

**Biomass Research and Development Act**  
**Revised by the Energy Policy Act of 2005**  
**Amended by the Energy Independence and Security Act of 2007**

**TITLE III—BIOMASS RESEARCH AND DEVELOPMENT ACT OF 2000**

**SEC. 301. [7 U.S.C. 7624 note] SHORT TITLE.**

This title may be cited as the ‘‘Biomass Research and Development Act of 2000’’.

**SEC. 302. [7 U.S.C. 7624 note] FINDINGS.**

Congress finds that—

- (1) conversion of biomass into biobased industrial products offers outstanding potential for benefit to the national interest through—
  - (A) improved strategic security and balance of payments;
  - (B) healthier rural economies;
  - (C) improved environmental quality;
  - (D) near-zero net greenhouse gas emissions;
  - (E) technology export; and
  - (F) sustainable resource supply;
- (2) the key technical challenges to be overcome in order for biobased industrial products to be cost-competitive are finding new technology and reducing the cost of technology for converting biomass into desired biobased industrial products;
- (3) biobased fuels, such as ethanol, have the clear potential to be sustainable, low cost, and high performance fuels that are compatible with both current and future transportation systems and provide near-zero net greenhouse gas emissions;
- (4) biobased chemicals have the clear potential for environmentally benign product life cycles;
- (5) biobased power can—
  - (A) provide environmental benefits;
  - (B) promote rural economic development; and
  - (C) diversify energy resource options;
- (6) many biomass feedstocks suitable for industrial processing show the clear potential for sustainable production, in some cases resulting in improved soil fertility and carbon sequestration;
- (7)(A) grain processing mills are biorefineries that produce a diversity of useful food, chemical, feed, and fuel products; and  
(B) technologies that result in further diversification of the range of value-added biobased industrial products can meet a key need for the grain processing industry;
- (8)(A) cellulosic feedstocks are attractive because of their low cost and widespread availability; and  
(B) research resulting in cost-effective technology to overcome the recalcitrance of cellulosic biomass would allow biorefineries to produce fuels and bulk chemicals on a very large scale, with a commensurately large realization of the benefit described in paragraph (1);
- (9) research into the fundamentals to understand important mechanisms of biomass conversion can be expected to accelerate the application and advancement of biomass processing technology by—
  - (A) increasing the confidence and speed with which new technologies can be scaled up; and
  - (B) giving rise to processing innovations based on new knowledge;

(10) the added utility of biobased industrial products developed through improvements in processing technology would encourage the design of feedstocks that would meet future needs more effectively;

(11) the creation of value-added biobased industrial products would create new jobs in construction, manufacturing, and distribution, as well as new higher-valued exports of products and technology;

(12)(A) because of the relatively short-term time horizon characteristic of private sector investments, and because many benefits of biomass processing are in the national interest, it is appropriate for the Federal Government to provide precommercial investment in fundamental research and research-driven innovation in the biomass processing area; and

(B) such an investment would provide a valuable complement to ongoing and past governmental support in the biomass processing area; and

(13) several prominent studies, including studies by the President's Committee of Advisors on Science and Technology and the National Research Council—

(A) support the potential for large research-driven advances in technologies for production of biobased industrial products as well as associated benefits; and

(B) document the need for a focused, integrated, and innovation-driven research effort to provide the appropriate progress in a timely manner.

### **SEC. 303. [7 U.S.C. 7624 note] DEFINITIONS.**

In this title:

(1) **ADVISORY COMMITTEE.**—The term “Advisory Committee” means the Biomass Research and Development Technical Advisory Committee established by section 306.

(2) **BIOBASED FUEL.**—The term ‘biobased fuel’ means any transportation fuel produced from biomass.

(3) **BIOBASED PRODUCT.**—The term ‘biobased product’ means an industrial product (including chemicals, materials, and polymers) produced from biomass, or a commercial or industrial product (including animal feed and electric power) derived in connection with the conversion of biomass to fuel.;

(4) **BIOMASS.**—The term “biomass” means any organic matter that is available on a renewable or recurring basis, including agricultural crops and trees, wood and wood wastes and residues, plants (including aquatic plants), grasses, residues fibers, and animal wastes, municipal wastes, and other waste materials.

(5) **BOARD.**—The term “Board” means the Biomass Research and Development Board established by section 305.

