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# Electrical Power: Overview of Congressional Issues

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# Summary

The electric power industry is in the process of transformation. The electricity infrastructure of the United States is aging, and uncertainty exists around how to modernize the grid, and what technologies and fuels will be used to produce electricity in the future. Congress will likely be faced with policy issues regarding how the modernization of this vital industry will unfold.

For most of the 20th century, coal has been the dominant fuel used to produce electricity. In 2011, coal was the fuel used for almost 42% of power generation in the United States. However, coal use for power generation seems to be on the decline. In April 2012, for the first time in history, the amount of electricity generated from natural gas equaled that of coal (according to Energy Information Administration statistics) with each fuel claiming about 32% of the market. The future of coal as a fuel for power generation seems to be in question. Two major reasons are generally seen as being responsible: the expectation of a dramatic rise in natural gas supplies, and the impact of environmental regulations on an aging base of coal-fired power plants. The electric utility industry values diversity in fuel choice options since reliance on one fuel or technology can leave electricity producers vulnerable to price and supply volatility. However, an "inverse relationship" is developing for coal vs. natural gas as a power generation choice based on market economics alone, and policies which allow one fuel source to dominate may come at the detriment of the other.

Upgrading the nation's transmission system to accommodate current and future uses, and ensuring the reliable functioning and the security of the grid, has been a major concern for the federal government. Federal law has already tasked the Federal Energy Regulatory Commission with responsibility for enforcing reliability standards for the bulk electric system, including cybersecurity, but protection from natural hazards continues as a key issue. The recent damage sustained to the electrical grid by Hurricane Sandy in New York and New Jersey and difficulty in restoring electricity service underscore the age and fragility of the power system, and how electricity service might benefit from hardening and modernization of various power systems. Growing concerns over greenhouse gas (GHG) emissions, other environmental costs associated with burning fossil fuels, and existing or anticipated state and federal policies addressing these issues are leading some utilities and energy providers to deploy more renewable energy technologies to meet power demands, and potentially increasing the need for new transmission lines to incorporate clean energy sources.

New environmental regulations under development would impose new requirements on coal-fired power plants. Some of these rules would be implemented at the federal level, while others would be implemented at the state level. The Environmental Protection Agency (EPA) also issued standards for greenhouse gas emissions which would require all new power plants to restrict carbon dioxide emissions. EPA has yet to propose rules for GHG emissions from existing power plants, as is required by court order. Much attention has focused on the resulting finalization of these regulations, and their potential to contribute to power plant retirements, with some in the electric power industry expressing concern that reliability could be impacted.

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# Synthesis of Key Issues

The electric power industry is in the process of transformation. The electricity infrastructure of the United States is aging, and uncertainty exists around how to modernize the grid, and what technologies and fuels will be used to produce electricity in the future. Unresolved questions of transmission and reliability of the grid are arising from potential cybersecurity threats and continuing interest in harnessing renewable energy and other low carbon sources of electricity. Concerns about reliability and electricity prices are being complicated by new environmental regulations and the rising availability of natural gas for the production of electric power from unconventional resources such as gas shales. Congress will likely be faced with policy issues regarding how the modernization of this vital industry will unfold.

# Basic Facts and Statistics

## Electric Power Generation in the United States

The electrical grid of the United States consists of all the power plants generating electricity, together with the transmission and distribution lines and their associated transformers and substations which bring power to end-use customers. Electric power generation in the United States is currently dominated by the use of combustible fuels, such as the fossil fuels coal and natural gas, or from biomass. These fuels are burned either to produce steam in boilers which is used to turn turbine-generators or burned directly in combustion turbines which turn generators to produce electricity. Nuclear power uses heat from the fission of radioactive elements to produce steam. However, electricity can also be generated directly by wind turbines, solar power, geothermal energy, and hydropower. Generally, electricity must be used as soon as it is produced, because large amounts of electricity cannot be easily stored.

