

CHAPTER 101—MAGNETIC FUSION ENERGY ENGINEERING

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§ 9301. Congressional findings and declaration of policy

(a) The Congress hereby finds that—

(1) the United States must formulate an energy policy designed to meet an impending worldwide shortage of many exhaustible, conventional energy resources in the next few decades;

(2) the energy policy of the United States must be designed to ensure that energy technologies using essentially inexhaustible resources are commercially available at a time prior to serious depletion of conventional resources;

(3) fusion energy is one of the few known energy sources which are essentially inexhaustible, and thus constitutes a long-term energy option;

(4) major progress in all aspects of magnetic fusion energy technology during the past decade instills confidence that power production from fusion energy systems is achievable;

(5) the United States must aggressively pursue research and development programs in magnetic fusion designed to foster advanced concepts and advanced technology and to develop efficient, reliable components and subsystems;

(6) to ensure the timely commercialization of magnetic fusion energy systems, the United States must demonstrate at an early date the engineering feasibility of magnetic fusion energy systems;

(7) progress in magnetic fusion energy systems is currently limited by the funds made available rather than technical barriers;

(8) it is a proper role for the Federal Government to accelerate research, development, and demonstration programs in magnetic fusion energy technologies; and

(9) acceleration of the current magnetic fusion program will require a doubling within seven years of the present funding level without consideration of inflation and a 25 per centum increase in funding each of fiscal years 1982 and 1983.

(b) It is therefore declared to be the policy of the United States and the purpose of this chap-

ter to accelerate the national effort in research, development, and demonstration activities related to magnetic fusion energy systems. Further, it is declared to be the policy of the United States and the purpose of this chapter that the objectives of such program shall be—

(1) to promote an orderly transition from the current research and development program through commercial development;

(2) to establish a national goal of demonstrating the engineering feasibility of magnetic fusion by the early 1990's;

(3) to achieve at the earliest practicable time, but not later than the year 1990, operation of a magnetic fusion engineering device based on the best available confinement concept;

(4) to establish as a national goal the operation of a magnetic fusion demonstration plant at the turn of the twenty-first century;

(5) to foster cooperation in magnetic fusion research and development among government, universities, industry, and national laboratories;

(6) to promote the broad participation of domestic industry in the national magnetic fusion program;

(7) to continue international cooperation in magnetic fusion research for the benefit of all nations;

(8) to promote greater public understanding of magnetic fusion; and

(9) to maintain the United States as the world leader in magnetic fusion.

(Pub. L. 96-386, § 2, Oct. 7, 1980, 94 Stat. 1539.)

SHORT TITLE

Pub. L. 96-386, § 1, Oct. 7, 1980, 94 Stat. 1539, provided: "That this Act [enacting this chapter] may be cited as the 'Magnetic Fusion Energy Engineering Act of 1980'."

§ 9302. Definitions

For the purposes of this chapter—

(1) "fusion" means a process whereby two light nuclei, such as deuterium and tritium, collide at high velocity, forming a compound nucleus, which subsequently separates into constituents which are different from the original colliding nuclei, and which carry away the accompanying energy release;

(2) "magnetic fusion" means the use of magnetic fields to confine a very hot, fully ionized gas of light nuclei, so that the fusion process can occur;

(3) "energy system" means a facility designed to utilize energy released in the magnetic fusion process for the generation of electricity and the production of hydrogen or other fuels;

(4) "fusion engineering device" means a magnetic fusion facility which achieves at least a burning plasma and serves to test components for engineering purposes;

(5) "demonstration plant" means a prototype energy system which is of sufficient size to provide safety, environmental reliability, availability, and ready engineering extrapolation of all components to commercial size but which system need not be economically competitive with then alternative energy sources; and

(6) “Secretary” means Secretary of Energy. (Pub. L. 96-386, §3, Oct. 7, 1980, 94 Stat. 1540.)

