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Administering Green Programs in Congress: Issues and Options

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Summary

Programs to create an environmentally conscious workplace have long existed on Capitol Hill. Congress has been working to reduce consumption and conserve energy since the 1970s. Traditionally, these programs have been administered by the Architect of the Capitol. In recent Congresses, the House of Representatives and the Senate have created separate greening programs. In addition, the Architect of the Capitol has developed green programs for the Capitol Complex.

In the House of Representatives, the Chief Administrative Officer (CAO) manages green programs for individual Member offices, committee offices, and support offices. The administration of building-wide energy conservation programs is traditionally managed by the Architect of the Capitol. For the House, the CAO and Architect's program oversight is conducted by the Committee on House Administration. In the 110th Congress, the House of Representatives labeled all conservation and greening programs as part of the "Green the Capitol" initiative.

In the Senate, green programs in individual Senate offices, committee offices, and staff support offices are administered by the Architect of the Capitol, in coordination with the Secretary of the Senate and the Sergeant at Arms of the Senate, and with oversight provided by the Rules and Administration Committee. In the 110th Congress, the Architect of the Capitol's role in administering facilities-related programs on behalf of the Senate has remained unchanged.

The Architect of the Capitol also administers greening programs for the Capitol Complex. These programs include energy usage reduction programs for the House and Senate office buildings, the Capitol building, and other Capitol complex facilities; conservation measures for the Senate office buildings, the Capitol building, and other Capitol complex facilities; and green programs for the Capitol Grounds.

A number of policy options are potentially available to create an inter-chamber greening program on Capitol Hill. The options include creating a formal House greening program, creating a "Green the Senate" initiative, establishing an independent greening commission, creating a Capitol Complex-wide greening program, and continuing to use ad-hoc programming for greening issues.

For further analysis of general greening programs in Congress, see CRS Report RL34617, *Recycling Programs in Congress: Legislative Development and Architect of the Capitol Administration*, by Jacob R. Straus.

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Programs designed to create an environmentally friendly work environment and conserve energy have gained a higher profile in the 110th Congress (2007-2009). In March 2007, the House of Representatives created the "Green the Capitol" initiative with the goal of making the House "carbon neutral" by the end of the 110th Congress.[1] The "Green the Capitol" initiative expanded energy reduction and greening programs for the House and encouraged cooperation with efforts in the Senate and in the Capitol Complex.

In general, the House and the Senate have developed separate greening programs. In the House, these programs are administered by the Chief Administrative Officer (CAO) in cooperation with the Architect of the Capitol, and with the oversight of the Committee on House Administration. In the Senate, greening programs are administered by the Architect of the Capitol in coordination with the Secretary of the Senate and the Sergeant at Arms of the Senate, with the oversight of the Committee on Rules and Administration. In addition, the Architect of the Capitol administers greening initiatives for the Capitol Complex, including energy usage programs for the House and Senate office buildings and the Capitol building.

House of Representatives

Implementation of greening programs in the House is divided between the Architect of the Capitol and the CAO. In general, the Architect is responsible for building and facilities maintenance, while the CAO is responsible for the interior of Member, committee, and support staff offices. In some ways, the relationship between the Architect and CAO is similar to the relationship between condominium owners and their building. The owner (the CAO) is responsible for maintenance of inside spaces including paint, carpet, furniture, and appliances, while the building (Architect) is responsible for maintenance of walls and general facilities operation such as heating, cooling, and building repairs. The following sections discuss the role of the CAO in implementing the "Green the Capitol" initiative and the role of the Architect in other greening projects.

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[1] U.S. Congress, Chief Administrative Officer of the House of Representatives, *Executive Summary of Green the Capitol Initiative Preliminary Report*, 110th Cong., 1st sess., p. 4. [http://www.speaker.gov/pdf/GTCsummary.pdf], accessed Sept. 29, 2008. (Hereafter, *Green the Capitol Preliminary Report Executive Summary*.)

"Green the Capitol" Initiative

In March 2007, Speaker Nancy Pelosi, Majority Leader Steny Hoyer, and the then chair of the Committee on House Administration, the late Juanita Millender-McDonald, asked CAO Daniel Beard and his Senate counterparts to "undertake a 'Green the Capitol' initiative to ensure that the House institutes the most up-to-date industry and government standards for green building and green operating procedures."[2] The letter further asked the CAO to provide a preliminary report by April 30, 2007 and a final report, with recommendations, by June 30, 2007.

As a result of the March 2007 letter, the CAO conducted a study to understand "House operating procedures with respect to energy conservation, sustainability and related matters."[3] The results of the study were presented to the House in two reports. The preliminary report was issued on April 19, 2007, and the final report was issued on June 21, 2007.

Preliminary Report. Using figures from the Government Accountability Office (GAO) and the Lawrence Berkeley National Laboratory, the CAO estimated that the House was responsible for 91,000 tons of greenhouse gas emissions, equivalent to the emissions of 17,200 cars, in FY2006.[4] Based on these numbers, the preliminary report included six recommendations to reduce greenhouse gas emissions in the House. These six preliminary recommendations were

1. operate the House in a carbon neutral manner;
2. shift to 100 percent renewable electric power;
3. aggressively improve energy efficiency;
4. adopt sustainable business practices;
5. maintain leadership on sustainability issues; and
6. insure carbon neutral operations with offsets.

The preliminary report also included broad options for implementing the six recommendations.[5]

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[2] U.S. Congress, Speaker of the House of Representatives, "House Democrats Urge Greening of Capitol Complex," press release, Mar. 2, 2007, [http://www.speaker.gov/newsroom/pressreleases?id=0082], accessed Sept. 29, 2008.

[3] *Green the Capitol Preliminary Report Executive Summary*, p. 3.

[4] U.S. Congress, Chief Administrative Officer of the House of Representatives, *Preliminary Report Green the Capitol Initiative*, 110th Cong., 1st sess. [http://www.speaker.gov/pdf/GTCreport.pdf], accessed Sept. 29, 2008, p. 4.

[5] Ibid., pp. 19-26.

Final Report. In the final report, the CAO created three goals for the "Green the Capitol" initiative based on the six initial recommendations. These three goals are

- operate the House in a carbon-neutral manner by the end of the 110th Congress;
- reduce the House's carbon footprint by cutting energy consumption by 50 percent in 10 years; and
- make House operations a model of sustainability.[6]

To achieve these goals, the final report provided a "roadmap to reduc[e] the carbon footprint of the House while operating in an environmentally sustainable manner."[7] While the three goals are broad, the report suggests strategies for implementation. **Table 1** lists the goals and recommended implementation strategies.

Table 1. Implementation Strategies for Final Report Goals

Goal	Recommended Strategy
Operate the House in a carbon-neutral manner by the end of the 110th Congress (December 2008)	- Purchase renewable power for electricity use; - Operate the Capitol Power Plant with natural gas; and - Purchase carbon offsets on the Chicago Climate Exchange.
Reduce the carbon footprint of the House by cutting energy consumption by 50% in 10 years	- Reduce energy consumption in House office buildings; and - Reduce energy consumption at the Capitol Power Plant.
Make House operations a model of sustainability	- Direct the CAO to oversee implementation of "Green the Capitol Initiative"; - Develop a House sustainability plan; - Conduct leadership, education, and outreach; and - Develop mechanisms for evaluating success and reporting progress.

Source: U.S. Congress, House Chief Administrative Officer, *Green the Capitol Initiative Final Report*, 110th Cong., 1st sess. [http://speaker.gov/pdf/GTCI621full2.pdf], accessed July 10, 2008, pp. 2-14.

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[6] U.S. Congress, Chief Administrative Officer of the House of Representatives, *Green the Capitol Initiative Final Report Executive Summary*, 110th Cong., 1st sess. [http://speaker.gov/pdf/GTCI621sum2.pdf], accessed Sept. 29, 2008, p. iv.

[7] U.S. Congress, Chief Administrative Officer of the House of Representatives, *Green the Capitol Initiative Final Report*, 110th Cong., 1st sess. [http://speaker.gov/pdf/GTCI621full2.pdf], accessed Sept. 29, 2008, p. 2.

The CAO has since created a greening agenda for the House of Representatives to reduce energy consumption and make the House "carbon neutral"[8] by the end of the 110th Congress. In announcing the release of the final report, Speaker of the House Pelosi summarized the initiative and its importance: "This plan is an essential first step, because it not only will make the House a better place to work and live near, but it will also make our institution a model — one that cares about what kind of planet our children will inherit."[9]

Six-Month Progress Report. In December 2007, six months after the "Green the Capitol" initiative began, the CAO issued a report on the progress made in meeting the initiative's goals. In his comments introducing the report, the CAO stated: "In just six months we have made significant inroads toward our goal of carbon neutrality and vastly improved energy efficiency. Based on our success thus far, and with the help of our committed and environmentally-conscious employees, I am confident that goal is well within our grasp."[10]

The six-month progress report also contained a list of completed and ongoing projects. These projects, described in more detail below, included initiating a study to relight the Capitol Dome, purchasing carbon credits on the Chicago Climate Exchange, holding a "Green the Capitol Expo" to highlight alternative forms of transportation, initiating a car sharing program, purchasing renewable electricity and additional natural gas for the Capitol Power Plant, serving "fair trade" coffee in House food service venues, composting food and material waste from the cafeteria, and installing compact florescent light bulbs throughout the House.[11]

"Green the Capitol" Programs. "Green the Capitol" programs seek to reduce energy consumption to meet the House goal of carbon neutrality by the end of the 110th Congress. The details of many of these projects are contained in the preliminary report, final report, and the six month progress report, which are noted earlier in this CRS report. Other information can be found in testimony given by the CAO at committee hearings, in "Green the Capitol" newsletters, and press releases.

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[8] Webster's Dictionary defines "carbon neutral" as "emitting no carbon dioxide into the atmosphere; also, employing a technique to absorb carbon dioxide so it is not emitted." See, *Webster's New Millennium Dictionary of English, Preview Edition*, [http://dictionary.reference.com/browse/carbon neutral], accessed Sept. 29, 2008. Alternatively, the Oxford English Dictionary defines the term "carbon neutral" as "making no net release of carbon dioxide to the atmosphere, especially through offsetting emissions by planting trees." See, *Shorter Oxford English Dictionary*, vol. 1 (New York: Oxford University Press, 2007), p. 346.

[9] U.S. Congress, Speaker of the House of Representatives, "Pelosi: As Part of 'Green the Capitol' Initiative, House to Reduce Energy Consumption by 50 Percent in Just 10 Years," press release, June 21, 2007 [http://speaker.gov/newsroom/pressreleases?id=0222], accessed Sept. 29, 2008.