Originally, the individual utility company systems were not linked, but with greater electricity demand came the necessity of sharing generation resources. This sharing of generation resources required an interconnection of separate company systems to enable power sales and transfers. These aggregated power systems form three major "interconnections"—the Eastern and Western interconnections, and the Electric Reliability Council of Texas, which includes most of that state. Within these interconnections are reliability regions, and a number of balancing authorities[1] which "integrate resource plans ahead of time, maintain load-interchange generation balance" within a balancing authority area, and "support interconnection frequency in real-time." The grid also connects the many publicly and privately owned electric utility and power companies in different states and regions of the United States[2] (and in Canada and Mexico).

Congress passed the Public Utility Regulatory Policies Act of 1978 (P.L. 95-617), creating a class of non-utility power producers (i.e., qualifying small power and cogeneration facilities) which resulted in the introduction of competition into wholesale power markets (e.g., for the sale of

[1] See definition of "Balancing Authority" at http://www.eia.gov/tools/glossary/index.cfm?id=B.

[2] The U.S. electric industry comprises over 3,000 public, private, and cooperative utilities, and more than 1,000 independent power generators. See *Electricity Regulation In the US: A Guide*, Regulatory Assistance Project, March 2011, http://www.raponline.org/document/download/id/645.

electricity to entities other than the end-user of power). The passage of the Energy Policy Act of 1992 (P.L. 102-486) served to further promote greater competition in the bulk power markets.[3] As a result, in many parts of the United States, the electric power industry began to transition from highly regulated, local monopoly companies which generated, transmitted, and distributed electricity to end-use customers, to a business in which power generation is competitive while the industry's transmission and distribution functions are still highly regulated.

In these regions with restructured electricity industries, competitive markets largely set the price of power. The rates consumers ultimately pay for electricity are based on auctions in regional transmission organization (RTO) or independent system operator (ISO) systems wherein generators competitively bid to provide energy for a particular time period. Rates for wholesale transactions of RTOs and ISOs are under the Federal Energy Regulatory Commission's (FERC's) regulatory jurisdiction. Wholesale power rate components depend upon the market structure of the RTO or ISO, and generally have cost components for energy, capacity, transmission, ancillary services,[4] operating reserves, and general system costs and regulatory fees. Non-RTO transmission costs and distribution costs are generally added to arrive at the rate end-use customers pay. While FERC is largely responsible for regulation of the electric power transmission system and wholesale power markets, regulation of the distribution function of the electric power business is still largely carried out by state government agencies.

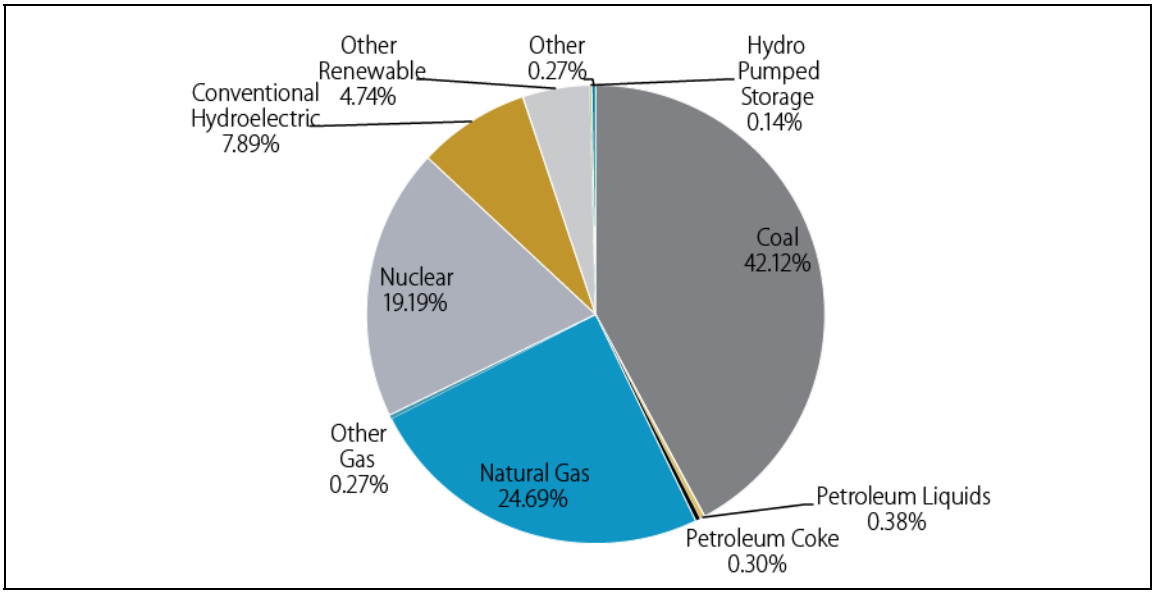
The choice of power generation technology in the United States is heavily influenced by the cost of fuel. Historically, the use of fossil fuels has provided some of the lowest prices for generating electricity. **Figure 1** shows that, as of 2011, coal accounts for approximately 42% of net generation by the electric power sector,[5] followed by natural gas at 25%, and nuclear power at almost 20%.

