



CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

May 7, 2003

S. 14 **Energy Policy Act of 2003**

As introduced on April 30, 2003

SUMMARY

S. 14 would amend existing law and establish new laws relating to energy regulation, production, consumption, and research and development. Assuming appropriation of the necessary funds, CBO estimates that implementing S. 14 would cost about \$3.7 billion in 2004, \$40.3 billion over the next five years, and \$52.6 billion over the next 10 years. In addition, we estimate that enacting S. 14 would increase direct spending by \$94 million in 2003, \$212 million in 2004, and \$5.1 billion over the 2003-2013 period. We also estimate that the bill would increase revenues by \$75 million in 2004 and \$820 million over the 2004-2013 period.

S. 14 contains several mandates as defined in the Unfunded Mandates Reform Act (UMRA) that would affect both intergovernmental and private-sector entities. CBO expects that some of the mandates could impose substantial costs on those entities. CBO cannot determine the cost of all the mandates in the bill because several of the requirements established by the bill would hinge on future regulatory action for which information is not available. Accordingly, CBO cannot determine whether the total cost of the mandates imposed on the private sector would exceed the annual threshold established in UMRA (\$117 million in 2003, adjusted annually for inflation). However, CBO expects that the aggregate cost of all intergovernmental mandates would not exceed the threshold established in UMRA (\$59 million in 2003, adjusted annually for inflation).

ESTIMATED COST TO THE FEDERAL GOVERNMENT

For this estimate, CBO assumes that S. 14 will be enacted by the end of fiscal year 2003. Additionally, CBO assumes that the full estimated amounts will be appropriated for each year and that spending will follow historical rates for ongoing activities. The estimated budgetary impact of S. 14 is shown in the following table. The costs of this legislation fall within budget functions 050 (defense), 270 (energy), 250 (general science, space, and

technology), 300 (natural resources and environment), 400 (transportation), 450 (community and regional development), 800 (general government), and 950 (undistributed offsetting receipts).

TABLE 1. ESTIMATED BUDGETARY IMPACT OF S. 14

	By Fiscal Year, in Billions of Dollars										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
SPENDING SUBJECT TO APPROPRIATION											
Spending Under Current Law											
Budget Authority ^a	5.6	0	0	0	0	0	0	0	0	0	0
Estimated Outlays	5.5	3.0	0.7	0.2	0.1	0	0	0	0	0	0
Proposed Changes:											
Specified Authorizations											
Authorization Level	0	7.7	7.9	8.7	9.4	10.0	0.5	0.5	0.3	0.1	0.1
Estimated Outlays	0	3.3	6.7	8.2	9.2	9.6	5.3	1.4	0.6	0.3	0.2
Unspecified Authorizations											
Estimated Authorization Level	0	0.7	0.7	0.7	0.8	0.8	0.8	2.2	0.6	0.2	0.2
Estimated Outlays	0	0.4	0.5	0.7	0.7	0.8	0.8	1.0	1.0	1.2	0.5
Total Proposed Changes											
Estimated Authorization Level	0	8.4	8.5	9.4	10.2	10.8	1.3	2.7	0.9	0.3	0.3
Estimated Outlays	0	3.7	7.2	8.9	9.9	10.5	6.1	2.4	1.6	1.5	0.7
Spending Under S. 14											
Estimated Authorization Level ^a	5.6	8.4	8.5	9.4	10.2	10.8	1.3	2.7	0.9	0.3	0.3
Estimated Outlays	5.5	6.7	7.9	9.1	10.0	10.5	6.1	2.4	1.6	1.5	0.7
CHANGES IN DIRECT SPENDING											
Estimated Budget Authority	0.1	0.3	0.5	0.6	0.7	0.5	0.5	0.5	0.6	0.6	0.6
Estimated Outlays	0.1	0.2	0.4	0.5	0.6	0.6	0.6	0.5	0.5	0.6	0.6
CHANGES IN REVENUES											
Estimated Revenues	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

NOTE: Details may not add to totals because of rounding.

a. The 2003 level is the amount appropriated for that year for programs related to energy, science, and resource management.

BASIS OF ESTIMATE

Assuming appropriation of the necessary amounts, CBO estimates that implementing S. 14 would cost roughly \$3.7 billion in 2004, \$40.3 billion over the 2004-2008 period, and \$52.6 billion over the 2004-2013 period. We also estimate that the bill would increase direct spending by \$94 million in 2003, \$212 million in 2004, and \$5.1 billion over the 2003-2013 period. CBO estimates that enacting the bill would increase revenues by \$75 million in 2004 and \$820 million over the 10-year period. Table 2 details the components of estimated discretionary spending under S. 14. (Table 3, provided later, details the bill's direct spending and revenue effects.)