[10] U.S. Congress, House Chief Administrative Officer, *Green the Capitol: Six Months of Progress*, 110th Cong., 1st sess., Dec. 2007 [http://cao.house.gov/greenthecapitol/progress-booklet-2007dec.pdf], accessed, Sept. 29, 2008, p. 1. (Hereafter, *Green the Capitol Six-Month Progress Report*).

[11] Ibid, pp. 2-7.

Relighting of the Capitol Dome. On October 19, 2007, the CAO issued a Request for Proposal (RFP)[12] to design a lighting scheme for the Capitol Building Dome using "more energy efficient lighting."[13] The RFP specified that the "work will include the lighting of the interior and exterior of the Capitol Dome. The design shall describe the role of the lighting in enhancing the exterior and the architecture of the building at night and shall emphasize methods for incorporating energy saving lighting design and sustainability as part of the overall effort."[14]

On March 4, 2008, a contract to design a new configuration for the Capitol Dome was awarded to The Lighting Practice of Philadelphia.[15] The Lighting Practice contract will cost $671,400 and was chosen from among five proposals ranging in cost from $521,306 to $1,348,268 and "offered the lowest cost and the most technically acceptable design."[16] Funds for the lighting design project will be disbursed from the CAO's operating budget.[17] A future RFP is to be issued by the Architect for the implementation of the design.

Compact Fluorescent Light Bulbs. The House is currently in the process of changing approximately 30,000 light bulbs from standard incandescent bulbs to more energy efficient compact fluorescent light bulbs (CFL). CFLs use approximately one-fifth to one-quarter the energy of incandescent light bulbs and can

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[12] According to the Federal Acquisition Institute, a request for proposal (RFP) is a solicitation for offers under negotiation procedures. Federal Acquisition Institute, *Glossary of Acquisition Terms*, FAC-97-09, Dec. 1998 [http://www.fai.gov/pdfs/glossary.pdf], p. 92, accessed Sept. 29, 2008.

[13] *Green the Capitol Six-Month Progress Report*, p. 2.

[14] U.S. Congress, Chief Administrative Officer of the House of Representatives, "Comprehensive Lighting Design for the U.S. Capitol Building Dome," Solicitation Number OPR080000004. A synopsis of the request for proposal can be found [https://www.fbo.gov/spg/House/HOCAO/HOCAOOP/OPR08000004/listing.html], accessed Sept. 29, 2008.

[15] U.S. Congress, Chief Administrative Officer of the House of Representatives, "Plans to Relight Symbol of Democracy Taking Shape," press release, March 4, 2008 [http://cao.house.gov/press/cao-20080305.shtml], accessed Sept. 29, 2008.

[16] U.S. Congress, House Committee on Appropriations, Subcommittee on Legislative Branch, *Legislative Branch Appropriations for 2009: Part 2 Fiscal Year 2009 Legislative Branch Appropriations Requests*, hearing, 110th Cong., 2nd sess. (Washington: GPO, 2008), pp. 576-577.

[17] U.S. Congress, Chief Administrative Officer of the House of Representatives, "Plans to Relight Symbol of Democracy Taking Shape," press release, March 4, 2008 [http://cao.house.gov/press/cao-20080305.shtml], accessed Sept. 29, 2008. For press accounts of the dome lighting project see "Seeing the Light," *The Washington Post*, Apr. 2, 2008, p. A8; Jordy Yager, "Who's Go the Brighter Lights? Capitol Dome vs. Memorials," *The Hill*, Mar. 5, 2008, p. 1, 8; "Editorial: Lightning Round," *The Philadelphia Inquirer*, Apr. 3, 2008, p. A14; and Linda Loyd, "Lighting Practice Caught Off-Guard by Furor," *The Philadelphia Inquirer*, Apr. 4, 2008, p. A1.

last up to 10 times longer than incandescent light bulbs.[18] According to the fact sheet accompanying the "Green the Capitol" six-month progress report, approximately 7,000 of 30,000 light bulbs had been changed as of December 2007.[19]

Low VOC (volatile organic compounds) Carpets. In preparation for the transition to the 111th Congress (2009-2011), the CAO issued an RFP for the installation of new carpet for Member offices.[20] As part of the installation of new carpet, the CAO sought a vendor who could offer carpets that contained low levels of volatile organic compounds,[21] which are often associated with "sick building syndrome."[22]

Carbon Offsets. A carbon offset is defined as "tradeable carbon-emissions permits."[23] Carbon offsets can be purchased on market-based exchanges, such as the Chicago Climate Exchange.[24] Carbon offsets are purchased as a way to counterbalance emissions that are not easily remedied through other programs. For example, in November 2007, the House purchased $90,500 in carbon credits to offset the burning of natural gas in the Capitol Power Plant to heat and cool the House Office Buildings.[25] In a press release, Representative Rahm Emanuel summarized the goal of carbon offsets in the House.

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[18] For more information on compact fluorescent light bulbs see CRS Report RS22807, *Compact Fluorescent Light Bulbs (CFLs): Issues with Use and Disposal*, by Linda Luther.

[19] U.S. Congress, Chief Administrative Officer of the House of Representatives, *Six Months of Progress: A Report from the Green the Capitol Office*, "Checklist," [http://cao.house.gov/greenthecapitol/progress-report-2007dec.pdf], accessed Sept. 29, 2008. (Hereafter, *Six Months of Progress Checklist*).

[20] U.S. Congress, Chief Administrative Officer of the House of Representatives, "Carpet Installation for the 111th Transition," Solicitation Number: OPR08000028. A synopsis of the proposal can be found at [https://www.fbo.gov/spg/House/HOCAO/HOCAOOP/OPR08000028/listing.html], accessed Sept. 29, 2008.

[21] Volatile organic compounds (VOCs) are a class of chemicals that are commonly encountered by people as they go about their daily routines. Exposure to VOCs can occur from contact with chlorinated water, methane, smoking, paint, dry-cleaning, and gasoline. For more information about VOCs see David L. Ashley, Michael A. Bonin, Frederick L. Cardinali, Joan M. McGraw, and Joe V. Wooten, "Measurement of Volatile Organic Compounds in Human Blood," *Environmental Health Perspectives*, Vol. 104, Supp. 5 (Oct. 1996), pp. 871-877.

[22] *Green the Capitol Six-Month Progress Report*, p. 5.

[23] Eric C. Bettelheim and Gilonne d'Origny, "Carbon Sinks and Emissions Trading under the Kyoto Protocol: A Legal Analysis," *Philosophical Transactions: Mathematical, Physical and Engineering Sciences*, Vol. 360, No. 1797 (Aug. 15, 2002), p. 1843. For a discussion of carbon offsets see CRS Report RL34241, *Voluntary Carbon Offsets: Overview and Assessment*, by Jonathan L. Ramseur.

[24] For more information on the Chicago Climate Exchange and its operations see [http://www.chicagoclimatex.com], accessed Aug. 13, 2008.

[25] U.S. Congress, House of Representatives, *Statement of Disbursements of the House: October 1, 2007 to December 31, 2007*, 110th Cong., 2nd sess., Oct. 16, 2007, H.Doc. 110-87 (Washington: GPO, 2007), p. 35.

> Under the leadership of House Speaker Nancy Pelosi (CA-8) and Majority Leader Steny Hoyer (MD-5), the House will become carbon neutral by purchasing wind power for electricity used by the House, by substituting the House's portion of the use of the Capitol Power Plant natural gas for coal, and to offset the carbon emitted from burning natural gas, the House will purchase carbon offsets. After taking into account the other changes made under the Green the Capitol Initiative, the House is offsetting 30,000 tons of carbon through the purchase of carbon financial instrument contracts or carbon credits through CCX [Chicago Climate Exchange], totaling approximately $90,000. Funding for the purchase of these carbon offsets is available in the Chief Administrative Officer's Fiscal Year 2008 budget.[26]

For FY2009, the CAO has requested $125,000 for the purchase of carbon offsets. The CAO testified that he hopes the House will not need to purchase carbon credits to remain carbon neutral in FY2009. If, however, the purchase of credits is necessary "then the Chicago Climate Exchange, like the New York Stock Exchange, is a marketplace where prices fluctuate depending on supply and demand. Accordingly, in the event that we need to purchase the same amount of carbon credits in FY2009, as we did in FY2008, we would expect a potential increase in the purchase price."[27]

Natural Gas in the Capitol Power Plant. The House has decided to stop using coal to generate steam in the power plant. Instead, the House is working to use only natural gas to generate the steam necessary to operate the heating and cooling system in the House Office Buildings and in the House portion of the Capitol building.[28] Because the House office buildings do not receive steam separately from other buildings, the House has directed the Architect to purchase additional natural gas so that the proportion of steam supplied to the House will no longer be generated with coal and fuel oil.[29]

In testimony before the House Committee on Transportation and Infrastructure, the CAO stated:

> I think it is important to add to this debate, though, that if we switch to 100 percent natural gas, we would certainly have a significantly reduced environmental footprint and carbon footprint. Right now, the Congress is the proud owner and operator of a facility that is the second largest point source

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[26] U.S. Congress, Representative Rahm Emanuel, "Emanuel Announced Greening of the Capitol: U.S. Congress to Purchase Carbon Offsets from the Chicago Climate Exchange," press release, Nov. 5, 2007 [http://www.house.gov/apps/list/press/il05_emanuel/capitolgreening.html], accessed, Sept. 29, 2008.

[27] U.S. Congress, House Committee on Appropriations, Subcommittee on Legislative Branch, *Legislative Branch Appropriations for 2009: Part 2 Fiscal Year 2009 Legislative Branch Appropriations Requests*, hearing, 110th Cong., 2nd sess. (Washington: GPO, 2008), p. 552.

[28] *Six Months of Progress Checklist*, p. 2.

[29] U.S. Government Accountability Office, *Economic and Other Implications of Switching from Coal to Natural Gas at the Capitol Power Plant and at Electricity-Generating Units Nationwide*, GAO-08-601R, May 1, 2008.

> pollution in the District of Columbia. And so, I think there is a significant environmental benefit associated with moving to 100 percent gas.[30]

In a statement on the House floor, Representative Jay Inslee reiterated the CAO's statement on the importance of switching to natural gas at the Capitol Power Plant and suggested that the House could further reduce its emissions.

