

Energy Legislation: Comparison of Selected Provisions in H.R. 8 and S. 2012

(name redacted), Coordinator
Section Research Manager

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Summary

Congress most recently enacted major energy legislation in the Energy Independence and Security Act of 2007 (P.L. 110-140). The 114th Congress is currently considering new legislation to address broad energy issues. On September 9, 2015, the Senate Committee on Energy and Natural Resources reported S. 2012, the Energy Policy and Modernization Act; the Senate began consideration on the bill January 27, 2016. On December 3, 2015, the House passed an amended version of H.R. 8, the North American Energy Security and Infrastructure Act of 2015.

Both bills would address a variety of energy topics, including

- Energy efficiency in federal buildings, data centers, manufacturing, and schools;
- Water conservation/efficiency;
- Electric grid cybersecurity;

H.R. 8 also contains provisions on

- Electric grid physical security;
- A North American energy security plan;
- Repeal of the limitation on exports of U.S.-produced crude oil; and
- A study of wholesale electricity markets.

S. 2012 also includes provisions on

- Energy workforce development (struck from H.R. 8 on the House floor)
- Review of the Strategic Petroleum Reserve (struck from H.R. 8 on the House floor)
- Energy-efficient appliances;
- Liquefied natural gas exports;
- Electric grid energy storage;
- Renewable energy supply and incentives;
- Helium and critical minerals;
- Nuclear energy; and
- Loan programs.

As part of the FY2016 Consolidated Appropriations Act (P.L. 114-113), Congress enacted two key energy provisions, removing them from the debate on H.R. 8 and S. 2012.

- Repeal of limitation on exports of U.S.-produced crude oil under the Energy Policy and Conservation Act; and
- Extension of several energy tax incentives, including the production tax credits (PTC) for wind and solar electricity.

Other key energy issues not addressed by the bills (but potentially subject to floor amendments):

- Modifications to the federal renewable fuel standard (RFS);
- Transport safety (rail, pipeline, etc.) for crude oil and other flammable fuels; and
- Nuclear waste storage and disposal.

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Introduction

On September 9, 2015, the Senate Committee on Energy and Natural Resources reported S. 2012, the Energy Policy Modernization Act, a major energy bill with provisions addressing energy efficiency, critical infrastructure, energy supplies (fossil, renewable, and nuclear), energy financing and markets, and critical minerals, among other topics.¹ On November 19, 2015, the House Committee on Energy and Commerce reported H.R. 8, the North American Energy Security and Infrastructure Act of 2015. H.R. 8 addresses many similar topics, including energy efficiency, infrastructure, and energy markets.² On December 3, 2015, the House passed an amended H.R. 8. The Senate began consideration of S. 2012 on January 27, 2016.³

The House-passed bill would have eliminated restrictions on the export of U.S.-produced crude oil (as would have H.R. 702, which passed the House October 9, 2015). In the Senate, S. 1372 and S. 2011 would also have eliminated the restrictions. However, this provision was included in the FY2016 Consolidated Appropriations Act (P.L. 114-113), as well as an extension of several energy tax incentives, including the production tax credits (PTC) for wind and solar electricity.

The House-passed bill also includes provisions on the physical security of the grid. Two of these provisions—on critical electric infrastructure security and a strategic transformer reserve—were included in the Fixing America’s Surface Transportation (FAST) Act (P.L. 114-94).⁴

This report summarizes recent congressional actions on H.R. 8 and S. 2012, and briefly discusses key topics covered by the bills and/or likely to be addressed in consideration on the floor and any potential conference. These two bills have been identified by committee and chamber leadership as the vehicles in the 114th Congress for major energy legislation.

Recent Developments

Enacted Legislation

H.R. 22—Fixing America’s Surface Transportation (FAST) Act of 2016

- January 6, 2015: Bill introduced
- January 6, 2015: Passed House
- July 30, 2015: Passed Senate
- December 3, 2015: House and Senate agree to Conference Report
- December 4, 2015: Signed by President Obama, became P.L. 114-94

¹ U.S. Congress, Senate Committee on Energy and Natural Resources, *Energy Policy and Modernization Act of 2015*, 114th Cong., 1st sess., September 9, 2015, S.Rept. 114-138 (Washington: GPO, 2015).

² U.S. Congress, House Committee on Energy and Commerce, *North American Energy Security and Infrastructure Act of 2015*, committee print, 114th Cong., 1st sess., November 19, 2015, H.Rept. 114-347 (Washington: GPO, 2015).

³ The Senate Committee on Energy and Natural Resources released a Manager’s Amendment to S. 2012, which is largely identical to the reported version, and is available on the committee’s website, http://www.energy.senate.gov/public/index.cfm?a=files.serve&File_id=9EC8A0A5-CA3F-434D-85C3-EAD30B040925. This report analyzes the committee-reported version.

