

# **TITLE IX—RESEARCH AND DEVELOPMENT**

## **SEC. 901. SHORT TITLE.**

Designates title as the “Energy Research, Development, Demonstration, and Commercial Application Act of 2003”.

## **SEC. 902. GOALS.**

Broad goals are defined and the Secretary is required to publish specific goals with each annual budget submission.

## **SEC. 903. DEFINITIONS.**

Defines terms used in the title.

### **Subtitle A—Energy Efficiency**

## **SEC. 911. ENERGY EFFICIENCY.**

Establishes authorization levels.

## **SEC. 912. NEXT GENERATION LIGHTING INITIATIVE.**

Authorizes a new Initiative to develop advanced solid state lighting options through research, development, demonstration, and commercial application activities. Defines selection of an Industry Alliance to assist in updating roadmaps and assessing progress of the Initiative.

## **SEC. 913. NATIONAL BUILDING PERFORMANCE INITIATIVE.**

Authorizes the Director of OSTP to establish an interagency program to address energy conservation and R&D efforts to reduce energy use in buildings. Establishes an advisory committee to oversee creation and implementation of a plan, and requires annual progress reports.

## **SEC. 914. SECONDARY ELECTRIC VEHICLE BATTERY USE PROGRAM.**

Authorizes a program to evaluate secondary use of electric vehicle batteries through research, development, demonstration, and commercial application activities.

## **SEC. 915. ENERGY EFFICIENCY SCIENCE INITIATIVE.**

Authorizes a research program administered by the Assistant Secretary responsible for energy conservation.

### **Subtitle B—Distributed Energy and Electric Energy Systems**

## **SEC. 921. DISTRIBUTED ENERGY AND ELECTRIC ENERGY SYSTEMS.**

Establishes authorization levels.

**SEC. 922. HYBRID DISTRIBUTED POWER SYSTEMS.**

Authorizes development of a strategy for development of hybrid distributed power systems that combine a renewable technology and nonintermittent power generation technologies.

**SEC. 923. HIGH POWER DENSITY INDUSTRY PROGRAM.**

Authorizes creation of a research and demonstration program for high power density facilities.

**SEC. 924. MICRO-COGENERATION ENERGY TECHNOLOGY.**

Authorizes grants to consortia to develop small-scale combined heat and power systems for residential applications.

**SEC. 925. DISTRIBUTED ENERGY TECHNOLOGY DEMONSTRATION PROGRAM.** *(new section)*

Authorizes assistance to demonstration projects using distributed energy technologies in highly energy intensive commercial applications.

**SEC. 926. OFFICE OF ELECTRIC TRANSMISSION AND DISTRIBUTION.**

Amends Title II of the Department of Energy Organization Act to create a new Office of Electric Transmission and Distribution.

**SEC. 927. ELECTRIC TRANSMISSION AND DISTRIBUTION PROGRAMS.**

Authorizes research, development and demonstration programs to ensure reliability, efficiency and environmental integrity of electrical transmission systems. Requires a 5-year program plan to be completed within the first year. Authorizes a Power Delivery Research Initiative focused on establishing test beds at national labs, universities, or in industry, to evaluate and demonstrate the technologies required to move high temperature superconductivity into commercial use. Authorizes a Transmission and Distribution Grid Planning and Operations Initiative for research, development and demonstration of tools to plan, operate, and expand transmission and distribution grids in realistic market scenarios. This Initiative shall use a distributed research center involving universities and national laboratories with a focus on transfer of useful technologies to industry.

## Subtitle C—Renewable Energy

**SEC. 931. RENEWABLE ENERGY.**

Establishes authorization levels.

**SEC. 932. BIOENERGY PROGRAMS.**

Authorizes a broad program of research in biopower, biofuels and bioproducts, including technologies utilizing cellulosic feedstocks or enzyme-based processing.

**SEC. 933. BIODIESEL ENGINE TESTING PROGRAM.** *(new section)*

Authorizes testing to determine the impact of biodiesel on current and future emission control technologies and requires a report within 2 years on the findings of the study.

**SEC. 934. CONCENTRATING SOLAR POWER RESEARCH PROGRAM.**

Authorizes a program of research on concentrating solar power research to establish technologies and economics of both electricity and hydrogen production. A report with recommendations for future research is required within 4 years.

**SEC. 935. MISCELLANEOUS PROJECTS.**

Authorizes R&D in ocean energy, combinations of renewable and other energy sources, and hydrogen carrier fuels.

## Subtitle D—Nuclear Energy

**SEC. 941. NUCLEAR ENERGY.**

Establishes authorization levels.

**SEC. 942. NUCLEAR ENERGY RESEARCH PROGRAMS.**

Authorizes the Nuclear Energy Research Initiative, Nuclear Energy Plant Optimization, Nuclear Power 2010, Generation IV Nuclear Energy Systems, Reactor Production of Hydrogen, and Nuclear Infrastructure Support Programs.

**SEC. 943. ADVANCED FUEL CYCLE INITIATIVE.**

Authorizes the Advanced Fuel Cycle Initiative to evaluate proliferation-resistant fuel recycling and transmutation technologies, which support evaluation of alternative national strategies for spent fuel management and Generation IV advanced reactor concepts. An annual progress report is required..

**SEC. 944. UNIVERSITY NUCLEAR SCIENCE AND ENGINEERING SUPPORT.**

Authorizes fellowship and faculty assistance programs, maintains university research and training reactor, and encourages university-national lab interactions.

**SEC. 945. SECURITY OF NUCLEAR FACILITIES.** *(new section)*

Authorizes research and development on technologies for improving safety and security of reactors.

**SEC. 946. ALTERNATIVES TO INDUSTRIAL RADIOACTIVE SOURCES.** *(new section)*

Authorizes research and development on alternatives to large industrial radioactive sources, including well-logging sources, that reduce safety, environmental, or proliferation risks. A survey and report to Congress are required of existing types of commercial sources, along with review of available disposal options for such sources and evaluation of the need for alternative future disposal options.

## Subtitle E—Fossil Energy

### **SEC. 951. FOSSIL ENERGY.**

Establishes authorization levels.

### **SEC. 952. FOSSIL ENERGY RESEARCH PROGRAMS.**

Authorizes research programs for coal, oil and gas, and fuel cells. Requires a report at two year intervals on oil and gas reserves off the coast of Louisiana and Texas. Establishes a national center or consortium of excellence in clean energy and power generation.

### **SEC. 953. RESEARCH AND DEVELOPMENT FOR COAL MINING TECHNOLOGIES.** *(new section)*

Authorizes research and development program on coal mining technologies. Research is to be guided by the Mining Industry of the Future program, and NAS reports, and is to include technologies to enable mining of coal with reduced contaminant levels.

### **SEC. 954. COAL AND RELATED TECHNOLOGIES PROGRAM.** *(new section)*

Authorizes a broad research, development, demonstration and commercial application program for coal and power systems. Requires the Secretary to identify goals for coal-based technologies.

## Subtitle F—Science

### **SEC. 961. SCIENCE.**

Establishes authorization levels for Office of Science. Authorizes funding for ITER separate from the rest of Science budget.

### **SEC. 962. UNITED STATES PARTICIPATION IN ITER.**

Authorizes U.S. participation in ITER and requires a comprehensive report within 180 days on overall program directions.

### **SEC. 963. SPALLATION NEUTRON SOURCE.**

Sets limits on total funds expended for the Spallation Neutron Source and requires a report on the SNS as part of the annual budget submission.

### **SEC. 964. SUPPORT FOR SCIENCE AND ENERGY FACILITIES AND INFRASTRUCTURE.**

Requires development and implementation of a strategy for maintaining or building essential facilities and infrastructure primarily supporting programs of the Office of Science, the Office of Energy Efficiency and Renewable Energy, the Office of Fossil Energy, or the Office of Nuclear Energy, Science and Technology.

### **SEC. 965. CATALYSIS RESEARCH PROGRAM.** *(new section)*

Authorizes a broad research and development program for catalysis science including use of precious metals. Requires National Academy of Science review every 3 years.

**SEC. 966. NANOSCALE SCIENCE AND ENGINEERING RESEARCH.**

Authorizes nanoscale science and engineering programs supportive of Department's mission areas. Authorizes construction of Nanoscience and Nanoengineering Research Centers.

**SEC. 967. ADVANCED SCIENTIFIC COMPUTING FOR ENERGY MISSIONS.**

Authorizes a robust scientific computing program supporting the Department's mission areas. Requires coordination with other national efforts, including the National Nuclear Security Administration's Accelerated Strategic Computing Initiative. Requires report to Congress before undertaking development of new computational architectures. Amends the High-Performance Computing Act of 1991 and includes authorization levels as necessary for fiscal years 2004 through 2007.

**SEC. 968. GENOMES TO LIFE PROGRAM.**

Authorizes research and development in systems biology and proteomics toward understanding biological systems on the scale of proteins to cells. Authorizes construction and ancillary equipment for the Genomes to Life user facilities.

**SEC. 969. FISSION AND FUSION ENERGY MATERIALS RESEARCH PROGRAM.**

Authorizes a research and development program on material science issues presented by advanced fission reactors and Department's fusion program.

**SEC. 970. ENERGY-WATER SUPPLY TECHNOLOGIES PROGRAM.**

Authorizes a research and demonstration program to study energy-related issues associated with water resources and issues associated with sustaining water supplies for energy production. Program topics shall include arsenic removal, desalination, and energy and water sustainability. The arsenic removal program is to be run by the American Water Works Association Research Foundation for the Department. Desalination program is to follow the national Desalination and Water Purification Technology Roadmap in partnership with the US Bureau of Reclamation. The sustainability program supports water modeling studies, on the level of major national river basins, to understand water usage patterns and the impact of energy production activities in these basins.

