOFA (74 *Fed. Reg.* 27767) to implement the CHST matching payments component of BCAP. The NOFA was terminated on February 3, 2010, and, on February 8, 2010, USDA published a proposed rule for BCAP (75 *Fed. Reg.* 6264). The final rule was published on October 27, 2010 (74 *Fed. Reg.* 27767), and implements the full BCAP program, including the annual and establishment payment. USDA is required to submit a report to the House and Senate Agriculture Committees on the dissemination of the best practice data and information gathered from participants receiving assistance under BCAP no later than four years after enactment of the 2008 farm bill (i.e., by June 18, 2012).

No payments were made in FY2008; however, in FY2009 and FY2010, \$243 million was paid out to projects in 31 states.<sup>43</sup> As of July 29, 2011, USDA had selected nine BCAP project areas and continued to enroll producers for annual and establishment payments. Matching payments have been suspended until enrollment for annual and establishment payments concludes.<sup>44</sup>

### **Section 9012: Forest Biomass for Energy**

**Function:** The Forest Biomass for Energy program is a research and development program to encourage use of forest biomass for energy. The Forest Service, other federal agencies, state and local governments, Indian tribes, land-grant colleges and universities, and private entities are eligible to compete for program funds. Priority is given to projects that use low-value forest byproduct biomass for the production of energy; develop processes to integrate bioenergy from forest biomass into existing manufacturing streams; develop new transportation fuels; and improve the growth and yield of trees for renewable energy. (7 U.S.C. § 8112)

**Administered by:** Forest Service, USDA.

**Funding:** Discretionary funding of \$12 million annually is authorized to be appropriated for FY2009-FY2012; however, no funding has been appropriated through FY2011.

**Implementation Status:** The Forest Service has not yet announced any regulations for this program. The President's FY2011 budget proposed to fund both the Forest Biomass for Energy Program and the Community Wood Energy Program using funds from the Hazardous Fuels Program (Wildland Fire Management) within the Forest Service. The President's FY2012 budget proposal included a similar request to fund both programs using the Hazardous Fuels Program; however, only \$15 million was requested for the Forest Biomass for Energy Program and \$3.75 million for the Community Wood Energy Program.

### **Section 9013: Community Wood Energy Program**

**Function:** The Community Wood Energy Program provides matching grants to state and local governments to acquire community wood energy systems for public buildings. Participants must

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<sup>43</sup> BCAP CHST Summary Report, at [http://www.fsa.usda.gov/Internet/FSA\\_File/bcap\\_chst\\_summary\\_report.pdf](http://www.fsa.usda.gov/Internet/FSA_File/bcap_chst_summary_report.pdf).

<sup>44</sup> See FSA, USDA, "BCAP Project Areas Listing," at <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap-pjt-bloc>.



also implement a community wood energy plan to meet energy needs with reduced carbon intensity through conservation, reduced costs, utilizing low-value wood sources, and increased awareness of energy consumption. (7 U.S.C. § 8113)

**Administered by:** Forest Service, USDA.

**Funding:** Discretionary funding of \$5 million annually is authorized to be appropriated for FY2009-FY2012. No funding has been appropriated through FY2011; however, the Forest Service has awarded \$49 million in funding from the American Recovery and Reinvestment Act of 2009 (ARRA, P.L. 111-5) for wood-to-energy projects, and the appropriations committee reports in FY2010 and FY2011 have directed the use of \$5 million in Hazardous Fuels funds for biomass energy projects.

**Implementation Status:** The Forest Service is pursuing the implementation of this program using funding from their overall State & Private appropriation.<sup>45</sup> An agency working group is developing the work plan for the Community Wood Energy Program, coordinating with Rural Development (RD) to ensure the new program is complementary with other biomass energy programs administered by RD. (See “Implementation” note under “Section 9012: Forest Biomass for Energy” for funding proposals under the President’s FY2011 and FY2012 budget proposals.)

### **Biofuels Infrastructure Study**

**Function:** Sec. 9002 of the 2008 farm bill requests that USDA, DOE, EPA, and the Department of Transportation (DOT) jointly report on the infrastructure needs, requirements, and development approaches for expanding the domestic production, transportation, and distribution of biofuels given current and likely future market trends. A report including the study results is to be submitted to various related committees in Congress. No deadline was specified.