⁴ For more information on these provisions, see CRS Insight IN10425, *Electric Grid Physical Security: Recent Legislation*, by (name redacted) .

H.R. 2029—Consolidated Appropriations Act of 2016

- April 24, 2015: Bill introduced as the FY2016 Military Construction/Veterans Affairs Appropriations Act
- April 30, 2015: Passed House
- November 11, 2015: Passed Senate
- December 18, 2015: House and Senate agree to bill as amended
- December 18, 2015: Signed by President Obama, became P.L. 114-113

House Legislation

H.R. 8—North American Energy Security and Infrastructure Act of 2015

- July 22, 2015: House Committee on Energy and Commerce Subcommittee on Energy and Power approved draft text that would become H.R. 8
- September 16, 2015: Bill introduced
- September 29-30, 2015: House Committee on Energy and Commerce markup
- September 30, 2015: Ordered reported by the House Committee on Energy and Commerce
- November 19, 2015: Reported by the House Committee on Energy and Commerce (H.Rept. 114-347)
- December 1-3, 2015: House consideration
- December 3, 2015: Passed House

H.R. 702—To adapt to changing crude oil market conditions

- February 4, 2015: Bill introduced
- September 17, 2015: House Committee on Energy and Commerce markup
- September 25, 2015: Reported by the House Committee on Energy and Commerce
- October 9, 2015: Passed House

Senate Legislation

S. 2012—Energy Policy Modernization Act of 2015

- July 28-30, 2015: Senate Committee on Energy and Natural Resources markup of various energy-related bills, some of which would be incorporated into S. 2012
- October 9, 2015: Reported by the Senate Committee on Energy and Natural Resources (S.Rept. 114-138)
- January 27, 2016: Senate consideration began

S. 1372—American Crude Oil Export Equality Act

- May 19, 2015: Bill introduced
- October 1, 2015: Senate Committee on Banking markup held, bill ordered reported

S. 2011—Offshore Production and Energizing National Security Act of 2015

- September 9, 2015: Reported by the Senate Committee on Energy and Natural Resources (S.Rept. 114-137); placed on Senate Calendar

Selected Energy Issues

Electric Grid Security⁵

Comparing Grid Security Provisions in H.R. 8 and S. 2012

With respect to emergency authority for the Secretary of Energy during grid emergencies, the principal difference between the two bills is the nature of the emergency threat or event. S. 2012 would authorize emergency measures only in case of a cyber threat whereas H.R. 8 would authorize them for any major threat to the grid—cyber or physical—and would include natural events (e.g., geomagnetic storms). While both bills would require the Department of Energy (DOE) to establish programs promoting cyber-secure technologies, the Senate bill would be more expansive, including risk modeling for all grid threats (not just cyber threats) and possible changes to the Electricity Sector Information Sharing and Analysis Center (E-ISAC).⁶ H.R. 8 also includes provisions to create a strategic transformer reserve; S. 2012 does not.

H.R. 8 Electric Grid Security Provisions

H.R. 8 includes three sections primarily directed at the security of the electric grid. As noted above, provisions similar to Sections 1104 and 1105 were included in P.L. 114-94.⁷

Section 1104 (Critical Electric Infrastructure Security) would provide the Secretary of Energy additional authority to order emergency measures to protect or restore the reliability of critical civilian or defense electric infrastructure during a grid security emergency. The identification of such an emergency would be made by written notice from the President with a concurrent notification to Congress. This section would allow grid owners to recover prudent costs incurred under such emergency measures through rates regulated by the Federal Energy Regulatory Commission (FERC). The section would also require increased protection of information on critical electric infrastructure.

Section 1105 (Strategic Transformer Reserve) would require the Secretary of Energy to submit to Congress a plan for a strategic transformer reserve. The reserve would store spare large power transformers and mobile substations in strategic locations in sufficient numbers to temporarily

⁵ This section was prepared by Richard Campbell, Specialist in Energy Policy, and (name redacted), Specialist in Energy and Infrastructure Policy. For more information on grid physical security, see CRS Report R43604, *Physical Security of the U.S. Power Grid: High-Voltage Transformer Substations*, by (name redacted). For more information on grid cybersecurity, see CRS Report R41886, *The Smart Grid and Cybersecurity—Regulatory Policy and Issues*, by (name redacted).

⁶ The E-ISAC, in collaboration with DOE and the Electricity Subsector Coordinating Council (ESCC), serves as the primary security communications channel for the Electricity Subsector and enhances the subsector's ability to prepare for and respond to cyber and physical threats, vulnerabilities, and incidents. From E-ISAC website, <https://www.esisac.com/#about>.