> Switching from coal, first, to natural gas in our power plant, which reduces carbon dioxide something like 20 to 30 percent. We're then taking a look at the possibility of going to a totally renewable fuel of wood pellets [from trees] grown in New Hampshire and some other places which would go to essentially zero CO_2 on a net basis.[31]

In May 2008, the GAO completed a report on the implications of switching from coal to natural gas at the Capitol Power Plant. The Capitol Power Plant uses a combination of coal, natural gas, and fuel oil to generate the steam necessary to heat and cool the Capitol Complex. From 2001 to 2007, "[t]he percentage of energy input from each fuel has varied from year to year, with an average fuel mix of 43 percent natural gas, 47 percent coal, and 10 percent fuel oil."[32] Additionally, GAO reported that to complete the "Green the Capitol" goal of using only natural gas to supply steam to the House would require a 38% increase in the use of natural gas.

> Based on available data and key assumptions about the plant's operation and future fuel costs, we estimated that fulfilling the Green the Capitol initiative's fuel-switching directive would require the plant to increase its natural gas use by 38 percent relative to its baseline level of fuel consumption between 2001 and 2007. As a portion of the plant's total fuel mix, natural gas would increase from about 43 percent of overall energy input to about 60 percent of input. Using information from the AOC on its fuel expenditures and fuel price projections from EIA [Energy Information Administration], we estimate that implementing the fuel-switching directive could range in cost from $1.0 to $1.8 million in fiscal year 2008.[33]

Car Sharing. On November 1, 2007, the House began a car sharing pilot program with four cars located in Rayburn parking garage. The program is designed to encourage "Hill staffers to use public transportation to commute to work, and the car share program for meetings and appointments off the Hill."[34] Partnered with

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[30] U.S. Congress, House Committee on Transportation and Infrastructure, *Administration Proposals on Climate Change and Energy Independence*, hearing, 110th Cong., 1st sess., May 11 and 16, 2007, H.Hrg. 110-44 (Washington: GPO, 2007), p. 45.

[31] Rep. Jay Inslee, "Green the Capitol Initiative," *Congressional Record*, daily edition, vol. 153, no. 177(Nov. 15, 2007), p. H14074.

[32] U.S. Government Accountability Office, *Economic and Other Implications of Switching from Coal to Natural Gas at the Capitol Power Plant and at Electricity-Generating Units Nationwide*, GAO-08-601R, May 1, 2008, p. 2.

[33] Ibid., p. 6.

[34] U.S. Congress, Chief Administrative Officer of the House of Representatives, "House Car Sharing Pilot," [http://cao.house.gov/greenthecapitol/carshare.shtml], accessed Sept. 29, (continued...)

Zipcar, the House has a fleet of four hybrid cars, located in the Rayburn garage.[35] Zipcars parked in the Rayburn garage are available only for the use of House Members and staff, but otherwise operate with the same rules and regulations as other Zipcars.[36] House Members and staff can use the Zipcars outside of work hours.

In a speech on the House floor, Representative Earl Blumenhauer discussed the benefits for a car sharing program.

> Car sharing ...is a very successful business around the country. It's recently on the GSA schedule. I'm pleased to have a small part in encouraging that to happen here on Capitol Hill. We now have over 100 employees that have signed up for it. There are cars that are parked here that people can use before or after hours for business or after hours on their own time....[37]

The CAO testified before the House Appropriations Committee's Subcommittee on the Legislative Branch that 272 individuals had signed up for Zipcars through the House program, that 38% of registrants were actively making reservations, and that "[s]ince November 1, 2007, the on-campus vehicles have been driven a total of 290.5 hours or 8.7 percent of available hours. House participants have used off-campus vehicles for a total of 1736 hours since the inception of the program."[38]

Bicycle Programs. On March 21, 2008, the CAO issued an RFP to create a House bicycle sharing program. In the RFP, the CAO stated that:

> The House is interested in acquiring the services of a contractor to provide and maintain at least 30 bicycles. Additional bicycles may be ordered later depending on the success of the program and subject to availability of funding. The contractor will deliver the bicycles fully assembled and ready for use and provide ongoing preventative and remedial maintenance.[39]

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[34] (...continued)
2008.

[35] *Six Months of Progress Checklist*, p. 3.

[36] Zipcar, "How does Zipcar work? [http://www.zipcar.com/how/], accessed Aug. 19, 2008. For additional information on the car-sharing program, see Elizabeth Brotherton, "House Staff Get Zipcars, Flexcars," *Roll Call*, Oct. 29, 2007, posted at [http://cao.house.gov/press/rollcall-20071029.shtml], accessed Sept. 29, 2008.

[37] Rep. Earl Blumenhauer, "Green the Capitol Initiative," *Congressional Record*, daily edition, vol. 153, no. 177 (Nov. 15, 2007), p. H14073.

[38] U.S. Congress, House Committee on Appropriations, Subcommittee on Legislative Branch, *Legislative Branch Appropriations for 2009: Part 2 Fiscal Year 2009 Legislative Branch Appropriations Requests*, hearing, 110th Cong., 2nd sess. (Washington: GPO, 2008), p. 554.

[39] U.S. Congress, Chief Administrative Officer of the House of Representatives, "House Bike Sharing Program," Solicitation Number: OPR08000038. A synopsis of the proposal can be found at [https://www.fbo.gov/spg/House/HOCAO/HOCAOOP/OPR08000038/listing.html], accessed Sept. 29, 2008.

The "Wheels4Wellness" program is free of charge to House staff and employees who sign up at the House fitness center.[40] The bike-sharing program is designed to "allow employees to checkout bicycles from self-service racks in six locations on the House side of the Capitol."[41] Bicycles can be checked out from First Call in room B227 of the Longworth House Office Building or from the CAO's HR office in room 102 of the Ford House Office Building between 8:00 a.m. and 5:00 p.m.[42] Bicycles are located in lot one behind the Cannon House Office Building, lot four behind the Rayburn House Office Building, and lot nine across from the Ford House Office Building.[43] The bicycles cannot be kept overnight.[44]

Purchase of Renewable Electricity. During FY2007, the House purchased renewable energy from Pepco, their energy supplier. On May 11, 2007, Stephen T. Ayers, acting Architect of the Capitol, testified before the House Committee on Transportation and Infrastructure on climate change and energy independence. As part of his testimony, Mr. Ayers stated that the Architect has "contracted with GSA and Pepco for three percent renewable energy in FY2007 and is currently in discussions with Pepco as we assess the budget implications to increase this percentage to the maximum percentage that is reasonable."[45]

Food Service. In 2005, the Architect began a search for a food service vendor for the Capitol Visitor Center.[46] As part of the search process, the House and the

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[40] Dear-Colleague Letter from Representatives Earl Blumenauer and Thomas Petri, co-chairs, Congressional Bike Caucus, Aug. 6, 2008. To sign up for the bike-sharing program, House staff and employees need to bring their staff ID badge, a completed waiver form, and a completed participation form to the House Gym, located on level G2 of the Rayburn House Office Building between 11-2 Monday through Friday. Waiver and participation forms are available on Housenet, the House intranet, [https://housenet.house.gov/portal/server.pt?open=512&objID=372&&PageID=36663&mode=2&in_hi_userid=2&cached=true], accessed Aug. 20, 2008, and are required to use the bike-sharing program. Housenet is available only to House offices.

[41] U.S. Congress, Chief Administrative Officer of the House of Representatives, "Wheels4Wellness Bike Sharing Pilot Program Rolls Out," [http://cao.house.gov/w4w.shtml], accessed July 17, 2008.

[42] Dear-Colleague Letter from Representatives Earl Blumenauer and Thomas Petri, co-chairs, Congressional Bike Caucus, Aug. 6, 2008.

[43] Dear-Colleague Letter from Representatives Earl Blumenauer and Thomas Petri, co-chairs, Congressional Bike Caucus, Sept. 5, 2008.

[44] U.S. Congress, House of Representatives, "Wheels 4 Wellness," *Housenet* [https://housenet.house.gov/portal/server.pt?open=512&objID=372&&PageID=36663&mode=2&in_hi_userid=2&cached=true], accessed Aug. 20, 2008.

[45] Testimony of Acting Architect of the Capitol Stephen T. Ayers, in U.S. Congress, House Committee on Transportation and Infrastructure, *Regarding the Administrative Responses to Climate Change and Energy Independence*, hearings, 110th Cong., 1st sess., May 11, 2007 [http://transportation.house.gov/hearings/Testimony.aspx?TID=1131&NewsID=190], accessed Sept. 29, 2008, p. 4.

[46] For additional information on the Capitol Visitor Center, see CRS Report RL31121, *The* (continued...)

Senate were provided the option of contracting with the Architect's vendor for House and Senate food services operations, respectively. In August 2007, the Architect chose Restaurant Associates of New York City as the official food vendor for the Capitol Visitor Center. Following the Architect's decision, the House independently contracted with Restaurant Associates to provide food service in the Longworth, Rayburn, and Cannon House Office Buildings, the House wing of the Capitol, and the Members' Dining Room.[47] The contract went into effect on December 17, 2007.

As part of the contract, Restaurant Associates (RA) has agreed to operate the House cafeteria and restaurants in an environmentally friendly manner. "At the US House of Representatives, RA is determined to impact both the health and wellness of our guests, and the quality of our community and the environment."[48] RA initiated the following programs:

- purchasing organic food, when possible;
- purchasing local food grown within 150 miles of the Capitol, when possible;
- purchasing sustainable seafood;
- serving food with zero trans-fat;
- serving fair trade coffee;
- serving cage free eggs;
- composting food and biodegradable container waste; and
- installing white boards to reduce printing of signs.

There has been considerable attention on two of the programs that RA has initiated. The fair trade coffee program and the composting program have been discussed in the CAO's Six-Month Progress Report, on the floor of the House, or during hearings.

Fair Trade Coffee. To ensure that coffee was purchased under "fair market conditions," the House has begun to serve "Pura Vida Coffee, which specializes in organic and bird-friendly, shade-grown beans."[49] In a speech on the House floor, Representative Sam Farr explained the importance of fair trade coffee. "They [Restaurant Associates] are going to provide all fair trade coffee, which is the coffee that is paid the best price because you grow it for organic conditions, for taking care

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[46] (...continued)
Capitol Visitor Center: An Overview, by Stephen W. Stathis.

[47] U.S. Congress, House of Representatives, Chief Administrative Officer, "House Cafeteria to Undergo Major Menu, Operational Changes in December," press release, Nov. 13, 2007 [http://cao.house.gov/press/cao-20071113.shtml], accessed Feb. 4, 2008. Food service in the Ford Cafeteria is scheduled to transition from the current vendor, the Skenteris family, to Restaurant Associates in September 2008. U.S. Congress, House of Representatives, Chief Administrative Officer, "CAO Allows Current Ford Cafeteria Vendor to Remain Until September 2008," press release, Nov. 16, 2007 [http://cao.house.gov/press/cao-20071116.shtml], accessed Sept. 29, 2008.

