

112TH CONGRESS  
1ST SESSION

# H. R. 3371

To produce high-performance Federal buildings through an improved approach to building utilization, design, construction, and operations and maintenance, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

NOVEMBER 4, 2011

Mr. CARNAHAN (for himself, Mr. WESTMORELAND, Mr. WELCH, Mr. QUIGLEY, Ms. HIRONO, Mr. PERLMUTTER, Ms. MCCOLLUM, Ms. EDWARDS, Mr. POLIS, Mr. GARAMENDI, Ms. DELAURO, Mr. RYAN of Ohio, Mr. HONDA, Mr. GRIJALVA, Ms. SCHAKOWSKY, and Ms. TSONGAS) introduced the following bill; which was referred to the Committee on Transportation and Infrastructure, and in addition to the Committee on Energy and Commerce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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## A BILL

To produce high-performance Federal buildings through an improved approach to building utilization, design, construction, and operations and maintenance, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the  
5 “High-Performance Federal Buildings Act of 2011”.

1 (b) TABLE OF CONTENTS.—The table of contents for  
 2 this Act is as follows:

- Sec. 1. Short title; table of contents.
- Sec. 2. Consideration of life-cycle cost required.
- Sec. 3. Long-term savings through life-cycle cost analysis.
- Sec. 4. Building commissioning.
- Sec. 5. Integrated design processes and building information modeling.
- Sec. 6. Reporting of Federal building performance data.
- Sec. 7. Verification of compliance with requirements.
- Sec. 8. Availability of funds for design updates to meet standards.
- Sec. 9. Updating Federal building energy efficiency performance standards.
- Sec. 10. Establishing and updating Federal building water efficiency performance standards.

3 **SEC. 2. CONSIDERATION OF LIFE-CYCLE COST REQUIRED.**

4 (a) REQUIREMENT.—The head of a Federal depart-  
 5 ment or agency involved in the construction of a building  
 6 described in subsection (b) shall ensure that the life-cycle  
 7 cost of the building is considered during the design of the  
 8 building.

9 (b) FEDERAL BUILDINGS SUBJECT TO REQUIRE-  
 10 MENT.—A building is subject to the requirement under  
 11 subsection (a) if—

12 (1) construction of the building begins after the  
 13 date of enactment of this Act;

14 (2) the estimated construction costs of the  
 15 building exceed \$1,000,000; and

16 (3) Federal funding comprises more than 50  
 17 percent of the funding for the estimated construction  
 18 costs of the building.

19 (c) DEFINITIONS.—In this section, the following defi-  
 20 nitions apply:

1           (1) LIFE-CYCLE COST.—The term “life-cycle  
2 cost” means the sum of the following costs, as esti-  
3 mated for the lifetime of a building:

4                   (A) Investment costs.

5                   (B) Capital costs.

6                   (C) Installation costs.

7                   (D) Energy costs.

8                   (E) Operating costs.

9                   (F) Maintenance costs.

10                  (G) Replacement costs.

11           (2) LIFETIME OF A BUILDING.—The term “life-  
12 time of a building” means, with respect to a build-  
13 ing, the greater of—

14                   (A) the period of time during which the  
15 building is projected to be utilized; or

16                   (B) 50 years.

17 **SEC. 3. LONG-TERM SAVINGS THROUGH LIFE-CYCLE COST**  
18 **ANALYSIS.**

19           Section 3307(b) of title 40, United States Code, is  
20 amended—

21           (1) in paragraph (6) by striking “and” at the  
22 end;

23           (2) in paragraph (7) by striking the period at  
24 the end and inserting “; and”; and

25           (3) by adding at the end the following:

1           “(8) with respect to any prospectus for the con-  
2           struction, alteration, or acquisition of any building  
3           or space to be leased, a statement by the Adminis-  
4           trator describing the use of life-cycle cost analysis  
5           and any increased design, construction, or acquisi-  
6           tion costs identified by such analysis that are offset  
7           by lower long-term costs.”.