[3] The bulk power system makes it possible for utilities to engage in wholesale (sales for resale) electric power trade. U.S. Energy Information Administration, Overview—Power Transactions & Interconnected Networks, 2011, http://www.eia.gov/cneaf/electricity/page/prim2/chapter7.html.

[4] "Services that ensure reliability and support the transmission of electricity from generation sites to customer loads. Such services may include load regulation, spinning reserve, non-spinning reserve, replacement reserve, and voltage support." See http://www.eia.gov/tools/glossary/index.cfm.

[5] Includes electric utilities and independent power producers.

**Figure 1. U.S. Electric Power Industry Net Generation, 2011**




**Source:** U.S. Energy Information Administration, Annual Energy Review 2011. Table 8.2a.

**Notes:** "Other" includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels). See http://www.eia.gov/emeu/aer/elect.html.

# Major Electric Power Issues

## Future Technologies for Electricity Production Face Uncertainty

Electricity generation is vital to the commerce and daily functioning of the United States. However, the average age of power plants is now over 30 years, and the life expectancy of most power plants is about 40 years. While most of these plants are well-maintained, they are generally not as efficient as newer power plants. As power plants age, they are generally upgraded to continue operations, but the least efficient plants may be retired. Other plants may be shifted from base load operations (in which they essentially operate around the clock) to less demanding intermediate or peaking schedules. The cost of building a power plant is generally recovered over the depreciable life of the asset, such that operations and maintenance (O&M) expenses become the major component of an older power plant's continuing costs. A major component of O&M is the cost of fuel. However, the costs of modernizing older plants to meet new regulatory requirements can be relatively high. When the cost of upgrades to meet new environmental requirements is considered along with (perhaps increasing) O&M expenses, many older power plants become subject to retirement decisions.

Electric power generation is responsible for 37% of U.S. domestic carbon dioxide emissions (the primary anthropogenic greenhouse gas (GHG)), and over one-third of all U.S. GHG emissions.[6]

[6] U.S. Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2008*, DOE/EIA-0573(2008), December 2009, http://www.eia.doe.gov/oiaf/1605/ggrpt/pdf/0573(2008).pdf.

Growing concerns over GHG emissions, other environmental costs associated with burning fossil fuels, and existing or anticipated state and federal policies addressing these issues are leading some utilities and energy providers to deploy more renewable energy technologies to meet power demands. As of 2011, hydropower represented 8% of all U.S. electric power industry net generation, with all other renewable energy accounting for a further combined total of 4%.[7]

Renewable energy has been used since before the Industrial Revolution, but not on the scale of steam power generation. Renewable energy technologies use the power of the sun, wind, water, and heat from the earth, offering the possibility of producing electricity on a large scale without most of the environmental and climate consequences of electric power generation using fossil fuels. Renewable energy sources have the potential to provide inexpensive, almost limitless electricity with minimal adverse environmental impacts. However, some of the technologies used today to generate electricity from renewable energy sources are variable in nature, and produce higher cost power than conventional fossil or nuclear sources of electricity (if environmental externalities are not considered). Practical energy storage technologies can potentially be a game-changer for greater renewable energy deployment. State governments have generally led the way in encouraging deployment of renewable energy technologies, using a Renewable Portfolio Standard (RPS) to create a market for renewable energy via mandated requirements. While most RPS goals are expected to be met, about 12 states have existing provisions expiring by 2015, and approximately 14 states and the District of Columbia have existing RPS or related provisions scheduled to expire by 2020.

