"SEC. 5. NATIONAL RESEARCH COUNCIL STUDY.

"(a) AGREEMENT FOR STUDY.—The Secretary shall offer to enter into an agreement with the National Research Council under which the National Research Council shall—

"(1) conduct a study of the progress made under the methane hydrate research and development program implemented under this Act; and

"(2) make recommendations for future methane hydrate research and development needs.

"(b) REPORT.—Not later than September 30, 2009, the Secretary shall submit to Congress a report containing the findings and recommendations of the National Research Council under this section.

"SEC. 6. REPORTS AND STUDIES FOR CONGRESS.

"The Secretary shall provide to the Committee on Science of the House of Representatives and the Committee on Energy and Natural Resources of the Senate copies of any report or study that the Department of Energy prepares at the direction of any committee of Congress relating to the methane hydrate research and development program implemented under this Act.

"SEC. 7. AUTHORIZATION OF APPROPRIATIONS.

"There are authorized to be appropriated to the Secretary to carry out this Act, to remain available until expended—

"(1) $15,000,000 for fiscal year 2006;

"(2) $20,000,000 for fiscal year 2007;

"(3) $30,000,000 for fiscal year 2008;

"(4) $40,000,000 for fiscal year 2009; and

"(5) $50,000,000 for fiscal year 2010.".

30 USC 2001 note.

(b) RECLASSIFICATION.—The Law Revision Counsel shall reclassify the Methane Hydrate Research and Development Act of 2000 (30 U.S.C. 1902 note; Public Law 106–193) to a new chapter at the end of title 30, United States Code.

Subtitle G—Science

42 USC 16311.

SEC. 971. SCIENCE.

(a) IN GENERAL.—The Secretary shall conduct, through the Office of Science, programs of research, development, demonstration, and commercial application in high energy physics, nuclear physics, biological and environmental research, basic energy sciences, advanced scientific computing research, and fusion energy sciences, including activities described in this subtitle. The programs shall include support for facilities and infrastructure, education, outreach, information, analysis, and coordination activities.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out research, development, demonstration, and commercial application activities of the Office of Science, including activities authorized under this subtitle (including the amounts authorized under the amendment made by section 976(b) and including basic energy sciences, advanced scientific and computing research, biological and environmental research, fusion energy sciences, high energy physics, nuclear physics, research analysis, and infrastructure support)—

(1) $4,153,000,000 for fiscal year 2007;

(2) $4,586,000,000 for fiscal year 2008; and

(3) $5,200,000,000 for fiscal year 2009.

(c) ALLOCATIONS.—From amounts authorized under subsection (b), the following sums are authorized:

(1) For activities under the Fusion Energy Sciences program (including activities under section 972)—

(A) $355,500,000 for fiscal year 2007;

(B) $369,500,000 for fiscal year 2008;

(C) $384,800,000 for fiscal year 2009; and

(D) in addition to the amounts authorized under subparagraphs (A), (B), and (C), such sums as may be necessary for ITER construction, consistent with the limitations of section 972(c)(5).

(2) For activities under the catalysis research program under section 973—

(A) $36,500,000 for fiscal year 2007;

(B) $38,200,000 for fiscal year 2008; and

(C) such sums as may be necessary for fiscal year 2009.

(3) For activities under the Systems Biology Program under section 977 such sums as may be necessary for each of fiscal years 2007 through 2009.

(4) For activities under the Energy and Water Supplies program under section 979, $30,000,000 for each of fiscal years 2007 through 2009.

(5) For the energy research fellowships programs under section 984, $40,000,000 for each of fiscal years 2007 through 2009.

(6) For the advanced scientific computing activities under section 976—

(A) $270,000,000 for fiscal year 2007;

(B) $350,000,000 for fiscal year 2008; and

(C) $375,000,000 for fiscal year 2009.

(7) For the science and engineering education pilot program under section 983—

(A) $4,000,000 for each of fiscal years 2007 and 2008; and

(B) $8,000,000 for fiscal year 2009.

(d) INTEGRATED BIOENERGY RESEARCH AND DEVELOPMENT.—In addition to amounts otherwise authorized by this section, there are authorized to be appropriated to the Secretary for integrated bioenergy research and development programs, projects, and activities, $49,000,000 for each of the fiscal years 2005 through 2009. Activities funded under this subsection shall be coordinated with ongoing related programs of other Federal agencies, including the Plant Genome Program of the National Science Foundation. Of the funds authorized under this subsection, at least $5,000,000 for each fiscal year shall be for training and education targeted to minority and socially disadvantaged farmers and ranchers.

SEC. 972. FUSION ENERGY SCIENCES PROGRAM. 42 USC 16312.

(a) DECLARATION OF POLICY.—It shall be the policy of the United States to conduct research, development, demonstration, and commercial applications to provide for the scientific, engineering, and commercial infrastructure necessary to ensure that the United States is competitive with other countries in providing fusion energy for its own needs and the needs of other countries, including by demonstrating electric power or hydrogen

production for the United States energy grid using fusion energy at the earliest date.

(b) PLANNING.—

Deadline.

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall submit to Congress a plan (with proposed cost estimates, budgets, and lists of potential international partners) for the implementation of the policy described in subsection (a) in a manner that ensures that—

(A) existing fusion research facilities are more fully used;

(B) fusion science, technology, theory, advanced computation, modeling, and simulation are strengthened;

(C) new magnetic and inertial fusion research and development facilities are selected based on scientific innovation and cost effectiveness, and the potential of the facilities to advance the goal of practical fusion energy at the earliest date practicable;

(D) facilities that are selected are funded at a cost-effective rate;

(E) communication of scientific results and methods between the fusion energy science community and the broader scientific and technology communities is improved;

(F) inertial confinement fusion facilities are used to the extent practicable for the purpose of inertial fusion energy research and development;

(G) attractive alternative inertial and magnetic fusion energy approaches are more fully explored; and

(H) to the extent practicable, the recommendations of the Fusion Energy Sciences Advisory Committee in the report on workforce planning, dated March 2004, are carried out, including periodic reassessment of program needs.