⁷ For more information on these provisions, see CRS Insight IN10425, *Electric Grid Physical Security: Recent Legislation*, by (name redacted).

replace critical large power transformers damaged due to intentional attacks or destructive natural events.

Section 1106 (Cyber Sense) would require the Secretary of Energy to establish a voluntary program to identify and promote cyber-secure products for the bulk-power grid. For products in the program, the section would require the Secretary to establish and maintain cybersecurity vulnerability reporting processes and a related database, promulgate related regulations, provide technical assistance to grid stakeholders, oversee testing, and provide other support.

S. 2012 Electric Grid Security Provisions

S. 2012 includes two sections primarily directed at electric grid security:

Section 2001 (Cybersecurity Threats) would provide the Secretary of Energy additional authority to order immediate emergency measures to avert or mitigate a cybersecurity threat upon receiving notice from the President that such a threat exists. The President would provide written notice to the Secretary and Congress of such a threat as soon as practicable. This section would allow grid owners to recover prudent costs incurred under such emergency measures through rates regulated by FERC. The section would also increase protection of critical electric infrastructure information.

Section 2002 (Enhanced Grid Security) would designate DOE as the lead sector-specific agency for cybersecurity for the energy sector, with specific mandates to

- Carry out an energy sector cybersecurity research, development, and demonstration program,
- Establish a cybertesting and mitigation program for energy sector supply chain products,
- Provide operational support for energy sector cyberresilience,
- Develop a program for modeling and assessing energy infrastructure risks in the face of natural and human-made threats (cyber and physical), and
- Explore alternative structures and funding mechanisms to expand industry participation in the E-ISAC.

Electric Grid Modernization and Reliability⁸

Comparing Electric Grid Modernization and Reliability in H.R. 8 and S. 2012

Both H.R. 8 and S. 2012 contain provisions for a review of Regional Transmission Organization or Independent System Operator (collectively RTOs) performance and market operations with regard to reliability and resiliency, ostensibly in the wake of new federal agency rules which could affect fuel diversity in electric generation. Options and funding for modernization of the grid to improve resiliency are addressed by various provisions in both bills. H.R. 8 has a provision that would protect parties from liability if an emergency order to provide grid services conflicted with environmental regulations or law. S. 2012 has provisions for developing micro-grids and expediting transmission siting. S. 2012 would require FERC to issue a report evaluating

⁸ This section was prepared by Richard Campbell, Specialist in Energy Policy. For more on grid modernization, see CRS Report R43742, *Customer Choice and the Power Industry of the Future*, by (name redacted) .

the effect of increasing dispatch of distributed generation and micro-grids on electric system reliability.

H.R. 8 Electric Grid Modernization/Reliability Provisions

H.R. 8 devotes Title I, “Modernizing and Protecting Infrastructure,” to grid modernization and reliability topics. Subtitle A addresses energy delivery and reliability; Subtitle B addresses energy security and infrastructure modernization.

Section 1102 (Resolving Environmental and Grid Reliability Conflicts) would authorize FERC to ensure that an emergency order for the generation, delivery, interchange, or transmission of electricity which results in a conflict with a federal, state, or local environmental requirement, regulation, or law, is applicable only during the hours necessary to meet the emergency and minimizes any adverse environmental impacts. An action or omission taken by a party necessary to comply with an emergency order issued under this subsection would not be considered a violation of such environmental law or regulation, and the party would not be subject to any requirement, civil or criminal liability, or citizen suit under the environmental law or regulation, even if a court action subsequently stayed, modified, or set aside the emergency order.

Section 1103 (Emergency Preparedness for Energy Supply Disruptions) would authorize the Secretary of Energy to enhance emergency preparedness for natural disasters. A list of activities is specified to improve communications and leverage industry cooperation in emergency situations.

Section 1107 (State Coverage and Consideration of PURPA Standards for Electric Utilities) would require states to consider three new voluntary standards under the Public Utility Regulatory Policies Act of 1978 (PURPA; 16 U.S.C. 2621(d)):

- Requiring each electric utility to develop a plan to improve the resiliency of electric infrastructure;
- Requiring electric utilities to develop and implement a plan for deploying advanced energy analytics (AEA), and requiring each state to consider and confirm the recovery of costs for procurement, deployment, and usage of AEA technology by electric utilities; and
- Requiring electric utilities to adopt or modify policies to ensure that reliable generation is incorporated into their integrated resource plans over a 10-year period.

Section 1108 (Reliability Analyses for Certain Rules that Affect Electric Generating Facilities) would require FERC (in consultation with the Electric Reliability Organization (ERO)) to conduct an independent reliability assessment of any proposed or final rule issued by a federal agency for which compliance with the rule may impact an electric utility, resulting in closure or interruption to operations of its generating units.