(6) **DEMONSTRATION.**—The term ‘demonstration’ means demonstration of technology in a pilot plant or semi-works scale facility.

(7) **INITIATIVE.**—The term “Initiative” means the Biomass Research and Development Initiative established under section 307.

(8) **INSTITUTION OF HIGHER EDUCATION.**—The term “institution of higher education” has the meaning given the term in section 102(a) of the Higher Education Act of 1965 (20 U.S.C. 1002(a)).

(9) **NATIONAL LABORATORY.**—The term ‘National Laboratory’ has the meaning given that term in section 2 of the Energy Policy Act of 2005.

(10) **POINT OF CONTACT.**—The term “point of contact” means a point of contact designated under section 304(d).

**SEC. 304. [7 U.S.C. 7624 note] COOPERATION AND COORDINATION IN BIOMASS RESEARCH AND DEVELOPMENT.**

(a) **IN GENERAL.**—The Secretary of Agriculture and the Secretary of Energy shall cooperate with respect to, and coordinate, policies and procedures that promote research and development leading to the production of biobased fuels and biobased products.

(b) **POINTS OF CONTACT.**—

(1) **IN GENERAL.**—To coordinate research and development programs and activities relating to biobased industrial products that are carried out by their respective Departments—

(A) the Secretary of Agriculture shall designate, as the point of contact for the Department of Agriculture, an officer of the Department of Agriculture appointed by the President to a position in the Department before the date of the designation, by and with the advice and consent of the Senate; and

(B) the Secretary of Energy shall designate, as the point of contact for the Department of Energy, an officer of the Department of Energy appointed by the President to a position in the Department before the date of the designation, by and with the advice and consent of the Senate.

(2) **DUTIES.**—The points of contact shall jointly—

(A) assist in arranging interlaboratory and site-specific supplemental agreements for research and development projects relating to biobased fuels and biobased products;

(B) serve as cochairpersons of the Board;

(C) administer the Initiative; and

(D) respond in writing to each recommendation of the Advisory Committee made under section 306(c).

**SEC. 305. [7 U.S.C. 7624 note] BIOMASS RESEARCH AND DEVELOPMENT BOARD.**

(a) **ESTABLISHMENT.**—There is established the Biomass Research and Development Board, which shall supersede the Interagency Council on Biobased Products and Bioenergy established by Executive Order No. 13134, to coordinate programs within and among departments and agencies of the Federal Government for the purpose of promoting the use of biobased fuels and biobased products by—

(1) maximizing the benefits deriving from Federal grants and assistance; and

(2) bringing coherence to Federal strategic planning.

(b) **MEMBERSHIP.**—The Board shall consist of—

(1) the point of contact of the Department of Energy designated under section 304(b)(1)(B), who shall serve as cochairperson of the Board;

(2) the point of contact of the Department of Agriculture designated under section 304(b)(1)(A), who shall serve as cochairperson of the Board;

(3) a senior officer of each of the Department of the Interior, the Environmental Protection Agency, the National Science Foundation, and the Office of Science and Technology Policy, each of whom shall—

(A) be appointed by the head of the respective agency; and

(B) have a rank that is equivalent to the rank of the points of contact; and

(4) at the option of the Secretary of Agriculture and the Secretary of Energy, other members appointed by the Secretaries after consultation with the members described in paragraphs (1) through (3)).

- (c) DUTIES.—The Board shall—
- (1) coordinate research and development activities relating to biobased fuels and biobased products—
    - (A) between the Department of Agriculture and the Department of Energy; and
    - (B) with other departments and agencies of the Federal Government;
  - (2) provide recommendations to the points of contact concerning administration of this title;
  - (3) ensure that—
    - (A) solicitations are open and competitive with awards made annually; and
    - (B) objectives and evaluation criteria of the solicitations are clearly stated and minimally prescriptive, with no areas of special interest; and
  - (4) ensure that the panel of scientific and technical peers assembled under section 307(g)(1)(C) to review proposals is composed predominantly of independent experts selected from outside the Departments of Agriculture and Energy.
- (d) FUNDING.—Each agency represented on the Board is encouraged to provide funds for any purpose under this title.
- (e) MEETINGS.—The Board shall meet at least quarterly to enable the Board to carry out the duties of the Board under subsection (c).