**Funding:** No specific funding was announced for this study and no funding has been authorized through FY2011.

### **Renewable Fertilizer Study**

**Function:** Sec. 9003 of the 2008 farm bill requires that a report be submitted to the House and Senate Agriculture Committees within one year of receipt of the appropriations to carry out the study on the production of fertilizer from renewable energy sources in rural areas. The report is to be based on a study of the challenges to commercialization of rural fertilizer production from renewable sources, potential processes and technologies, and the potential impacts of renewable fertilizer on fossil fuel use and the environment.

**Funding:** Discretionary funding of \$1 million was authorized to be appropriated for FY2009; however, no discretionary funding has been authorized through FY2011.

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<sup>45</sup> Farm Bill Working Group, Office of Budget and Program Analysis, USDA, “Highlights: Title IX-Energy,” October 26, 2009.

## **Title VII—Energy-Related Agricultural Research and Extension Provisions**

### **Section 7205: Nutrient Management Research and Extension Initiative**

**Function:** Sec. 1673(h) of the 1990 farm bill (Food, Agriculture, Conservation, and Trade Act of 1990; P.L. 101-624) authorized matching grants under the farm bill nutrient management research and extension initiative for finding innovative methods and technologies for economic use or disposal of animal waste. This program was extended through 2007 by Sec. 7120 of the 2002 farm bill. The 2008 farm bill again extended the nutrient management research and extension initiative through FY2012 and added dairy cattle waste as a type of waste to be studied. It also added an amendment to include the production of renewable energy from animal waste as an eligible activity to receive grants under this section. (7 U.S.C. § 5925a)

**Administered by:** National Agricultural Research, Extension, Education, and Economics Advisory Board, USDA.<sup>46</sup>

**Funding:** Mandatory CCC funds of such sums as necessary are made available for each of FY2008-FY2012.

### **Section 7207: Agricultural Bioenergy Feedstock and Energy Efficiency Research and Extension Initiative**

**Function:** Sec. 7207 of the 2008 farm bill established the Agricultural Bioenergy Feedstock and Energy Efficiency Research and Extension Initiative, a program to award competitive matching grants (up to 50% of project costs) for projects with a focus on supporting on-farm biomass crop research and the dissemination of results to enhance the production of biomass energy crops and the integration of such production with the production of bioenergy.

**Administered by:** The Secretary of Agriculture in consultation with the National Agricultural Research, Extension, Education, and Economics Advisory Board, USDA.

**Funding:** Discretionary funding of \$50 million annually is authorized to be appropriated for FY2008-FY2012; however, no funding has been appropriated through FY2011.

### **Section 7526: Sun Grant Program**

**Function:** The Sun Grant Initiative (SGI) is a national network of land-grant universities and federally funded laboratories—coordinated through regional Sun Grant centers—working together to further establish a biobased economy.<sup>47</sup> Sun Grant centers are also charged with reviving America’s farming communities by placing an emphasis on rural economic development through the production of biobased renewable energy feedstocks.

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<sup>46</sup> See <http://nareeeab.ree.usda.gov>.

<sup>47</sup> See “Sun Grant Initiative,” at <http://www.sungrant.org/>.

This provision was added subsequent to the 2002 farm bill under the Sun Grant Research Initiative Act of 2003 (Sec. 778, Consolidated Appropriations Act, 2004; P.L. 108-199). The initiative was originally established with five national Sun Grant research centers based at land-grant universities (a north-central center at South Dakota State University; a southeastern center at the University of Tennessee; a south-central center at Oklahoma State University; a western center at Oregon State University; and a northeastern center at Cornell University), each covering a different national region, to enhance coordination and collaboration among USDA, DOE, and land-grant universities in the development, distribution, and implementation of biobased energy technologies. Competitive grants are available to land-grant schools within each region. The 2008 farm bill reauthorized the Sun Grant Program through FY2012 and established a sixth regional center—a Western Insular Pacific Sub-Center at the University of Hawaii. (7 U.S.C. § 8114)

**Administered by:** NIFA, USDA. Each regional Sun Grant center manages the programs and activities within its region, although a process based on peer and merit review is used to administer grants.

**Funding:** Discretionary funding of \$75 million annually is authorized to be appropriated for FY2008-FY2012. However, \$2.25 million only for FY2010 has been appropriated to date.