Section 1110 (Reliability and Performance Assurance in Regional Transmission Organizations) would require each RTO that operates a capacity market (or a comparable market intended to ensure the procurement and availability of sufficient future electric energy resources) to provide FERC an analysis of how the structure of the market utilizes competitive market forces (while ensuring reliable system operation) in procuring capacity resources. FERC would be required to evaluate such analyses and submit a report to Congress evaluating the market structures.

S. 2012 Electric Grid Modernization/Reliability Provisions

S. 2012 addresses these issues in Title II, Subtitle D, and Title IV, Subtitle D.

Section 2302 (Electric System Grid Architecture, Scenario Development, and Modeling) would require the Secretary of Energy to establish a process to develop a model of grid architecture and a set of scenarios to examine the impacts of different combinations of resources (including different quantities of distributed energy resources and large-scale central generation within different market structures) on the grid. The Secretary would make a determination whether any additional standards are necessary to ensure the interoperability of grid systems and communications networks.

Section 2304 (Hybrid Micro-Grid Systems for Isolated and Resilient Communities) would require the Secretary to establish a multiple-phase program focused on promoting the development of hybrid micro-grids for isolated communities and micro-grid systems to increase critical infrastructure resiliency. An implementation strategy, especially for isolated communities subject to extreme weather and high energy costs, would be coupled with developing micro-grids to increase resiliency. Cost-shared demonstration projects would include the development of physical and cybersecurity plans to protect the grid. The Secretary would be required to submit annual reports to Congress on the program.

Section 2309 (Electric Transmission Infrastructure Permitting) would require the Secretary of Energy to establish an Interagency Rapid Response Team for transmission to expedite and improve the permitting process for electric transmission infrastructure on federal and nonfederal land. A Transmission Ombudsman (with specific duties described in the bill) would be established within the Council of Environmental Quality to ensure and enhance grid reliability.

Section 2310 (Report by Transmission Organizations of Distributed Energy Resources and Micro-grid Systems) would require FERC to mandate a report from RTOs identifying distributed energy resources and micro-grid systems that are subject to dispatch by the RTO. The report would identify fuel sources and operational characteristics of such systems, and to the extent practicable, include a discussion of the benefits and costs associated with these systems over the short- and long-term periods of the RTO planning cycle, identifying barriers to the deployment of these systems for RTO use.

Section 4301 (Bulk Power System Reliability Impact Statement) would require regional entities under the ERO to submit a report every three years to Congress and FERC on the state of and prospects for reliability within the geographic region covered by the regional entity. Not later than 15 days after the head of a federal agency proposes a major rule that may significantly affect the reliable operation of the bulk power system, FERC would be required to solicit a reliability impact statement (RIS) from any regional entity affected. The ERO would be required to produce a single RIS for an area broader than covered by a single regional entity.

Section 4302 (Report by Transmission Organizations on Diversity of Supply) would require FERC to obtain a report from each RTO identifying electric generation capacity resources available to the RTO and describing their operational characteristics and availability of transmission facilities and ancillary services to support reliability. The report would assess the ability of the RTO's market rules and operations to produce a transparent market. Opportunities for enhancing electric generation self-supply options by load-serving entities would also be identified in the report.

Energy Efficiency and Renewable Energy⁹

Both bills contain several provisions related to renewable energy and energy efficiency, although there is little overlap among the provisions. The most significant overlap is in energy efficiency in buildings.

Similar Efficiency Provisions

Efficiency in Buildings

Most of the provisions contained in the two bills related to efficiency in buildings are relatively modest “house-keeping” proposals, such as deleting expired provisions of the code or eliminating certain reports to Congress. Many of the buildings provisions in the two bills are similar or nearly identical. Some of those provisions (e.g., H.R. 8: §3111, §3112, §3116; S. 2012: §1009, §1011, §1015) are similar to—or otherwise related to—proposals that appeared in the Shaheen-Portman bill (S. 2262) and related legislation of the 113th Congress.¹⁰ **Table 1** shows the similar and related buildings provisions of the two bills.

Table 1. Buildings: Related Provisions in H.R. 8 and S. 2012

(Table shows related section numbers for each bill)

	Model Codes ^a	Schools	ESPC ^b	Info Tech	Data Centers	Fossil Fuel	Performance Stds.	Furnace Stds.	Energy Star	Voluntary Verification
H.R. 8	3141	3131	none ^c	3111	3112	3116	3117	3123	3124	3122
S. 2012	1001	1003	1006	1009	1011	1015	1016	1103	1104	1106

Source: H.R. 8 and S. 2012.

Notes: Does not include buildings provisions that are unique to each bill.

- The two provisions for model energy codes cover the same functional areas, but the proposals are markedly different. For details about their differences, see the section below.
- Energy savings performance contracts.
- This provision was struck on the House floor.

