# Union Calendar No. 192

110TH CONGRESS
1ST SESSION

# H. R. 3237

**[Report No. 110–305, Part I]**

To facilitate the transition to a smart electricity grid.

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IN THE HOUSE OF REPRESENTATIVES

JULY 31, 2007

Mr. BOUCHER (for himself and Mr. DINGELL) introduced the following bill; which was referred to the Committee on Energy and Commerce, and in addition to the Committee on Science and Technology, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

AUGUST 3, 2007

Reported from the Committee on Energy and Commerce

AUGUST 3, 2007

Committee on Science and Technology discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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# A BILL

To facilitate the transition to a smart electricity grid.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

(a) SHORT TITLE.—This Act may be cited as the ''Smart Grid Facilitation Act of 2007''.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:



# TITLE I—SMART GRID AND DEMAND RESPONSE

## Subtitle A—Smart Grid

**SEC. 101. STATEMENT OF POLICY ON MODERNIZATION OF ELECTRICITY GRID.**

(a) SMART GRID CHARACTERISTICS.—It is the policy of the United States to support the modernization of the Nation's electricity transmission and distribution system to incorporate digital information and controls technology and to share real-time pricing information with electricity customers to achieve each of the following, which together characterize a smart grid:

(1) Increased reliability, security and efficiency of the electric grid.

(2) Dynamic optimization of grid operations and resources, with full cyber-security.

(3) Deployment and integration of distributed resources and generation.

(4) Development and incorporation of demand response demand-side resources, and energy efficiency resources.

(5) Deployment of ''smart'' technologies for metering, communications concerning grid operations and status, and distribution automation.

(6) Integration of ''smart'' appliances and consumer devices.

(7) Deployment and integration of renewable energy resources, both to the grid and on the customer side of the electric meter.

(8) Deployment and integration of advanced electricity storage and peak-sharing technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.

(9) Provision to consumers of new information and control options.

(10) Continual environmental improvement in electricity production and distribution.

(11) Enhanced capacity and efficiency of electricity networks, reduction of line losses, and maintenance of power quality.

(b) SUPPORT.—The Secretary of Energy and the Federal Energy Regulatory Commission and other Federal agencies as appropriate shall undertake programs to support the development and demonstration of Smart Grid technologies and standards to maximize the achievement of these goals.

(c) BARRIERS.—It is further the policy of the United States that no State, State agency, or local government or instrumentality thereof should prohibit, or erect unreasonable barriers to, the deployment of smart grid technologies on an electric utility's distribution facilities, or unreasonably limit the services that may be provided using such technologies.

(d) INFORMATION.—It is further the policy of the United States that electricity purchasers are entitled to receive information about the varying value of electricity at different times and places, and that States shall not prohibit nor erect unreasonable barriers to the provision of such information flows to end users.

**SEC. 102. GRID MODERNIZATION COMMISSION.**

(a) ESTABLISHMENT AND MISSION.—

(1) ESTABLISHMENT.—The President shall establish a Grid Modernization Commission composed of 9 members. Three members of the Commission shall be appointed by the President, and one each shall be appointed by the Speaker and minority leader of the United States House of Representatives and by the majority leader and minority leader of the United States Senate. Two members shall be appointed by the President from among persons recommended by an association representing State utility regulatory commissioners. The President shall designate one Commissioner to serve as Chairperson.

(2) MISSION.—The mission of the Grid Modernization Commission shall be to facilitate the adoption of Smart Grid standards, technologies, and practices across the Nation's electricity grid to the point of general adoption and ongoing market support in the United States electric sector. The Commission shall be responsible for monitoring developments, encouraging progress toward common standards and protocols, identifying barriers and proposing solutions, coordinating with all Federal departments and agencies, and coordinating approaches on smart grid implementation with States and local governmental authorities.

(b) MEMBERSHIP.—The members appointed to the Commission shall, collectively, have qualifications in electric utility operations and infrastructure, digital information and control technologies, security, market development, finance and utility regulation, energy efficiency, demand response, renewable energy, and consumer protection.

(c) AUTHORITIES TO INTERVENE.—The Commission shall have the authority to intervene and represent itself before the Federal Energy Regulatory Commission and other Federal and State agencies as it deems necessary to accomplish its mission.

(d) TERMS OF OFFICE.—The term of office of each Commissioner shall be 5 years, and any member may be reappointed for not more than one additional term of 5 years.

(e) TERMINATION.—Unless extended by Act of Congress, the Commission shall complete its work and cease its activities by January 1, 2020, or on such earlier date that the Commission determines that the proliferation, evolution, and adaptation of Smart Grid technologies no longer require Federal leadership and assistance.

(f) COMPENSATION OF MEMBERS.—Each member of the Commission who is not an officer or employee of the Federal Government shall be compensated at a rate equal

to the daily equivalent of the annual rate of basic pay prescribed for level III of the Executive Schedule under section 5315 of title 5, United States Code, for each day (including travel time) during which such member is engaged in the performance of the duties of the Commission. All members of the Commission who are officers or employees of the United States shall serve without compensation in addition to that received for their services as officers or employees of the United States.