**Implementation Status:** As of July 20, 2011, SGI had more than 130 field studies on biomass feedstocks currently underway with locations in more than 75% of the states.

Since NIFA has been delegated the authority to administer the program, awards made under the Sun Grant Program are subject to NIFA's assistance regulations at 7 C.F.R. part 3430 as announced on November 18, 2010 (Competitive and Noncompetitive Nonformula Federal Assistance Programs—Administrative Provisions for the Sun Grant Program, 75 *Fed. Reg.* 70578).

## **Title XI—Energy-Related Livestock Provisions**

### **Sec. 11014: Study on Bioenergy Operations**

**Function:** Sec. 11014 of the 2008 farm bill requires a USDA study on the use of animal manure as a fertilizer and potential other uses; the impact of limitations placed on the use of animal manure on consumers and agricultural operations; and the effects of increased competition for manure due to biofuel uses. A report on the results of the study was due to respective agricultural committees of the House and Senate by June 18, 2009 (one year after enactment).

**Funding:** No specific funding was announced for this study.

## **Title XV—Energy-Related Tax Provisions**

### **Sec. 15321: Credit for Production of Cellulosic Biofuel**

**Function:** Sec. 15321 of the 2008 farm bill established a new tax credit—the Cellulosic Biofuel Producer Credit—uniquely for cellulosic ethanol producers, and at a substantially higher rate than is available for corn-starch ethanol blenders. Prior to the 2008 farm bill's enactment, all ethanol (cellulosic included) blended into gasoline was eligible for a volumetric ethanol excise tax credit

(VEETC) of \$0.51 per gallon. The ethanol blender, not the producer, was eligible for the VEETC. With the Cellulosic Biofuel Producer Credit, producers of cellulosic ethanol (produced exclusively in the United States) are now eligible for a credit of \$1.01 per gallon less the amount of small-producer ethanol credit claimed and the alcohol mixture credit claimed for ethanol. The Cellulosic Biofuel Producer Credit expires on December 31, 2012. (26 U.S.C. § 40)

### **Sec. 15322: Comprehensive Study of Biofuels**

**Function:** Sec. 15322 requires the Secretary of Treasury, with USDA, DOE, and EPA, to commission the National Academy of Sciences to produce a report on biofuels, including current and projected production, economic and environmental impacts, government program impacts, and the relative impacts of different types of biofuels on markets, trade, and infrastructure. The report should also assess the ability to convert corn ethanol plants to other uses, compare corn ethanol with other biofuels and renewable energy sources, and assess the need for additional scientific inquiry and areas of interest for future research. The final report was due to Congress by June 18, 2009 (12 months after the 2008 farm bill enactment), but to date, has not been completed.

**Funding:** No specific funding was announced for this study.

### **Sec. 15331: Modification of Alcohol Credit**

**Function:** As stated earlier, prior to passage of the 2008 farm bill, any ethanol blended into gasoline was eligible for a tax credit of \$0.51 per gallon as provided under previous law (American Jobs Creation Act of 2004, P.L. 108-357) through December 31, 2010. Sec. 15331 of the 2008 farm bill reduces the VEETC to \$0.45 per gallon beginning in the first calendar year after the year in which 7.5 billion gallons of ethanol is produced. In 2008 an estimated 9.2 billion gallons of ethanol was produced, so the tax credit reduction was effective January 1, 2009. (26 U.S.C. § 40)

See below under Sec. 15333 for recent VEETC-related news.

### **Sec. 15332: Calculation of Volume of Alcohol for Fuel Credits**

**Function:** A small amount of gasoline is added to pure ethanol at the production plant to “denature” it (i.e., prevent it from being sold as alcohol), thereby converting it to “fuel” ethanol. Prior to the 2008 farm bill, the volume of bio-alcohol counted as fuel eligible for the tax credit could include up to 5% of the volume as denaturant. Sec. 15332 of the 2008 farm bill reduced the permissible volume of denaturant to 2% for purposes of calculating the volume of alcohol eligible for the tax credit. (26 U.S.C. § 40)

### **Sec. 15333: Ethanol Tariff Extension**

**Function:** Imports of ethyl alcohol (Heading 9901.00.50 of the Harmonized Tariff Schedule (HTS)) are subject to a most-favored nation duty of 14.27¢ per liter (\$0.54 per gallon) and a 2.5% ad valorem tariff (Heading 2207.10.60; HTS) on imports of un-denatured ethyl alcohol. The import duty was to expire on December 31, 2008. Sec. 15333 of the 2008 farm bill extended the

import duty of \$0.54 per gallon for imported ethanol or mixtures of ethanol (heading 9901.00.50 of the HTS) through December 31, 2010.