Code Maintenance: Repeal Provisions

Both bills contain numerous proposals to repeal efficiency, renewables, and other statutory provisions (S. 2012, Title IV, Subtitle H; H.R. 8, Subtitle B Chapter 3). The proposed repeals of provisions for renewables and efficiency are nearly identical. Several of those provisions would repeal study, survey, or reporting requirements (e.g., H.R. 8: §3233, §3234, §3250; S. 2012: §4704, §4705). Others would repeal programs. Of the proposed program repeals, it is unclear whether some of these provisions may have significant impact (e.g., H.R. 8: §3246, §3249, §3251; S. 2012: §4717, §4722, §4724).

⁹ This section was prepared by (name redacted), Specialist in Energy Policy, and (name redacted), Specialist in Agricultural Conservation and Natural Resources Policy. For more information on federal energy efficiency and renewable energy programs, see CRS Report R40913, *Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs*, by (name redacted) and (name redacted).

¹⁰ For a review of provisions in S. 2262, see CRS Report R43524, *S. 2262, Shaheen-Portman Bill 2014: Energy Savings and Industrial Competitiveness Act*, by (name redacted).

Key Differences in Efficiency and Renewable Energy Provisions

Buildings: Model Energy Codes

The two bills have distinctly different proposals for model energy codes. Section 1001 of S. 2012 is similar to the model codes provision in the Shaheen-Portman bill of the 113th Congress.¹¹ S. 2012 would direct DOE to update its model building energy codes for residential and commercial buildings, in order to meet new targets for aggregate energy savings. States, American Indian tribes, and local governments would be encouraged to adopt the new energy codes, and DOE would be directed to ensure compliance in jurisdictions that adopt the codes. DOE could provide technical assistance and incentive funding for jurisdictions that aim to adopt the codes, but the codes are otherwise voluntary.¹²

Section 3141 of H.R. 8, often referred to as the Blackburn-Schrader provision, is the most controversial energy efficiency proposal. It would modify the law for model building energy codes. The provision is nearly identical to the Blackburn-Schrader bill, H.R. 1273. It would prohibit DOE from providing technical and financial assistance—to code-setting organizations and to implementing governmental jurisdictions—for any new model code provision that has a simple payback greater than 10 years.¹³

Proponents of the Blackburn-Schrader provision contend that

- Excessive DOE advocacy in the model code development and implementation processes calls for greater controls and transparency.¹⁴
- DOE certification process for jurisdictions' code implementation is too burdensome and, thus, calls for a self-certification (no third party) process.¹⁵
- The current model code process requires overly costly products and materials, which can be corrected by requiring that each new code provision satisfy a 10-year payback period.¹⁶

Opponents of the legislation counter that

- The proposed controls over the code development and implementation processes bar DOE from providing important technical assistance, and such controls could cripple those processes.¹⁷

¹¹ For a brief summary of that provision in S. 2262, see p. 20 of CRS Report R43524, *S. 2262, Shaheen-Portman Bill 2014: Energy Savings and Industrial Competitiveness Act*, by (name redacted)

¹² These provisions are similar to those proposed in S. 2262 and S. 1392 in the 113th Congress.

¹³ Currently, industry associations develop model energy codes through two separate processes—one for residential buildings and one for commercial buildings. The codes are updated regularly. DOE provides assistance to the above-noted associations. DOE also provides assistance to states, American Indian tribes, and local governments that implement new model codes. Currently there is no explicit payback period required.

¹⁴ House Committee on Energy and Commerce, Subcommittee on Energy and Power, *Hearing on Draft Energy Bill*, April 30, 2015, Printed Statement of John Somerhalder of AGL Resources, p. 5. Available at https://www.aga.org/sites/default/files/sites/default/files/media/aga_somerhalder_testimony_final_4-30-15.pdf.

¹⁵ *Blackburn-Schrader Press Release*, March 2015.

¹⁶ *Blackburn-Schrader Press Release*, March 2015. Statement of John Floyd, Principal of Ole South Properties in Nashville, TN.

¹⁷ Alliance to Save Energy (ASE), *Building Energy Codes Fact Sheet*, August 25, 2015, at <https://www.ase.org/resources/building-energy-codes-fact-sheet-0>.

- Self-certification is an unscientific and unreliable method for determining actual implementation of model energy codes.¹⁸
- The payback period method neglects benefits that occur after the period, ignores the time value of money, and thus does not accurately measure benefits and overall profitability.¹⁹

Buildings: Other Unique Provisions

Each bill contains several buildings provisions that do not appear in the other bill. Most, if not all, of those provisions have been described as relatively modest housekeeping measures. The buildings provisions that are unique to H.R. 8 include voluntary building asset ratings, a thermal insulation report, federal renewable energy purchase requirements, and smart grid energy labels. Provisions unique to S. 2012 include multifamily building demonstration projects, efficiency retrofits, training centers, green buildings certification, and a report on operational efficiency.