**SEC. 306. [7 U.S.C. 7624 note] BIOMASS RESEARCH AND DEVELOPMENT TECHNICAL ADVISORY COMMITTEE.**

- (a) ESTABLISHMENT.—There is established the Biomass Research and Development Technical Advisory Committee, which shall supersede the Advisory Committee on Biobased Products and Bioenergy established by Executive Order No. 13134—
- (1) to advise the Secretary of Energy, the Secretary of Agriculture, and the points of contact concerning—
    - (A) the technical focus and direction of requests for proposals issued under the Initiative; and
    - (B) procedures for reviewing and evaluating the proposals;
  - (2) to facilitate consultations and partnerships among Federal and State agencies, agricultural producers, industry, consumers, the research community, and other interested groups to carry out program activities relating to the Initiative; and
  - (3) to evaluate and perform strategic planning on program activities relating to the Initiative.
- (b) MEMBERSHIP.—
- (1) IN GENERAL.—The Advisory Committee shall consist of—
    - (A) an individual affiliated with the biofuels industry;
    - (B) an individual affiliated with the biobased industrial and commercial products industry;
    - (C) an individual affiliated with an institution of higher education who has expertise in biobased fuels and biobased products;
    - (D) two prominent engineers or scientists from government or academia who have expertise in biobased fuels and biobased products;
    - (E) an individual affiliated with a commodity trade association;
    - (F) an individual affiliated with an environmental or conservation organization;
    - (G) two individuals associated with State government who have expertise in biobased fuels and biobased products;

- (H) an individual with expertise in energy and environmental analysis;
  - (I) an individual with expertise in the economics of biobased fuels and biobased products;
  - (J) an individual with expertise in agricultural economics; and
  - (K) at the option of the points of contact, other members.
- (2) APPOINTMENT.—The members of the Advisory Committee shall be appointed by the points of contact.
- (c) DUTIES.—The Advisory Committee shall—
- (1) advise the points of contact with respect to the Initiative; and
  - (2) evaluate whether, and make recommendations in writing to the Board to ensure that—
    - (A) funds authorized for the Initiative are distributed and used in a manner that is consistent with the objectives, purposes, and considerations of the Initiative;
    - (B) solicitations are open and competitive with awards made annually and that objectives and evaluation criteria of the solicitations are clearly stated and minimally prescriptive, with no areas of special interest;
    - (C) the points of contact are funding proposals under this title that are selected on the basis of merit, as determined by an independent panel of scientific and technical peers predominantly from outside the Department of Agriculture and Energy; and
    - (D) activities under this title are carried out in accordance with this title.

**SEC. 307. [7 U.S.C. 7624 note] BIOMASS RESEARCH AND DEVELOPMENT INITIATIVE.**

- (a) IN GENERAL.—The Secretary of Agriculture and the Secretary of Energy, acting through their respective points of contact and in consultation with the Board, shall establish and carry out a Biomass Research and Development Initiative under which competitively awarded grants, contracts, and financial assistance are provided to, or entered into with, eligible entities to carry research on, and development and demonstration of, biobased fuels and biobased products, and the methods, practices and technologies, biotechnology, for their production.
- (b) OBJECTIVES.—The objectives of the Initiative are to develop—
- (1) technologies and processes necessary for abundant commercial production of biobased fuels at prices competitive with fossil fuels;
  - (2) high-value biobased products—
    - (A) to enhance the economic viability of biobased fuels and power; and
    - (B) as substitutes for petroleum-based feedstocks and products; and
  - (3) a diversity of sustainable domestic sources of biomass for conversion to biobased fuels and biobased products.
- (c) PURPOSES.—The purposes of the Initiative are—
- (1) to increase the energy security of the United States;
  - (2) to create jobs and enhance the economic development of the rural economy;
  - (3) to enhance the environment and public health; and
  - (4) to diversify markets for raw agricultural and forestry products.
- (d) TECHNICAL AREAS.—To advance the objectives and purposes of the Initiative, the Secretary of Agriculture and the Secretary of Energy, in consultation with the Administrator of the Environmental Protection Agency and heads of other appropriate departments and agencies (referred to in this section as the Secretaries’), shall direct research and development toward—

(1) feedstock production through the development of crops and cropping systems relevant to production of raw materials for conversion to biobased fuels and biobased products, including—