The ethanol import duty (and the VEETC) were subsequently extended through December 31, 2011 by the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (P.L. 111-312). On June 16, 2011, the Senate voted 73-27 to accept an amendment (S.Amdt. 476 to S. 782) that would have eliminated both the import duty and the VEETC. However, a cloture vote on the underlying bill, S. 782, failed on June 21, 2011.

### **Sec. 15334: Limitations on Duty Drawback on Certain Imported Ethanol**

**Function:** Sect 1313 of the Tariff Act of 1930, as amended, permits the refund of an import duty if the duty-paid good is re-exported or used to make a good that is exported. This type of duty refund is referred to as a “drawback.” Prior to the 2008 farm bill, a person who manufactured gasoline using ethanol that was subject to the duty imposed under HTS 9901.00.50, could export a qualifying substitute product to obtain the refund of the duty paid. Allowable substitute products included either ethanol not subject to the duty, or another petroleum product (e.g., jet fuel which does not contain ethanol). Sec. 15334 of the 2008 farm bill eliminates the ability to obtain a refund of an import duty if the exported product contains no ethanol.

## **Additional Federal Renewable Energy Programs**

### **Rural Development Agency (RDA), USDA**

In addition to administering the Biorefinery Assistance Program, the Repowering Assistance Program, the Bioenergy Program for Advanced Biofuels, the Rural Energy for America Program, and the Biomass Research and Development Program as described above, the Rural Business-Cooperative Service (RBCS) of USDA’s Rural Development Agency administers several additional programs targeting both rural and agricultural activities that include funding opportunities in the form of payments, grants, loans, and loan guarantees for the development and commercialization of renewable energy, among other activities. The following programs within RBCS could possibly be used to assist renewable energy producers:<sup>48</sup>

- Value-Added Producer Grant Program
- Business and Industry Guaranteed Loan Program
- Rural Economic Development Loan and Grant
- Rural Business Enterprise Grants
- Rural Business Opportunity Grant Program
- Cooperative Programs’ Energy Research
- Direct and Guaranteed Electric Loan Program

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<sup>48</sup> See CRS Report RL31837, *An Overview of USDA Rural Development Programs*. For program details, awards lists, and other related information, see USDA’s RDA, at <http://www.rurdev.usda.gov/>.

- High Energy Cost Grants Program
- Various residential energy programs that provide financial assistance for energy efficiency additions or upgrades, including the Rural Energy Plus Program, the Home Repair and Preservation Program, and Housing Preservation Grants

## **Natural Resources and Conservation Service (NRCS), USDA**

In addition to the RD programs, USDA's NRCS operates several conservation programs that include energy efficiency components with funding available for both energy efficiency improvements and assessments of energy-efficiency savings related to new energy technologies. The following programs within NRCS could possibly be used to provide energy-efficiency assistance:<sup>49</sup>

- Conservation Innovation Grants (CIG)
- Conservation loans
- Environmental Quality Incentives Program (EQIP)

## **DOE Renewable Energy Programs**

The Department of Energy administers several programs that provide financial assistance for energy efficiency, research and deployment, and renewable energy projects including various loan, loan guarantee, and grant programs.<sup>50</sup> In addition, DOE's Office of Energy Efficiency and Renewable Energy (EERE) provides funding for renewable energy and energy efficiency research and development.<sup>51</sup>

## **Assessment of Federal Biofuels Policy**

The impact of increased ethanol production on agricultural and rural economies was a subject of debate during the farm bill process. As a result, the 2008 farm bill included provisions requiring a series of reports assessing how ethanol production may be impacting the farm economy, the environment, and consumer food prices. Among these are:

- the Comprehensive Study of Biofuels (Sec. 15332) to be conducted by USDA, EPA, DOE, and the National Academy of Sciences (due by June 18, 2009);
- the Biofuels Infrastructure Study (Sec. 9002) by USDA, DOE, EPA, and DOT (no deadline specified); and
- an assessment of the economic impacts of expanded cellulosic biomass production on local economies and infrastructures as required by BCAP (due by June 18, 2012).