[48] Restaurant Associates, "Sustainability," *House of Representatives Dining Services Website* [http://go.compass-usa.com/house/content/sustainability.asp], accessed Sept. 29, 2008.

[49] *Green the Capitol Six-Month Progress Report*, p. 3.

of the employees, paying good wages of doing it environmentally sensitive, and Starbucks and everyone else is participating in this."[50]

Composting. The House of Representatives began composting food waste and biodegradable food containers and utensils in partnership with the House restaurant food vendor in December 2007.[51] Between December 2007 and April 2008, the House reduced the volume of materials sent to the landfill by 120 tons.[52]

In testimony before the Select Committee on Energy Independence and Global Warming on February 26, 2008, CAO Daniel Beard described the process for composting of food service waste and its benefits for the reduction of transportation costs of waste materials.

> We send the compostable food service items along with all of the food waste from the front of the cafeteria and from the kitchens to a pulper. The pulper is like a giant garbage disposal that breaks down and dewaters the compost material. This reduces the volume of the compost material by a ratio of 10-1 and reduces the weight by as much as 4-1. The result is reduced hauling costs and reduced tipping fees by 60%-75%.[53]

The House is expanding the composting program to include individual Member offices. In testimony before the House Committee on Transportation and Infrastructure's Subcommittee on Economic Development, Public Buildings, and Emergency Management, the CAO talked about the program's expansion. "The House has completely revamped its paper recycling program to ensure compostable food waste is picked up from Member offices."[54] Bins to collect compostable

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[50] Rep. Sam Farr, "Green the Capitol Initiative," *Congressional Record*, daily edition, vol. 153, no. 177 (Nov. 15, 2007), p. H14077.

[51] For a discussion on composting see, George Tchobanoglous and Frank Kreith, *Handbook of Solid Waste Management* (New York: McGraw-Hill, 2002), pp. 1.9-1.11.

[52] U.S. Congress, Chief Administrative Officer of the House of Representatives, Green the Capitol Initiative, *Green Team "Newsletter,"* vol. 1, 110th Cong., 2nd sess. Apr. 7, 2008 [http://cao.house.gov/ greenthecapitol/green-newsletter/greenteam01.shtml], accessed Sept. 29, 2008.

[53] Testimony of Chief Administrative Office of the House of Representatives Daniel Beard, in U.S. Congress, House Select Committee on Energy Independence and Global Warming, *Food for Thought: A Primer on the Climate Consequences of Food Choices*, 110th Cong., 2nd sess., Feb. 26, 2008, [http://globalwarming.house.gov/tools/assets/files/0361.pdf], accessed Sept. 29, 2008.

[54] Testimony of Chief Administrative Office of the House of Representatives Daniel Beard, in U.S. Congress, House Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings, and Emergency Management, *A Growing Capitol Complex and Visitor Center: Needs for Transportation, Security, Greening, Energy, and Maintenance*, 110th Cong., 2nd sess., Apr. 1, 2008 [http://cao.house.gov/appearances/20080401_transportation.shtml], accessed Sept. 29, 2008.

materials within individual offices are available through the House recycling program office.[55]

Other Green Initiatives

The House also has greening programs that operate outside of the "Green the Capitol" initiative. These programs are administered by the Architect of the Capitol and oversight is provided by the Committee on House Administration, the Transportation and Infrastructure Committee's Subcommittee on Economic Development, Public Buildings, and Emergency Management, and during the 110th Congress the Select Committee on Energy Independence and Global Warming.[56]

Architect of the Capitol. The Architect of the Capitol is responsible for the facilities and buildings in the Capitol Complex. As part of this role, the Architect is responsible for the administration of the House recycling program and is generally responsible for the reduction of energy usage throughout the Capitol Complex.

Recycling. The House recycling program was established by the adoption of H.Res. 104 in the 101st Congress (1989-1991).[57] Created as a voluntary program, focused on recycling paper, the recycling program has grown to include bottles, cans, e-waste (i.e., computers, printers, and toner cartridges), and construction materials (i.e., carpet, concrete, ceiling tiles and scrap metal). In calendar year 2007, the House recycled approximately 1,400 tons of paper, 21.5 tons of bottles and cans, and 294 tons of e-waste and construction material.[58]

The recycling program operates separately from the "Green the Capitol" initiative. The "Green the Capitol" initiative, however, has begun recycling materials not previously recycled by the Architect. These items include the composting of food waste, corn-based biodegradable forks, spoons, and knives, and sugar cane-based

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[55] For information on how to request a compost bin for an office visit [http://cao.house.gov/greenthecapitol/recycle/faq.shtml], accessed Sept. 29, 2008.

[56] Section 4(c) of H.Res. 202, agreed to March 8, 2007, established the Select Committee on Energy Independence and Global Warming's jurisdiction. "The select committee shall not have legislative jurisdiction and shall have no authority to take legislative action on any bill or resolution. Its sole authority shall be to investigate, study, make findings, and develop recommendations on policies, strategies, technologies and other innovations, intended to reduce the dependence of the United States on foreign sources of energy and achieve substantial and permanent reductions in emissions and other activities that contribute to climate change and global warming." The select committee will expire at the end of the 110th Congress unless the House agrees to a resolution authorizing its continuance.

[57] H.Res. 104 (101st Congress), agreed to by voice vote, Aug. 1, 1989.

[58] For more information on the House recycling program see CRS Report RL34617, *Recycling Programs in Congress: Legislative Development and Architect of the Capitol Administration*, by Jacob R. Straus.

biodegradable carry out containers from the House restaurants. The personal cell phones of House staff have also been collected and recycled.[59]

Committee Programs. The Committee on House Administration and the Transportation and Infrastructure Committee's Subcommittee on Economic Development, Public Buildings, and Emergency Management have held hearings and discussions on greening issues in the House. These hearings have concentrated on the Architect's energy reduction programs as well as the CAO's "Greening the Capitol" initiative. Additionally, the Committee on House Administration has begun to organize programs, such as a tire inflation workshop, to assist individual staff members reduce their energy consumption during their commute to work.

Proper Tire Inflation. On July 28, 2008, Representative Vernon Ehlers, Ranking Member of the Committee on House Administration, sent a Dear Colleague letter announcing a program to check staff vehicles for proper tire inflation. In his letter, Representative Ehlers stated "[t]he Department of Energy estimates that 1.2 billion gallons of fuel were wasted in 2005 as a result of driving on underinflated tires. With gas prices at an all time high, the simple step of keeping tires inflated will help ease pain at the pump, as well as reduce carbon emissions, a major threat to the environment."[60] The program took place on July 30, and offered free tire inspections to participants.

Legislative Proposals. While the Architect administers the majority of greening programs not officially part of "Greening the Capitol," other legislative proposals have also been introduced to create green programs. In the 110th Congress, two bills have been introduced that would create green programs. H.R. 6474, introduced by Representative Zoe Lofgren would allow the CAO of the House to create projects to promote energy efficiency and reduce energy consumption in the House. H.R. 6171, introduced by Representative Dan Lungren, would create a Congressional commission[61] on energy in the National Capitol Region.

Demonstration Projects. On July 10, 2008, Representative Lofgren and Representative Zack Wamp introduced H.R. 6474 "[t]o authorize the Chief Administrative Officer of the House of Representatives to carry out a series of demonstration projects to promote the use of innovative technologies in reducing energy consumption and promoting energy efficiency and cost savings in the House of Representatives."[62] The bill would authorize $5 million for both FY2009 and

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[59] Dear-Colleague Letter from Daniel Beard, Chief Administrative Officer of the House of Representatives, Dec. 12, 2007. See also, Elizabeth Brotherton, "Beard Details New Recycling Efforts," *Roll Call*, Feb. 27, 2008 [http://www.rollcall.com/issues/53_99/news/22279-1.html], accessed Sept. 29, 2008.

[60] U.S. Congress, Committee on House Administration, "Under Pressure? Proper Tire Inflation Save Energy, Money," *Dear Colleague Letter*, July 28, 2008.

[61] For more information on Congressional Commissions see CRS Report RS22725, *Congressional Advisory Commissions: An Overview*, by Matthew Eric Glassman.

[62] H.R. 6474 (110th Congress), ordered reported from the Committee on House (continued...)

2010 for the CAO to carry out short term demonstration projects that promote innovative technology to reduce energy consumption and promote energy efficiency and cost savings in the House.[63]

During the markup session on July 30, Representative Ehlers proposed three amendments to the bill. The amendments would have (1) provided the authority to carry out the demonstration projects to the Architect of the Capitol instead of the CAO, (2) required the CAO to consult with the Architect on demonstration projects, and (3) clarified the responsibility of the CAO and the Architect for building related projects.[64] All three amendments were defeated by voice vote. The bill was ordered reported by voice vote.

National Capitol Energy Commission. On June 3, 2008, Representative Dan Lungren introduced H.R. 6171, the "National Capital Region Leadership in Environmental and Energy Stewardship Commission Act." The bill would create a Congressional commission to analyze the environmental and energy footprint of the federal government in the National Capitol Region, hold a nationwide competition to find innovative solutions to reduce or eliminate federal government facility emissions, analyze existing and new technologies, recommend solutions to eliminate emissions and reduce energy consumption, and submit a report to Congress with recommendations and draft legislation.[65] The bill was referred to Committee on Oversight and Government Reform.

Senate

Unlike the House of Representatives, the Senate does not have a formal name for its greening activities. The Senate, however, is engaged in greening activities, such as the replacement of light bulbs, the installation of energy efficient building systems, and the development of green programs in the Senate cafeterias.

Administration

While the Senate does not have a formal greening program, the Architect of the Capitol, under the guidance of the Senate Committee on Rules and Administration, has created a greening program for the Senate office buildings and the Senate wing of the Capitol. In creating greening programs, the Architect aims to improve client (i.e., individual Member, committee, and support staff offices) satisfaction and to

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[62] (...continued)
Administration, July 30, 2008.

[63] U.S. Congress, Committee on House Administration, *Committee Meeting*, markup of H.R. 6339, H.R. 6474, H.R. 6475, H.R. 6589, H.R. 998, H.R. 6608, H.Res. 1207, and committee resolutions 110-7 and 110-8, 110th Cong., 2nd sess., July 30, 2008.