TABLE 2. ESTIMATED EFFECTS OF S. 14 ON SPENDING SUBJECT TO APPROPRIATION

	By Fiscal Year, in Billions of Dollars										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
SPENDING SUBJECT TO APPROPRIATION											
Discretionary Spending Under Current Law											
Budget Authority ^a	5.6	0	0	0	0	0	0	0	0	0	0
Estimated Outlays	5.5	3.0	0.7	0.2	0.1	0	0	0	0	0	0
Proposed Changes:											
Specified Authorization Level	0	7.7	7.9	8.7	9.4	10.0	0.5	0.5	0.3	0.1	0.1
Estimated Outlays	0	3.3	6.7	8.2	9.2	9.6	5.3	1.4	0.6	0.3	0.2
Estimated Authorizations:											
Coastal Impact Assistance											
Estimated Authorization Level	0	0.4	0.4	0.4	0.6	0.6	0.6	0	0	0	0
Estimated Outlays	0	0.1	0.3	0.4	0.5	0.6	0.6	0.4	0.1	0	0
Alaska Pipeline Loan Guarantee											
Estimated Authorization Level	0	0	0	0	0	0	0	2.0	0	0	0
Estimated Outlays	0	0	0	0	0	0	0	0.4	0.6	0.8	0.2
Indian Energy Programs											
Estimated Authorization Level	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Estimated Outlays	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Energy Conservation At Federal Agencies											
Estimated Authorization Level	0	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0
Estimated Outlays	0	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0

Continued

TABLE 2. Continued

	By Fiscal Year, in Billions of Dollars										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Renewable Energy Production Incentive											
Estimated Authorization Level	0	0.1	*	*	*	*	*	0.1	0.1	0.1	0.1
Estimated Outlays	0	0.1	*	*	*	*	*	0.1	0.1	0.1	0.1
Nuclear Loan Guarantee											
Estimated Authorization Level	0	0	0	0	0	0	0	0	0.4	0	0
Estimated Outlays	0	0	0	0	0	0	0	0	0.1	0.2	0.1
Grants for Energy-Efficient Public Buildings and Other Provisions											
Estimated Authorization Level	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Estimated Outlays	0	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Subtotal, Estimated Authorizations											
Estimated Authorization Level	0	0.7	0.7	0.7	0.8	0.8	0.8	2.2	0.6	0.2	0.2
Estimated Outlays	0	0.4	0.5	0.7	0.7	0.8	0.8	1.0	1.0	1.2	0.5
Total Proposed Changes											
Estimated Authorization Level	0	8.4	8.5	9.4	10.2	10.8	1.3	2.7	0.9	0.3	0.3
Estimated Outlays	0	3.7	7.2	8.9	9.9	10.5	6.1	2.4	1.6	1.5	0.7
Discretionary Spending Under S.14											
Estimated Authorization Level ^a	5.6	8.4	8.5	9.4	10.2	10.8	1.3	2.7	0.9	0.3	0.3
Estimated Outlays	5.5	6.7	7.9	9.1	10.0	10.5	6.1	2.4	1.6	1.5	0.7

NOTE: Details may not add to totals because of rounding.

* = Less than \$50 million.

a. The 2003 amount is the sum appropriated for that year for programs related to energy, science, and resource management.

Spending Subject to Appropriation

S. 14 contains provisions that specify amounts authorized to be appropriated for several programs related to research and development, energy production and conservation, and resource management. Additionally, the bill would authorize unspecified amounts to be appropriated for other programs related to those issues. The following two sections detail

the costs of specified and estimated authorizations. (A discussion of direct spending and revenue effects follows the next two sections.)

Provisions with Specified Authorizations

CBO estimates that implementing programs with specified authorizations in the bill would cost about \$37.1 billion over the 2004-2008 period and \$45 billion over the next 10 years. That estimate assumes that all amounts authorized to be appropriated for these programs—about \$43.6 billion over the next five years—will be provided each year. (The bill contains additional specified authorizations of about \$1.5 billion for the 2009-2013 period for Indian energy programs and research related to coal, hydrogen, and fossil energy.) Estimates of outlays are based on historical spending patterns for energy-related activities.

Research and Development Programs. Titles VIII and IX would authorize the appropriation of \$6.6 billion in 2004 and \$39.9 billion over the 2004-2008 period for various programs related to energy and science research, development, and demonstration. Over half of this funding would be allocated to science programs administered by the Department of Energy (DOE), with most of the balance going to research and development related to energy efficiency and various fuel sources. In total, we estimate that fully funding these programs would cost about \$3.1 billion in 2004 and \$33.9 billion over the 2004-2008 period.

Other Specified Program Authorizations. The bill also would specifically authorize funds to be appropriated for several other energy-related programs. CBO estimates that, over the 2004-2008 period, implementing those programs would cost:

- \$1.1 billion for the research, development, and demonstration of an advanced nuclear reactor design using hydrogen and for decommissioning of an experimental reactor in Arkansas;
- \$770 million to provide financial assistance for projects that advance the efficiency, environmental performance, and cost-competitiveness of coal technologies;
- \$466 million for the development of federal oil and natural gas resources;
- \$271 million to promote energy efficiency at federal, state, and local levels;
- \$254 million to address personnel, training, and education issues faced by the energy industry;

- \$126 million to assess renewable resources on federal lands and to provide grants to entities that use biomass to produce energy;
- \$105 million for the Secretary of Energy create a public-private research partnership for developing railroad technologies that increase fuel economy, reduce emissions, and lower the cost of operations;
- \$86 million for programs to provide grants and financial assistance to Indian tribes for certain energy projects; and
- \$23 million for the Secretary of Transportation to develop fuel economy standards for automobiles.

Provisions with Estimated Authorizations

Based on information from DOE, other affected agencies, and industry sources, CBO estimates that S. 14 would authorize the appropriation of an additional \$721 million in 2004, \$3.8 billion over the 2004-2008 period, and \$7.8 billion over the next 10 years.