## Subtitle G—Energy and Environment

**SEC. 971. UNITED STATES-MEXICO ENERGY TECHNOLOGY COOPERATION.**

Authorizes a joint U.S.-Mexico collaborative program in the border region to promote energy efficiency and reduced environmental risks that contribute to public health issues.

**SEC. 972. COAL TECHNOLOGY LOAN.**

Authorizes Secretary to provide loan to clean coal plant in Healy, Alaska..

## Subtitle H—Management

### **SEC. 981. AVAILABILITY OF FUNDS.**

Funds authorized under entire title remain available until expended.

### **SEC. 982. COST SHARING.**

Sets cost sharing requirements for programs (20 percent for R&D, 50 percent for Demonstration and Commercial Application) with ability of Secretary to waive requirement. Allows in-kind contributions.

### **SEC. 983. MERIT REVIEW OF PROPOSALS.**

Requires merit review of proposals in this title.

### **SEC. 984. EXTERNAL TECHNICAL REVIEW OF DEPARTMENTAL PROGRAMS.**

Requires advisory boards for Department programs. Authorizes the Secretary to use the National Academy of Sciences to establish such boards and to conduct other reviews and assessments of programs and goals on at least 5-year intervals.

### **SEC. 985. IMPROVED COORDINATION OF TECHNOLOGY TRANSFER ACTIVITIES.**

Requires Secretary to appoint a Technology Transfer Coordinator and establishes a Tech Transfer Working Group with representation from each DOE facility.

### **SEC. 986. TECHNOLOGY INFRASTRUCTURE PROGRAM.**

Requires Secretary to establish a pilot program to encourage creation of technology clusters in support of departmental mission areas. Authorizes \$10,000,000 annually for FY2004, FY2005 and FY2006.

### **SEC. 987. SMALL BUSINESS ADVOCACY AND ASSISTANCE.**

Requires each National Laboratory and enables each single purpose research facility to designate a small business advocate to facilitate participation of small businesses in procurement and research opportunities. Authorizes small business technical assistance grants not to exceed \$10,000 each to improve a concern's products or services. Authorizes \$5,000,000 annually

### **SEC. 988. MOBILITY OF SCIENTIFIC AND TECHNICAL PERSONNEL.**

Requires report on barriers that may exist to inhibit transfer of personnel among Department's facilities and laboratories.

### **SEC. 989. NATIONAL ACADEMY OF SCIENCES REPORT.**

Requires a National Academy study on obstacles to accelerating the transition of energy technology into commercial application.

**SEC. 990. OUTREACH.**

Requires that all programs include an outreach component to provide the public with information.

**SEC. 991. COMPETITIVE AWARD OF MANAGEMENT CONTRACTS.**

Requires that management and operating contracts for nonmilitary laboratories shall be subject to competition unless the Secretary grants a waiver and informs Congress.

**SEC. 992. REPROGRAMMING.**

Reprogramming that changes an individual distribution by more than 5 percent is not allowed unless the Secretary has provided 30 days notice to the appropriate authorizing committees.

**SEC. 993. CONSTRUCTION WITH OTHER LAWS.**

Requires Secretary to conform this title to existing laws.

**SEC. 994. IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY.**

Amends the Department of Energy Organization Act to establish an Assistant Secretary for Science and to increase the number of Assistant Secretaries (in addition to the new Assistant Secretary for Science) from 6 to 8. Provides sense of Congress that leadership in nuclear energy shall be at Assistant Secretary level.

**SEC. 995. EDUCATIONAL PROGRAMS IN SCIENCE AND MATHEMATICS.** *(new section)*

Amends the Department of Energy Science Education Enhancement Act (42 U.S.C. 7381a) to authorize the Department of Energy to support competitive science and mathematics events and reauthorizes funding of that Act for \$40,000,000 for each of fiscal years 2004 through 2008.

**SEC. 996. OTHER TRANSACTIONS AUTHORITY.** *(new section)*

Amends the Department of Energy Organization act (42 U.S.C. 7256) to allow transactions by the Secretary of Energy to further research, development, or demonstrations and exempts them from provisions of section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5908). These other transactions can only be entered if standard contract, grant or cooperative agreements are not feasible or appropriate. The amendment also allows the Secretary to protect from disclosure certain business information for up to 5 years and requires that the Secretary develop guidelines within 3 months for using the other transactions mechanism.

**SEC. 997. REPORT ON RESEARCH AND DEVELOPMENT PROGRAM EVALUATION METHODOLOGIES.** *(new section)*

Requires the Secretary within 6 months to arrange with the National Academy of Sciences to

investigate and report on the scientific and technical merits of any evaluation methodology for scientific and technical programs of the Department then to submit this report to congress within 6 months of its receipt.