## Recent Events

Electricity today is widely viewed as a commodity.[8] As a commodity, electricity is primarily bought and sold as both power[9] and energy,[10] with various attributes being traded in electricity markets. Competitive electricity markets have enabled a variety of wholesale electricity products and services to facilitate the sale and transmission of power. These involve both physical transactions (i.e., electricity is generated and sent to or taken off the grid), and financial transactions (i.e., the purchase and sale of electricity). Services have also arisen to provide transaction flexibility, and to manage (or hedge) the risks of various transactions. Some purchasers of electricity as a commodity do so solely for financial reasons. With the California (or Western) energy crisis of 2000 to 2001, the susceptibility of electricity markets to manipulation became evident.[11] Enron and its affiliates were principally found liable for "engaging in various gaming and market manipulation schemes," with an initial decision ordering the disgorgement of

[7] U.S. Energy Information Administration, *Electricity Net Generation: Total (All Sectors), 1949-2009*, Annual Energy Review 2009, Report No. DOE/EIA-0384(2009), July 19, 2010, http://www.eia.gov/emeu/aer/elect.html.

[8] A commodity is an economic good, or a product available for shipment as a mass-produced, unspecialized product. See http://www.merriam-webster.com/dictionary/commodity.

[9] Power is the rate of producing, transferring, or using electricity. Power is measured in Watts and often expressed in kiloWatts (kW) or MegaWatts (MW).

[10] Electrical energy is the ability of an electric current to produce work, heat, light, or other forms of energy. It is measured in kiloWatt-hours.(kWh). Example: A 100kW generator operating for 1 hour produces 1 kWh of electrical energy. See http://www.eia.gov/tools/glossary/index.cfm?id=E.

[11] California suffered through a series of electricity shortages caused mainly by market manipulation to decrease energy supplies and drive up electricity prices. See Staff Report, *Price Manipulation in Western Markets*, Federal Energy Regulatory Commission, Docket No. PA02-2-000, March 26, 2003, http://www.ferc.gov/legal/maj-ord-reg/land-docs/Gelinas_at_a_glance2.pdf.

$1.6 billion in unjust profits.[12] FERC continues to investigate allegations of energy market manipulation, with nine actions in FY2012 resulting in civil penalties of $148 million assessed, and disgorgement of unjust profits of another $121 million.[13]

Increases in the domestic production of natural gas (primarily due to hydraulic fracturing of gas shales) are causing a dramatic change in electric power production decisions. With increasing production of natural gas has come a decline in natural gas prices, and a decline in coal consumption for power generation. In April 2012, for the first time in history, the amount of electricity generation from natural gas equaled that of coal, according to EIA statistics, with each representing about 32% of the market. Many in the energy industry believe that a structural change in the economics of natural gas use has begun.

> While coal is projected to retain the largest share of the electricity generation mix through 2035, analyses included in the Annual Energy Outlook 2012 ... anticipate its share declining as more generation comes from natural gas and renewable technologies. Coal's role as the preeminent source of electricity generation in the United States has lessened in recent years, declining from 49% of total electricity generation in 2007 to 42% in 2011.… Projected fuel prices and economic growth are key factors influencing the future electricity generation mix. The price of natural gas, coal's chief competitor, has dropped significantly in recent years due to the increase in domestic production of natural gas.[14]

The electric utility industry values diversity in fuel choice options since reliance on one fuel or technology can leave electricity producers vulnerable to price and supply volatility. However, an "inverse relationship" is developing for coal vs. natural gas as a power generation choice based on market economics alone, and policies which allow one fuel source to dominate could increase industry vulnerability to volatility. Nevertheless, according to the EIA, coal is expected to be a key part of electricity generation in the United States well past the year 2030.[15] Increased availability of natural gas also raises the prospect of a greater use of distributed generation for power generation.