Appliances and Equipment

S. 2012 has three unique provisions, which involve an appliance product rebate, a utility transformer rebate, and commercial refrigeration standards.

Manufacturing

S. 2012 has three unique provisions, which involve energy efficient manufacturing, small and medium manufacturer leverage, and smart manufacturing at national laboratories. H.R. 8 contains a Future of Industry provision that would promote supply chain, manufacturing, and industrial process efficiency.²⁰

Vehicles

S. 2012 has two unique provisions, which involve vehicle research and development (R&D) and manufacturing.

Authorizations of Appropriations²¹

S. 2012 contains several provisions to authorize and reauthorize certain energy efficiency and renewable energy programs. The bill would reauthorize the Weatherization Assistance Program, the State Energy Program, the Vehicle Technologies Program,²² geothermal energy activities, and marine hydrokinetic activities. Also, the bill authorizes appropriations for the establishment of both a new grant program and a new low-interest loan program for woody biomass heat and

¹⁸ House Committee on Energy and Commerce, Subcommittee on Energy and Power, *Hearing on Draft Energy Bill*, April 30, 2015, Printed Statement of Kateri Callahan of the Alliance to Save Energy, p. 6.

¹⁹ ASE, *Building Codes Fact Sheet*.

²⁰ The House manager's amendment struck a Future of Industry provision that would have promoted supply chain, manufacturing and industrial process efficiency.

²¹ This section was prepared by (name redacted), Specialist in Agricultural Conservation and Natural Resources Policy. For more information on these authorization provisions, see CRS Report R44284, *Energy Efficiency and Renewable Energy (EERE): Authorizations of Appropriations Proposed by the Energy Policy Modernization Act of 2015 (S. 2012)*, by (name redacted)

²² Including the Vehicle Research and Development, and Medium and Heavy-Duty Commercial and Transit Vehicles programs.

biopower systems. Additionally, the bill directs DOE to identify green building programs that were authorized by Congress.²³ In contrast, H.R. 8 contains no authorization or reauthorization provisions for energy efficiency and renewable energy programs.²⁴

ATVM Provision²⁵

Section 4004 of S. 2012 makes two significant changes to DOE Advanced Technology Vehicle Manufacturing (ATVM) program. ATVM is a \$25 billion loan program established by Congress in 2007 to provide direct loans to automakers to spur manufacture of more fuel efficient, low emission cars and pickup trucks. Section 4004 would expand ATVM project eligibility to include the manufacture or retrofitting of U.S.-built vessels serving in domestic or international commerce. The Secretary of Transportation would determine the energy efficiency improvement standards that applicants would have to meet to qualify for a loan. Section 4004 also requires a change in the administrative fee structure of ATVM loans so that applicants would pay a larger share. There is no similar provision in H.R. 8.

Natural Gas Supply²⁶

For S. 2012, Title II (Infrastructure, Subtitle C—Trade) and Title III (Supply, Subtitle B—Oil and Gas) are the two main titles related to natural gas. For H.R. 8, Title II (Energy Security and Diplomacy) is the primary natural gas related title. The bills contain similar natural gas related provisions, but language is not identical.

Currently potential exporters of natural gas must receive an export permit from the Department of Energy and facility permits from either FERC or the Maritime Administration (MARAD). In many cases, facility permits require the completion of a review, and potentially an environmental impact statement (EIS), under the National Environmental Policy Act (NEPA).

Section 2201 of S. 2012 would require the Secretary of Energy to issue a final decision on any natural gas export application within 45 days of either FERC or MARAD concluding the required review under NEPA of the siting, construction, expansion, or operation of a liquefied natural gas (LNG) export facility. Section 2202 would require LNG export projects to report a list of countries to which the LNG is delivered to the Secretary of Energy. The list would be published on DOE's website and made available to the public. Section 3102 would require the Secretary of Energy to study the state, regional, and national implications of exporting LNG with respect to consumers and the economy, including job creation in the manufacturing sectors. Section 3102 would establish a process for obtaining all the necessary permits from the various government agencies.

²³ Green building programs are identified in the bill as any program listed in Table 9 of U.S. Government Accountability Office, *2012 Annual Report: Opportunities to Reduce Duplication, Overlap and Fragmentation, Achieve Savings, and Enhance Revenue*, GAO-12-342SP, February 2012. Table 9 includes the state energy program and the weatherization assistance program among others.

²⁴ H.R. 8 has an authorization provision which allows the Secretary of Energy to enhance emergency preparedness for natural disasters (Sec. 1103). Also, H.R. 8 contains an amendment concerning federal authorizations for hydropower, whereby it modifies the hydropower licensing process, among other things.