[64] Statements of Representative Vernon, in U.S. Congress, House Committee on House Administration, *Committee Meeting*, markup of H.R. 6339, H.R. 6474, H.R. 6475, H.R. 6589, H.R. 998, H.R. 6608, H.Res. 1207, and committee resolutions 110-7 and 110-8, 110th Cong., 2nd sess., July 30, 2008.

[65] H.R. 6171 (110th Congress), introduced June 3, 2008.

improve energy efficiency.[66] The Sergeant at Arms also administers greening and energy savings initiatives related to computer technology and security for the Senate.

Greening Programs

Senate greening programs are focused on the reduction of energy consumption and lessening overall Senate energy costs. The details of many of these projects were discussed during a Senate Committee on Rules and Administration hearing and in conversations with the Architect's office.

Recycling. The Senate recycling program was established by the adoption of S.Res. 99 in the 101st Congress (1989-1991).[67] Created as a voluntary program focused on recycling paper, the recycling program has grown to include bottles, cans, e-waste (i.e., computers, printers, and toner cartridges), and construction materials (i.e., carpet, concrete, ceiling tiles and scrap metal). In calendar year 2007, the Senate recycled approximately 700 tons of paper, 10 tons of bottles and cans, and 292 tons of e-waste and construction material.[68]

Lighting Programs. The Architect has developed a program to reduce energy consumption from lighting in the Senate. The lighting energy savings program consists of three main projects, installing compact fluorescent light bulbs, installing dimmable ballasts in Senate offices, and installing solar lighting in Senate parking lots.

Light Bulbs. Since 2006, the Senate has installed approximately 4,000 compact fluorescent light (CFL) bulbs to replace incandescent bulbs.[69] While CFLs are more energy efficient than incandescent light bulbs, the Senate is not switching all lights to CFLs. Committee hearing rooms have not been switched to CFLs because CFL bulbs cannot produce the light levels required for television

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[66] Based on CRS discussions with Scott Shapleigh, recycling program manager, Architect of the Capitol, and Michael Shirven, general engineer, Architect of the Capitol, Mar. 6, 2008.

[67] S.Res. 99 (101st Congress), agreed to by unanimous consent, Oct. 2, 1989.

[68] For more information on the House recycling program see CRS Report RL34617, *Recycling Programs in Congress: Legislative Development and Architect of the Capitol Administration*, by Jacob R. Straus.

[69] Testimony of Acting Architect of the Capitol Stephen T. Ayers, in U.S. Congress, Senate Committee on Rules and Administration, *Improving Energy Efficiency, Increasing the Use of Renewable Sources of Energy, and Reducing the Carbon Footprint of the Capitol Complex*, hearing, 110th Cong., 2nd sess., June 18, 2008 [http://rules.senate.gov/hearings/2008/0618ayers.pdf], accessed Aug. 20, 2008. (Hereafter, *Senate Rules Committee Energy Efficiency Hearing*).

broadcasting.[70] Incandescent bulbs replaced as part of the CFL replacement project are being recycled by the Senate.[71]

The Senate has also undertaken lighting projects that are projected to reduce energy consumption by approximately one million kilowatt hours (kWh) per year. **Table 2** lists the projects, provides a description, and lists the estimated kWh saved per year.

Table 2. Senate Energy Saving Lighting Projects

Project	Description	kWh Saved Per Year
SHG 008 Storage Room	Motion sensor installed	28,404
Dirksen Cove Lighting	Controller installed to turn cove lights off at night and on weekends	343,837
Russell Rotunda Lighting	Controller installed to turn lights on only at night	19,710
Dirksen Cafeteria	Dimmer panel removed to allow 215 incandescent bulbs to be replaced with 26 watt CFLs	289,664
Russell Basement Lights	Controller installed to turn center corridor lights off at night	2,982
Dirksen and Russell Bathroom Exhaust Fans	Exhaust fans turned off at night	149,175
Senate Underground Garage	Motion sensors	158,865
Total		**992,637**

Source: Email exchange between the author and Scott Shapleigh, recycling program manager, Senate office buildings, Architect of the Capitol, Aug. 22, 2008.

Dimmable Ballasts. The Architect has installed a dimmable ballast lighting system in 11 Senate and committee offices in the Hart Senate Office Building. Dimmable ballasts allow light levels to be networked and controlled from a central computer.[72] This allows light levels to be reduced on a per fixture basis, with a standard output of approximately 70% of available light. The Senate system includes daylight sensors near windows, occupancy sensors in conference rooms, and additional light switches for individual control in conference rooms.[73] The Architect

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[70] Conversation between the author and Scott Shapleigh, recycling program manager, Senate office buildings, Architect of the Capitol, Sept. 10, 2008.

[71] Ibid., p. 17.

[72] Washington State University Cooperative Extension Energy Program, "Energy Efficiency Fact Sheet: Dimmable Compact Florescent Lamps" [http://www.energy.wsu.edu/documents/building/light/compact_fluor.pdf], accessed Sept. 29, 2008.

[73] Conversation between the author and Scott Shapleigh, recycling program manager, Senate (continued...)

estimates that the pilot program of 11 offices "typically saves 11,400 kilowatt hours per week or 40 percent of lighting energy used in an office suite. Over the first year, the pilot saved 692,000 kilowatt hours of electricity."[74] With the completion of the pilot program, the Architect has begun to outfit an additional 10 offices in the Hart and Dirksen Senate Office Buildings with the dimmable ballast system. The Senate plans to install dimmable ballasts in all offices in the future.

Solar Lighting in Parking Lots. To reduce energy consumption in lighting the Senate parking lots, the Senate has selected a vendor to provide renewable, solar energy for lighting in parking lot 18. In testimony before the Senate Committee on Rules and Administration, acting Architect of the Capitol Stephen Ayers testified that the project is "[s]cheduled to be completed this fall [2008]," and that the "...new lights will save 1,825 kilowatt hours per year."[75]

Water Savings Programs. The Architect has developed a program to reduce water usage in the Senate. The water savings program consists of two main projects, installing dual flush valves in private restrooms and installing water cooling systems in offices that do not require plastic bottles.

Dual Flush Valves. The Architect is installing dual flush valve toilets in private bathrooms in Senate offices. These toilets provide more than one option of how much water is used to flush the system. Installation of the dual flush valves reduces the amount of water needed to flush a toilet. The Architect has chosen not to install dual flush valves in public restrooms for sanitary reasons.[76]

Water Coolers. In 2008, the Senate Rules and Administration Committee approved the installation of bottle-less water filtration systems in Senate offices. Each individual office is responsible for selecting a vendor to supply the water cooler and filters. The Architect then facilitates the selection of appropriate cooler locations in an office, installs the necessary infrastructure to support bottle-less coolers through the plumbing office, regulates the types of systems that can be purchased or rented by offices, and connects the office to the existing building water supply.[77] Through September 2008, requests have been made for 80 coolers to be installed by Senate offices. The Architect's office anticipates another 20 to 30 requests will be made.[78]

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[73] (...continued)
office buildings, Architect of the Capitol and Michael Shirven, general engineer, Senate office buildings, Architect of the Capitol, Mar. 6, 2008.

[74] Testimony of Acting Architect of the Capitol Stephen T. Ayers, *Senate Rules Committee Energy Efficiency Hearing*, p. 6.

[75] Ibid.

[76] Conversation between the author and Scott Shapleigh, recycling program manager, Senate office buildings, Architect of the Capitol and Michael Shirven, general engineer, Senate office buildings, Architect of the Capitol, Mar. 6, 2008.

[77] Email from Trent Wolfersberger, assistant superintendent, Senate Support Office, Architect of the Capitol, Sept. 11, 2008.

[78] Based on CRS conversations with Trent Wolfersberger, assistant superintendent, Senate (continued...)

Steam Traps. The Architect has replaced 147 steam traps[79] in the Hart Senate office building. The steam traps were replaced because when a steam trap fails, "it bleeds steam in to the air and wastes energy." The new traps have been placed on a preventative maintenance program and will be replaced or repaired as needed.[80]

Dirksen Green Roof. A green roof is an alternative roofing option that places vegetation or solar panels on a building's roof to absorb heat and reduce rainwater runoff. The American Institute of Architects defines a green roof as

> a roof of a building that is partially or completely covered with vegetation and soil, or a growing medium, planted over a waterproofing membrane. A green roof may also include additional layers such as a root barrier and drainage irrigation systems. Green roofs can be below, at , or above grade, but in all cases the plants are not planted in the "ground." The term "green roof" may also be used to refer to roofs that incorporate some form of green technology, such as solar panels or photovataic modules.[81]

Pursuant to the passage of P.L. 109-58, the Energy Policy Act of 2005,[82] the Architect was asked by Congress "to evaluate the potential for converting some of the roof areas on Dirksen Senate Office Building to 'vegetated' roofs."[83] In the report, the Architect evaluated multiple roof designs, including replacing the existing roof with another copper roof, creating a roof with a public courtyard accessible by

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[78] (...continued)
Support Office, Architect of the Capitol, Sept. 11, 2008.

[79] "Steam traps are automatic valves that release condensed steam (condensate) from a steam space while preventing the loss of live steam. They also remove non-condensable gases from the steam space. Steam traps are designed to maintain steam energy efficiency for performing specific tasks such as heating a building or maintaining heat for process use. Once steam has transferred heat through a process and becomes hot water, it is removed by the trap from the steam side as condensate and either returned to the boiler via condensate return lines or discharged to the atmosphere, which is a wasteful practice." See, U.S. Department of Energy, Federal Energy Management Program, "FEMP Management and Maintenance: Steam Traps," [http://www1.eere.energy.gov/femp/operations_maintenance/om_steamtraps.html], accessed Sept. 29, 2008.

[80] Email from Scott Shapleigh, recycling program manager, Senate office buildings, Architect of the Capitol, Aug. 22, 2008.

[81] The American Institute of Architects, *50 to 50* [http://www.aia.org/SiteObjects/files/50to50_20071212.pdf], accessed Sept. 29, 2008. For more information about the benefits and drawbacks of green roofs see Erica Oberndorfer, Jeremy Lundholm, Brad Bass, Reid R. Coffman, Hitesh Doshi, Nigel Dunnett, Stuart Gaffin, Manfred Köhler, Karen K. Y. Liu, and Bradley Rowe, "Green Roofs as Urban Ecosystems: Ecological Structures, Functions, and Services," *Bioscience*, vol. 57, no. 10 (Nov. 2007), pp. 823-833.

[82] P.L. 109-58, 119 Stat. 1136-1137, Aug. 5, 2005. Section 1829 requires the Architect to carry out a study to explore the feasibility of installing energy and water conservation measures on the Dirksen Senate Office Building roof, including the area directly above the food service facilities in the center of the building.