(g) TRAVEL EXPENSES.—The members of the Commission shall be allowed travel expenses, including per diem in lieu of subsistence, at rates authorized for employees of agencies under subchapter I of chapter 57 of title 5, United States Code, while away from their homes or regular places of business in the performance of services for the Commission.

(h) MEETINGS.—The Commission shall meet at the call of the Chairman. Commission meetings shall be open to the public, but as many as three Commissioners may meet in private without constituting a meeting requiring public access.

(i) APPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT.—The Federal Advisory Committee Act (5 U.S.C. App. 1 et seq.) shall not apply to the Commission.

(j) OFFICES AND STAFF.—The Secretary of Energy shall provide the Commission with offices in the Department of Energy and shall make available to the Commission the expertise and staff resources of both the Office of Electricity Delivery and Energy Reliability and the Office of Energy Efficiency and Renewable Energy.

(k) DETAIL OF GOVERNMENT EMPLOYEES.—Any Federal Government employee may be detailed to the Commission without reimbursement, and such detail shall be without interruption or loss of civil service status or privilege.

(l) EXECUTIVE DIRECTOR.—The Secretary of Energy shall appoint an officer of the Senior Executive Service to serve as Executive Director to the Commission.

(m) PROCUREMENT OF TEMPORARY AND INTERMITTENT SERVICES.—The Chairman of the Commission may procure temporary and intermittent services under section 3109(b) of title 5, United States Code, at rates for individuals which do not exceed the daily equivalent of the annual rate of basic pay prescribed for level V of the Executive Schedule under section 5316 of such title.

(n) INFORMATION FROM FEDERAL AGENCIES.—The Commission may secure directly from any Federal department or agency such information as the Commission considers necessary to carry out this Act. Upon request of

the Chairman of the Commission, the head of such department or agency shall furnish such information to the Commission. The Commission shall maintain the same level of confidentiality for such information made available under this subsection as is required of the head of the department or agency from which the information was obtained.

(o) POSTAL SERVICES.—The Commission may use the United States mails in the same manner and under the same conditions as other departments and agencies of the Federal Government.

**SEC. 103. GRID ASSESSMENT AND REPORT.**

(a) IN GENERAL.—The Grid Modernization Commission shall undertake, and update on a biannual basis, an assessment of the progress toward modernizing the electric system from generation to ultimate electricity consumption, including implementation of ''smart grid'' technologies. The Commission shall prepare this assessment with input from stakeholders including but not limited to electric utilities, other Federal offices, States, companies involved in developing related technologies, the National Electric Reliability Organization recognized by the Federal Energy Regulatory Commission, electricity customers, and persons with special related expertise. The assessment shall include each of the following:

(1) An updated inventory of existing smart grid systems.

(2) A description of the condition of existing grid infrastructure and procedures for determining the need for new infrastructure.

(3) A description of any plans of States, utilities, or others to introduce smart grid systems and technologies.

(4) An assessment of constraints to deployment of smart grid technology and most important opportunities for doing so, including the readiness or lack thereof of enabling technologies.

(5) An assessment of remaining potential benefits resulting from introduction of smart grid systems, including benefits related to demand-side efficiencies, improved reliability, improved security, reduced prices, and improved integration of renewable resources.

(6) Recommendations for legislative or regulatory changes to remove barriers to and create incentives for smart grid system implementation and to meet the policy goals of this title.

(7) An estimate of the potential costs required for modernization of the electricity grid, with specificity relative to geographic areas and components of

the grid, together with an assessment of whether the necessary funds would be available to meet such costs, and the sources of such funds.

(8) An assessment of ancillary benefits to other economic sectors or activities beyond the electricity sector, such as potential broadband service over power lines.

(9) An assessment of technologies, activities or opportunities in energy end use devices, customer premises, buildings, and power generation and storage devices that could accelerate or expand the impact and effectiveness of smart grid advances.

(10) An assessment of potential risks to personal privacy, corporate confidentiality, and grid security from the spread of smart grid technologies, and if so what additional measures and policies are needed to assure privacy and information protection for electric customers and grid partners, and cybersecurity protection for extended grid systems.

(11) An assessment of the readiness of market forces to drive further implementation and evolution of ''smart grid'' technologies in the absence of government leadership.

(12) Recommendations to the Secretary of Energy and other Federal officers on actions they should take to assist.

The Commission may request electric utilities to provide information relating to deployment and planned deployment of smart grid systems and technologies. At the request of the utility, the Commission shall maintain the confidentiality of utility-specific or specific security-related information. The Commission shall provide opportunities for input and comment by interested persons, including representatives of electricity consumers, Smart Grid technology service providers, the electric utility industry, and State and local government.

(b) STATE AND REGIONAL ASSESSMENT AND REPORT.—States or groups of States are encouraged to participate in the development of State or region-specific components of the assessment and report under subsection (a). Such State-specific components may address the assessment and reporting criteria above but also may include but not be limited to any of the following:

(1) Assessment of types of security threats to electricity delivery.

(2) Energy assurance and response plans to address security threats.

(3) Plans for introduction of smart grid systems and technologies over 3, 5, and 10 year planning horizons.

The Commission may make grants to States that begin development of a State or Regional Plan within 180 days after the enactment of this Act to offset up to one-half of the costs required to develop such plans.