²⁵ This section was prepared by (name redacted), Specialist in Industrial Organization and Business. For more information on ATVM, see CRS Report R42064, *The Advanced Technology Vehicles Manufacturing (ATVM) Loan Program: Status and Issues*, by (name redacted) and (name redacted)

²⁶ This section was prepared by (name redacted), Specialist in Energy Policy, (name redacted), Specialist in Energy Economics, and (name redacted), Specialist in Energy Policy. For more information on natural gas export policy, see CRS Report R42074, *U.S. Natural Gas Exports: New Opportunities, Uncertain Outcomes*, by (name redacted) et al.

Section 2005 of H.R. 8 would require DOE to act on natural gas export project proposals requiring either FERC or MARAD approval within 30 days of the conclusion of NEPA review to site, construct, expand, or operate an LNG facility. The section would also require an applicant to export LNG to publicly disclose the specific destination or destinations of any such authorized LNG exports.

Crude Oil Export Limitations²⁷

During the 114th Congress, there has been considerable debate about whether to allow crude oil to be exported from the United States to international markets. Until December 2015, including provisions in the Energy Policy and Conservation Act of 1975 as well as other statutes, the export of crude oil produced in the United States was generally restricted, although certain exceptions allowed for limited exports. As part of the FY2016 Consolidated Appropriations Act (P.L. 114-113), which was enacted December 18, 2015, those restrictions were eliminated.

The desire to export U.S. crude oil is motivated by price differentials between domestic and international prices that expand and narrow over time and are influenced by market factors such as transportation/infrastructure limitations. Since 2010, the international/domestic price differential has generally ranged from \$0 to approximately \$30 per barrel. Having the option to export crude oil when differentials are high would be valuable to U.S. oil production companies. However, U.S. refiners generally benefit financially, through enhanced refining margins, when differentials exist, since the acquisition cost of crude oil is typically the largest expense a refinery must incur. As a result, much of the business/industry portion of the debate has centered on how oil producers might benefit from a liberalized export policy and how refiners might be financially harmed from the same.

Numerous economic studies, analyses, and reports from industry, government, academia, and nonprofit institutions have been published on the potential impacts associated with allowing crude oil exports. The general themes of the majority of studies to date are similar in nature: (1) domestic and international price benchmarks would converge towards an equilibrium differential, (2) there would be downward pressure on U.S. consumer prices for gasoline, and (3) the ability to export crude oil would provide an incentive for more domestic production. A study by the Energy Information Administration published in September 2015 indicates that under high oil-production growth assumptions, consumer gasoline prices could potentially go down by \$0.01 per gallon in 2025. Other published analyses suggest that allowing crude oil exports may result in price increases for consumers in certain U.S. regions, and other reports indicate that crude exports would have negative environmental consequences resulting from the extraction and transportation of exported crude oil. However, the magnitude of these anticipated economic effects varies, in some cases considerably, and is dependent on static assumptions made for market conditions that are dynamic and constantly change. As a result, accurately predicting global and domestic market impacts that might result from changing U.S. crude oil export policy is difficult.

Carbon Capture and Storage²⁸

H.R. 8 and S. 2012 contain sections that address carbon capture and storage (CCS), but which differ significantly. Section 1109 of H.R. 8 would establish an evaluation process by which the Secretary of Energy would annually review each DOE-funded CCS project and make recommendations. The evaluation would examine whether a project has made (1) advancements toward achieving a specific goal of the program, and (2) significant progress in advancing a specific CCS technology. If the Secretary finds that the project has made significant progress in advancing CCS technology, the Secretary would then make a recommendation on whether increased funding would be necessary to further advance the project. If significant progress has not been made, then the Secretary would determine whether additional funding would be needed to achieve progress, or if the project has reached its full potential and should be discontinued.

²⁷ Prepared by (name redacted), Specialist in Energy Policy. For more information on crude oil export policy, see CRS Report R43442, *U.S. Crude Oil Export Policy: Background and Considerations*, by (name redacted) et al.

²⁸ This section was prepared by (name redacted), Specialist in Energy and Natural Resources Policy. For more information on CCS, see CRS Report R42532, *Carbon Capture and Sequestration (CCS): A Primer*, by (name redacted)

H.R. 8 would also require two reports from the Secretary of Energy. One report, required every two years, would provide the evaluations and recommendations for each DOE project undertaken during the previous year, and make them publicly available on the DOE website. The second report, to be submitted to various energy-related committees every three years, would contain evaluations and recommendations from the previous three years, and would assess progress by DOE in advancing CCS technologies, including progress toward achieving the DOE goal of having an array of CCS technologies ready by 2020 for large-scale demonstration.