- (A) development of advanced and dedicated crops with desired features, including enhanced productivity, broader site range, low requirements for chemical inputs, and enhanced processing;
- (B) advanced crop production methods to achieve the features described in subparagraph (A);
- (C) feedstock harvest, handling, transport, and storage; and
- (D) strategies for integrating feedstock production into existing managed land;

(2) overcoming recalcitrance of cellulosic biomass through developing technologies for converting cellulosic biomass into intermediates that can subsequently be converted into biobased fuels and biobased products, including—

- (A) pretreatment in combination with enzymatic or microbial hydrolysis; and
- (B) thermochemical approaches, including gasification and pyrolysis;

(3) product diversification through technologies relevant to production of a range of biobased products (including chemicals, animal feeds, and cogenerated power) that eventually can increase the feasibility of fuel production in a biorefinery, including—

- (A) catalytic processing, including thermochemical fuel production;
- (B) metabolic engineering, enzyme engineering, and fermentation systems for biological production of desired products or cogeneration of power;
- (C) product recovery;
- (D) power production technologies; and
- (E) integration into existing biomass processing facilities, including starch ethanol plants, paper mills, and power plants;

(4) analysis that provides strategic guidance for the application of biomass technologies in accordance with realization of improved sustainability and environmental quality, cost effectiveness, security, and rural economic development, usually featuring system-wide approaches;

(5) the improvement and development of analytical tools to facilitate the analysis of life-cycle energy and greenhouse gas emissions, including emissions related to direct and indirect land use changes, attributable to all potential biofuel feedstocks and production processes; and

(6) the systematic evaluation of the impact of expanded biofuel production on the environment, including forest lands, and on the food supply for humans and animals.

(e) **ADDITIONAL CONSIDERATIONS.**—Within the technical areas described in subsection (d), and in addition to advancing the purposes described in subsection (c) and the objectives described in subsection (b), the Secretaries shall support research and development—

(1) to create continuously expanding opportunities for participants in existing biofuels production by seeking synergies and continuity with current technologies and practices, such as the use of dried distillers grains as a bridge feedstock;

- (2) to maximize the environmental, economic, and social benefits of production of biobased fuels and biobased products on a large scale through life-cycle economic and environmental analysis and other means;
- (3) to assess the potential of Federal land and land management programs as feedstock resources for biobased fuels and biobased products, consistent with the integrity of soil and water resources and with other environmental considerations; and
- (4) to facilitate small-scale production, local, and on-farm use of biofuels, including the development of small-scale gasification technologies for production of biofuel from cellulosic feedstocks.

(f) **ELIGIBLE ENTITIES.**—To be eligible for a grant, contract, or assistance under this section, an applicant shall be—

- (1) an institution of higher education;
- (2) a National Laboratory;
- (3) a Federal research agency;
- (4) a State research agency;
- (5) a private sector entity;
- (6) a nonprofit organization; or
- (7) a consortium of 2 or more entities described in paragraphs (1) through (6).

(g) **ADMINISTRATION.**—

(1) **IN GENERAL.**—After consultation with the Board, the points of contact shall—

- (A) publish annually 1 or more joint requests for proposals for grants, contracts, and assistance under this section;
- (B) require that grants, contracts, and assistance under this section be awarded competitively, on the basis of merit, after the establishment of procedures that provide for scientific peer review by an independent panel of scientific and technical peers; and
- (C) give some preference to applications that—
  - (i) involve a consortia of experts from multiple institutions;
  - (ii) encourage the integration of disciplines and application of the best technical resources; and
  - (iii) increase the geographic diversity of demonstration projects.

(2) **DISTRIBUTION OF FUNDING BY TECHNICAL AREA.**—Of the funds authorized to be appropriated for activities described in this section, funds shall be distributed for each of fiscal years 2007 through 2010 so as to achieve an approximate distribution of—

- (A) 20 percent of the funds to carry out activities for feedstock production under subsection (d)(1);
- (B) 45 percent of the funds to carry out activities for overcoming recalcitrance of cellulosic biomass under subsection (d)(2);
- (C) 30 percent of the funds to carry out activities for product diversification under subsection (d)(3); and
- (D) 5 percent of the funds to carry out activities for strategic guidance under subsection (d)(4).