[83] U.S. Congress, Architect of the Capitol, *Dirksen Senate Office Building Facilities Condition Assessment Vegetative Roof Study Project No. SB06015*, July 27, 2007, p. 1-1.

a pedestrian bridge from the Hart Senate Office Building, and creating a vegetative roof that would be inaccessible to staff. **Table 3** lists the costs associated with the three proposals presented by the Architect.

Table 3. Costs of Architect-Proposed Roof Replacement Options for Dirksen Senate Office Building

Replacement Option	Estimated Cost
Similar to Existing Roof	$1,636,823
Inaccessible Green Roof	$5,121,531
Publicly Accessible Green Roof	$6,653,098

Source: U.S. Congress, Architect of the Capitol, *Dirksen Senate Office Building Facilities Condition Assessment Vegetative Roof Study Project No. SB06015*, July 27, 2007, p. 1-1.

Cost differences presented in **Table 3** result from the type of vegetation used in each roof plan. For the publicly accessible roof, the Architect proposed adding small, shallow rooted plants on the roof of the interior courtyard, creating an area with trees and shrubs where tennis courts currently exist on the roof of Dirksen, and building a pedestrian bridge from the Hart building. For the non-publicly accessible roof, the Architect proposed a variety of plants on both the interior roof and in the tennis court area.[84] The Architect has not been authorized to begin construction on a green roof.[85]

Restaurants. As noted earlier, as part of the search process for a food service vendor for the Capitol Visitors Center, the House and the Senate were provided the option of contracting with the vendor chosen by the Architect for House and Senate food services operations, respectively. The Senate has chosen to exercise this option and is negotiating a contract with Restaurant Associates.

Contracting with Restaurant Associates to operate the Senate restaurants would presumably allow the Senate to participate in many of the green programs currently established in the House restaurants. As part of the new contract, the Senate could require Restaurant Associates to operate its cafeterias in accordance with environmental considerations. This would position the Senate to receive many of the green benefits associated with the practices currently in place under the House contract.

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[84] Ibid. For additional information on green roofs see, Nancy Solomon, "Vegetation Systems Atop Buildings Yield Environmental Benefits: Roofing Technology Developed in Germany is Starting to Take Root in North America," *Architectural Record*, vol. 191, no. 3 (Mar. 1, 2003); and The American Institute of Architects, "Green Roof Design," *AIA Best Practices*, [http://www.aia.org/SiteObjects/files/bestpractice_18_18_02E.pdf], accessed Sept. 29, 2008.

[85] Conversation between the author and Scott Shapleigh, recycling program manager, Senate office buildings, Architect of the Capitol and Michael Shirven, general engineer, Senate office buildings, Architect of the Capitol, Mar. 6, 2008.

Capitol Complex

In addition to programs specifically designed to green aspects of the House or the Senate, the Architect of the Capitol also facilitates greening programs for the Capitol Complex. These programs affect all buildings in the Capitol Complex.[86]

Administration

Pursuant to Chapter 28 and Chapter 30 of Title 2 *United States Code*, the Architect of the Capitol is responsible for the maintenance and upkeep of the United States Capitol and the House and Senate Office Buildings. These responsibilities include "the mechanical and structural maintenance of the building, the upkeep and improvement of the Capitol grounds, and the arrangement of inaugural ceremonies and other ceremonies held in the building or on the grounds."[87] The Architect also manages the energy usage of Capitol Complex buildings and the operation of the Capitol Power Plant.[88]

Greening Programs

Among the Architect of the Capitol's responsibilities are energy reduction and greening programs in the Capitol Complex. Capitol Complex greening programs can generally be classified into energy reduction initiatives and Capitol Power Plant modifications. Both energy saving programs impact operation for all Capitol Complex buildings.

Energy Reduction. The Architect of the Capitol is required by law to improve energy efficiency in the Capitol Complex. The Architect's energy reduction requirements are set forth in the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007.

Energy Policy Act of 2005. The Energy Policy Act of 2005 amended 42 U.S.C. § 8251, et seq., to require the Architect to "develop, update, and implement a cost-effective energy conservation and management plan...for all facilities

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[86] The Capitol Complex includes the Capitol, the House Office Buildings (Cannon, Longworth, Rayburn, and Ford), Senate Office Buildings (Russell, Dirksen, and Hart), the U.S. Botanic Garden, the Capitol Grounds, the Library of Congress buildings (Jefferson, Adams, and Madison), the Supreme Court Building, the Thurgood Marshall Federal Judiciary Building, the Capitol Power Plant, the Capitol Visitors Center, and various support facilities. See U.S. Congress, Architect of the Capitol, "Capitol Complex Overview," [http://www.aoc.gov/cc/index.cfm], accessed Sept. 29, 2008.

[87] U.S. Congress, Architect of the Capitol, "Responsibilities," [http://www.aoc.gov/aoc/responsibilities/index.cfm]], accessed Sept. 29, 2008.

[88] 2 U.S.C. § 2162. For more information on the Architect of the Capitol, see CRS Report RL32820, *Architect of the Capitol: Appointment, Duties, and Current Issues*, by Mildred Amer.

administered by Congress...to meet the energy performance requirements for Federal buildings."[89]

In testimony before the Senate Committee on Rules and Administration, the Acting Architect of the Capitol, Stephen T. Ayers, testified that his office has exceeded the goals set out in the Energy Policy Act.

> The Energy Policy Act requires us to increasingly reduce energy consumption per gross square foot per year in fiscal years 2006 through 2015. The AOC exceeded the goal of 2 percent by reducing energy consumption by 6.5 percent in 2006. In addition, for 2007, we achieved a total cumulative reduction of 6.7 percent over the 2003 baseline.[90]

Energy Independence and Security Act of 2007. The Energy Independence and Security Act of 2007 further requires the Architect to reduce energy consumption in the Capitol Complex. The Act allows the Architect to perform a feasibility study regarding construction of a photovoltaic roof for the Rayburn House office building; to, when practical, include energy efficiency measures, climate change mitigation measures, and other appropriate environmental measures in the Capitol Complex master plan; to operate the steam boilers and the chiller plant at the Capitol Power Plant in the most energy efficient manner possible to minimize carbon emissions and operating costs; and to install technologies for the capture and storage or use of carbon dioxide emitted from coal combustion in the Capitol Power Plant.[91]

Additionally, the Act requires the use of Energy Star lighting products in all federal buildings and establishes an Office of High-Performance Green Buildings in the U.S. General Services Administration to promote green building technology and implementation in federal buildings.[92]

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[89] P.L. 109-58, 119 Stat. 605, Aug. 8, 2005. The act further required that the Architect's plan include: (1) a description of the life cycle cost analysis used to determine the cost-effectiveness of proposed energy efficiency projects; (2) a schedule of energy surveys to ensure complete surveys of all congressional buildings every five years to determine the cost and payback period of energy and water conservation measures; (3) a strategy for installation of life cycle cost-effective energy and water conservation measures; (4) the results of a study of the costs and benefits of installation of sub-metering in congressional buildings; and (5) information packages and 'how-to' guides for each Member and employing authority of Congress that detail simple, cost-effective methods to save energy and taxpayer dollars in the workplace.

[90] *Senate Rules Committee Energy Efficiency Hearing*, p. 6.

[91] P.L. 110-140, 121 Stat. 1655-1658. For more information on the Energy Independence and Security Act of 2007, see CRS Report RL34294, *Energy Independence and Security Act of 2007: A Summary of Major Provisions*, coordinated by Fred Sissine.

[92] The White House, Executive Office of the President, "Fact Sheet: Energy Independence and Security Act of 2007," press release, Dec. 19, 2007 [http://whitehouse.gov/news/releases/2007/12/print/20071219-1.html], accessed Sept. 29, 2008.

Energy Audits. In an April 2007 report, the GAO recommended that the Architect of the Capitol conduct energy audits on Capitol Complex buildings to identify projects that could reduce energy usage and greenhouse gas emissions. In the report, the GAO summarized the importance of energy audits.

> A strategy for reducing emissions includes conducting energy audits to identify and evaluate energy-efficiency and renewable-energy projects, as well as evaluating other emissions reduction projects that may fall outside the scope of energy audits. The strategy would also involve developing an implementation plan that considers cost-effectiveness, the extent to which the projects reduce emissions, and funding options.[93]

Following the GAO recommendations, the Architect has begun to conduct energy audits of Capitol Complex buildings. The Architect has already conducted an energy audit of the U.S. Capitol Police Buildings and Grounds and is planing to "use $400,000 of FY2008 funds to perform comprehensive energy audits of the Capitol Building and the Ford House Office Building." The Architect will also "direct any remaining FY2008 funds to an audit of the Hart Senate Office Building."[94] The Architect is currently scheduling energy audits in other buildings, with a goal of performing "energy audits on all buildings on a five-year rotating schedule."[95]

Environmental Services Performance Contracts. The Architect of the Capitol has entered into environmental services performance contracts (ESPC) to help Congress increase energy efficiency. ESPCs are a "contracting vehicle that allows agencies to accomplish energy projects for their facilities without up-front capital costs and without special Congressional appropriations to pay for the improvements."[96] The Architect has entered into ESPCs with two energy companies for a total of 55 projects in the Capitol Building, the Capitol Power Plant, the House Office Buildings, the Senate Office Buildings, the Library of Congress buildings, and on the Capitol Grounds. These projects will costs $154,781,000 to implement, with $149,882,000 paid for by the ESPC vendor and $4,899,000 paid for by the government. Overall, the ESPC contracts will reduce Capitol Complex energy consumption by 5.25% and are projected to save $20,700,000 annually.[97]

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[93] U.S. Government Accountability Office, *Energy Audits Are Key to Strategy for Reducing Greenhouse Gas Emissions*, GAO-07-516, Apr. 2007, p. 4.

[94] U.S. Government Accountability Office, *Architect of the Capitol: Progress in Improving Energy Efficiency and Options for Decreasing Greenhouse Gas Emissions*, GAO-08-917T, June 18, 2008, p. 5.

[95] Testimony of Acting Architect of the Capitol Stephen T. Ayers, *Senate Rules Committee Energy Efficiency Hearing*, p. 7.

[96] U.S. Department of Energy, Federal Energy Management Program, *Super Energy Savings Performance Contracts*, [http://www1.eere.energy.gov/femp/financing/superespcs.html], accessed Sept. 29, 2008.

[97] Based on CRS discussions with Charles Iliff, planning and project management project executive, Architect of the Capitol, Sept. 22, 2008.