[12] See 119 FERC ¶ 63,013 (2007) at http://www.ferc.gov/industries/electric/indus-act/wec/gaming-initial-decision.pdf.

[13] Office of Enforcement, *2012 Report on Enforcement*, Federal Energy Regulatory Commission, Docket No. AD07-13-005, November 15, 2012, http://www.ferc.gov/legal/staff-reports/11-15-12-enforcement.pdf#xml=http://search.atomz.com/search/pdfhelper.tk?sp_o=2,100000,0.

[14] EIA, *Fuel used in electricity generation is projected to shift over the next 25 years*, July 30, 2012, http://www.eia.gov/todayinenergy/detail.cfm?id=7310.

[15] "In the Reference case, the natural gas share of electric power generation increases from 24 percent in 2010 to 28 percent in 2035, while the renewables share grows from 10 percent to 15 percent. In contrast, the share of generation from coal-fired power plants declines. The historical reliance on coal-fired power plants in the U.S. electric power sector has begun to wane in recent years. Over the next 25 years, the share of electricity generation from coal falls to 38 percent, well below the 48-percent share seen as recently as 2008, due to slow growth in electricity demand, increased competition from natural gas and renewable generation, and the need to comply with new environmental regulations." See http://www.eia.gov/forecasts/aeo/pdf/0383(2012).pdf.

## Selected Congressional Action from 112th Congress

### Clean Energy Standard Act of 2012 (S. 2146, Bingaman)

Would have amended the Public Utility Regulatory Policies Act of 1978 to require, beginning in calendar 2015, each electric utility that sold electric energy to electric consumers in a state (other than Alaska or Hawaii) to obtain a percentage of such electric energy from clean energy. This minimum requirement would have risen from 24% in 2015, to a minimum of 84% in 2035 and the years thereafter. The bill directed the Secretary of Energy to (1) establish a federal clean energy credit trading program under which electric utilities may submit clean energy credits to certify their compliance, and (2) issue to each generator of electric energy a quantity of clean energy credits determined in accordance with the bill. Any electric utility that failed to meet the requirements of the bill would have been subject to a civil penalty. The bill would have required the Secretary to establish a state energy efficiency funding program. Introduced March 1, 2012; hearings held by Committee on Energy and Natural Resources.

### American Renewable Energy and Efficiency Act (H.R. 5967, Markey)

Would have amended the Public Utility Regulatory Policies Act of 1978 to require the Federal Energy Regulatory Commission to promulgate regulations to implement and enforce a federal combined efficiency and renewable electricity standard. Would have required each retail electric supplier to submit to FERC, annually, an amount of federal renewable electricity credits and demonstrated total annual electricity savings for the previous year that, in the aggregate, was equal to the supplier's annual combined target for that year as established by the bill (compliance obligation). The bill would have required FERC, upon a request from a state's governor, to increase, to no more than half, the proportion of the annual combined targets for suppliers located within such state that could be met through submission of electricity savings (as opposed to renewable electricity credits). Would have required a supplier's target to be equal to the product of the supplier's base amount (electricity sold) for the year and a specified annual percentage for that year, which increases from 8% for 2014 to 50% for 2035 through 2040. The bill would have prescribed penalties for noncompliance with, or violations of, this bill. The bill would terminate on December 31, 2041. The bill would have authorized states to set the rates for a sale of electricity by a facility generating electricity from renewable energy sources pursuant to a state-approved production incentive program. Introduced June 19, 2012; Referred to the House Committee on Energy and Commerce.