(2) COSTS AND SCHEDULES.—The plan shall also address the status of and, to the extent practicable, costs and schedules for—

(A) the design and implementation of international or national facilities for the testing of fusion materials; and

(B) the design and implementation of international or national facilities for the testing and development of key fusion technologies.

(c) UNITED STATES PARTICIPATION IN ITER.—

(1) DEFINITIONS.—In this subsection:

(A) CONSTRUCTION.—

(i) IN GENERAL.—The term "construction" means—

(I) the physical construction of the ITER facility; and

(II) the physical construction, purchase, or manufacture of equipment or components that are specifically designed for the ITER facility.

(ii) EXCLUSIONS.—The term "construction" does not include the design of the facility, equipment, or components.

(B) ITER.—The term "ITER" means the international burning plasma fusion research project in which the President announced United States participation on January 30, 2003, or any similar international project.

(2) PARTICIPATION.—The United States may participate in the ITER only in accordance with this subsection.

(3) AGREEMENT.—

(A) IN GENERAL.—The Secretary may negotiate an agreement for United States participation in the ITER.

(B) CONTENTS.—Any agreement for United States participation in the ITER shall, at a minimum—

(i) clearly define the United States financial contribution to construction and operating costs, as well as any other costs associated with a project;

(ii) ensure that the share of high-technology components of the ITER manufactured in the United States is at least proportionate to the United States financial contribution to the ITER;

(iii) ensure that the United States will not be financially responsible for cost overruns in components manufactured in other ITER participating countries;

(iv) guarantee the United States full access to all data generated by the ITER;

(v) enable United States researchers to propose and carry out an equitable share of the experiments at the ITER;

(vi) provide the United States with a role in all collective decisionmaking related to the ITER; and

(vii) describe the process for discontinuing or decommissioning the ITER and any United States role in that process.

(4) PLAN.—

(A) DEVELOPMENT.—The Secretary, in consultation with the Fusion Energy Sciences Advisory Committee, shall develop a plan for the participation of United States scientists in the ITER that shall include—

(i) the United States research agenda for the ITER;

(ii) methods to evaluate whether the ITER is promoting progress toward making fusion a reliable and affordable source of power; and

(iii) a description of how work at the ITER will relate to other elements of the United States fusion program.

(B) REVIEW.—The Secretary shall request a review of the plan by the National Academy of Sciences.

(5) LIMITATION.—No Federal funds shall be expended for the construction of the ITER until the Secretary has submitted to Congress— Reports. Deadlines.

(A) the agreement negotiated in accordance with paragraph (3) and 120 days have elapsed since that submission;

(B) a report describing the management structure of the ITER and providing a fixed dollar estimate of the cost of United States participation in the construction of the ITER, and 120 days have elapsed since that submission;

(C) a report describing how United States participation in the ITER will be funded without reducing funding for other programs in the Office of Science (including other fusion programs), and 60 days have elapsed since that submission; and

(D) the plan required by paragraph (4) (but not the National Academy of Sciences review of that plan), and 60 days have elapsed since that submission.

(6) ALTERNATIVE TO ITER.—

(A) IN GENERAL.—If at any time during the negotiations on the ITER, the Secretary determines that construction and operation of the ITER is unlikely or infeasible, the Secretary shall submit to Congress, along with the budget request of the President submitted to Congress for the following fiscal year, a plan for implementing a domestic burning plasma experiment such as the Fusion Ignition Research Experiment, including costs and schedules for the plan.

(B) ADMINISTRATION.—The Secretary shall—

(i) refine the plan in full consultation with the Fusion Energy Sciences Advisory Committee; and

(ii) transmit the plan to the National Academy of Sciences for review.

42 USC 16313.

SEC. 973. CATALYSIS RESEARCH PROGRAM.

(a) ESTABLISHMENT.—The Secretary, acting through the Office of Science, shall support a program of research and development in catalysis science consistent with the statutory authorities of the Department related to research and development.

(b) COMPONENTS.—The program shall include efforts to—

(1) enable catalyst design using combinations of experimental and mechanistic methodologies coupled with computational modeling of catalytic reactions at the molecular level;

(2) develop techniques for high throughput synthesis, assay, and characterization at nanometer and subnanometer scales in-situ under actual operating conditions;

(3) synthesize catalysts with specific site architectures;

(4) conduct research on the use of precious metals for catalysis; and

(5) translate molecular understanding to the design of catalytic compounds.

(c) DUTIES OF THE OFFICE OF SCIENCE.—In carrying out the program, the Director of the Office of Science shall—

(1) support both individual investigators and multidisciplinary teams of investigators to pioneer new approaches in catalytic design;

(2) develop, plan, construct, acquire, share, or operate special equipment or facilities for the use of investigators in collaboration with national user facilities, such as nanoscience and engineering centers;

(3) support technology transfer activities to benefit industry and other users of catalysis science and engineering; and

(4) coordinate research and development activities with industry and other Federal agencies.

Deadline.

(d) ASSESSMENT.—Not later than 3 years after the date of enactment of this Act, the Secretary shall enter into an arrangement with the National Academy of Sciences to—

(1) review the catalysis program to measure—

(A) gains made in the fundamental science of catalysis; and

(B) progress towards developing new fuels for energy production and material fabrication processes; and