Solar Cells. Pursuant to the passage of P.L. 109-58, the Energy Policy Act of 2005,[98] the Architect requested that the Department of Energy Solar America Initiative study solar energy opportunities for Congressional office buildings.[99] The Department of Energy completed the study in October 2007, and concluded that "there is potential for over 2 Megawatts of photovoltaics made up of numerous arrays on each building."[100] The Department of Energy also calculated the number of possible photovotaic (PV) arrays, the total square feet required for the arrays, the size of the photovotaic cells, the initial cost of the project, the estimated annual energy generated, and the estimated annual utility cost savings. **Table 4** presents the Department of Energy's findings.

Table 4. Department of Energy Photovaltaic (PV) Evaluation for the Capitol Complex

	House of Representatives	Library of Congress	Senate	Total
PV Arrays Evaluated	31	14	14	59
Sum of PV Array Areas (ft^2)	133,972	30,305	39,889	204,166
Sum of PV Size (kW)	1,547	352	461	2,360
PV Initial Cost	$13,872,288	$2,973,796	$4,065,589	$20,911,673
PV Annual Energy Delivery (kWh/year)	1,566,654	351,766	471,469	2,379,889
PV Annual Utility Cost Savings ($/year)	$158,364	$35,793	$47,923	$242,080

Source: U.S. Department of Energy, *Assessment of the United States Capitol Complex for Application of Solar Energy Technologies*, Oct. 2007, p. 3.

The Department of Energy also considered the installation of solar water heating systems for the House Page Dorm and the Senate daycare building. The study concluded that photovoltaic systems have long payback periods with high initial costs and that without local government incentives, solar systems are not cost effective. "[W]hile the Washington, DC government does offer incentives for photovoltaics, they are often awarded to low-income neighborhoods, hospitals, and other non-Federal entities. Without such incentives, the cost of photovoltaic systems is high and the payback is long." However, the study also concluded that "[d]ue to week-long

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[98] P.L. 109-58, 119 Stat. 1136-1137, Aug. 5, 2005.

[99] The Department of Energy studied the feasibility of installing solar panels on the Rayburn House Office Building (HOB), the Cannon HOB, the Ford HOB, the Longworth HOB, the House page dorm, and the House parking lot; the Dirksen Senate Office Building (SOB), the Hart SOB, the Russell SOB, and the Senate child care building; and the Adams and Madison Buildings of the Library of Congress.

[100] U.S. Department of Energy, *Assessment of the United States Capitol Complex for Application of Solar Energy Technologies*, Oct. 2007, p. 2.

use and the lower cost of the technology, solar water heating on the House Page Dorm would be cost effective according to the criteria of 10CFR436."[101]

Capitol Power Plant. The Capitol Power Plant consists of a main plant (built in 1910),[102] the east refrigeration plant (built in 1938), an operations building (built in 1978), the west refrigeration plant (built in 1978), the coal yard (transferred from the General Services Administration [GSA] in 1987), and the west refrigeration building expansion (built in 2007).[103] Between 1909 and 1938, the Capitol Power Plant provided electricity and steam to the Capitol Complex buildings. In 1938, the east refrigeration plant was completed and the power plant began supplying chilled water in addition to electricity and steam. Since 1952, the power plant has only supplied steam and chilled water.[104]

To generate steam, the power plant's steam generation plant "contains seven boilers that utilize a combination of three fuels (natural gas, low-sulfur coal, and fuel oil) to generate steam."[105] On average, the Capitol Power Plant historically uses a mixture of 43% natural gas, 47% coal, and 10% fuel oil to generate steam.[106] For 2009, the Capitol Power Plant projects the mixture of fuels to be 60% natural gas, 35% coal, and 5% fuel oil.[107]

In FY2008, the Architect has spent $67,570,000 on utilities for the Capitol Power Plant. For FY2009, the Architect has requested $68,791,000 in appropriations for the purchase of natural gas, coal, fuel oil, and electricity to operate the power plant.[108] As part of the "Green the Capitol" initiative, the House has estimated that 31% of the Capitol Power Plant output can be attributed to the House office space in

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[101] Ibid. 10 C.F.R. § 436 establishes the rules for Federal energy management and planning programs. These programs are designed to "reduce Federal energy consumption and to promote life cycle cost effective investments in building energy systems, building water systems and energy and water conservation measures for Federal buildings."

[102] P.L. 58-194, 33 Stat. 479, Apr. 26, 1904.

[103] U.S. Congress, Architect of the Capitol, *Accountability Report 2003*, [http://www.aoc.gov/aoc/cfo/upload/AOC-Financial-Report-2003.pdf], accessed Sept. 29, 2008, p. 25.

[104] U.S. Government Accountability Office, *Feasibility of Outsourcing the Management and Operation of the Capitol Power Plant*, GAO-08-382R, Jan. 31, 2008, p. 4. Electricity for the Capitol Complex is purchased from Pepco.

[105] Testimony of Acting Architect of the Capitol Stephen T. Ayers, *Senate Rules Committee Energy Efficiency Hearing*, p. 8.

[106] U.S. Government Accountability Office, *Economic and Other Implications of Switching from Coal and Natural Gas at the Capitol Power Plant and at Electricity-Generating Units Nationwide*, GAO-08-601R, May 1, 2008, p. 2.

[107] Based on CRS discussions with Christopher Potter, deputy director, Capitol Power Plant, Sept. 5, 2008.

[108] Ibid., p. 510.

the Capitol Complex.[109] The House has appropriated additional funds for the Architect to purchase additional natural gas, so that the proportion of steam supplied to the House will no longer be generated with coal and fuel oil. The Senate will continue to use a mixture of coal, natural gas, and electricity.[110]

Criticism of Greening Programs

Opposition to the "Green the Capitol" initiative has developed as the program has expanded. While no Members of Congress have gone on record against the goal of creating a more environmentally friendly and sustainable Capitol, there have been concerns expressed about how money has been spent, the process used to choose some vendors, and the manner in which greening goals have been pursued.

The ranking member of the Subcommittee on Economic Development, Public Buildings, and Emergency Management of the House Committee on Transportation and Infrastructure, summarized the position of those opposed to aspects of green programs for financial reasons during his opening statement at a hearing on greening Washington and the National Capitol Region. In reference to green initiatives, he said:

> They make a lot of sense when they result in improved efficiency and real energy reductions and are done in the most cost efficient way. However, when done without regard to the cost or real benefit to the environment, they can be completely illogical and a waste of taxpayer's money.[111]

Those opposed to greening programs have primarily focused their attention on the purchase of carbon offsets and the awarding of the contract to re-light the Capitol Dome.

Carbon Offsets

As discussed previously, the House purchased $90,550 worth of carbon offset credits on the Chicago Climate Exchange on November 2, 2007.[112] Members of the

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[109] U.S. Congress, Chief Administrative Officer of the House of Representatives, *Preliminary Report Green the Capitol Initiative*, 110th Cong., 1st sess. [http://www.speaker.gov/pdf/GTCreport.pdf], accessed Sept. 29, 2008, p. 11.

[110] U.S. Government Accountability Office, *Economic and Other Implications of Switching from Coal to Natural Gas at the Capitol Power Plant and at Electricity-Generating Units Nationwide*, GAO-08-601R, May 1, 2008, pp. 2-3.

[111] Statement of Ranking Member Sam Graves, in U.S. Congress, House Committee on Transportation and Infrastructure, Economic Development, Public Buildings and Emergency Management Subcommittee, *Greening Washington and the National Capital Region*, hearing, 110th Cong., 2nd sess. Apr. 17, 2008 [http://republicans.transportation.house.gov/news/PRArticle.aspx?NewsID=363], accessed Oct. 2, 2008.

[112] U.S. Congress, House of Representatives, *Statement of Disbursements of the House: October 1, 2007 to December 31, 2007*, 110th Cong., 2nd sess., Oct. 16, 2007, H.Doc. 110-87

(continued...)

minority opposed to the carbon offset purchase have argued that using funds to purchase carbon credits is a waste of taxpayer money as "it accomplishes nothing, but makes you feel good about yourself."[113]

To illustrate the point, the minority leader referred to an article in the *Washington Post* that questioned the logic of purchasing carbon offsets and stated that the money the House spent may not have provided the perceived benefit.[114] The article traced where the House's money went in an effort to offset pollution.

> Some of the money went to farmers in North Dakota, for tilling practices that keep carbon buried in the soil. But some farmers were already doing this, for other reasons, before the House paid a cent.
>
> Other funds went to Iowa, where a power plant has been temporarily rejiggered to burn more cleanly. But that test project had ended more than a year before the money arrived.[115]

The *Washington Post* also quotes the ranking member of the House Administration Committee, as saying "[t]his is just extra money in their pocket for something they're already doing."[116]

On January 14, 2008, the ranking Member of the House Committee on Energy and Commerce, and the ranking Member of the Subcommittee on Oversight and Investigations, sent a letter to Comptroller General David M. Walker requesting that GAO examine the carbon credits marketplace.[117] On January 31, in a follow up letter, the two ranking members further requested that "GAO, in the course of work on these matters, specifically examine and report the manner and means by which the House of Representatives made the purchases."[118] The GAO report was released in summer 2008.[119]

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[112] (...continued)
(Washington: GPO, 2007), p. 35. For more information on the Chicago Climate Exchange see, [http://www.chicagoclimatex.com], accessed Sept. 29, 2008.

[113] U.S. Congress, Minority Leader of the House of Representatives, "Green Pork Update: Beard's 'Waste of Taxpayer Dollars' Now Under Examination by Government Auditors," press release, Feb. 6, 2008 [http://republicanleader.house.gov/News/DocumentSingle.aspx?DocumentID=83264], accessed Sept. 29, 2008.

[114] Ibid.

[115] David A. Fahrenthold, "Value of U.S. House's Carbon Offsets Is Murky," *The Washington Post*, Jan. 28, 2008, p. A1.

[116] Ibid.

[117] Letter from Reps. Joe Barton and John Shimkus, to David M. Walker, Comptroller General of the United States, Jan. 14, 2008. A copy of the letter is available from the author.

[118] Letter from Reps. Joe Barton and John Shimkus, to David M. Walker, Comptroller General of the United States, Jan. 31, 2008. A copy of the letter is available from the author.

[119] U.S. Government Accountability Office, *Carbon Offsets: The U.S. Voluntary Market Is Growing, but Quality Assurance Poses Challenges for Market Participants*, GAO-08-1048, (continued...)

