CONGRESSIONAL BUDGET OFFICE
COST ESTIMATE

June 28, 2007

H.R. 2635
Carbon-Neutral Government Act of 2007

As ordered reported by the House Committee on Oversight and Government Reform on June 12, 2007, with a subsequent amendment provided on June 27, 2007

SUMMARY

H.R. 2635 would establish targets for greenhouse gas reduction and standards for energy efficiency for the federal government. Starting in 2010, the bill would require federal agencies to reduce emissions of greenhouse gases in order to achieve net zero emissions by 2050. In addition, the legislation would:

- Establish a two-year pilot program for federal purchases of greenhouse gas offsets (as specified in the bill) and renewable energy certificates;
- Require agencies to purchase low greenhouse gas-emitting vehicles;
- Require energy-efficiency standards for new (and renovated) federal buildings;
- Permit individuals to sue the federal government for damages (of up to $1.5 million per year) caused by global warming; and
- Authorize the Environmental Protection Agency (EPA) to establish a carbon cap-and-trade program for use by federal agencies.

CBO estimates that enacting this legislation would increase direct spending by $20 million in 2008, by $340 million over the 2008-2012 period, and by $840 million over the 2008-2017 period, mostly for the cost of entering into contractual commitments to acquire renewable forms of energy and to achieve reductions in energy use. In addition, we estimate that implementing the bill would increase the federal government's operating costs subject to appropriation by $178 million in 2008 and $1.3 billion over the 2008-2012 period, mostly to purchase low greenhouse gas-emitting vehicles and to participate in the pilot program for acquiring qualified greenhouse gas offsets.

H.R. 2635 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would not affect the budgets of state, local, or tribal governments.

ESTIMATED COST TO THE FEDERAL GOVERNMENT

The estimated budgetary impact of H.R. 2635 is shown in the following table. The costs of this legislation fall within nearly all budget functions because the bill would affect all executive and legislative branch agencies.

TABLE 1. ESTIMATED BUDGETARY IMPACT OF H.R. 2635

	By Fiscal Year, in Millions of Dollars				
	2008	2009	2010	2011	2012
CHANGES IN DIRECT SPENDING[a]					
Estimated Budget Authority	40	60	80	100	100
Estimated Outlays	20	40	80	100	100
CHANGES IN SPENDING SUBJECT TO APPROPRIATION					
Estimated Authorization Level	180	298	295	263	336
Estimated Outlays	178	296	295	263	336

a. Enacting H.R. 2635 also would increase direct spending by an estimated $100 million per year from 2013 through 2017. Changes in direct spending through 2017 are detailed in Table 2.

BASIS OF ESTIMATE

For this estimate, CBO assumes that H.R. 2635 will be enacted before the start of 2008, that the necessary funds will be provided for each year, and that spending will follow historical patterns for ongoing and similar initiatives. CBO estimates that enacting H.R. 2635 would increase direct spending by $20 million in 2008 and $840 million over the 2008-2017 period. In addition, we estimate that implementing the bill would increase discretionary spending by $178 million in 2008 and $1.3 billion over the 2008-2012 period.

Background

H.R. 2635 would establish targets for reducing the federal government's emissions of greenhouse gases.

Greenhouse Gases. The federal government's emissions of greenhouse gases—primarily carbon dioxide, but also methane, nitrous oxide, and other chemicals—are the result of a variety of processes, including the combustion of fossil fuels, industrial activities, and natural processes. Most of the carbon dioxide emissions in the United States result from the combustion of fossil fuels. There is currently no requirement for the federal government to specifically track or reduce its greenhouse gas emissions and no reliable comprehensive data base of direct and indirect greenhouse gas emissions that result from the government's operations. For this estimate, CBO estimated the federal government's greenhouse gas emissions based on the carbon dioxide coefficients of the various fuels consumed. The government emits at least 100 million metric tons of carbon dioxide annually through the consumption of fossil fuels.

H.R. 2635 would require agencies to inventory and reduce all greenhouse gas emissions, including direct emissions (e.g., energy usage in buildings and vehicles) as well as indirect emissions (e.g., emissions from the production of energy, travel costs, and contractor-related activities). Limited information is available on the greenhouse gas emissions of the federal government. For this estimate, CBO assumes agencies would reduce current energy consumption and purchase qualified greenhouse gas offsets to achieve the required 2 percent annual reduction in carbon dioxide emissions starting in 2011.