(c) SMART GRID REPORT.—Based on its completed initial assessment under subsection (a), the Commission shall submit a report to Congress and the President not later than 2 years after the date of enactment of this Act and subsequent reports every 2 years thereafter. Each report shall include recommendations to the President and to the Congress on actions necessary to modernize the electricity grid. The Commission shall annually update and revise its report and as well as conduct ongoing monitoring and evaluation activities.

(d) CONSULTATION AND PUBLIC INPUT.—The Commission shall consult with the Secretary of Energy and the Federal Energy Regulatory Commission on technical issues associated with advanced electricity grid technologies. The Commission shall to the extent feasible provide for broad and frequent input from stakeholders and the general public

(e) INTEROPERABILITY PROTOCOLS AND MODEL STANDARDS FOR INFORMATION MANAGEMENT.—

(1) IN GENERAL.—The Grid Modernization Commission shall work with Smart Grid stakeholders to lead towards the earliest feasible development of flexible, uniform, and consensus protocols or model standards for information management among and interoperability of smart grid devices and systems. Such protocols and model standards shall allow such devices to communicate and function over multiple technologies, including wireless, cable, satellite, broadband-over-power line, and telephone. Such protocols and model standards should align policy, business, and technology approaches in a way that enables all electric resources, including demand side resources, to contribute to an efficient, reliable electricity network, on an automated basis, as appropriate.

(2) SCOPE OF PROTOCOLS AND MODEL STANDARDS.—The protocols and model standards shall accommodate centralized and distributed generation, transmission and distribution resources, including advanced technologies to improve the efficiency and reliability of the electric power transmission and distributions system, renewable generation, energy stor-

age, energy efficiency, and demand response and enabling devices and systems.

(3) ESTABLISHMENT OF WORKING GROUP.—Not later than 90 days after the date of enactment of this Act the Commission shall establish a working group comprised of electric industry experts, to be appointed by the Chairman, to assist in developing the protocols and model standards described in this subsection and guide the Federal participation in that process. Members appointed to the working group shall represent the various sectors of the electricity industry, including sectors relating to the generation, transmission, distribution and end-user.

(4) DEVELOPMENT OF PROTOCOLS AND MODEL STANDARDS.—In developing the protocols and model standards, the working group shall consult with expert groups such as the Gridwise Architecture Council, the Institute of Electrical and Electronics Engineers, other electric industry groups, customer and manufacturer groups, and any appropriate Federal and State agencies. The proposed protocols and model standards shall be made available in the public domain, except to the extent they may allow or create threats to grid reliability and security.

(5) PROPOSAL FOR PROTOCOLS AND MODEL STANDARDS.—

(A) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the working group shall submit to the Commission recommendations concerning development of proposed protocols and model standards and recommendations for Federal support in the implementation of such protocols and model standards.

(B) REVIEW BY THE COMMISSION.—On receipt of the recommendations under subparagraph (A), the Commission shall take such action as necessary to encourage the adoption of the protocols and model standards and their implementation.

(C) PUBLICATION OF PROTOCOLS AND MODEL STANDARDS.—The Commission shall publish, not later than 3 years after the date of the enactment of this Act, and every two years thereafter, a report on the status of interoperability of smart grid technologies, and the availability of protocols and model standards to allow such interoperability.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out the purposes of this section the sum of $25,000,000 for each of the fiscal years 2008 through 2012, and such sums as may be necessary thereafter through fiscal year 2018.

**SEC. 104. FEDERAL MATCHING FUND FOR SMART GRID INVESTMENT COSTS.**

(a) MATCHING FUND.—The Secretary of Energy shall establish a Smart Grid Investment Matching Grant Program to provide reimbursement of one-fourth of qualifying Smart Grid investments.

(b) QUALIFYING INVESTMENTS.—Qualifying Smart Grid investments may include any of the following made on or after the date of enactment of this Act:

(1) In the case of appliances covered for purposes of establishing energy conservation standards under part B of title III of the Energy Policy and Conservation Act of 1975 (42 U.S.C. 6291 and following), the documented expenditures incurred by a manufacturer of such appliances associated with purchasing or designing, creating the ability to manufacture, and manufacturing and installing for one calendar year, internal devices that allow the appliance to engage in Smart Grid functions.

(2) In the case of specialized electricity-using equipment, including motors and drivers, installed in industrial or commercial applications, the documented expenditures incurred by its owner or its manufacturer of installing devices or modifying that equipment to engage in Smart Grid functions.

(3) In the case of transmission and distribution equipment fitted with monitoring and communications devices to enable smart grid functions, the documented expenditures incurred by the electric utility to purchase and install such monitoring and communications devices.

(4) In the case of metering devices, sensors, control devices, and other devices integrated with and attached to an electric utility system that are capable of engaging in Smart Grid functions, the documented expenditures incurred by the electric utility and its customers to purchase and install such devices.

(5) In the case of software that enables devices or computers to engage in Smart Grid functions, the documented purchase costs of the software.

(6) In the case of entities that operate or coordinate operations of regional electric grids, the documented expenditures for purchasing and install-

ing such equipment that allows Smart Grid functions to operate and be combined or coordinated among multiple electric utilities and between that region and other regions.