On July 29, 2008, the House minority leader further criticized the purchase of carbon offsets. In a letter addressed to the Speaker, the minority leader requested that the Speaker "immediately relieve House Chief Administrative Officer Dan Beard of his duties..." in part because "Mr. Beard spent $90,000 to purchase carbon credits on the Chicago Climate Exchange, ignoring a reasonable and sensible request by a member of the House Committee on House Administration to wait for a Government Accountability Office study of carbon credits to determine if they were worthwhile and effective."[120]

Criticism of carbon offsets was also leveled by a Senator during a hearing before the Senate Committee on Rules and Administration on renewable energy and the Capitol complex:

> Yes, I am very skeptical about carbon offsets. I could put it pleasantly, but I might as well just put it bluntly. The opportunities for scamming that thing are huge, and the question I have been unable to get anybody to answer for me when we have gotten into that area is: How do you know that the person who plants a tree in order to provide the carbon offset would not have planted the tree anyway? And, indeed, I have heard from some farmers who have said, "You know, I just got an insight into a major new income stream for me, because as I was out planting trees, somebody came up and said, 'Can we buy the planting of your trees to sell as carbon offsets?'" And he said, "I would have planted the trees anyway, but now I can get some money for doing something that would have happened anyway." And when I raised that with some people, they say, "Oh, well, we are going to investigate that." We are going to have to be sure that there is, in fact, a real carbon offset rather than a scam.[121]

Capitol Dome

Opponents of the "Green the Capitol" initiative are also dissatisfied with the process used to solicit and evaluate proposals to relight the Capitol dome, the length of time required to realize energy savings as a result of dome lighting expenditures, and the necessity for a separate contract to install the lighting design. As discussed above under "Green the Capitol Programs," on October 19, 2007, the CAO issued a Request for Proposal (RFP) to design a lighting scheme for the Capitol Building

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[119] (...continued)
August 29, 2008. For more information on the controversy surrounding the carbon offset market see Jonathan Weisman, "Capitol to Buy Offsets in Bid to Go Green," *The Washington Post*, Nov. 5, 2007, p. A6; David A. Fahrenthold, "Value of U.S. House's Carbon Offsets Is Murkey," *The Washington Post*, Jan. 28, 2008, p. A1.; and Jordy Yager, "CAO Would 'Welcome" Investigation into Carbon Offsets," *The Hill*, Feb. 6, 2008, p. 16.

[120] Letter from Minority Leader John Boehner to Speaker of the House of Representatives Nancy Pelosi, July 29, 2008.

[121] *Senate Rules Committee Energy Efficiency Hearing*, pp. 16-17.

dome[122] and on March 4, 2008, a contract for $671,900 was awarded to the Lighting Practice of Philadelphia to design a new configuration for the Capitol dome.[123]

A representative addressed the Capitol Dome lighting project in a post on his personal blog.

> I agree that we have a responsibility to be good stewards of the environment, but it must be done in a consistent manner. Dan Beard, The House Chief Administrative Officer, said of this new lighting project: "We're not going to drastically cut our energy consumption..." If Speaker Pelosi would like to upgrade the Capitol's lighting system at such an exuberant cost, why doesn't she just come out and say it?
>
> Furthermore, it would take more than 45 years to recoup the money spent on the new "energy efficient" systems design.
>
> My question is this, if it is not going to significantly cut energy consumption, and it will actually cost more money in the long run, what is the goal of such a extensive and costly overhaul?[124]

The House minority leader also stated his opposition to the cost of the design contract when he was quoted in a *Washington Post* article. "Everyone supports making the Capitol more energy efficient, but we don't have to waste taxpayer dollars to do it: This is a ridiculous boondoggle."[125]

The House minority leader restated his opposition in his July 29, 2008 letter to the Speaker. In the letter, the minority leader refuted the CAO's claim that relighting the Capitol dome will save Congress money. "Mr. Beard claims that this effort will save money on lighting costs, but in reality it will take the House more than 50 years to generate enough energy savings to finally recoup the cost of Mr. Beard's misguided design effort. When multimillion dollar construction and installation costs are factored in, the payback period grows to well over a century."[126]

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[122] *Green the Capitol Six-Month Progress Report*, p. 2.

[123] U.S. Congress, Chief Administrative Officer of the House of Representatives, "Plans to Relight Symbol of Democracy Taking Shape," press release, March 4, 2008 [http://cao.house.gov/press/cao-20080305.shtml], accessed July 16, 2008.

[124] Representative John Campbell, "New Lights Over the Capitol," blog post [http://greeneyeshade.townhall.com/blog/g/e69697a1-1f2c-40ce-a1ab-20a17264ccab], accessed July 23, 2008.

[125] Christopher Lee, "Beacon or Boondoggle? New Lights For the Capitol: Update Would Conserve Energy, Democrats Say," *The Washington Post*, Apr. 2, 2008, p. A1.

[126] Letter from Minority Leader John Boehner to Speaker of the House of Representatives Nancy Pelosi, July 29, 2008. A copy of the letter is available from the author.

Options for Program Administration

The "Green the Capitol" initiative has become a central piece of the 110th Congress's administrative policies and programs. However, the "Green the Capitol" initiative is a non-statutory program that is operated by the Chief Administrative Officer at the request of the Speaker of the House. While the Speaker has the authority to create internal House programs, a number of policy options are potentially available to create an inter-chamber greening program on Capitol Hill.[127]

Formal House Greening Program

The current "Green the Capitol" initiative exists because of a request by the Speaker of the House, the majority leader, and the Committee on House Administration for the CAO to "undertake a 'Green the Capitol' initiative to ensure that the House institutes the most up-to-date industry and government standards for green building and green operating procedures."[128] Because the "Green the Capitol" initiative operates under the authority of the Speaker, it is possible that should the current minority become the majority, or the current Speaker steps down, the program could be discontinued.

To ensure the program's continuation, the House has the option of passing a resolution creating a more formal greening initiative. The resolution could create a program that includes input from both the majority and minority and considers the critiques of the opponents and the goals of the proponents. Should a new majority or Speaker desire to alter or terminate the program once a resolution has been agreed to, a subsequent resolution could amend or terminate the program.

"Green the Senate" Initiative

Senate greening programs are currently administered by the Architect of the Capitol under direction from the Committee on Rules and Administration. To augment the green programming taking place in the House of Representatives, the Senate could create its own "Green the Senate" initiative. A "Green the Senate" initiative could allow the Senate to create energy and cost savings programs that cover administrative functions not typically covered by the Architect. Should the Senate consider its own green initiative, it could choose to place its implementation with the Architect, or could assign implementation to the Sergeant at Arms, the Secretary of the Senate, or a combination of the three officers. If the Senate followed this course, the same continuity issues raised by the current House initiative would also apply to the Senate.

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[127] CRS take no position on any of the options identified in this report.

[128] U.S. Congress, Speaker of the House of Representatives, "House Democrats Urge Greening of Capitol Complex," press release, Mar. 2, 2007, [http://www.speaker.gov/newsroom/ pressreleases?id=0082], accessed July 9, 2008.

Independent Greening Commission

The Senate, the House, or both could create a greening commission to oversee greening efforts. Should the Senate or House choose to create a commission, it could be modeled after the commission on Congressional Mailing Standards, also known as the "Franking Commission."[129] The franking commission "has a three fold mandate: (1) to issue regulations governing the proper use of the franking privilege; (2) to provide guidance in connection with mailings; (3) to act as a quasi-judicial body for the disposition of formal complaints against Members of Congress who have allegedly violated franking laws or regulations."[130]

A greening commission could serve a similar purpose in guiding the Architect and the CAO to coordinate greening activities within the Senate and the House and between the two chambers. The greening commission could provide long-term strategic guidance to the Architect and CAO, provide context to the Architect and CAO of Member intent and interest in new greening opportunities, and act as a liaison between the greening program and the committees of jurisdiction in the Senate and in the House.

Capitol Complex-Wide Greening Program

Although the program created in March 2007 by the House is called the "Green the Capitol" initiative, the initiative only covers actions and opportunities in the House. By functioning in only one chamber, "Green the Capitol" does not have the authority to set policy in the Capitol as a whole. To maximize impact on the energy use and conservation of the Capitol, the House and the Senate could pass a concurrent resolution or a bill to create a Capitol-wide greening initiative.

The passage of either a concurrent resolution or bill could create a more formal, cooperative greening program that would encompass activities in the House and the Senate. Cooperation between chambers might encourage costs savings since purchasing services or goods in quantity often leads to lower prices. Additionally, the passage of a concurrent resolution or a bill would allow the House and Senate to addresses green programs for the entire Capitol complex, rather than creating programs that affect only a portion of the Capitol grounds.

Such legislation would need to determine who would administer a Capitol Hill-wide greening program. The House and the Senate could chose the Architect of the Capitol and expand Architect's jurisdiction to include all energy and green programs associated with building administration. The House and the Senate could also choose to designate officers within each chamber to coordinate Capitol Hill-wide efforts,

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[129] P.L. 93-191, 87 Stat. 737, Dec. 18, 1973. For more information on the Commission on Congressional Mailing Standards see CRS Report RL34274, *Franking Privilege: Historical Development and Options for Change*, by Matthew Eric Glassman; and CRS Report RS22771, *Congressional Franking Privilege: Background and Current Legislation*, by Matthew Eric Glassman.

[130] U.S. Congress, Committee on House Administration, "About Franking Commission," [http://cha.house.gov/franking_about.aspx], Sept. 23, 2008.

create a new officer of the Capitol for greening issues, or create a joint committee to facilitate and provide oversight to a combination of offices responsible for greening.

Continued Case-by-Case Programming

The House and the Senate might determine the current system of operating greening programs is effective. Instead of creating a statutory House or Senate program, creating a "Green the Senate" Program, or creating a joint greening effort, the House and the Senate could continue to allow the CAO to operate the "Green the Capitol" initiative and allow the Architect of the Capitol to administer other greening and energy usage programs in the House and Senate. Expansion could continue on an as-needed basis, with minimal coordination between the Houses.

To provide oversight in the case-by-case system, the House and the Senate could rely on the existing committee system to guide green programs. In the House, the Committee on House Administration, the Committee on Transportation and Infrastructure, the Committee on Appropriations, and in the 110th Congress the Select Committee on Energy Independence and Global Warming have jurisdiction. In the Senate, the Committee on Rules and Administration, the Energy and Natural Resources Committee, and the Environment and Public Works Committee, and the Committee on Appropriations maintain jurisdiction over current greening initiatives. Each of these committees could hold hearings, individually or jointly, to discuss greening programs and provide direction to the officers of Congress responsible for implementing energy reduction and greening.