Methods of Compliance. Under the bill, the federal government could lower its energy use or purchase qualified greenhouse gas offsets or renewable energy certificates or a combination of those approaches to reduce its greenhouse gas emissions.

Energy Conservation Investments. Methods of lowering the federal government's energy use could range from inexpensive education and outreach campaigns to encourage employees and agencies to curtail their energy use, to more costly investments in energy conservation improvements to buildings or in energy-efficient equipment and vehicles. Agencies typically make energy conservation investments using appropriated funds or by entering into energy savings performance contracts (ESPCs).

Greenhouse Gas Offsets. Under the bill, greenhouse gas offsets would provide a verifiable, enforceable, and permanent reduction of greenhouse gas emissions through a reduction in emissions or the sequestration (that is, the removal) of greenhouse gases (for example, by the permanent storage of carbon dioxide emissions). Such reductions in emissions or increases in the sequestration of greenhouse gas could be achieved by entities other than the federal

government—for example, by modifications in energy use to reduce carbon emissions (such as switching from coal to natural gas) or changes in the management of forest lands to increase the sequestration of carbon. Those entities could then sell the reductions in greenhouse gases that they have achieved to others, such as the federal government, that are required to reduce emissions.

The Federal Government's Energy Use and Carbon Dioxide Emissions. The federal government is the largest single consumer of energy in the United States. According to the Department of Energy (DOE), the federal government accounts for about 2 percent of the total energy consumed in the United States. When measured in terms of energy delivered (net of losses in the generation of electricity), the government used about 1.1 quadrillion British thermal units (Btu) or quads of energy at a cost of $14.5 billion in 2005. Federal buildings accounted for 35 percent of the government's energy use, vehicles and equipment used about 60 percent, and the remainder was used in various industrial processes and support facilities. Based on the type of energy used, CBO and others have estimated that the federal government's activities—from heating and cooling office buildings to operating fighter jets—produce at least 100 million metric tons of carbon dioxide annually.

Reducing and Offsetting Carbon Dioxide Emissions. CBO expects that 20 percent of the reduction in greenhouse gas emissions required of the federal government under H.R. 2635 before 2017 would stem from reducing energy use. We expect that most emissions reduction under the bill in the initial years—80 percent—would be achieved by purchasing greenhouse gas offsets. That estimate reflects the fact that the energy conservation potential of existing federal buildings is limited—not all of the reduction in greenhouse gas emissions required under H.R. 2635 could be obtained by making federal buildings more energy efficient. In addition, most federal energy use is related to vehicle and equipment operation by the Department of Defense and other agencies for purposes that are not likely to be significantly reduced in the next few years. Thus, the purchase of greenhouse gas offsets is the compliance strategy likely to be most widely adopted by federal agencies for the first several years following enactment of the legislation.

Direct Spending

CBO expects that two provisions of H.R. 2635 would affect direct spending; the estimated cost of those provisions are shown in Table 2. First, the bill would require federal agencies to reduce their greenhouse gas emissions by at least 2 percent annually to reach net zero emissions by 2050. It also would permit individuals to sue the government for its failure to reduce those emissions. CBO estimates that enacting the bill would increase direct spending by $20 million in 2008, $340 million over the 2008-2012 period, and $840 million over the 2008-2017 period, for the cost of entering into long-term contracts to achieve reductions in energy use. Those contracts are known as energy savings performance contracts. ESPCs

allow agencies to acquire energy-efficiency investments and agree to pay private contractors for the cost of those investments over several years using the avoided energy costs due to the investment.

TABLE 2. ESTIMATED DIRECT SPENDING EFFECTS OF H.R. 2635

	By Fiscal Year, in Millions of Dollars											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2008-2012	2008-2017
CHANGES IN DIRECT SPENDING												
Estimated Budget Authority	40	60	80	100	100	100	100	100	100	100	380	880
Estimated Outlays	20	40	80	100	100	100	100	100	100	100	340	840

Energy Savings Performance Contracts. Section 102 would require federal agencies to reduce their greenhouse gas emissions by freezing emissions in 2010 and then working to steadily reduce net emissions by at least 2 percent a year to achieve net zero greenhouse gas emissions by 2050.