S. 14 would authorize financial assistance for certain coastal states, create a new federal loan guarantee program for an Alaska natural gas pipeline, and establish new programs for energy development on Indian lands and energy conservation. The bill also would reauthorize the renewable energy production incentive program, authorize federal loan guarantees for the next generation of nuclear power plants, and require new administrative rules regarding electricity production. Finally, S. 14 would authorize grants to support the construction of energy-efficient buildings and require various new studies on energy issues, reports to the Congress, and other federal efforts related to energy production and consumption. In total, CBO estimates that carrying out these activities would cost \$374 million in 2004, \$3.2 billion over the 2004-2008 period, and \$7.6 billion over the 2004-2013 period.

Coastal Impact Assistance. Section 111 would establish the coastal impact assistance fairness program to be carried out by the Department of the Interior (DOI). For this program, the bill would authorize the appropriation of 12.5 percent of eligible outer continental shelf (OCS) receipts from oil and gas royalties to finance conservation grants to coastal states and their subdivisions over the 2004-2009 period. For fiscal years 2004-2006, total payments would be based on fiscal year 2003 eligible earnings (CBO estimates that these earnings would be \$3.5 billion), while payments for fiscal years 2007-2009 would be based on 2006 earnings (we project these earnings would be \$4.8 billion).

Assuming appropriation of the authorized amounts, CBO estimates that DOI would spend about \$145 million in 2004, \$2 billion over the 2004-2008 period, and \$3.1 billion over the next 10 years. These estimates are based on current CBO baseline projections of OCS receipts. Payments for the first three years have been adjusted to reflect the bill's requirement that eligible receipts on existing leases must be earned after January 1, 2003.

Loan Guarantee for an Alaska Natural Gas Pipeline. S. 14 would authorize the appropriation of necessary sums to provide the subsidy cost necessary to guarantee loans to build a natural gas pipeline to deliver gas from the Alaskan North Slope to Chicago for distribution in the United States. For this estimate, CBO assumes the loan guarantee would cover \$20 billion of private financing, and that it would be executed in 2010 when we expect construction would begin. CBO estimates that a loan guarantee for this project would involve a 10 percent subsidy and cost \$2 billion over the 2010-2013 period.

That estimate is based on the probability of default that has been assigned to a recent gas pipeline project in the same region by a private credit rating agency, and the favorable outlook for substantial recoveries on such a loan in the event of default. As is true for almost any large, long-term project, this estimate is quite uncertain. Actual subsidy costs for such a loan guarantee could be either higher or lower than \$2 billion. Some of the uncertainties associated with this estimate are highlighted below.

Under S. 14, a federal loan guarantee could be issued for a natural gas pipeline that generally follows the existing oil pipeline from Prudhoe Bay to the Alcan Highway and then connects to existing infrastructure in Alberta. Authorization for an Alaska Natural Gas Transportation System was enacted by the Congress in the mid-1970s. The natural gas pipeline envisioned by that legislation still has not been built. At the October 2, 2001, hearing on the Alaska natural gas pipeline held by the Senate Committee on Energy and Natural Resources, industry representatives generally concluded that an Alaska natural gas pipeline would cost about \$20 billion to construct, and was uneconomic at this time. The major risk facing such a project is the volatility of natural gas prices. Construction delay and cost overruns are also risk factors.

Risk of Default. The Alaska Gas Producers Project Team, an organization of major owners of natural gas resources in Alaska, has estimated that a pipeline with a capacity of 4.3 billion cubic feet per day would need to charge a tariff of at least \$2.40 per thousand cubic feet from the North Slope to Chicago to amortize the cost of the pipeline and pay operating expenses. One method used by pipeline operators to mitigate the risk associated with investments in a gas pipeline is to obtain commitments from future customers to use the pipeline at a set price. Such contractual obligations are known as ship-or-pay contracts because they require gas producers to pay a predetermined shipping cost to the pipeline regardless of any downturn in the market price of gas.

Under S. 14, however, the Secretary of Energy could not require the Alaska natural gas pipeline builder to obtain ship-or-pay commitments from gas producers as a condition of providing a loan guarantee. This provision would shift more of the financial risk of the pipeline project from gas producers to the federal government. The volatility of natural gas prices thus adds to the uncertainty over how much risk the government would bear in guaranteeing a loan for construction of a pipeline.

To estimate the probability of a default on the loans used to construct the Alaska natural gas pipeline, CBO examined the credit rating of the Alliance pipeline and discussed the project with private credit analysts. The Alliance natural gas pipeline runs from northwestern Canada to Chicago. It is much smaller in scale than the proposed Alaska natural gas pipeline and cost about \$3.5 billion to build. When Alliance began operations in December 2000, it was given a credit rating of BBB by Standard and Poor's—indicative of a cumulative probability of default of about 10 percent. Significantly, this credit rating also reflected the fact that Alliance had nearly all of its capacity under 15-year ship-or-pay contracts.

The major owners of natural gas resources on the North Slope of Alaska all have very strong credit ratings, and the known and estimated gas reserves in the region are more than enough to fill the Alaskan natural gas pipeline to capacity for decades. Without ship-or-pay contracts in place prior to the financing of this pipeline, however, CBO expects the project might have a higher risk of default than the Alliance pipeline. CBO estimates that this project would involve about a 20-to-25-percent risk of default over its lifetime, which would be consistent with a BB credit rating from Standard and Poor's.

