

tee, 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—

- (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.

(Pub. L. 109-58, title IX, §972, Aug. 8, 2005, 119 Stat. 899.)

**§ 16313. 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.

**(d) Assessment**

Not later than 3 years after August 8, 2005, 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
- (2) submit to Congress a report describing the results of the review.

(Pub. L. 109-58, title IX, §973, Aug. 8, 2005, 119 Stat. 902.)

**§ 16314. Hydrogen**

**(a) In general**

The Secretary shall conduct a program of fundamental research and development in support of programs authorized under subchapter VIII.

**(b) Methods**

The program shall include support for methods of generating hydrogen without the use of natural gas.

(Pub. L. 109-58, title IX, §974, Aug. 8, 2005, 119 Stat. 903.)

**§ 16315. Solid state lighting**

The Secretary shall conduct a program of fundamental research on solid state lighting in support of the Next Generation Lighting Initiative carried out under section 16192 of this title.