(7) In the case of persons or entities other than electric utilities owning and operating a distributed electricity generator, the documented expenditures of enabling that generator to be monitored, controlled, or otherwise integrated into grid operations and electricity flows on the grid utilizing Smart Grid functions.

(8) In the case of electric or hybrid-electric vehicles, the documented expenses for devices that allow the vehicle to engage in Smart Grid functions.

(9) The documented expenditures related to purchasing and implementing Smart Grid functions in such other cases as the Secretary of Energy shall identify. In making such grants, the Secretary shall seek to reward innovation and early adaptation, even if success is not complete, rather than deployment of proven and commercially viable technologies.

(c) INVESTMENTS NOT INCLUDED.—Qualifying Smart Grid investments do not include any of the following:

(1) Expenditures for electricity generation, transmission, or distribution infrastructure or equipment not directly related to enabling Smart Grid functions.

(2) After the effective date of a standard under paragraph (21) of section 111(d) of the Public Utility Regulatory Policies Act of 1978 (relating to Smart Grid information), an investment that is not in compliance with such standard.

(3) After the development and publication by the Commission of protocols and model standards for interoperability of smart grid devices and technologies, an investment that fails to incorporate any of such protocols or model standards.

(4) Expenditures for physical interconnection of generators or other devices to the grid except those that are directly related to enabling Smart Grid functions.

(5) Expenditures for ongoing salaries, benefits, or personnel costs not incurred in the initial installation, training, or start up of smart grid functions.

(6) Expenditures for travel, lodging, meals or other personal costs.

(7) Ongoing or routine operation, billing, customer relations, security, and maintenance expenditures.

(8) Such other expenditures that the Secretary of Energy determines not to be Qualifying Smart Grid Investments by reason of the lack of the ability to perform smart grid functions or lack of direct relationship to smart grid functions.

(d) SMART GRID FUNCTIONS.—The term ''smart grid functions'' means any of the following:

(1) The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations, to or from or by means of the electric utility system, through one or a combination of devices and technologies.

(2) The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time or use, nature of use, storage, or other information relevant to device, grid, or utility operations to or from a computer or other control device.

(3) The ability to measure or monitor electricity use as a function of time of day, power quality char-

acteristics such as voltage level, current, cycles per second, or source or type of generation and to store, synthesize or report that information by digital means.

(4) The ability to sense and localize disruptions or changes in power flows on the grid and communicate such information instantaneously and automatically for purposes of enabling automatic protective responses to sustain reliability and security of grid operations.

(5) The ability to detect, prevent, communicate with regard to, respond to, or recover from system security threats, including cyber-security threats and terrorism, using digital information, media, and devices.

(6) The ability of any appliance or machine to respond to such signals, measurements, or communications automatically or in a manner programmed by its owner or operator without independent human intervention.

(7) The ability to use digital information to operate functionalities on the electric utility grid that were previously electro-mechanical or manual.

(8) The ability to use digital controls to manage and modify electricity demand, enable congestion

management, assist in voltage control, provide operating reserves, and provide frequency regulation.

(9) Such other functions as the Secretary of Energy may identify as being necessary or useful to the operation of a Smart Grid.

(e) OFFICE.—The Secretary of Energy shall—

(1) establish an Office to administer the Smart Grid Investment Grant Program, assuring that expert resources from the Commission on Grid Modernization, the Office of Energy Distribution and Electricity Reliability, and the Office of Energy Efficiency and Renewable Energy are fully available to advise on its administration and actions;

(2) appoint a Senior Executive Service officer to direct the Office, together with such personnel as are required to administer the Smart Grid Investment Grant program;

(3) establish and publish in the Federal Register, within 180 days after the enactment of this Act procedures by which applicants who have made qualifying Smart Grid investments can seek and obtain reimbursement of one-fourth of their documented expenditures;

(4) establish procedures to assure that there is no duplication or multiple reimbursement for the

same investment or costs, that the reimbursement goes to the party making the actual expenditures for Qualifying Smart Grid Investments, and that the grants made have significant effect in encouraging and facilitating the development of a smart grid;

(5) maintain public records of reimbursements made, recipients, and qualifying Smart Grid investments which have received reimbursements;

(6) establish procedures to provide, in cases deemed by the Secretary to be warranted, advance payment of moneys up to the full amount of the projected eventual reimbursement, to creditworthy applicants whose ability to make Qualifying Smart Grid Investments may be hindered by lack of initial capital, in lieu of any later reimbursement for which that applicant qualifies, and subject to full return of the advance payment in the event that the Qualifying Smart Grid investment is not made;

(7) establish procedures to provide, in the event appropriated moneys in any year are insufficient to provide reimbursements for qualifying Smart Grid investments, that such reimbursement would be made in the next fiscal year or whenever funds are again sufficient, with the condition that the insufficiency of funds to reimburse Qualifying Smart Grid

Investments from moneys appropriated for that purpose does not create a Federal obligation to that applicant; and

(8) have and exercise the discretion to deny grants for investments that do not qualify in the reasonable judgement of the Secretary.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Energy the sums of—

(1) $10,000,000 for each of fiscal years 2008 through 2012 to provide for administration of the Smart Grid Investment Matching Fund; and

(2) $250,000,000 for fiscal year 2008 and $500,000,000 for each of fiscal years 2009 through 2012 to provide reimbursements of one-fourth of Qualifying Smart Grid Investments.