Recovery of Investment in the Event of Default. Offsetting this risk of the project defaulting on its financing because of depressed natural gas prices, construction delays and cost overruns, is the high likelihood that creditors (including the federal government) could expect to recover substantial amounts of their investments through refinancing at lower interest terms, or other credit restructuring over a longer term. In the event of default, CBO estimates Alaska natural gas pipeline creditors could expect to recover a high percentage of the value of their investments but discounted over a longer period. Considering the risk of project default and the likelihood of significant recovery on investments, CBO estimates the proposed federal loan guarantee would have a 10 percent subsidy rate and thus would cost \$2 billion (for a \$20 billion guarantee), subject to appropriation of the necessary sums.

It is possible that the Secretary of Energy could guarantee less than the 80 percent of total project costs that would be authorized by the bill. In that case, the cost would be proportionately lower. It is also possible that the Secretary could guarantee several different loans for various phases of the project, up to and including construction. CBO, however, has no detailed information on the plans for financing the pipeline to use as the basis of such a detailed estimate.

Indian Energy Programs. Title III would authorize DOI to provide grants and loans to Indian tribes. That title also would authorize DOE to issue loan guarantees for energy development projects on Indian land and establish an Office of Indian Energy Policy and Programs. In total, CBO estimates that these programs would cost \$52 million in 2004, \$325 million over the 2004-2008 period, and \$600 million over the next 10 years.

DOI Grants and Loans. The bill would authorize DOI to provide loans and grants to Indian tribes for energy resource development and to provide grants to Indian tribes and tribal consortia for the development of tribal energy resource inventory, feasibility studies, and the enforcement of tribal laws to protect the environment. Based on information from DOI, CBO estimates that such grants and loans would cost about \$19 million in 2004, \$170 million over the 2004-2008 period, and \$370 million over the next 10 years.

Loan guarantees. Title III also would authorize the Secretary of Energy to issue loan guarantees for energy development projects on Indian land valued at up to \$2 billion. Based on information from the Council of Energy Resource Tribes, CBO expects that DOE would provide loan guarantees for a variety of projects, including electricity transmission lines, fossil fuel electricity generation, and renewable fuels.

CBO expects that the subsidy cost of loans guaranteed under this program would have a wide range from 2 or 3 percent to over 50 percent depending on the type of project guaranteed by DOE. For example, we expect that the risk of building a transmission line on Indian land would be similar to loans guaranteed by the Rural Utilities Service (which have little subsidy cost), and we do not expect that DOE would consider alternative energy projects, such as electricity generation from wind, with a financial outlook less than commercial projects that are rated CCC by companies like Standard and Poor's and Moodys.

For this estimate, CBO assumes that about half of the program would provide loan guarantees for electricity transmission lines. The remaining half would be divided between fossil fuel electricity generation and renewable fuels. Under these assumptions, we estimate that the average subsidy cost for loans guaranteed under the program would be 10 percent. CBO expects that loans would be disbursed over an eight-year period, and we estimate that the loan guarantee program would cost the federal government \$30 million in 2004, \$140 million over the 2004-2008 period, and \$200 million over the next 10 years.

Office of Indian Energy Policy and Programs. The bill also would authorize DOE to establish a new office that would be responsible for various grant and loan programs authorized under title III. Based on information from DOE, CBO estimates that the salaries, expenses, benefits, space, and travel cost of the DOE employees that would administer such programs would be about \$3 million annually.

Energy Conservation at Federal Agencies. S. 14 would amend several energy conservation goals and requirements that apply to the federal government. Most of those goals, such as reducing energy use by 2 percent per year relative to 2000 consumption and purchasing energy-efficient products when economical, are being done under current executive orders. Where practical, the bill would require that hourly electricity meters be installed at all federal buildings by 2010. Such meters would provide data at least once daily and measure hourly consumption of electricity. The data would be available to facility energy managers.

Based on information from the DOE, we assume that it would only be economical to meter 20 percent of the government's inventory of 500,000 buildings and that installing meters would cost, on average, \$4,000 per building. We assume that meters would be installed in 20,000 buildings per year until 2008, when the project would be complete. Thus, we estimate that implementing the metering provisions of S. 14 would cost \$80 million in 2004 and \$400 million over the next five years.

Based on experience in the private sector, metering the hourly electricity use of buildings can lead to reduced energy consumption and reduce costs enough to recoup the cost of installing meters within two to four years. It is possible that this requirement could lead to a future reduction in appropriations for federal building energy use, but any such savings would depend on how metering information is used by federal agencies. Additionally, metering can reveal where energy use is high, but capital investment and other changes in how federal buildings consume energy would likely be needed to achieve savings. In any case, any savings are not likely to be significant over the next five years because most of the new metering and required capital investment would not be completed until the end of that period or after 2008.

Renewable Energy Production Incentive (REPI). The REPI program currently provides cash payments to public utilities and electric cooperatives that generate energy using renewable sources. The payment is based on the annual kilowatt-hours of electricity generated using qualified renewable energy sources. Section 502 of the bill would reauthorize the REPI program for an additional 10 years and make Indian tribes eligible for the program. Annual funding appropriated for the program has not kept pace with applications for payment from eligible utilities. Specifically, eligible utilities have generated electricity from renewable resources since 1994 in an amount that qualifies for about \$43 million in REPI payments that have not been appropriated. Based on information from DOE, CBO estimates that fully funding this program, including the backlog of applications, would cost \$56 million in 2004, \$186 million over the 2004-2008 period, and \$440 million over the next 10 years.

Loan Guarantees for Nuclear Power Plants. S. 14 would authorize DOE to provide loan guarantees for up to 50 percent of the construction costs of new nuclear power plants and

would authorize DOE to enter into long-term contracts for the purchase of power from those plants. The Secretary could provide loan guarantees for up to seven plants (with a capacity of 1,100 megawatts each). No new nuclear plants have been ordered in the U.S. in the last 25 years, and the last was completed in 1996.