## CRS Reports

CRS Report R42756, *Energy Policy: 113th Congress Issues*, by Carl E. Behrens

CRS Report R42814, *Natural Gas in the U.S. Economy: Opportunities for Growth* , by Robert Pirog and Michael Ratner

CRS Report R41954, *U.S. Renewable Electricity Generation: Resources and Challenges*, by Phillip Brown and Gene Whitney

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*Renewable Electricity Futures Study*, National Renewable Energy Laboratory, 2012, http://www.nrel.gov/docs/fy12osti/52409-1.pdf.

*Natural Gas and the Transformation of the U.S. Energy Sector: Electricity*, The Joint Institute for Strategic Energy Analysis, November 2012, http://www.nrel.gov/docs/fy13osti/55538.pdf.

# Adequacy and Reliability of the Grid

As with electric power plants, electric transmission and distribution system components are also aging, with power transformers averaging over 40 years of age, and 70% of transmission lines being 25 years or older. As components of the system are retired, they are replaced with newer components often linked to communications or automated systems (i.e., the Smart Grid). With changes in federal law encouraging electricity competition and markets, regulatory changes, and the aging of the electric power infrastructure as drivers, the grid is changing from a largely patchwork system built to serve the needs of individual electric utility companies to essentially a national interconnected system capable of accommodating massive transfers of electrical energy between regions of the United States.

Damage from storms to transmission and distribution systems appears to be increasing. But undergrounding transmission and distribution systems is not always a solution. Underground lines can be more expensive, and take longer to repair. Replacing overhead lines with underground cable is also expensive.

Upgrading the nation's transmission to accommodate current and future uses and ensuring the functioning and the security of the grid have been paramount concerns for the federal government. The federal government has already tasked the FERC with responsibility for enforcing reliability standards for the bulk electric system, but cybersecurity[16] and physical security of the grid remain key issues. The information technology systems and capabilities of the Smart Grid add to the ability to control power flows and enhance the efficiency of grid operations. But these attributes also potentially increase the susceptibility of the grid to cyber (i.e., computer-related) attack since these two-way information and control capabilities are built around microprocessor devices whose basic functions are controlled by software programming. Safeguarding large transformers and key substations from a potential physical attack by terrorists is a concern. Protection from a major geomagnetic disturbance event caused by solar storms is also a key issue, as prolonged, widespread electricity outages could result.[17]

[16] CRS Report R41886, *The Smart Grid and Cybersecurity—Regulatory Policy and Issues*, by Richard J. Campbell

[17] Radiation or charged particles ejected into space weather from solar flare eruptions could cause geomagnetic storms. Periodically, these eruptions from the sun are powerful enough to disrupt the operations of electric power systems. Solar flares occur in cycles of almost 11 years. The last major solar flare eruption in 1989 caused blackouts across the Canadian province of Quebec for nine hours. But even greater storms can occur perhaps every 100 or more years. An event observed in 1921 demonstrates that although these events are rare, they are likely to occur again. The reoccurrence today of an event like the 1921 storm could potentially result in large-scale blackouts affecting more than 130 million people and would expose more than 350 transformers to the risk of permanent damage. It could take weeks or months to replace most of the damaged transformers. Some of the larger units could take years to replace since there are no U.S. power transformer manufacturers, and a multi-year backlog exists for the larger units.

See Committee on the Societal and Economic Impacts of Severe Space Weather Events, National Research Council, (continued...)

## Recent Events

High winds, especially when combined with precipitation from seasonal storms, can cause damage to electricity utility systems, resulting in service interruptions to large numbers of electricity customers. Data from various studies lead to cost estimates from storm-related outages to the U.S. economy at between $20 billion and $55 billion annually. Data also suggest the trend of outages from weather-related events is increasing.[18] The recent damage sustained to the electrical grid by Hurricane Sandy in New York and New Jersey, and difficulty in restoring electricity service underscore the age and fragility of the power system, and how electricity service might benefit from hardening and modernization of various power systems.