**SEC. 105. SMART GRID TECHNOLOGY DEPLOYMENT.**

(a) POWER GRID DIGITAL INFORMATION TECHNOLOGY.—The Secretary of Energy shall conduct programs to—

(1) deploy advanced techniques for measuring peak load reductions and energy efficiency savings on customer premises from smart metering, demand response, distributed generation and electricity storage systems;

(2) implement means for demand response, distributed generation, and storage to provide ancillary services;

(3) advance the use of wide-area measurement networks including data mining, visualization, advanced computing, and secure and dependable communications in a highly distributed environment; and

(4) implement reliability technologies in a grid control room environment against a representative set of local outage and wide area blackout scenarios.

(b) SMART GRID REGIONAL DEMONSTRATION PROGRAM.—

(1) ESTABLISHMENT OF PROGRAM.—The Secretary of Energy shall establish a program of demonstration projects specifically focused on advanced technologies for power grid sensing, communications, analysis, and power flow control, including the integration of demand-side resources into grid management. The goals of this program shall be to—

(A) demonstrate the potential benefits of concentrated investments in advanced grid technologies on a regional grid;

(B) facilitate the commercial transition from the current power transmission and dis-

tribution system technologies to advanced technologies; and

(C) facilitate the integration of advanced technologies in existing electric networks to improve system performance, power flow control and reliability.

(2) DEMONSTRATION PROJECTS.—The Secretary shall establish Smart Grid demonstration projects for not more than 5 electric utility systems of various types and sizes under this subsection. Such demonstration projects shall be undertaken in cooperation with the electric utility. Under such demonstration projects, financial assistance shall be available to cover not more than one-half of the qualifying Smart Grid technology investments made by the electric utility. Any project receiving financial assistance under this section shall not be eligible to receive financial assistance (including loan guarantees) under any other Federal program.

(c) AUTHORIZATION.—

(1) POWER GRID DIGITAL INFORMATION TECHNOLOGY PROGRAMS.—There are authorized to be appropriated to carry out subsection (a) such sums as are necessary for each of the fiscal years 2008 through 2012.

(2) SMART GRID REGIONAL DEMONSTRATION PROGRAM.—There is authorized to be appropriated to carry out subsection (b) $20,000,000 for each of the fiscal years 2008 through 2012.

**SEC. 106. SMART GRID INFORMATION REQUIREMENTS.**

(a) FINDINGS.—Congress finds that Smart Grid technologies will require, for their optimum use by electricity consumers, that such consumers have access to information on prices, use, and other factors in possession of their utilities or electricity suppliers, in order to assist the customers in optimizing their electricity use and limiting the associated environmental impacts.

(b) DEVELOPMENT OF RULES.—The Commission on Grid Modernization shall within one year of its initial meeting develop and declare a standard for the collection, presentation and delivery of information to electricity purchasers as required by the standard under section 111(d)(21) of the Public Utility Regulatory Policies Act of 1978. Such standard shall provide purchasers with different access options for such information. Such standard shall be developed with input from the Secretary of Energy, the Federal Energy Regulatory Commission, the Administrator of the Environmental Protection Agency, States, and stakeholders representing, but not limited to, electric utilities, energy efficiency and demand response

experts, environmental organizations and consumer organizations.

(c) APPLICATION OF SMART GRID INFORMATION STANDARD TO FEDERAL ENTITIES AND WHOLESALE MARKETS.—Within 60 days of the declaration of the standard under subsection (b), the Federal Energy Regulatory Commission shall propose a rule under which all public utilities, with respect to federally jurisdictional sales for resale of electricity in interstate commerce, and all approved regional transmission organizations subject to its jurisdiction, will implement those elements of the Smart Grid information standard developed pursuant to this section that the Commission determines to be relevant and to add value for purchasers of wholesale power or those utilizing interstate transmission. The Tennessee Valley Authority, Bonneville Power Administration, and Federal power administrations shall, within 90 days of the adoption of a final rule by the Commission, adopt it for their own sales or transmission of electricity.

**SEC. 107. STATE CONSIDERATION OF INCENTIVES FOR SMART GRID.**

(a) CONSIDERATION OF ADDITIONAL STANDARDS.—Section 111(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) is amended by adding at the end:

''(18) UTILITY INVESTMENT IN SMART GRID INVESTMENTS.—Each electric utility shall prior to undertaking investments in non-advanced grid technologies demonstrate that alternative investments in advanced grid technologies have been considered, including from a standpoint of cost-effectiveness, where such cost-effectiveness considers costs and benefits on a life-cycle basis.

''(19) UTILITY COST OF SMART GRID INVESTMENTS.—Each electric utility shall be permitted to—

''(A) recover from ratepayers the capital and operating expenditures and other costs of the utility for qualified smart grid system, including a reasonable rate of return on the capital expenditures of the utility for a qualified smart grid system, and

''(B) recover in a timely manner the remaining book-value costs of equipment rendered obsolete by the deployment of a qualified smart grid system, based on the remaining depreciable life of the obsolete equipment.

