PROMOTING BIOENERGY AND BIOBASED PRODUCTS

The President's FY2001 budget proposal includes a new initiative in research and development in bio-based technologies, which convert crops, trees, and other "biomass" into a vast array of fuels and products. Biobased industries use agricultural, forest, and aquatic resources to make an array of commercial products including fuels, electricity, chemicals, adhesives, lubricants, and building materials. The initiative supports the President's August 1999 Executive Order 13134 and Memorandum on Promoting Biobased Products and Bioenergy, aimed at tripling U.S. use of biobased products and bioenergy by 2010.

The initiative provides an increase of more than $93 million over the amounts available for FY 2000, with $49 million directed towards the Department of Energy (DOE) and $44 million for increased R&D efforts at the Department of Agriculture (USDA). In addition to this increase in R&D, the Commodity Credit Corporation will provide $100 million in FY 2000 and up to $150 million in FY 2001 and 2002 in incentive payments to encourage production of biobased fuels.

	FY 2000 ($M)	FY 2001 ($M)	Percent Increase
U.S. Department of Agriculture	71	115	62%
U.S. Department of Energy	125	174	39%
Total	196	289	47%

Reaching the President's goal would generate billions of dollars of new income for farmers and diversify and strengthen the rural economy producing 50,000 new, high-technology jobs in small processing plants in rural America and up to 130,000 such jobs in biopower, bioproducts, and biofuels industries. It would also generate 348 million barrels of oil a year, equal to 158 super tankers and would lower the emissions of greenhouse gases by 100 million tons, equal to the amount emitted by 70 million cars.

A major goal of this initiative is making biomass a viable competitor to fossil fuels as an energy source and chemical feedstock while protecting the environment. Continuing advances in forest and farm technology, molecular biology, and other areas make this goal achievable, but capturing the goal will require an unprecedented effort to support research in universities, companies, and our national laboratories. In the past few years, for example, federal research has developed techniques that greatly accelerates the production of sugars and other useful chemicals from materials like corn stover and wood. Creative companies have taken research results from such investments and are making major investments. Cargill-Dow Polymers, for example, recently announced plans to build a $300 million production facility that will convert corn based sugars to plastic fibers that can be used to create products that are all natural and biodegradable. In the near future we can expect production of loose-fill packaging materials from a combination of plastic resins and natural polymers made from biomass. The research funded under this initiative will ensure a continuing flow of the basic innovations on which such investments can be made.

Many uses for biomass materials are possible in the near future and this initiative will support research concepts on a competitive basis. This will include support for integrated systems capable of processing feedstocks simultaneously into a variety of products such as fuels, chemicals, and electricity. Much like today's petroleum-based refineries, the mix of products from these facilities will depend on market conditions. The research aims to understand the basic chemistry of cellulose and other materials in biomass, and develop new thermal, chemical, and bio-chemical techniques for converting these materials into useful forms.

The President's August 1999 Executive Order instructs DOE, USDA, NSF, EPA and other agencies, to work closely together in supporting the broad range of needed research and development efforts. The research will support research partnerships linking industry, university, and government research facilities selected on a competitive basis. Key areas of new research activity will include:

- Development of inexpensive cellulase systems to break down cellulose into low-cost sugars for the production of bio-based chemicals and bioenergy. This will allow woody and grassy crops and agricultural waste such as corn stalks to take the place of high-value grain and food crops as biofuel feedstocks.
- Renewable Bioproducts, using multi-disciplinary and university/industry partnerships to develop and accelerate adoption of possible "leap-frog" technologies for converting crops, trees and residues into chemical feedstocks and consumer products.
- Biopower, promoting both the integration of biomass gasification systems with modern gas-turbine/steam-turbine generation systems, and the co-firing of biomass with coal at levels ranging from 5-15% biomass by heat value.
- Methane gas recovery pilots to reduce greenhouse gas emissions from livestock operations, providing a clean energy source to the producer, and providing assistance to farmers that want to produce or market biobased products.
- Expanded Agricultural Research to develop biobased materials from commodities and bioproducts, and convert biomass to energy.
- Competitive resources for research partnerships involving universities that will complement the new Initiative for Future Agriculture and Food Systems.
- Rural Development grants to rural electric cooperatives to develop pilot projects to demonstrate the commercial viability of small-scale biomass fuel generation, grants for technical assistance to cooperatives for processing and marketing biobased products, and loans for facilities and operating capital for organizations engaged in biobased production activities.
- The Commodity Credit Corporation will accelerate commercial investment in innovative bioproduct and bioenergy technologies by providing up to $100 million in FY 2000 and up to $150 million in FY 2001 and 2002 in incentive payments to ethanol and other bioenergy producers to expand production of biobased fuels. Payments would be made on a portion of the increase in agricultural commodities purchased for expanded bioenergy production, with smaller and cooperatively-owned facilities receiving higher payment rates.
- Expanded Forest Service research on faster-growing trees and the use of small-diameter trees for commercial, biobased products.