§ 9303. Program activities

(a) Development in areas where lack of knowledge limits magnetic fusion energy systems

The Secretary shall initiate activities or accelerate existing activities in research areas in which the lack of knowledge limits magnetic fusion energy systems in order to ensure the achievement of the purposes of this chapter.

(b) Research programs on plasma confinement, alternate confinement concepts, advanced fuels, and properties of materials likely to be used in construction of fusion engineering devices

(1) The Secretary shall maintain an aggressive plasma confinement research program on the current lead concept to provide a full measure of support for the design, construction, and operation of the fusion engineering devices.

(2) The Secretary shall maintain a broadly based research program on alternate confinement concepts and on advanced fuels at a sufficient level of funding to achieve optimal design of each successive magnetic fusion facility using the then best available confinement and fuel concept.

(3) The Secretary shall ensure that research on properties of materials likely to be required for the construction of fusion engineering devices is adequate to provide timely information for the design of such devices.

(c) Fusion engineering device designs

(1) The Secretary shall initiate design activities on a fusion engineering device using the best available confinement concept to ensure operation of such a device at the earliest practicable time, but not later than the year 1990.

(2) The Secretary shall develop and test the adequacy of the engineering design of components to be utilized in the fusion engineering device.

(d) Operation of demonstration plant at turn of twenty-first century

The Secretary shall initiate at the earliest practical time each activity which he deems necessary to achieve the national goal for operation of a demonstration plant at the turn of the twenty-first century.

(e) Assessment of factors in determining commercial introduction of magnetic fusion energy systems

The Secretary shall continue efforts to assess factors which will determine the commercial introduction of magnetic fusion energy systems including, but not limited to—

- (1) projected costs relative to other alternative energy sources;
- (2) projected growth rates in energy demand;
- (3) safety-related design limitations;
- (4) environmental impacts; and
- (5) limitations on the availability of strategic elements, such as helium, lithium, and special metals.

(Pub. L. 96-386, §4, Oct. 7, 1980, 94 Stat. 1540.)

§ 9304. Comprehensive program management plan; submittal to Congressional committees

(a) The Secretary shall prepare a comprehensive program management plan for the conduct of the research, development, and demonstration activities under this chapter. Such plan shall include at a minimum—

(1) a presentation of the program strategy which will be used to achieve the purposes of this chapter;

(2) a five-year program implementation schedule, including identification of detailed milestone goals, with associated budget and program resources requirements;

(3) risk assessments;

(4) supporting research and development needed to solve problems which may inhibit or limit development of magnetic fusion energy systems; and

(5) an analysis of institutional, environmental, and economic considerations which are limiting the national magnetic fusion program.

(b) The Secretary shall transmit the comprehensive program management plan to the Committee on Science and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate not later than January 1, 1982.

(Pub. L. 96-386, §5, Oct. 7, 1980, 94 Stat. 1541.)

CHANGE OF NAME

Committee on Science and Technology of House of Representatives changed to Committee on Science, Space, and Technology of House of Representatives by House Resolution No. 5, One Hundred Twelfth Congress, Jan. 5, 2011.

§ 9305. Magnetic fusion engineering center

(a) Development plan

The Secretary shall develop a plan for the creation of a national magnetic fusion engineering center for the purpose of accelerating fusion technology development via the concentration and coordination of major magnetic fusion engineering devices and associated activities at such a national center.

(b) Factors considered in formulation of development plan

In developing the plan, the Secretary shall include relevant factors including, but not limited to—

(1) means of saving cost and time through the establishment of the national center relative to the cost and schedule currently projected for the program;

(2) means of providing common facilities to be shared by many magnetic fusion concepts;

(3) assessment of the environmental and safety-related aspects of the national center;

(4) provisions for international cooperation in magnetic fusion activities at the national center;

(5) provision of access to facilities for the broader technical involvement of domestic industry and universities in the magnetic fusion energy program;

(6) siting criteria for the national center including a list of potential sites;