''(20) RATE DESIGN MODIFICATIONS TO PROMOTE ENERGY EFFICIENCY INVESTMENTS.—

''(A) IN GENERAL.—The rates allowed to be charged by any electric utility shall—

''(i) align utility incentives with the delivery of cost-effective energy efficiency; and

''(ii) promote energy efficiency investments.

''(B) POLICY OPTIONS.—In complying with subparagraph (A), each State regulatory authority and each nonregulated utility shall consider—

''(i) removing the throughput incentive and other regulatory and management disincentives to energy efficiency;

''(ii) providing utility incentives for the successful management of energy efficiency programs;

''(iii) including the impact on adoption of energy efficiency as 1 of the goals of retail rate design, recognizing that energy efficiency must be balanced with other objectives;

''(iv) adopting rate designs that encourage energy efficiency for each customer class; and

''(v) allowing timely recovery of energy efficiency-related costs.

''(21) SMART GRID INFORMATION.—

''(A) STANDARD.—All electricity purchasers shall be provided direct access, both in written and electronic machine-readable form, to information from their electricity provider as provided in subparagraph (B).

''(B) INFORMATION.—Information provided under this section shall conform to the standardized rules issued by the Commission on Grid Modernization under section 106(b) of the Smart Grid Facilitation Act of 2007 and shall include:

''(i) PRICES.—Purchasers and other interested persons shall be provided with information on—

''(I) time-based electricity prices in the wholesale electricity market; and

''(II) time-based electricity retail prices or rates that are available to the purchasers.

''(ii) USAGE.—Purchasers shall be provided with the number of electricity

units, expressed in kwh, purchased by them

''(iii) INTERVALS AND PROJECTIONS.—Updates of information on prices and usage shall be offered on not less than a daily basis, shall include hourly price and use information, where available, and shall include a day-ahead projection of such price information to the extent available.

''(iv) SOURCES.—Purchasers and other interested person shall be provided with written information on the sources of the power provided by the utility, to the extent it can be determined, by type of generation, including greenhouse gas emissions and criteria pollutants associated each type of generation, for intervals during which such information is available on a cost-effective basis, but not less than monthly.

''(C) ACCESS.—Purchasers shall be able to access their own information at any time through the internet and on other means of communication elected by that utility for Smart Grid applications. Other interested persons

shall be able to access information not specific to any purchaser through the Internet. Information specific to any purchaser shall be provided solely to that purchaser.''.

(b) RECONSIDERATION OF CERTAIN STANDARDS.—Section 112 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622) is amended by adding the following at the end thereof:

''(g) RECONSIDERATION OF PRIOR TIME-OF-DAY AND COMMUNICATION STANDARDS.—Not later than 1 year after the enactment of this subsection, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated utility shall commence a reconsideration under section 111, or set a hearing date for reconsideration, with respect to the standards established by paragraphs (3) and (14) of section 111(d) to take into account Smart Grid technologies. Not later than 2 years after the date of the enactment of this subsection, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the reconsideration, and shall make the determination, referred to in section 111 with respect to the standards established by paragraphs (3) and (14) of section 111(d).''.

(c) COMPLIANCE.—

(1) TIME LIMITATIONS.—Section 112(b) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(b)) is amended by adding the following at the end thereof:

''(6)(A) Not later than 1 year after the enactment of this paragraph, but not less than 3 years after the conclusion of any prior review of such standards, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated utility shall commence the consideration referred to in section 111, or set a hearing date for consideration, with respect to the standards established by paragraphs (18) through (20) of section 111(d). Not later than 6 months after the promulgation of rules by the Commission on Grid Modernization under section 106(b) of the Smart Grid Facilitation Act of 2007, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated utility shall commence the consideration referred to in section 111, or set a hearing date for consideration, with respect to the standard established by paragraph (21) of section 111(d).

''(B) Not later than 2 years after the date of the enactment of the this paragraph, but not less than 4 years after the conclusion of any prior review of such standard, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the consideration, and shall make the determination, referred to in section 111 with respect to each standard established by paragraphs (18) through (20) of section 111(d). Not later than 18 months after the promulgation of rules by the Commission on Grid Modernization under section 106(b) of the Smart Grid Facilitation Act of 2007 each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the consideration, and shall make the determination, referred to in section 111 with respect to each standard established by paragraph (21) of section 111(d).''.

(2) FAILURE TO COMPLY.—Section 112(c) of such Act is amended by adding the following at the end: ''In the case of the standards established by paragraphs (18) through (21) of section 111(d), the reference contained in this subsection to the date of

enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraphs.''.

(3) PRIOR STATE ACTIONS.—Section 112(d) of such Act is amended by inserting ''and paragraphs (18) through (20)'' before ''of such 111(d)''.