The obligation to make payments under ESPCs is incurred when the government signs a contract. Under current law, agencies can use such contracts to acquire new energy-efficient equipment and pay for it over a period of several years without an appropriation for the full amount of the purchase price. Thus, consistent with government accounting principles, CBO has determined that the budget should reflect that commitment as new obligations at the time that a contract is signed and that the authority to enter into those contracts without budget authority for the full amount of the purchase price constitutes direct spending.

CBO examined information on past energy conservation investments made by the federal government to estimate the cost of reducing energy use, and thereby reducing carbon dioxide emissions. Based on the cost of energy conservation investments made by federal agencies over the past decade, and the estimated energy savings achieved by those investments, CBO estimates that lowering greenhouse gas emissions through energy conservation investments in federal buildings using ESPCs would cost $20 million in 2008, $340 million over the 2008-2012 period, and $840 million over the 2008-2017 period. We estimate that this level of energy conservation investment would fulfill about 20 percent of the greenhouse gas reduction goal under H.R. 2635 over the 2011-2017 period.

Judicial Review. Section 211 would permit individuals to sue the federal government in the United States Court of Appeals for the District of Columbia Circuit for failure to reduce its greenhouse gas emissions according to the schedule outlined in H.R. 2635. Under the bill,

if plaintiffs prevailed in such lawsuits, payment would be made from the Treasury for mitigation projects as recommended by the plaintiff. Under H.R. 2635, such payments could not exceed a maximum of $1.5 million annually. CBO expects that agencies would be able to comply with the goals of the legislation over the 2008-2017 period, and it is unlikely that such damages would be paid from the Treasury.

Spending Subject to Appropriation

CBO estimates that implementing H.R. 2635 would have discretionary costs of $178 million in 2008 and $1.3 billion over the 2008-2012 period, primarily for the purchase of low greenhouse gas-emitting vehicles and for participation in the pilot program for qualified greenhouse gas offsets (see Table 3).

Pilot Program for Purchase of Offsets and Certificates. Section 103 would authorize the appropriation of one one-hundreth of one percent of the discretionary funds made available to the executive and legislative branches of the federal government in fiscal years 2009 and 2010 to establish a two-year pilot program to purchase greenhouse gas emission offsets and renewable energy certificates. Renewable energy certifications are the rights to the environmental benefits from generating electricity from renewable energy sources. Since discretionary funding is likely to total in the vicinity of $1 trillion for each of the next few years, CBO estimates that this provision would cost about $100 million in each of fiscal years 2009 and 2010. (The precise amount of this authorization would depend on the overall growth in discretionary appropriations over the next few years.) CBO expects that this pilot program would help prepare agencies to develop strategies to reduce greenhouse gas emissions starting in 2010.

TABLE 3. ESTIMATED SPENDING SUBJECT TO APPROPRIATION UNDER H.R. 2635

	By Fiscal Year, in Millions of Dollars				
	2008	2009	2010	2011	2012
CHANGES IN SPENDING SUBJECT TO APPROPRIATION					
Pilot Program for Purchase of Offsets and Certificates					
Estimated Authorization Level	0	100	100	0	0
Estimated Outlays	0	100	100	0	0
Greenhouse Gas Reductions					
Estimated Authorization Level	0	0	0	60	120
Estimated Outlays	0	0	0	60	120
Federal Vehicle Fleets					
Estimated Authorization Level	135	138	140	143	146
Estimated Outlays	135	138	140	143	146
Metering					
Estimated Authorization Level	20	20	20	20	20
Estimated Outlays	20	20	20	20	20
Other Provisions					
Estimated Authorization Level	10	20	30	40	50
Estimated Outlays	8	18	30	40	50
Other Reports					
Estimated Authorization Level	15	20	5	0	0
Estimated Outlays	15	20	5	0	0
Total Changes					
Estimated Authorization Level	180	298	295	263	336
Estimated Outlays	178	296	295	263	336

Greenhouse Gas Reductions. Section 102 would require federal agencies to reduce their greenhouse gas emissions by freezing emissions in 2010 and then reducing emissions by at least 2 percent each year.

In the initial years following enactment of H.R. 2635, CBO expects that agencies would primarily rely on the purchase of qualified greenhouse gas offsets and renewable energy certificates to achieve the required reductions in carbon dioxide emissions. Under the bill, such offsets could be purchased by an agency from other federal or nonfederal entities to help meet its own greenhouse gas reduction requirements. Offset projects might range from buying credits for carbon sequestration that results from planting trees to financing energy-efficient upgrades at power plants in other cities. A recent Government Accountability

Office (GAO) report[1] estimates that the annual costs of such offsets range from $5 to $25 per ton. The market for such offsets is currently in its infancy, as few entities are actually required to reduce greenhouse gas emissions or acquire energy from renewable sources. If H.R. 2635 were enacted, the market for such offsets would become more regulated, and CBO expects that with significant additional demand the price of greenhouse gas emission offsets would rise to at least $25 per ton. CBO estimates that the federal government would have to purchase carbon reduction credits for about 2.2 million metric tons annually starting in 2010 to meet the goals of H.R. 2635. We estimate that those offsets would cost $60 million in 2011 and $179 million over the 2011-2012 period, assuming the appropriation of the necessary amounts.

Federal Vehicle Fleets. Section 201would require federal agencies to purchase light-duty and medium-duty passenger vehicles that are low greenhouse gas-emitting vehicles. EPA would be required each year to issue guidance identifying the vehicles that emit low levels of greenhouse gases. Currently, the General Services Administration (GSA) purchases around 60,000 new vehicles annually for the federal government's use. Of that amount, approximately 45,000 vehicles are light- and medium-duty passenger vehicles. Although there is no current standard for low greenhouse gas-emitting vehicles, based on information from GSA and GAO, it appears that more fuel-efficient vehicles, including hybrid and alternative-fuel vehicles, would probably add at least $3,000 to the price of a standard vehicle. Using that information, CBO estimates that acquiring low greenhouse gas-emitting vehicles under H.R. 2635 would cost about $135 million in 2008 and about $700 million over the 2008-2012 period. The federal government also could realize cost savings from reduced gasoline purchases if the vehicles it purchases achieve greater gasoline mileage. CBO expects, however, that any savings in the operating costs of federal vehicles would not be significant over the next five years.

Metering. Section 205 would require that all federal agencies install meters to record the use of natural gas, steam, chilled water, and water by October 1, 2016. Such meters could provide data on an hourly or daily time frame to measure consumption of electricity. The federal government operates in more than 500,000 buildings. Many federal buildings use natural gas, steam, chilled water, and water. Based on information from the General Services Administration, the Department of Defense, and the Department of Energy, CBO expects that about 20 percent of those buildings would be economical to meter, and implementing the metering provision would cost about $20 million in 2008 and $100 million over the 2008-2012 period.

Other Provisions. Other provisions of H.R. 2635 would require EPA to oversee and manage the greenhouse gas emissions of federal agencies, including establishing a carbon cap-and-

1. Government Accountability Office, *Legislative Branch Energy Audits Are Key to Strategy for Reducing Greenhouse Gas Emissions*, GAO-07-516 (April 2007).

trade program for use by federal agencies. In addition, the legislation would add significant new reporting requirements by federal agencies on their greenhouse gas emissions and energy use. Based on information from agencies and the cost of similar requirements, CBO estimates that implementing those provisions would cost $8 million in 2008 and about $150 million over the 2008-2012 period.

Other Reports. Section 102 would require the Forest Service, the Bureau of Land Management, the National Park Service, and the United States Fish and Wildlife Service to conduct studies to identify management strategies to enhance the potential for sequestration of greenhouse gases on federal lands and to implement programs on selected sites demonstrating sequestration strategies. Carbon sequestration is the process by which carbon dioxide is removed from the atmosphere; forests, oceans, and soils are natural carbon sinks (areas that remove carbon from the atmosphere).

The studies would be completed within two years of enactment, and the projects would be implemented the following year. Based on information provided by the agencies, CBO estimates that these activities would cost $15 million in 2008 and $40 million over the 2008-2010 period.

INTERGOVERNMENTAL AND PRIVATE-SECTOR IMPACT

H.R. 2635 contains no intergovernmental or private-sector mandates as defined in UMRA and would not affect the budgets of state, local, or tribal governments.

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