Based on information from DOE about preliminary construction plans at three sites, we expect that the department would provide credit assistance for six nuclear power plants over the next 20 years. Based on information from the Nuclear Regulatory Commission (NRC), DOE, and industry sources, CBO expects that construction of the first new nuclear power plant would begin after 2010. Estimates of the cost for such a plant range from \$2.1 billion to almost \$3 billion, including engineering, procurement, and construction, as well as costs associated with construction delays, and first-of-a-kind engineering costs.

For this estimate, CBO assumes that the first nuclear plant built using a federal loan guarantee would have a capacity of 1,100 megawatts and have associated project costs of \$2.5 billion. We expect that such a plant would be located at the site of an existing nuclear plant and would employ a reactor design certified by the NRC prior to construction. This plant would be the first to be licensed under the NRC's new licensing procedures, which have been extensively revised over the past decade.

Based on current industry practices, CBO expects that any new nuclear construction project would be financed with 50 percent equity and 50 percent debt. The high equity participation reflects the current practice of purchasing energy assets using high equity stakes, 100 percent in some cases, used by companies likely to undertake a new nuclear construction project. Thus, we assume that the government loan guarantee would cover half the construction cost of a new plant, or \$1.25 billion in 2011.

CBO considers the risk of default on such a loan guarantee to be very high—well above 50 percent. The key factor accounting for this risk is that we expect that the plant would be uneconomic to operate because of its high construction costs, relative to other electricity generation sources. In addition, this project would have significant technical risk because it would be the first of a new generation of nuclear plants, as well as project delay and interruption risk due to licensing and regulatory proceedings.

In its 2003 Annual Energy Outlook, the Energy Information Administration (EIA) projects that production from new nuclear power plants would not be cost-competitive with other power sources until after 2025. EIA also reports that current construction costs for a typical electricity plant range from \$536 per kilowatt of capacity for natural-gas-powered combined-cycle technology to \$1,367 per kilowatt of capacity for coal-steam technology. Although construction costs could diminish significantly as a new generation of nuclear plants are built, a new nuclear power plant starting construction in 2011 would have a construction cost of about \$2,300 per kilowatt of capacity. By 2011, that cost would result in capital costs that

are 40 percent to 250 percent above the cost of capital for electricity plants using gas and coal. Because the cost of power from the first of the next generation of new nuclear power plants would likely be significantly above prevailing market rates, we would expect that the plant operators would default on the borrowing that financed its capital costs.

Assuming the nuclear plant is completed, we expect it would financially default soon after beginning operations, however, we expect that the plant would continue to operate and sell power at competitive market rates. Thus, over the plant's expected operating lifetime, its creditors (which could be the federal government) could expect to recover a significant portion of the plant's construction loan. The ability to recover a significant portion of the value of the initial construction loan would offset the high subsidy cost of a federal loan guarantee. Under the Federal Credit Reform Act, funds must be appropriated in advance to cover the subsidy cost of such loan guarantees, measured on a present-value basis. CBO estimates that the net present value of amounts recovered by the government on its loan guarantee from continued plant operations following a default and the project's technical and regulatory risk would result in a subsidy cost of 30 percent or about \$375 million over the 2011-2013 period. Based on information from DOE, we expect other loan guarantees would not be issued for nuclear power plants until after 2013.

Alternatively, under the bill, DOE could choose to forgo the loan guarantee and enter into a long-term purchase agreement to buy some or all of a nuclear plant's production instead. Under this option, the full value of funds committed by the government to purchase power from a nuclear plant over many years would need to be appropriated in advance, prior to construction, to assure a private lender that future cash flows would be adequate to cover debt-service costs. CBO estimates that this option for financial assistance would cost more than a federal loan guarantee and that DOE would probably not use this alternative.

Electricity Regulations. Title XI would require the Federal Energy Regulatory Commission (FERC) to establish several new rules for managing the nation's electricity system and governing the business practices of the electricity industry. Such rules would affect transmission services, construction and siting permits for building new transmission lines, and the reliability of the nation's electricity transmission infrastructure. The bill also would repeal the Public Utility Holding Company Act of 1935, require FERC to take over certain regulatory procedures currently undertaken by the Securities and Exchange Commission, and amend the Public Utilities Regulatory Policies Act.

Based on information from FERC, CBO estimates that implementing these provisions would cost \$11 million in 2004 and \$47 million over the 2004-2008 period. Such costs would cover additional data processing and storage, additional staff, and travel related to the agency's new duties. Because FERC recovers 100 percent of its costs through user fees, such additional costs would be offset by an equal change in fees that the commission charges. Hence, these provisions would have no net budgetary impact.

Grants for Energy-Efficient Public Buildings and Other Provisions. The bill would authorize the appropriation of necessary sums for each of fiscal years 2004 through 2013 for grants to states for the construction and renovation of energy-efficient public buildings. Based on information from DOE about similar grant programs, CBO estimates that the program would cost \$10 million in 2004, \$171 million over the 2004-2008 period, and about \$400 million over the next 10 years. This amount would allow DOE to provide grants to all 50 states over the next five years.

S. 14 includes numerous provisions that would require new studies on energy-related subjects, reports to the Congress, and activities related to energy development and consumption. Based on information from the agencies that would be responsible for implementing these provisions, CBO estimates that these activities would cost \$31 million in 2004, \$117 million over the 2004-2008 period, and \$361 million over the next 10 years.

Direct Spending and Revenues

S. 14 contains several provisions that would affect direct spending and revenues. The bill would expand and provide permanent authorization for the use of federal energy savings performance contracts (ESPCs), establish an organization to manage the reliability of the nation's electricity system, make changes to programs to develop federally owned oil and natural gas, and modify a requirement that DOE sell certain uranium products in 2003.

The budget-year and 10-year costs of these provisions are shown in Table 3. Overall, CBO estimates that enacting S. 14 would increase direct spending by \$94 million in 2003, \$212 million in 2004, and \$5.1 billion over the 2004-2013 period. We estimate that enacting the bill would increase revenues by \$75 million in 2004 and by \$820 million over the 2004-2013 period. In addition, we estimate that new civil penalties imposed by the bill would result in an increase in revenues of less than \$500,000 annually.

Energy Savings Performance Contracts. Section 604 of S. 14 would provide permanent authorization to use ESPCs and would expand their use under two new programs. Under one program, agencies would be allowed to use an ESPC to construct replacement buildings by committing to pay private contractors a portion of the budget savings expected from reduced operations, maintenance, and energy costs at such new buildings. Under a second program, agencies would be authorized to use ESPCs to obtain energy-efficient vehicles. CBO estimates that these provisions would cost \$105 million in 2004, \$1.7 billion over the 2004-2008 period, and \$3.8 billion over the next 10 years.

TABLE 3. ESTIMATED DIRECT SPENDING AND REVENUE EFFECTS OF S. 14

	By Fiscal Year, in Millions of Dollars										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CHANGES IN DIRECT SPENDING											
Energy Savings Performance Contracts											
Estimated Budget Authority	0	210	374	512	549	386	359	361	434	436	508
Estimated Outlays	0	105	240	369	470	476	429	404	404	439	465
Electric Reliability Organization (ERO)											
Estimated Budget Authority	0	100	102	104	106	108	110	112	114	116	118
Estimated Outlays	0	100	102	104	106	108	110	112	114	116	118
Federal Oil and Natural Gas Programs											
Estimated Budget Authority	0	7	21	25	24	26	18	12	5	1	-3
Estimated Outlays	0	7	21	25	24	26	18	12	5	1	-3
Modification to Uranium Sales Requirement											
Estimated Budget Authority	94	0	0	0	0	0	0	0	0	0	0
Estimated Outlays	94	0	0	0	0	0	0	0	0	0	0
Total Changes in Direct Spending Under S. 14											
Estimated Budget Authority	94	317	497	641	679	520	487	485	553	553	623
Estimated Outlays	94	212	363	498	600	610	557	528	523	556	580
CHANGES IN REVENUES											
Fees Collected by ERO											
Estimated Revenues	0	75	77	78	80	81	83	84	86	87	89

Permanent Authorization of ESPCs. Currently, federal agencies can enter into an ESPC, a specific type of long-term contract, for the purchase of energy-efficiency equipment, such as new windows and lighting. Using such equipment can reduce the energy costs for a facility. When using an ESPC, the savings from reduced energy bills are used to pay for the purchase of the new equipment over several years. The commitment to make such payments is made when the ESPC is entered into. Thus, consistent with governmentwide accounting principles, CBO believes that the budget should reflect that commitment as new obligations at the time that an ESPC is signed. Currently, agencies can use ESPCs to purchase new equipment over a 25-year period without an appropriation for the full amount of the purchase price.

Since 1988, DOE estimates that agencies have entered into ESPCs valued over \$800 million. CBO estimates that, because the federal building inventory is aging, those contracts would continue to be used over time at roughly the same rate currently used—\$75 million in 2004 and increasing after that. Thus, we estimate that extending the authorization for ESPCs would increase direct spending by about \$64 million in 2004 and \$1.1 billion over the 2004-2013 period.

Expanded Use of ESPCs for Construction of Buildings. S. 14 would expand the use of such contracts to cover the purchase of a new building if the cost of the new building is less than the present value of estimated savings from lower costs of operations, maintenance, and energy consumption. A November 2000 report from the General Services Administration's Office of the Inspector General estimates that it would take several billion dollars to bring the federal building inventory up to appropriate operations, maintenance, and energy efficiency standards. Thus, we assume that the opportunity for cost savings that could be generated from reduced operations, maintenance, and energy expenses at new buildings would be significant. We expect that the new authority provided by the bill would be used only in a few cases in the first few years but that, as buildings continue to deteriorate and requirements for energy efficiency continue to increase, the authority would be used at an increasing rate.

DOE has plans to use the new authority under this provision to build a new facility in New Mexico at an estimated cost of \$35 million. While the precise number of new facilities planned for construction that could qualify for funding under the authority that would be provided by the bill cannot be determined at this time, CBO estimates that this new authority would be used at least 15 times over the next five years at an estimated cost of \$11 million in 2004 and \$400 million over the 2004-2008 period. We expect that the use of the funding mechanism would grow after 2008 and that total spending over the 2004-2013 period would be about \$1.7 billion.

Expanded Use of ESPCs for Energy-Efficient Vehicles. In addition, section 604 would authorize the Secretary of Defense and the heads of other federal agencies to use as many as 10 ESPCs for a pilot project involving nonbuilding applications. According to officials at the Department of Defense, the department would use this authority to improve the performance and fuel consumption of general-purpose vehicles and defense weapons systems, such as ships, armored vehicles, and combat aircraft. The pilot program would authorize payments of up to \$100 million under these contracts, or a total of \$1 billion for such contracts. CBO estimates that, given the large inventory of equipment available for such contracts, the full amount of this authority would be used over the next five years. We estimate that federal spending under this provision would total \$30 million in 2004 and about \$1 billion over the next 10 years.

Electric Reliability Organization. S. 14 would authorize FERC to exercise authority over the reliability of the nation's electricity transmission system through the establishment of an Electric Reliability Organization (ERO). Under the bill, FERC would select an organization to become the ERO based on several criteria, including the ability of the organization to charge fees to end users of the electricity system to cover its costs. CBO believes the ERO's collections and spending should be included in the federal budget because this new entity would conduct inherently governmental activities that could not be undertaken by a purely private organization.

Based on information from the North American Electric Reliability Council (NERC), CBO estimates that the newly formed ERO and its regional affiliates would spend between \$75 million and \$150 million a year. For this estimate, CBO assumes that spending by the ERO and its regional affiliates would start at \$100 million a year and increase by the rate of anticipated inflation. Thus, we estimate that spending by the ERO would total about \$100 million in 2004 and \$1.1 billion over the next 10 years.

Because the ERO and the regional organizations created by it would be governmental in nature, CBO believes that the collection of these fees should be recorded as revenues in the budget. Based on information from NERC, CBO estimates that net revenues collected by an ERO and its regional organizations would total \$75 million in 2004, and \$820 million over the 2004-2013 period.

Currently, the federal power marketing administrations, including the Tennessee Valley Authority and the Bonneville Power Administration, pay dues to the regional affiliates of NERC. We would expect that those payments would continue and would increase under the new regulatory scheme established by the ERO. Any increase in those fees would be offset by changes in the rates charged to customers of the federal agencies.

Provisions Related to Federal Oil and Natural Gas Resources. Title I would make several changes to federal programs related to the production of oil and natural gas. Several of these provisions would provide private producers of those resources with various forms of royalty relief or other credits that would reduce federal receipts, particularly over the next few years. By creating incentives for greater production of oil and natural gas, CBO expects that net receipts from royalties would eventually increase under some of those provisions, but not for several years. Based on information from DOI, CBO estimates that these provisions would result in a net loss of offsetting receipts (a credit against direct spending) totaling \$7 million in 2004 and \$136 million over the next 10 years.

Uranium Sales and Transfers. Section 441 would allow DOE to transfer up to 3,293 metric tons of uranium to the United States Enrichment Corporation (USEC) to replace uranium that does not meet commercial specifications. CBO expects that, if this provision

is enacted, DOE will transfer that material to USEC instead of selling it as required under current law. We estimate that the government would forego sales receipts of about \$94 million in 2003 as a result of this change, thereby increasing direct spending by the same amount.

INTERGOVERNMENTAL AND PRIVATE-SECTOR IMPACT

S. 14 contains several mandates as defined in the Unfunded Mandates Reform Act that would affect both private-sector and intergovernmental entities. CBO expects that some of the mandates could impose substantial costs on those entities. CBO cannot determine the cost of all the mandates in the bill because several of the requirements established by the bill would hinge on future regulatory action for which information is not available. Accordingly, CBO cannot determine whether the total cost of the mandates imposed on the private sector would exceed the annual threshold established in UMRA (\$117 million in 2003, adjusted annually for inflation). However, CBO expects that the aggregate cost of all intergovernmental mandates would not exceed the threshold established in UMRA (\$59 million in 2003, adjusted annually for inflation).

Based on our analysis, we expect that provisions contained in the bill's titles on electricity, nuclear matters, and energy conservation would have the greatest impact on private-sector and intergovernmental entities. In addition, one of the bill's provisions would limit state authority to regulate electric utilities.

Electricity

Mandatory Reliability Standards. The bill would require users of the bulk-power system to comply with standards that the ERO, to be designated by FERC, establishes. Those users include intergovernmental entities such as municipally owned utilities as well as private-sector entities, such as utilities, nonutility generators, and marketers. Currently, NERC, a voluntary organization, promotes electricity reliability. According to several representatives of the electricity industry, virtually all public and private-sector users of the bulk-power system voluntarily comply with NERC standards. For those entities, the mandate would impose no significant, additional costs in the short term relative to current practice since the ERO is not expected to significantly change current standards.

Mandatory Assessments. The bill would direct the ERO to assess fees to cover the costs of implementing and enforcing ERO standards. Those fees would be considered a mandate under UMRA. The bill does not specify who would pay those fees, only that the fees should take into account the relationship of costs to each region and reflect an equitable sharing of

those costs among all electric energy consumers. Although there is some uncertainty about how fees would be assessed, the most likely scenario is that the ERO would assess fees on its members, which is the current practice of NERC. Those members include both public and private entities.

CBO estimates that the incremental increase in NERC collections for the proposed compliance, monitoring, and enforcement activities would total about \$60 million for each of fiscal years 2004 through 2008.

Regulatory Fees. The bill would require FERC to assume certain regulatory procedures that are currently under the jurisdiction of the Securities and Exchange Commission. Under current law FERC has the authority to collect fees from investor-owned utility companies to offset its costs. The duty to pay those fee increases would be considered a private-sector mandate under UMRA. Based on information from FERC, CBO expects that over \$40 million in additional fees would be collected from investor-owned utilities over the 2004-2008 period.

State Authority Over Electric Utilities. Section 1111 would preempt state authority to take action to ensure the safety, adequacy, and reliability of electric service within that state if the state's actions are inconsistent with the federal reliability standards. This preemption of state authority would impose no additional duties on state governments that would result in additional spending.

Sections 1141, 1142, and 1143 would require state regulators to review the use of net metering, time-based metering, demand response systems, and energy efficiency and dependence plans before permitting electric utilities to implement these federal standards. The sections contain intergovernmental mandates because they would increase a state's responsibilities under the existing mandates in the Public Utilities Regulatory Policies Act. However, CBO estimates that the states' costs to review additional standards would not be significant.

Additional Electricity Mandates. The electricity title contains several additional mandates that would impose costs on both public and private utilities. CBO cannot estimate the costs of those mandates because the extent of new requirements would depend on future regulatory action. The bill would impose mandates by requiring:

- Increased submission of data to FERC to improve market transparency;
- Compliance with rules to be issued by the Federal Trade Commission (FTC) to protect the privacy of retail electric consumers; and
- Compliance with rules to be issued by the FTC prohibiting a change of selection of an electric utility without the consent of the consumer or the appropriate state regulator.

Nuclear Matters

Increase in Retrospective Premium. Under current law, in the event that losses from a nuclear incident exceed the required amount of private insurance, the NRC would levy an assessment on its licensees (both public and private) to cover the shortfall in damage coverage. Section 403 would increase the maximum retrospective premium from \$84 million to \$94 million, as well as increase the maximum annual premium from \$10 million to \$15 million. CBO has determined that raising both the maximum total premium and the annual premium would increase the costs of an existing mandate and would thereby impose both intergovernmental and private-sector mandates under UMRA.

Because the probability of a nuclear accident resulting in losses exceeding the amount of private insurance coverage is low, CBO estimates that the annual costs of complying with the mandates (in expected-value terms) would not be substantial over the next five years. Moreover, because less than 5 percent of nuclear facilities are publicly owned, CBO does not expect significant costs would be incurred by state or local governments.

Energy Conservation

Section 621 would direct the Secretary of Energy to prescribe energy conservation standards restricting standby mode energy consumption of household appliances. Standby mode, as defined in the bill, is the lowest amount of electric power used by a household appliance when not performing its active functions. According to industry sources and DOE, up to 9,000 types of household appliances could be affected by this provision, and further, many such products may require significant modification to meet the standard for energy consumption in standby mode. DOE could not say how they would implement this provision, and CBO cannot determine the products that would be affected. We therefore cannot estimate the cost to the industry of meeting such a requirement. If DOE applies standards to the majority of products potentially affected, costs to industry could be substantial.

PREVIOUS CBO ESTIMATES

CBO has completed estimates for four bills that contain provisions that are similar to provisions of S. 14:

- On April 7, 2003, CBO transmitted a cost estimate for H.R. 1346, the Federal Government Energy Management Improvement Act, as ordered reported by the House Committee on Government Reform on March 20, 2003.
- On April 8, 2003, CBO transmitted a cost estimate of the direct spending and revenue impact of H.R. 6, as introduced on April 7, 2003, a bill to enhance energy conservation and research and development, to provide for security and diversity in the energy supply for the American people, and for other purposes.
- On April 15, 2003, CBO transmitted a cost estimate for H.R. 238, the Energy Research, Development, Demonstration, and Commercial Application Act of 2003, as ordered reported by the House Committee on Science on April 2, 2003.
- On May 1, 2003, CBO transmitted a cost estimate for H.R. 1644, the Energy Policy Act of 2003, as reported by the House Committee on Energy and Commerce on April 8, 2003.

A comparison of our estimates of provisions that would affect direct spending and revenues, spending subject to appropriation, and mandates follows.

Direct Spending and Revenues. S. 14 would authorize broader use of ESPCs than H.R. 1346, H.R. 6, and H.R. 1644; hence, our estimate of spending for such contracts under S. 14 is larger. Provisions in S. 14 relating to the establishment of an ERO are substantively similar to provisions in H.R. 6 and H.R. 1644, and our estimates of changes in direct spending and revenues are the same. Compared to H.R. 6, S. 14 contains fewer programs to provide royalty relief to producers of federal oil and natural gas resources; hence, we estimate that such programs would cost less under S. 14. Finally, provisions related to the sale of uranium resources in S. 14 and H.R. 1644 are substantively similar, and our estimates are the same.

Spending Subject to Appropriation. S. 14, H.R. 238, and H.R. 1644 would authorize specific amounts to be appropriated for various programs administered primarily by DOE. Differences in our estimates of spending for such programs reflect differences in the amounts that each bill would authorize to implement them. Provisions of S. 14 regarding energy conservation at federal agencies, reauthorization of the renewable energy production incentive, grants for energy-efficient public buildings, and electricity regulations are

substantively similar to provisions in H.R. 1644, and our estimates of spending for each of those programs are the same.

Mandates. Most of the mandates contained in S. 14 were also contained in H.R. 6 and H.R. 1644. H.R. 6 and H.R. 1644 contain a mandate establishing a renewable fuel standard for motor fuels, which would impose costs on refiners, importers, and blenders of gasoline in excess of UMRA's threshold for private-sector mandates in 2009. That provision is not included in S. 14.

Although H.R. 6 and H.R. 1644 contain several intergovernmental mandates that have not been included in S. 14, CBO does not expect compliance with the mandates contained in any of the bills to exceed the threshold for intergovernmental mandates established in UMRA.

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