**SEC. 108. DOE STUDY OF SECURITY ATTRIBUTES OF SMART GRID SYSTEMS.**

(a) DOE STUDY.—The Secretary of Energy shall, within 6 months after the Grid Modernization Commission completes its first biennial assessment and report under section 103 of the Smart Grid Facilitation Act of 2007, submit a report to Congress that provides a quantitative assessment and determination of the existing and potential impacts of the deployment of Smart Grid systems on improving the security of the Nation's electricity infrastructure and operating capability. The report shall include but not be limited to specific recommendations on each of the following:

(1) How smart grid systems can help in making the Nation's electricity system less vulnerable to disruptions due to intentional acts against the system.

(2) How smart grid systems can help in restoring the integrity of the Nation's electricity system subsequent to disruptions.

(3) How smart grid systems can facilitate emergency communications and control of the Nation's electricity system during times of localized or nationwide emergency.

(b) CONSULTATION.—The Secretary shall consult with other Federal agencies in the development of the report under this section, including but not limited to the Secretary of Homeland Security, the Federal Energy Regulatory Commission and the Electric Reliability Organization certified by the Commission under section 215(c) of the Federal Power Act (16 U.S.C. 824 o) as added by section 1211 of the Energy Policy Act of 2005 (Public Law 109–58; 119 Stat. 941)

(c) FUNDING.—The Secretary shall fund demonstration projects for the purpose of demonstrating the findings of the report under this section. Not more than $10,000,000 are authorized to be appropriated for such projects.

# Subtitle B—Demand Response

**SEC. 111. ELECTRICITY SECTOR DEMAND RESPONSE.**

(a) AMENDMENT OF NECPA.—Title V of the National Energy Conservation Policy Act (42 U.S.C. 8201 and following) is amended by adding the following new part at the end thereof:

**"PART 5—PEAK DEMAND REDUCTION**

**"SEC. 571. DEFINITIONS.**

''(a) SECRETARY.—As used in this part, the term 'Secretary' means the Secretary of Energy.

''(b) FEDERAL AGENCY.—As used in this part, the term 'Federal agency' has the same meaning as provided by section 551 of this Act.

**"SEC. 572. FEDERAL ELECTRICITY PEAK DEMAND REDUCTION STANDARD.**

''(a) 2008 AGENCY ANNUAL ENERGY PLAN.—Each Federal agency shall prepare, and include in its annual report under section 548(a) of this Act, each of the following:

''(1) A determination of the agency's aggregate electricity demand during the system peak hours for the utilities providing electricity service to its facilities during 2006 and 2007.

''(2) A forecast for each year through 2018 of the projected growth in such peak demand in light of projected growth of facilities, staff, activities, electric intensity of activities, and other relevant factors.

''(b) FEDERAL ELECTRICITY PEAK DEMAND REDUCTION STANDARD.—

''(1) IN GENERAL.—Except as provided in paragraph (2), for calendar year 2009 and each calendar year thereafter, each Federal agency shall reduce its

aggregate peak electricity demand or make such amounts of electricity demand available in the form of demand response, by the percentage amount specified in the Federal Electricity Peak Demand Reduction Standard set forth in the following table:

**"Federal Electricity Peak Demand Reduction Standard**

| Calendar Year | Reduction of Peak Demand Forecast |
|---|---|
| 2009 | 2 percent of the peak demand forecast for calendar year 2009 |
| 2010 | 4 percent of the peak demand forecast for calendar year 2010 |
| 2011 | 6 percent of the peak demand forecast for calendar year 2011 |
| 2012 | 8 percent of the peak demand forecast for calendar year 2012 |
| 2013 | 10 percent of the peak demand forecast for calendar year 2013 |
| 2014 | 12 percent of the peak demand forecast for calendar year 2014 |
| 2015 | 14 percent of the peak demand forecast for calendar year 2015 |
| 2016 | 16 percent of the peak demand forecast for calendar year 2016 |
| 2017 | 18 percent of the peak demand forecast for calendar year 2017 |
| 2018 and each calendar year thereafter. | 20 percent of the peak demand forecast for the applicable calendar year |

In the table above, the term 'forecast' refers to the forecast set forth in the 2008 report under section 548(a) of this Act as updated in accordance with subsection in (c)(1)(C).

''(2) EXCEPTION.—The standard under this subsection shall not apply to any activity of a Federal agency relating to defense or national security if compliance with the standard would have an adverse mission impact on the activity, as determined

by the Secretary of Defense or the Secretary of Homeland Security.

''(c) IMPLEMENTATION OF STANDARD.—

''(1) IN GENERAL.—Not later than January 1, 2010, and each calendar year thereafter, each Federal agency shall include in the annual energy plan of the Federal agency each of the following:

''(A) An assessment of whether the Federal agency was in compliance with the standard under subsection (b) for the preceding year.

''(B) A description of—

''(i) the method by which the Federal agency proposes to comply with the standard for the following calendar year;

''(ii) the factors relied on by the head of the Federal agency in determining whether to participate in demand response programs offered by an electric utility or others during the preceding calendar year; and

''(iii) if the Federal agency did not participate in a demand response program offered by each utility providing electric service to facilities of the agency during the preceding calendar year, an expla-

nation for the decision by the head of the Federal agency to not participate.

''(C) An update of the agency's prior forecast for the remaining years in the period until 2018.

''(2) AVAILABILITY TO PUBLIC.—Not later than January 1, 2010, and each calendar year thereafter, the head of each Federal agency shall make available to the public a description of each provision included in the annual energy plan of the Federal agency described in subparagraphs (A) through (C) of paragraph (1).