S. 2012 addresses CCS within a section of the bill that authorizes an array of coal-related activities (§3402). S. 2012 would establish a coal technology program for the purpose of ensuring the continued use of coal through improvements in efficiency, effectiveness, cost, and environmental performance. The program would require a research and development (R&D) program, large-scale pilot projects, and demonstration projects. One of nine objectives would be to address emissions of carbon dioxide (CO₂) through high efficiency platforms and carbon capture from new and existing coal plants. Another objective would be the validation of geologic storage of large volumes of anthropogenic sources of carbon dioxide, and the development of infrastructure to support a CO₂ use and storage industry.

A different section of S. 2012 (§4003) would authorize a Government Accountability Office (GAO) study on the effectiveness of the existing loan guarantee program for advanced fossil energy and other incentive programs for advanced fossil energy at DOE. Of the five categories required under the study, three would address CCS: (1) review each federal incentive for CCS demonstration projects; (2) assess whether combinations of existing incentive programs could effectively advance CCS; and (3) evaluate the impacts and costs of a 2015 National Coal Council report entitled *Fossil Forward: Revitalizing CCS, Bringing Scale and Speed to CCS Deployment*.

Critical Minerals²⁹

Title III, Subtitle D of S. 2012 (there is no similar provision in H.R. 8) would require the Secretary of the Interior to establish a methodology to identify and designate minerals as critical based on whether they were subject to supply restrictions and whether sufficient substitutes exist. The Secretary would review the methodology and the designations at least every three years. The Secretary would direct a comprehensive resource assessment of critical mineral potential in the United States, assessing the most critical minerals first. Survey and field work could be done to supplement existing information. The Secretary would also complete a resource assessment on any mineral added to the list within two years of its designation.

Agency review and reports would be required to facilitate a more efficient process for critical minerals exploration on federal lands, and specifically would require performance metrics for permitting mineral development activity. A report to Congress would identify measures and options to improve the processing of permits, licenses, etc., on federal land for critical mineral-related activity. A performance metric for evaluating the permitting process for the development of critical minerals on federal land (including the timeline of each phase of the process) would be published within 90 days of the report. The Secretary would engage with state, local, and Indian tribal governments so that conflicts and duplication of efforts would be avoided.

²⁹ This section was prepared by (name redacted), Specialist in Energy Policy. For more information on critical minerals, see CRS Report R43864, *China's Mineral Industry and U.S. Access to Strategic and Critical Minerals: Issues for Congress*, by (name redacted) .

DOE would be required to establish an R&D program to examine the alternatives to critical minerals and explore recycling and material efficiencies throughout the supply chain. This section of the bill would require an analysis of the amounts of critical minerals projected to be recycled and the projected amounts of substitution of alternatives over one-year, five-year and 10-year periods.

Subtitle D would also require the Department of the Interior to produce an annual outlook report on critical minerals that would provide forecasts of domestic supply, demand, and price for one-year, five-year, and 10-year periods.

The bill would require the Secretary of Labor to conduct a workforce assessment to determine the skills needed and those available domestically for critical mineral and related downstream manufacturing development.

Subtitle D would repeal the National Critical Materials Act of 1984 (to limit duplication) and would authorize \$5 million in appropriations annually for FY2017-FY2026 for the National Geological and Geophysical Data Preservation Program, which was established under the Energy Policy Act of 2005 (P.L. 109-58).

National Park Service

S. 2012 would reallocate a share of revenues from Outer Continental Shelf (OCS) oil and gas leases to a new National Park Service Maintenance Revitalization and Conservation Fund and would amend allocations within the Land and Water Conservation Fund. H.R. 8 contains no such provision.

Author Contact Information

(name redacted), Coordinator
Section Research Manager
#redacted@crs.loc.gov , 7-....

(name redacted)
Specialist in Energy Policy
#redacted@crs.loc.gov-....

(name redacted)
Specialist in Agricultural Conservation and Natural
Resources Policy
#redacted@crs.loc.gov , 7-....

(name redacted)
Specialist in Energy Policy
#redacted@crs.loc.gov , 7-....

(name redacted)
Specialist in Industrial Organization and Business
#redacted@crs.loc.gov-....

(name redacted)
Specialist in Energy and Natural Resources Policy
#redacted@crs.loc.gov-....

(name redacted)
Specialist in Energy Policy
#redacted@crs.loc.gov , 7-....

(name redacted)
Specialist in Energy and Infrastructure Policy
#redacted@crs.loc.gov , 7-....

(name redacted)
Specialist in Energy Economics
#redacted@crs.loc.gov-....

(name redacted)
Specialist in Energy Policy
#redacted@crs.loc.gov-....

(name redacted)
Specialist in Energy Policy
#redacted@crs.loc.gov-....

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