techniques for power flow through existing high voltage transmission lines.

Subtitle C—Renewable Energy

SEC. 931. RENEWABLE ENERGY.

(a) IN GENERAL.—

(1) OBJECTIVES.—The Secretary shall conduct programs of renewable energy research, development, demonstration, and commercial application, including activities described in this subtitle. Such programs shall take into consideration the following objectives:

(A) Increasing the conversion efficiency of all forms of renewable energy through improved technologies.

(B) Decreasing the cost of renewable energy generation and delivery.

(C) Promoting the diversity of the energy supply.

(D) Decreasing the dependence of the United States on foreign energy supplies.

(E) Improving United States energy security.

(F) Decreasing the environmental impact of energy-related activities.

(G) Increasing the export of renewable generation equipment from the United States.

(2) PROGRAMS.—

(A) SOLAR ENERGY.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for solar energy, including—

(i) photovoltaics;

(ii) solar hot water and solar space heating;

(iii) concentrating solar power;

(iv) lighting systems that integrate sunlight and electrical lighting in complement to each other in common lighting fixtures for the purpose of improving energy efficiency;

(v) manufacturability of low cost, high quality solar systems; and

(vi) development of products that can be easily integrated into new and existing buildings.

(B) WIND ENERGY.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for wind energy, including—

(i) low speed wind energy;

(ii) offshore wind energy;

(iii) testing and verification (including construction and operation of a research and testing facility capable of testing wind turbines); and

(iv) distributed wind energy generation.

(C) GEOTHERMAL.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for geothermal energy. The program shall focus on developing improved technologies for reducing the costs of geothermal energy installations, including technologies for—

(i) improving detection of geothermal resources;

(ii) decreasing drilling costs;

(iii) decreasing maintenance costs through improved materials;

(iv) increasing the potential for other revenue sources, such as mineral production; and

(v) increasing the understanding of reservoir life cycle and management.

(D) HYDROPOWER.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for cost competitive technologies that enable the development of new and incremental hydropower capacity, adding to the diversity of the energy supply of the United States, including:

(i) Fish-friendly large turbines.

(ii) Advanced technologies to enhance environmental performance and yield greater energy efficiencies.

(E) MISCELLANEOUS PROJECTS.—The Secretary shall conduct research, development, demonstration, and commercial application programs for—

(i) ocean energy, including wave energy;

(ii) the combined use of renewable energy technologies with one another and with other energy technologies, including the combined use of wind power and coal gasification technologies;

(iii) renewable energy technologies for cogeneration of hydrogen and electricity; and

(iv) kinetic hydro turbines.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out renewable energy research, development, demonstration, and commercial application activities, including activities authorized under this subtitle—

(1) $632,000,000 for fiscal year 2007;

(2) $743,000,000 for fiscal year 2008; and

(3) $852,000,000 for fiscal year 2009.

(c) BIOENERGY.—From the amounts authorized under subsection (b), there are authorized to be appropriated to carry out section 932—

(1) $213,000,000 for fiscal year 2007, of which $100,000,000 shall be for section 932(d);

(2) $251,000,000 for fiscal year 2008, of which $125,000,000 shall be for section 932(d); and

(3) $274,000,000 for fiscal year 2009, of which $150,000,000 shall be for section 932(d).

(d) SOLAR POWER.—From amounts authorized under subsection (b), there is authorized to be appropriated to carry out activities under subsection (a)(2)(A)—

(1) $140,000,000 for fiscal year 2007, of which $40,000,000 shall be for activities under section 935;

(2) $200,000,000 for fiscal year 2008, of which $50,000,000 shall be for activities under section 935; and

(3) $250,000,000 for fiscal year 2009, of which $50,000,000 shall be for activities under section 935.

(e) ADMINISTRATION.—Of the funds authorized under subsection (c), not less than $5,000,000 for each fiscal year shall be made available for grants to—

(1) part B institutions;

(2) Tribal Colleges or Universities (as defined in section 316(b) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b))); and

(3) Hispanic-serving institutions.

(f) RURAL DEMONSTRATION PROJECTS.—In carrying out this section, the Secretary, in consultation with the Secretary of Agriculture, shall demonstrate the use of renewable energy technologies to assist in delivering electricity to rural and remote locations including —

(1) advanced wind power technology, including combined use with coal gasification;

(2) biomass; and

(3) geothermal energy systems.

(g) ANALYSIS AND EVALUATION.—

(1) IN GENERAL.—The Secretary shall conduct analysis and evaluation in support of the renewable energy programs under this subtitle. These activities shall be used to guide budget and program decisions, and shall include—

(A) economic and technical analysis of renewable energy potential, including resource assessment;

(B) analysis of past program performance, both in terms of technical advances and in market introduction of renewable energy; and

(C) any other analysis or evaluation that the Secretary considers appropriate.

(2) FUNDING.—The Secretary may designate up to 1 percent of the funds appropriated for carrying out this subtitle for analysis and evaluation activities under this subsection.

SEC. 932. BIOENERGY PROGRAM.

(a) DEFINITIONS.—In this section:

(1) BIOMASS.—The term "biomass" means—

(A) any organic material grown for the purpose of being converted to energy;

(B) any organic byproduct of agriculture (including wastes from food production and processing) that can be converted into energy; or

(C) any waste material that can be converted to energy, is segregated from other waste materials, and is derived from—

(i) any of the following forest-related resources: mill residues, precommercial thinnings, slash, brush, or otherwise nonmerchantable material; or

(ii) wood waste materials, including waste pallets, crates, dunnage, manufacturing and construction wood wastes (other than pressure-treated, chemically-treated, or painted wood wastes), and landscape or right-of-way tree trimmings, but not including municipal solid waste, gas derived from the biodegradation of municipal solid waste, or paper that is commonly recycled.

(2) LIGNOCELLULOSIC FEEDSTOCK.—The term "lignocellulosic feedstock" means any portion of a plant or co-product from conversion, including crops, trees, forest residues, and agricultural residues not specifically grown for food, including from barley grain, grapeseed, rice bran, rice hulls, rice straw, soybean matter, and sugarcane bagasse.