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<sup>49</sup> For more information see NRCS, USDA, at <http://www.nrcs.usda.gov>.

<sup>50</sup> For information on DOE funding opportunities, visit <http://energy.gov/funding-opportunities>. See also CRS Report R40110, *Biofuels Incentives: A Summary of Federal Programs*, for a list of DOE programs specifically related to biofuels.

<sup>51</sup> For information on EERE financial assistance, see [http://www1.eere.energy.gov/financing/types\\_assistance.html](http://www1.eere.energy.gov/financing/types_assistance.html).



In partial response to these study mandates, EPA, USDA, and DOE have produced several studies concerning various issues related to biofuels since the 2008 farm bill was enacted on June 18, 2008. In addition, numerous studies have been produced by the federal government, academia, and private think-tanks concerning the market effects of policy-driven biofuels production. A selection of key official government studies, as well as key examples of academic and think-tank studies, are listed in an **Appendix** to this report. The results or findings of these emerging reports that are otherwise intended to measure the success of the various USDA energy programs could result in subsequent adjustments to program implementation or to future legislation.

## **Energy Policy Issues for the 2012 Farm Bill**

### **Program Expiration and Baseline Funding**

Available funding to write the next farm bill will be based on the baseline projections of the cost of current farm bill programs by the Congressional Budget Office, and on varying budgetary assumptions about whether programs will continue. All thirteen bioenergy provisions of Title IX—with the exception of Sec. 9010, the Feedstock Flexibility Program for Bioenergy Producers—are authorized only for the life of the 2008 farm bill, FY2008 through FY2012. As a result, they do not have a budgetary baseline beyond FY2012.<sup>52</sup> Because of the current tight budget situation, it seems highly unlikely that any new money will be available to fund new or expiring programs. Therefore, the most likely way that any expiring energy programs can survive is to offset their projected costs with reductions in other mandatory programs or from other cost savings. See **Table 1** for a list that includes expiring energy programs and their funding levels.

### **Possible Redundancy Across USDA and DOE Energy Programs**

Although each of the various Title IX programs has somewhat different policy goals, most of them end up funding very similar types of projects—anaerobic digesters, wind turbines, solar panels, and biofuels. This is particularly true for the Bioenergy Program for Advanced Biofuels and REAP funded projects, as well as DOE-funded projects under the 1703 and 1705 loan guarantee programs. Also, research projects focused on renewable energy that are funded under REAP and BRDI, as well as certain EERE-funded programs, appear to have some potential for overlap. To actually measure the extent of overlap or similarity would require a project-by-project comparison. In general, USDA programs tend to focus on the primary energy source or feedstock, whereas DOE projects tend to focus on the conversion or processing technology; however, the difference often appears subtle to a lay person. As a result, some policymakers suggest that some energy programs could be merged or eliminated to counter possible redundancy, whereas others (particularly those whose district benefits from specific programs) are quick to argue the merits of the individual programs.

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<sup>52</sup> See CRS Report R41433, *Previewing the Next Farm Bill: Unfunded and Early-Expiring Provisions*.



## Cellulosic Biofuels Slow Development

The 2008 farm bill energy title provides more than \$1 billion in financial incentives and support to encourage the production and use of advanced (mainly cellulosic) biofuels.<sup>53</sup> Grants and loan guarantees leverage industry investments in new technologies and infrastructure, as well as in the production of cellulosic feedstocks. However, the principal program designed to help “kick start” the U.S. cellulosic biofuels sector was the Biomass Crop Assistance Program (BCAP, Sec. 9001). BCAP addressed the quintessential “chicken and egg” problem—how do you encourage producers to grow cellulosic biomass when there is no existing market for that biomass, and how do you encourage investors to build cellulosic biofuels plants when there is no known existing biomass feedstock supply? BCAP attempted to remove some of the risk for biomass growers by supporting the production of dedicated crop and forest cellulosic feedstocks and by providing incentives for harvest and post-production storage and transport.<sup>54</sup>

Despite support from BCAP and other federal programs, the cellulosic ethanol sector has been slow to develop. While the conversion technology appears to work in the laboratory, it appears to be difficult to move to the commercial stage. Currently, no cellulosic ethanol is produced on a commercial scale. Only a few small refineries (mostly pilot or demonstration in scope) are engaged in limited production. Due to the slow progress in cellulosic ethanol production, EPA has been compelled to substantially reduce the cellulosic biofuel RFS mandates set by Congress for the years 2010 through 2012—from 100 million gallons (mgals) in 2010 to a mandate of 6.5 mgals, from 250 mgals for 2011 to 6.6 mgals, and from 500 mgals for 2012 to a preliminary 3.5 to 12.9 mgals.<sup>55</sup>

The EPA waiver of the cellulosic biofuels RFS for three consecutive years, coupled with recent limitations imposed on BCAP funding (see “Section 9011: Biomass Crop Assistance Program (BCAP),” earlier in this report) and the increasing congressional climate of budget austerity, likely increase the uncertainty associated with the future investments needed to kick start this sector.<sup>56</sup>

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<sup>53</sup> Advanced biofuels include biofuels derived from cellulosic feedstocks; sugar and starch other than corn kernel-starch; waste material including crop residue, animal, plant, or food waste; diesel fuel produced from renewable biomass including vegetable oil and animal fat; butanol or other alcohols produced through the conversion of organic matter; and other fuels derived from cellulosic biomass. For more information, see CRS Report RL34738, *Cellulosic Biofuels: Analysis of Policy Issues for Congress*.

<sup>54</sup> For more information on BCAP, see CRS Report R41296, *Biomass Crop Assistance Program (BCAP): Status and Issues*.

<sup>55</sup> U.S. EPA, *Renewable Fuels: Regulations & Standards*, at <http://www.epa.gov/otaq/fuels/renewablefuels/regulations.htm>.

<sup>56</sup> For more information, see CRS Report R41106, *Meeting the Renewable Fuel Standard (RFS) Mandate for Cellulosic Biofuels: Questions and Answers*.

**Table I. 2008 Farm Bill Authorized Funding for Energy Provisions, FY2008-FY2012**  
(\$ millions)

Section <sup>a</sup>	Provision Name	Type	FY2008	FY2009	FY2010	FY2011	FY2012	Total
Sec. 7205	Nutrient Management Res. & Ext. Init.	Discr. <sup>b</sup>	SSAN	SSAN	SSAN	SSAN	SSAN	SSAN
Sec. 7207	Bioen. Fdstk + Energy. Eff. Res. & Ext. Init.	Discr. <sup>b</sup>	\$50	\$50	\$50	\$50	\$50	\$250
Sec. 7526	Sun Grant Program	Discr. <sup>b</sup>	\$75	\$75	\$75	\$75	\$75	\$375
Sec. 9002 <sup>a</sup>	Federal Biobased Markets Program	Mand.	\$1	\$2	\$2	\$2	\$2	\$9
		Discr. <sup>b</sup>	\$0	\$2	\$2	\$2	\$2	\$8
Sec. 9003 <sup>a</sup>	Biorefinery Assistance Program	Mand.	\$0	\$75	\$245	\$0	\$0	\$320
		Discr. <sup>b</sup>	\$0	\$150	\$150	\$150	\$150	\$600
Sec. 9004 <sup>a</sup>	Repowering Assistance Program	Mand.	\$0	\$35	\$0	\$0	\$0	\$35
		Discr. <sup>b</sup>	\$0	\$15	\$15	\$15	\$15	\$60
Sec. 9005 <sup>a</sup>	Bioenergy Program for Adv. Biofuels	Mand.	\$0	\$55	\$55	\$85	\$105	\$300
		Discr. <sup>b</sup>	\$0	\$25	\$25	\$25	\$25	\$100
Sec. 9006 <sup>a</sup>	Biodiesel Fuel Education Program	Mand.	\$1	\$1	\$1	\$1	\$1	\$5
Sec. 9007 <sup>a</sup>	Rural Energy for America Prog. (REAP)	Mand.	\$0	\$55	\$60	\$70	\$70	\$255
		Discr. <sup>b</sup>	\$0	\$25	\$25	\$25	\$25	\$100
Sec. 9008 <sup>a</sup>	Biomass Research and Dev. Act (BRDA)	Mand.	\$0	\$20	\$28	\$30	\$40	\$118
		Discr. <sup>b</sup>	\$0	\$35	\$35	\$35	\$35	\$140
Sec. 9009 <sup>a</sup>	Rural Energy Self-Sufficiency Initiative	Discr. <sup>b</sup>	\$0	\$5	\$5	\$5	\$5	\$20
Sec. 9010 <sup>a</sup>	Feedstock Flex. Prog. for Bioenergy Prod.	Mand.	SSAN	SSAN	SSAN <sup>c</sup>	SSAN	SSAN	SSAN
Sec. 9011 <sup>a</sup>	Biomass Crop Assistance Prog. (BCAP)	Mand.	SSAN	SSAN	SSAN	SSAN	SSAN	SSAN
Sec. 9012 <sup>a</sup>	Forest Biomass for Energy	Discr. <sup>b</sup>	\$0	\$15	\$15	\$15	\$15	\$60
Sec. 9013 <sup>a</sup>	Community Wood Energy Program	Discr. <sup>b</sup>	\$0	\$5	\$5	\$5	\$5	\$20
Sec. 9002	Biofuels Infrastructure Study	None	\$0	\$0	\$0	\$0	\$0	\$0
Sec. 9003	Renewable Fertilizer Study	Discr. <sup>b</sup>	\$0	\$1	\$0	\$0	\$0	\$1
<b>Total Discretionary Funding Authorized<sup>b</sup></b>			\$125	\$403	\$402	\$402	\$402	\$1,734
<b>Total Mandatory Funding Authorized</b>			\$2	\$243	\$391	\$188	\$218	\$1,042