''(d) MODIFICATIONS TO FEDERAL ENERGY MANAGEMENT PROGRAM.—The Secretary shall make any modification to the Federal Energy Management Program of the Department of Energy that the Secretary determines to be necessary to—

''(1) incorporate the standard established under subsection (b) into the Federal Energy Management Program;

''(2) assist any Federal agency to comply with the standard established under subsection (b) through any appropriate means, including conducting 1 or more demonstration projects at Federal facilities.

''(e) ANNUAL REPORT.—Not later than March 1, 2010, and annually thereafter, the Secretary shall submit to Congress a report that evaluates the success of agencies in meeting the standard established under subsection (b) and the success of the Federal Energy Management Program in assisting agencies with meeting the standard, and the costs and benefits of such participation.

**''SEC. 573. NATIONAL ACTION PLAN FOR DEMAND RESPONSE.**

''(a) NATIONAL ASSESSMENT AND REPORT.—The Grid Modernization Commission established under subtitle A of the Smart Grid Facilitation Act of 2007 shall conduct a National Assessment of Demand Response. The Commission shall, within 18 months of the date on which the full Commission first meets, submit a Report to Congress that includes each of the following:

''(1) Estimation of nationwide demand response potential in 5 and 10 year horizons, including data on a State-by-State basis, and a methodology for updates of such estimates on an annual basis.

''(2) Estimation of how much of this potential can be achieved within 5 and 10 years after the enactment of this Act accompanied by specific policy recommendations that if implemented can achieve the estimated potential. Such recommendations shall

include options for funding and/or incentives for the development of demand response resources. The Commission shall seek to take advantage of pre-existing research and ongoing work, and shall assume that there is no duplication of effort. The Commission shall further note any barriers to demand response programs that are flexible , non-discriminatory, and fairly compensatory for the services and benefits made available and shall provide recommendations for overcoming such barriers.

''(b) NATIONAL ACTION PLAN ON DEMAND RESPONSE.—The Grid Modernization Commission shall further develop and implement a National Action Plan on Demand Response. Such Plan shall be completed within one year after the completion of the National Assessment of Demand Response, and shall meet each of the following objectives:

''(1) Provision of adequate technical assistance to States to allow them to maximize the amount of demand response resources that can be developed and deployed.

''(2) Implementation of a national communications program that includes broad-based customer education and support.

''(3) Development and dissemination of tools, information and other support mechanisms for use by customers, states, utilities and demand response providers.

''(c) AUTHORIZATION.—There are authorized to be appropriated to carry out this section not more than $10,000,000 for each of the fiscal years 2008 and 2009 and $20,000,000 for each of the fiscal years 2010 through 2020.

**''SEC. 574. REPORT ON ENVIRONMENTAL ATTRIBUTES AND IMPACTS OF DEMAND RESPONSE AND SMART GRID SYSTEMS.**

''(a) REPORT.—The Administrator of the Environmental Protection Agency shall solicit public input and, within 6 months after completion of the National Assessment of Demand Response required by section 573, submit a report to Congress that addresses each of the following:

''(1) A quantitative assessment and determination of the existing and potential impacts of demand response and 'smart grid' systems on air emissions and air quality, including but not limited to carbon dioxide, oxides of nitrogen and oxides of sulfur.

''(2) An assessment and determination of the existing and potential impacts of demand response

and 'smart grid' systems on environmental parameters other than emissions and air quality, including but not limited to:

"(A) Land use.

"(B) Water use.

"(C) Use of renewable energy.

"(D) Effect on energy sources other than electricity.

"(3) A detailed plan for how Energy Efficiency and Clean Energy programs administered by the Agency, including the Energy Star Program, will incorporate and encourage end-use efficiency, demand response and 'smart grid' systems and technologies, including but not limited to each of the following:

"(A) Requirements that appliances and other equipment are capable of manually and automatically receiving and acting upon pricing and control information and or instructions provided by the customer, a load serving entity or a third-party designated by the customer.

"(B) Requirements for time-based valuation of kilowatt hour reductions in planning and evaluation of energy efficiency programs.

"(C) Education and communication, including to state energy officials and state regu-

lators, that build awareness of demand response and smart grid systems and technologies and their existing and potential relationship to such Agency programs.

''(b) FUNDING.—There are authorized to be appropriated to carry out this section for fiscal year 2010, to remain available until expended.''.

(b) TABLE OF CONTENTS.—The table of contents for such Act is amended by adding the following after the items relating to part 4 of title V:

''PART 5—PEAK DEMAND REDUCTION

''Sec. 571. Definitions.
''Sec. 572. Federal Electricity Peak Demand Reduction Standard.
''Sec. 573. National action plan for demand response.
''Sec. 574. Study of environmental attributes and impacts of demand response and smart grid systems.''.

**Union Calendar No. 192**

110TH CONGRESS
1ST SESSION

# H. R. 3237

**[Report No. 110–305, Part I]**

# A BILL

To facilitate the transition to a smart electricity grid.

AUGUST 3, 2007

Committee on Science and Technology discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed