

## ENERGY PROGRAMS

### ENERGY EFFICIENCY AND RENEWABLE ENERGY (INCLUDING TRANSFER AND RESCISSIONS OF FUNDS)

The agreement provides \$1,912,104,111 in new budget authority for Energy Efficiency and Renewable Energy and rescinds \$10,418,111 of prior-year de-obligated balances.

The agreement includes a provision that authorizes the transfer of up to \$45,000,000 to the Defense Production Act Fund.

*Hydrogen and Fuel Cells Technologies.*—The agreement maintains the importance of technology validation, hydrogen fuels research and development, and market transformation but provides no further direction regarding these activities.

*Bioenergy Technologies.*—The Department is directed to continue conducting only research, development, and demonstration activities advancing technologies that can produce fuels and electricity from biomass and crops that could not otherwise be used as food. For purposes of allocating resources, the Department is directed to include biosolids derived from the municipal wastewater treatment process and other similar renewables within the definition of noncellulosic forms of biomass energy. The agreement provides \$2,000,000 for the clean cookstoves effort and recognizes this is the last year of funding for the Department's specific participation.

*Wind Energy.*—The agreement maintains the importance of offshore wind activities that support the development of technologies more innovative than currently commercially available, including funds for offshore wind demonstration projects.

*Geothermal Technologies.*—For future awards, the full spectrum of geothermal technologies as authorized by the Energy Independence and Security Act of 2007 shall be eligible for the funds appropriated for Geothermal Technologies by this Act. The Department shall continue its support of comprehensive programs that support academic and professional development initiatives. The agreement includes funds for site selection and characterization for the Enhanced Geothermal Systems Field Observatory project.

*Water Power.*—Within available funds, the agreement provides \$41,300,000 for marine and hydrokinetic technology and \$17,300,000 for conventional hydropower. Of the marine and hydrokinetic technology funding, no funding is available for the deep-tank wave testing facility or for the advanced manufacturing competitiveness initiative. Of the \$41,300,000, not less than \$20,000,000 is for competitive demonstrations of marine and hydrokinetic technologies, which may be in conjunction with activities at the National Marine Renewable Energy Centers. Of the \$17,300,000 for conventional hydropower, \$3,600,000 is for the purposes of Section 242 of the Energy Policy Act of 2005.

*Vehicle Technologies.*—The agreement provides the requested amount of \$10,100,000 for the Super Truck program to support existing contracts. Within available funds, the agreement recommends a

centers, private industries, and public organizations with strategic interests in sustainable energy. The Committee supports continuation of these efforts with the goal of fostering research collaborations, technology transfer, and commercialization efforts which will lead to increased domestic production of energy and lower prices for consumers.

The Committee encourages the Department to enter into technical assistance partnerships with non-profit partners to provide affordable grid technology testing and technical assistance to the electric industry to address the variability of renewable power generation. The partnerships should focus on deploying smart grid technologies and attendant energy storage solutions to support the continuous availability of electricity from an intermittent resource. The Department should competitively select partners who have a record of high-quality academic research and advanced technology development, and have successfully worked with the electric industry.

*Hydrogen Technology.*—The Committee continues to support fuel cell and hydrogen energy systems for stationary, vehicle, motive and portable power applications. The Committee recommends \$93,000,000 for the Fuel Cell Technologies program. The Committee is encouraged by the collaborative approach reflected in H2USA and sees it as an important step toward commercialization of fuel cell electric vehicles and the supply chain. With regards to infrastructure, the Department should analyze, research and make suitable investments in order to transform the size, cost, scalability (including modular stations), and interoperability of new retail hydrogen stations. The Department should focus on consumer acceptance in order to meet the needs of the initial commercial market beginning in 2015, while having the ability to increase the station capacity as commercialization develops. These investments should focus on strategic locations where early market introduction of vehicles is likely to occur.

*Bioenergy Technologies.*—The Committee recommends \$253,200,000 for biomass and biorefinery systems R&D. Within the available funds, the Department is directed to provide a total of \$30,000,000 for algae biofuels.

The Committee remains concerned the Department is interpreting biomass too narrowly and failing to consider promising noncellulosic forms of biomass energy technology projects. For purposes of allocating resources, the Department is directed to include biosolids derived from the municipal wastewater treatment and agricultural processes, and other similar renewables within the definition of noncellulosic. In funding biomass and biofuels refinery systems, the Department is encouraged to provide funding to projects that utilize regionally available and appropriate wood and agricultural biomass feedstock for thermal heating applications. Within available funds, \$15,000,000 is to demonstrate technologies that process biosolids from wastewater treatment into clean water; useful heat energy; products, such as wide application soil amendments; and that reduce net greenhouse gas emissions from current treatment processes and reduce the volume of material to be trucked by more than 90 percent. The Department should consider projects that utilize at least 20,000 wet tons per year of biosolids

and that create other commercially salable products or generate a synthesis gas for the production of useful heat or hydrogen.

The Committee continues to support the collaboration between the Navy, Department of Agriculture, and DOE to develop innovative technologies for jet and diesel fuels for military uses. The Committee recommends the requested \$60,000,000 to support this effort.

*Solar Energy.*—The Committee recommends \$248,000,000 for solar energy. The Committee supports the Department's emphasis advancing integration of distributed solar generation with the existing power grid and on lowering the "soft costs" of solar installations for residential and small-scale commercial customers. The financing, contracting, permitting, inspection, and installation costs can add significantly to the overall cost of solar system acquisition. The Department's efforts to develop the workforce, regulatory and legal expertise, and information technology tools are needed to drive cost reductions for solar technology for every day consumers. Furthermore, additional work is needed to ensure the reliability and resiliency of the power grid in face of growing distributed solar generation to ensure consumers and businesses can yield sustained value from their solar investments and utilities can reap generation benefits. Therefore, the Committee supports the proposed increases in the Systems Integration and Balance of System Soft Cost Reduction areas.

Within the funds provided, the Committee recommends \$61,500,000 for concentrating solar power projects, as improvements in this technology could address energy storage issues and are directly related to the Supercritical Transformational Electric Power Generation Initiative, which could increase efficiencies and further lower costs.

*Wind Energy.*—The recommendation is \$109,000,000 for wind energy. Within the available funds, \$6,400,000 is for distributed wind, \$42,600,000 is for the Offshore Wind Advanced Technology Demonstration Projects, and \$6,000,000 is to further substantiate the design and economic value proposition of alternate project designs for offshore wind power. The Committee reaffirms its direction that the Department use offshore wind technologies funding to include freshwater, deepwater, shallow water, and transitional depth installations.

*Geothermal Technology.*—The recommendation for geothermal technology is \$61,500,000. The funds made available by this section shall be disbursed to the full spectrum of geothermal technologies as authorized by the Energy Independence and Security Act of 2007 (Public Law 110-140). The Department of Energy is encouraged to continue its support of comprehensive programs that support academic and professional development initiatives.

To facilitate necessary technology development and expand understanding of subsurface dynamics, the Committee recommends \$29,000,000 for the Frontier Observatory for Research in Geothermal Energy, which will use a competitive process to site and construct a facility for the design, development, and testing of innovative methods of generating electricity for geothermal resources.

*Water Power Energy R&D.*—The Committee recommends \$69,000,000 for water power, including \$41,300,000 for marine and

hydrokinetic technology research, development and deployment, and \$27,500,000 for conventional hydropower.

None of the funding provided for marine and hydrokinetic technologies may be used for advanced design tools, the incubator program, or for the clean energy manufacturing initiative. Of the \$41,300,000 provided for marine and hydrokinetic technologies, \$25,000,000 is for competitive research, development and demonstrations of marine and hydrokinetic technologies. The \$25,000,000 should be used for new awards or to bring existing demonstration awards toward completion. The Committee directs the Department to consult with the marine and hydrokinetic energy industry on research, development and deployment priorities and ensure that related programs by the national laboratories support industry-driven technology advancement projects. The Committee directs the Department to provide not less than \$3,000,000 to continue development of an open water, fully energetic wave energy test facility.

The Committee recommends ongoing close coordination between the Department and the Federal Energy Regulatory Commission, the Bureau of Ocean Energy Management, the National Oceanic and Atmospheric Administration, other relevant agencies and industry to reduce the amount of time to permit MHK test and demonstration projects. Further, within available funding for marine and hydrokinetic technology, the Committee encourages the Department to support activities to develop advanced systems and component technologies to increase energy capture, reliability, and survivability for lower costs, and to assess and monitor environmental effects.

*Vehicle Technologies.*—The Committee recommends \$290,000,000 for vehicle technologies. The Committee is supportive of the \$8,000,000 for the Super Truck program and directs the Department to fulfill existing contracts to support commercialization of truck technologies demonstrated by industry partners. The Committee further directs the Department to identify future collaborative research initiatives with the freight industry to improve fuel efficiency in their vehicles. In addition, the Committee directs the Department to provide it with a report no later than 90 days after the date of enactment of this act on the industry's adoption rates of new fuel efficient technologies from the Super Truck program into its manufacturing lines.

Shortfalls remain in the research and development of dual-fuel systems that meet the power and reliability requirements for severe heavy duty engines used in some buses, fire trucks, on-highway construction haul trucks, and class 8 long-haul trucks. The committee directs the Department to continue research and development on dual fuel activities to address the needs of severe heavy duty engine vehicles. The research should consider whether direct fuel injected or dual fuel converted diesel engines can provide the necessary horsepower and reliability for safe and efficient long-haul trucking in consideration of the higher temperature exposure of parts and lubricants in addition to the large onboard fuel storage volume requirements. The research should incorporate highly controlled fleet operations that evaluate the practicality of both dual-fuel systems and gas-to-liquid [GTL] fuel produced directly from

No funding is provided for Advanced Fuel Vehicle Community Projects or the Transportation Electrification Program.

For other subprograms within Vehicle Technologies, the recommendation provides \$34,500,000 for Vehicle and Systems Simulation and Testing, of which no funding is included for the grid integration initiative; \$49,000,000 for Advanced Combustion Engines; \$36,000,000 for Materials Technology; and \$25,000,000 for Fuels Technology.

The Committee encourages Vehicle Technologies to leverage the expertise of various experimental and computational collaborative programs among universities, national laboratories, and industry to develop sustainable technologies that will improve the overall fuel economy of heavy-duty transportation systems.

*Bioenergy Technologies.*—The Committee recommends \$180,000,000 for Bioenergy Technologies, \$52,429,000 below fiscal year 2014 and \$73,200,000 below the budget request.

Within available funds, the recommendation includes \$46,500,000 for Feedstocks, of which \$30,000,000 is for research and development of biofuels from algae feedstocks; \$90,500,000 for Conversion Technologies, of which no funding is included for a conversion incubator; \$25,800,000 for Demonstration and Deployment, of which no funding is for the joint initiative with the Navy and the Department of Agriculture to develop commercial diesel and jet biofuels production capacity for defense purposes; and \$11,000,000 for Strategic Analysis and Crosscutting Sustainability.

The Department is directed not to procure or use commonly recycled paper that is segregated from municipal solid waste for electricity generation or to make grants for renewable biofuels production to any facility that uses as a feedstock recycled paper that is segregated from municipal solid waste. For the purposes of allocating resources, the Department is encouraged to include biosolids derived from the municipal wastewater treatment process and other similar renewables within the definition of noncellulosic biomass. The Committee also encourages the Department to evaluate the potential for the conversion of degradables in combined trash to liquid- and gaseous-fuels, and chemical intermediates at distributed locations where optimal, in order to determine the national resource potential and the benefits of this approach compared to other approaches, including the densification of wastes to be transferred to centralized conversion facilities.

The Committee notes that research, development, and demonstration of direct liquefaction of biomass via a pyrolysis event and the subsequent upgrading and cracking to renewable gasoline, diesel, and jet fuels is a high priority pathway to produce fuels from a range of biomass sources. The Committee supports the Department's continued efforts to examine the testing of new catalysts, separations strategies, and engineering designs at the bench- and pilot-scale to enable rapid evaluation of promising technologies.

The Committee also notes that the oil content of algae is only approximately 25 percent of the total biomass of algae, yet efforts to date have predominantly focused on extracting and processing oil from algae. The Committee encourages the Department to examine the commercial potential for value added renewable products that are derived from biomass intermediates or a slipstream on the tra-