**Source:** P.L. 110-246 (Food, Conservation, and Energy Act of 2008).

**Notes:** "SSAN" = Such sums as necessary.

- a. Section 9001 of the 2008 farm bill (P.L. 100-246) amends Title IX of the 2002 farm bill (P.L. 107-171). Sections 9001 through 9013 of the table are the amended section numbers.
- b. Many of the discretionary programs never received any funding or received lesser amounts through the annual appropriations process than originally authorized in the farm bill.
- c. The authority for funding under BCAP was reduced to \$552 million in FY2010 and \$432 million in FY2011 under the Supplemental Appropriations Act of 2010 (P.L. 111-212). BCAP funding for FY2011 was reduced a second time to \$112 million under the Department of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10).

**Table 2. 2008 Farm Bill Energy Provision Funding: Authorized and Available, FY2010 to FY2012**

(\$ millions)

Section <sup>a</sup>	Provision Name	Funds Type	FY2008		FY2009		FY2010		FY2011		FY2012	
			FB	Available	FB	Available	FB	Available	FB	Available	FB	Available
Sec. 7205	Nutrient Man. Res. & Ext. Init.	Discr.	SSAN	\$0	SSAN	\$0	SSAN	\$0	SSAN	\$0	SSAN	NA
Sec. 7207	Bio.Fdstk+En.Eff.Res.&Ext. Init.	Discr.	\$50	\$0	\$50	\$0	\$50	\$0	\$50	\$0	\$50	NA
Sec. 7526	Sun Grant Program	Discr.	\$75	\$0	\$75	\$0	\$75	\$2	\$75	\$0	\$75	NA
Sec. 9002	Fed. Biobased Markets Prog.	Mand.	\$1	\$1	\$2	\$2	\$2	\$2	\$2	\$2	\$2	NA
		Discr.	\$0	\$0	\$2	\$0	\$2	\$0	\$2	\$0	\$2	NA
Sec. 9003	Biorefinery Assist. Prog.	Mand. <sup>b</sup>	\$0	\$0	\$75	\$75	\$245	\$245 <sup>b</sup>	\$0	\$0 <sup>b</sup>	\$0	NA
		Discr.	\$0	\$0	\$150	\$0	\$150	\$0	150	\$0	\$150	NA
Sec. 9004	Repowering Assistance Prog.	Mand. <sup>b</sup>	\$0	\$0	\$35	\$35	\$0	\$20 <sup>b</sup>	\$0	\$0 <sup>b</sup>	\$0	NA
		Discr.	\$0	\$0	\$15	\$0	\$15	\$15	\$15	\$0	\$15	NA
Sec. 9005	Bioen. Prog. for Adv. Biof.	Mand. <sup>b</sup>	\$0	\$0	\$55	\$55	\$55	\$55 <sup>b</sup>	\$85	\$85 <sup>b</sup>	\$105	NA
		Discr.	\$0	\$0	\$25	\$0	\$25	\$0	\$25	\$0	\$25	NA <sup>c</sup>
Sec. 9006	Biodiesel Education Prog.	Mand.	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	NA
Sec. 9007	REAP	Mand. <sup>b</sup>	\$0	\$0	\$55	\$55	\$60	\$60 <sup>b</sup>	\$70	\$70 <sup>b</sup>	\$70	NA <sup>c</sup>
		Discr.	\$0	\$36	\$25	\$5	\$25	\$40	\$25	\$5	\$25	NA
Sec. 9008	BRDI	Mand. <sup>b</sup>	\$0	\$0	\$20	\$20	\$28	\$28 <sup>b</sup>	\$30	\$30 <sup>b</sup>	\$40	NA
		Discr.	\$0	\$0	\$35	\$0	\$35	\$0	\$35	\$0	\$35	NA
Sec. 9009	Rural Energy Self-Suff. Init.	Discr.	\$0	\$0	\$5	\$0	\$5	\$0	\$5	\$0	\$5	NA
Sec. 9010	Fdsk Flx. Prog. for Bio. Prod.	Mand.	SSAN	SSAN <sup>d</sup>	SSAN	SSAN <sup>d</sup>	SSAN	SSAN <sup>d</sup>	SSAN	SSAN <sup>d</sup>	SSAN	NA <sup>d</sup>
Sec. 9011	BCAP	Mand.	SSAN	SSAN	SSAN	SSAN	SSAN	\$552 <sup>e</sup>	SSAN	\$112 <sup>f</sup>	SSAN	NA <sup>c</sup>
Sec. 9012	Forest Biomass for Energy	Discr.	\$0	\$0	\$15	\$0	\$15	\$0	\$15	\$0	\$15	NA
Sec. 9013	Comm. Wood Energy Prog.	Discr.	\$0	\$0	\$5	\$0	\$5	\$0	\$5	\$0	\$5	NA