## Selected Congressional Action from 112th Congress

### Cyber Security and American Cyber Competitiveness Act of 2011 (S. 21, Reid)

The bill called for the enactment of bipartisan legislation to secure the United States against cyber attack, enhance American competitiveness, create jobs in the information technology industry, and protect the identities and sensitive information of American citizens and businesses by (1) enhancing the security and resiliency of U.S. government communications and information networks against cyber attack; (2) incentivizing the private sector to quantify, assess, and mitigate cyber risks to networks; (3) promoting investments in the American information technology sector; (4) improving the capability of the government and the private sector to assess cyber risks and prevent, detect, and respond to cyber attacks; (5) preventing and mitigating identity theft; (6) enhancing U.S. diplomatic capacity and international cooperation to respond to emerging cyber threats; (7) protecting and increasing the resiliency of U.S critical infrastructure and assets against cyber attacks. Introduced January 25, 2011; referred to the Senate Committee on Homeland Security and Governmental Affairs.

### Secure High-Voltage Infrastructure for Electricity from Lethal Damage Act (H.R. 668, Franks)

Amends the Federal Power Act to authorize FERC, with or without notice, hearing, or report, to order emergency measures to protect the reliability of either the bulk-power system or the defense critical electric infrastructure[19] whenever the President issues a written directive or determination identifying an imminent grid security threat. Directs FERC to consult with governmental authorities in Canada and Mexico regarding implementation of emergency measures. Prescribes (1) implementation procedures; and (2) related cost recovery measures affecting owners,

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(...continued)

*Severe Space Weather Events—Understanding Societal and Economic Impacts: A Workshop Report*, National Academies, May 22-23, 2008, http://books.nap.edu/catalog.php?record_id=12507.

[18] CRS Report R42696, *Weather-Related Power Outages and Electric System Resiliency*, by Richard J. Campbell

[19] The bill defines the term 'defense critical electric infrastructure' as any infrastructure located in the United States used for the generation, transmission, or distribution of electric energy that—(A) is not part of the bulk-power system; and (B) serves a facility designated by the President (as both critical to the defense of the United States and vulnerable to a disruption of the supply of electric energy provided to such facility by an external provider), but is not owned or operated by the owner or operator of such facility.

operators, or users of either the bulk-power system or the defense critical electric infrastructure. Directs FERC to require any owner, user, or operator of the domestic bulk-power system to implement measures to protect the system against specified vulnerabilities. Introduced February 11, 2011; referred to the House Energy and Commerce Subcommittee on Energy and Power.

## CRS Reports

CRS Report R42696, *Weather-Related Power Outages and Electric System Resiliency*, by Richard J. Campbell

CRS Report R41193, *Electricity Transmission Cost Allocation*, by Richard J. Campbell and Adam Vann

CRS Report R40657, *The Federal Government's Role in Electric Transmission Facility Siting*, by Adam Vann and James V. DeBergh

CRS Report R41886, *The Smart Grid and Cybersecurity—Regulatory Policy and Issues*, by Richard J. Campbell

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*Introduction to NISTIR 7628 Guidelines for Smart Grid Cyber Security*, The Smart Grid Interoperability Panel, September 2010, http://www.nist.gov/smartgrid/upload/nistir-7628_total.pdf.

*The Future of the Electric Grid*, Massachusetts Institute of Technology, December 5, 2011, http://mitei.mit.edu/system/files/Electric_Grid_Full_Report.pdf.

# Environmental Issues

Coal has long been the major fossil fuel used to produce electricity. However, burning coal results in environmental consequences, such as nitrogen oxides and sulfur emissions. Today, the burning of coal and other fossil fuels is also largely believed to be contributing to global climate change and its potentially damaging effects. Over the last 40 years, Congress has directed the Environmental Protection Agency (EPA) to reduce the potential health and environmental impacts of fossil fuel use by limiting emissions or other consequences of combustion processes.[20] These environmental regulatory requirements have been evolving in the last decade due to various challenges to EPA's implementation of federal laws.

[20] For example, with the Clean Air Act of 1970 (P.L. 91-604) and subsequent revisions, the Clean Water Act of 1972 (P.L.92-500), and the Resource Conservation and Recovery Act of 1976 (P.L. 94-580).

## Recent Events

New regulations under development at EPA would impose new requirements on coal-fired power plants. Some of these rules would be implemented at the federal level, while others would be implemented at the state level. They include the Cross-State Air Pollution Rule[21] (which replaced the Clean Air Interstate Rule); the Mercury and Air Toxics Standards (MATS) (also known as the Utility MACT) rule to reduce emissions of mercury, other metallic toxics, acid gases, and organic air toxics; the proposals to regulate coal combustion residues; and the Clean Water Act section 316(b) cooling water intake rule. However, only the Utility MACT rule is currently in effect.[22] EPA also issued standards for greenhouse gas emissions which would require all new power plants to restrict carbon dioxide emissions. EPA has yet to propose rules for GHG emissions from existing power plants, as is required by court order. Much attention has focused recently on the resulting finalization of these regulations, and their potential to contribute to the retirement of mostly small, older coal-burning power plants without modern environmental controls. Due to a general perception in the electric power industry that these new and pending environmental regulations present conflating requirements with unrealistic timeframes for compliance, the regulations have come to be referred to by the industry as the "train wreck" scenario due to a perception that a negative impact on reliability could result. Although environmental groups, and some in the electric power industry—mainly those with significant investments in nuclear or natural gas-fired generation—consider the concerns overstated.[23]

## Selected Congressional Action from 112th Congress

### Ensuring Affordable Energy Act (H.R. 153, Poe)

Prohibits any funds appropriated or otherwise available for the Administrator of the Environmental Protection Agency from being used to implement or enforce (1) a cap-and-trade program; or (2) any statutory or regulatory requirement pertaining to emissions of one or more greenhouse gases from stationary sources that is issued or becomes applicable or effective after January 1, 2011. Defines (1) "cap-and-trade program" as any regulatory program established after the date of enactment of the bill that provides for the sale, auction, or other distribution of a limited amount of allowances that permit the emission of one or more greenhouse gases; and (2) "greenhouse gas" to include carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, perfluorocarbons, or any other designated anthropogenic gas. Introduced February 1, 2011; referred to the Subcommittee on Energy and Power.

### Stop the War on Coal Act of 2012 (H.R. 3409, Johnson)

Prohibits the Secretary of the Interior, before December 31, 2013, from issuing or approving any proposed or final regulation under the Surface Mining Control and Reclamation Act of 1977 that would (1) adversely impact employment in coal mines in the United States; (2) cause a reduction

[21] On August 21, 2012, in a 2-1 decision, the D.C. Circuit Court of Appeals vacated and remanded the rule, finding that EPA's imposition of Federal Implementation Plans, without first giving the states an opportunity to develop their own plans, was unlawful. See CRS Report R41563, *Clean Air Issues in the 112th Congress*, by James E. McCarthy.

[22] The proposed regulations are discussed in the CRS Report R41914, *EPA's Regulation of Coal-Fired Power: Is a "Train Wreck" Coming?*, by James E. McCarthy and Claudia Copeland.

[23] CRS Report R42144, *EPA's Utility MACT: Will the Lights Go Out?*, by James E. McCarthy

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in revenue received by the federal government or any state, tribal, or local government, by reducing through regulation the quantity of coal in the United States that is available for mining; (3) reduce the quantity of coal available for domestic consumption or for export; (4) designate any area as unsuitable for surface coal mining and reclamation operations; or (5) expose the United States to liability for taking the value of privately owned coal through regulation.

Among many other actions, the bill amends the Clean Air Act to prohibit the Administrator of the Environmental Protection Agency from promulgating any regulation concerning, taking action relating to, or taking into consideration, the emission of a greenhouse gas (GHG) to address climate change. Excludes GHGs from the definition of "air pollutant" for purposes of addressing climate change. Repeals and nullifies a number of federal rules and EPA regulatory actions. Introduced November 14, 2011; referred to the Senate and referred to the Committee on Environment and Public Works.

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