(3) **DISTRIBUTION OF FUNDING WITHIN EACH TECHNICAL AREA.**—Within each technical area described in paragraphs (1) through (3) of subsection (d), funds shall be distributed for each of fiscal years 2007 through 2010 so as to achieve an approximate distribution of—

- (A) 15 percent of the funds for applied fundamentals;
- (B) 35 percent of the funds for innovation; and

(C) 50 percent of the funds for demonstration.

(4) **MATCHING FUNDS.**—

(A) **IN GENERAL.**—A minimum 20 percent funding match shall be required for demonstration projects under this title.

(B) **COMMERCIAL APPLICATIONS.**—A minimum of 50 percent funding match shall be required for commercial application projects under this title.

(5) **TECHNOLOGY AND INFORMATION TRANSFER TO**

**AGRICULTURAL USERS.**—The Administrator of the Cooperative State Research, Education, and Extension Service and the Chief of the Natural Resources Conservation Service shall ensure that applicable research results and technologies from the Initiative are adapted, made available, and disseminated through those services, as appropriate.

**SEC. 308. [7 U.S.C. 7624 note] ADMINISTRATIVE SUPPORT AND FUNDS.**

(a) **IN GENERAL.**—To the extent administrative support and funds are not provided by other agencies under subsection (b), the Secretary of Energy and the Secretary of Agriculture may provide such administrative support and funds of the Department of Energy and the Department of Agriculture to the Board and the Advisory Committee as are necessary to enable the Board and the Advisory Committee to carry out their duties under this title.

(b) **OTHER AGENCIES.**—The heads of the agencies referred to in section 305(b)(3), and the other members appointed under section 305(b)(4), may, and are encouraged to, provide administrative support and funds of their respective agencies to the Board and the Advisory Committee.

(c) **LIMITATION.**—Not more than 4 percent of the amount appropriated for each fiscal year under section 307(f) may be used to pay the administrative costs of carrying out this title.

**SEC. 309. [7 U.S.C. 7624 note] REPORTS.**

(a) **INITIAL REPORT.**—Not later than 180 days after the date of the enactment of this Act, the Secretary of Energy and the Secretary of Agriculture shall jointly submit to Congress a report that—

(1) identifies the points of contact, the members of the Board, and the members of the Advisory Committee;

(2) describes the status of current biobased industrial product research and development efforts in both the Federal Government and private sector;

(3) includes a section prepared by the Board that establishes a set of criteria to assess the potential of biobased industrial products, which shall include for both biomass production and transformation into biobased industrial products—

(A) an energy accounting;

(B) an environmental impact assessment; and

(C) an economic assessment; and

(4) describes the research and development goals of the Initiative, including how funds will be allocated in order to accomplish those goals.

(b) **ANNUAL REPORTS.**—For each fiscal year for which funds are made available to carry out this title, the Secretary of Energy and the Secretary of Agriculture shall jointly submit to Congress a detailed report on—

(1) the status and progress of the Initiative, including a report from the Advisory Committee on whether funds appropriated for the Initiative have been distributed and used in a manner that—

(A) is consistent with the objectives, purposes, and additional considerations described in subsections (b) through (e) of section 307;  
(B) uses the set of criteria established under subsection (a)(3);  
(C) achieves the distribution of funds described in paragraphs (2) and (3) of section 307(g); and  
(D) takes into account any recommendations that have been made by the Advisory Committee;

(2) the general status of cooperation and research and development efforts carried out at each agency with respect to biobased fuels and biobased products, including a report from the Advisory Committee on whether the points of contact are funding proposals that are selected under section 307(c)(2)(C); and  
(3) the plans of the Secretary of Energy and the Secretary of Agriculture for addressing concerns raised in the report, including concerns raised by the Advisory Committee.

(c) UPDATES.—The Secretary and the Secretary of Energy shall update the Vision and Roadmap documents prepared for Federal biomass research and development activities.

**SEC. 310. [7 U.S.C. 7624 note] FUNDING.**

(a) FUNDING.—Of funds of the Commodity Credit Corporation, the Secretary shall make available to carry out this title—

- (1) \$5,000,000 for fiscal year 2002; and
- (2) \$14,000,000 for each of fiscal years 2003 through 2007; to remain available until expended.

(b) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts transferred under subsection (a), there are authorized to be appropriated to carry out this title \$200,000,000 for each fiscal years 2006 through 2015.