**Source:** Compiled by CRS using the Food, Conservation, and Energy Act of 2008 (P.L. 110-246), the President's annual budget, and annual appropriations acts.

**Notes:** FB = 2008 farm bill authorized level; Available = for discretionary funds it is the amount appropriated, for mandatory funds it is the amount authorized in the 2008 farm bill less any reductions in annual appropriations acts.

- a. Section 9001 of the 2008 farm bill (P.L. 110-246) amends title IX of the 2002 farm bill (P.L. 107-171). Sections 9002 through 9013 of the table are the amended section numbers.
- b. Title IX programs 9003, 9004, 9005, 9007, and 9008 include funding that is authorized “to remain available until expended,” therefore carryover could exist from previous years if funds are unobligated.
- c. The House-passed FY2012 appropriation bill, Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2012 (H.R. 2112) would eliminate mandatory funding for BCAP and REAP, reduce mandatory funding for the Bioenergy Program for Advanced Biofuels to \$55 million, and reduce REAP discretionary funding to \$2.2 million. The Senate has not yet acted upon an FY2012 appropriations bill.
- d. This program is “triggered” when a sugar surplus exists. According to USDA, the Commodity Credit Corporation (CCC) does not have a surplus inventory of sugar, therefore this program has not been implemented.
- e. The Supplemental Appropriations Act of 2010 (P.L. 111-212) limits mandatory spending on BCAP by allowing no more than \$552 million in FY2010 and \$432 million in FY2011. 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*.
- f. BCAP funding for FY2011 was reduced a second time to \$112 million under the Dept. of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10).

## Appendix. Key Reports on Biofuels

### Chronologically Ordered Federal Government Reports

DOE, *U.S. Billion-Ton Update: Biomass Supply for a Bioenergy and Bioproducts Industry*, Oak Ridge National Laboratory (ORNL), DOE, August 2011; available at [http://www1.eere.energy.gov/biomass/pdfs/billion\\_ton\\_update.pdf](http://www1.eere.energy.gov/biomass/pdfs/billion_ton_update.pdf).

USDA, *Renewable Power Opportunities for Rural Communities*, Office of Energy Policy and New Uses, USDA Office of the Chief Economist, April 2011; available at <http://www.usda.gov/oce/reports/energy/RenewablePowerOpportunities-Final.pdf>.

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U.S. EPA, *Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis*, EPA-420-R-10-006, Assessment and Standards Division, Office of Transportation and Air Quality, U.S. EPA, February 2010; available at <http://www.epa.gov/otaq/renewablefuels/420r10006.pdf>.

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