8 **SEC. 4. BUILDING COMMISSIONING.**

9           (a) **FEDERAL BUILDING COMMISSIONING STAND-**  
10 **ARDS.**—Not later than one year after the date of enact-  
11 ment of this Act, the Administrator of General Services  
12 shall issue regulations establishing Federal building com-  
13 missioning standards, modeled on existing private sector  
14 standards and guidelines, for—

15           (1) the commissioning process generally;  
16           (2) the commissioning of individual building  
17           systems, including heating, ventilation, and air-con-  
18           ditioning, building envelope, and fire protection and  
19           life safety systems; and

20           (3) the use of building automation systems to  
21           perform ongoing commissioning of connected build-  
22           ing systems.

23           (b) **REQUIREMENT.**—With respect to each building  
24 constructed or altered by the Administrator or the head  
25 of any other Federal department or agency after the date

1 on which regulations are issued under paragraph (1), the  
2 Administrator or the head of such department or agency  
3 shall require commissioning with respect to such building  
4 that meets or exceeds the standards established under  
5 such regulations.

6 (c) COMMISSIONING DEFINED.—In this section, the  
7 term “commissioning” means a process for examining and  
8 evaluating a building or individual building system for the  
9 purpose of verifying and delivering a building or system  
10 that meets the building owner’s requirements for use.

11 **SEC. 5. INTEGRATED DESIGN PROCESSES AND BUILDING**  
12 **INFORMATION MODELING.**

13 (a) INTEGRATED DESIGN PROCESSES AND BUILDING  
14 INFORMATION MODELING.—

15 (1) STUDY.—The Comptroller General, in con-  
16 sultation with representatives of relevant profes-  
17 sional societies and industry associations, shall con-  
18 duct a study on the use of integrated design proc-  
19 esses and building information modeling with respect  
20 to the design and construction of Federal buildings.

21 (2) REPORT.—Not later than one year after the  
22 date of enactment of this Act, the Comptroller Gen-  
23 eral shall submit to Congress a report on the results  
24 of the study conducted under paragraph (1), includ-  
25 ing a description of—

1 (A) the legal, institutional, and other con-  
2 straints on the use of integrated design proc-  
3 esses and building information modeling by the  
4 Federal Government;

5 (B) the likely impact of the use of inte-  
6 grated design processes and building informa-  
7 tion modeling on the procurement and budg-  
8 eting process over the life of a facility;

9 (C) the potential impact of the use of inte-  
10 grated design processes and building informa-  
11 tion modeling on private sector firms and an  
12 analysis of measures to mitigate any negative  
13 impacts on small businesses;

14 (D) an analysis of the amount of product  
15 information that has building information mod-  
16 eling profiles and what level of product profiles  
17 must be available in order for building informa-  
18 tion modeling to be effectively used throughout  
19 the life of a facility;

20 (E) an analysis of the benefits of the use  
21 of integrated design processes and building in-  
22 formation modeling during the life cycle of a fa-  
23 cility; and

24 (F) recommendations for the development  
25 of a streamlined process for the design and con-

1 construction of Federal buildings using integrated  
2 design processes and building information mod-  
3 eling.

4 (b) OFFICE OF FEDERAL HIGH-PERFORMANCE  
5 GREEN BUILDINGS.—Not later than 90 days after the  
6 date of enactment of this Act, the duties of the Director  
7 of the Office of Federal High-Performance Green Build-  
8 ings shall include—

9 (1) providing technical assistance and guidance  
10 to Federal departments and agencies with respect to  
11 the utilization of building information modeling,  
12 commissioning, and integrated design processes;

13 (2) identification of best practices with respect  
14 to the utilization of building information modeling,  
15 commissioning, and integrated design processes, in-  
16 cluding identifying appropriate case studies from the  
17 Federal Government and the private sector;

18 (3) disseminating to Federal departments and  
19 agencies, State and local governments, and the pri-  
20 vate sector, through a publically available Web-based  
21 system or other means, information on best practices  
22 identified under paragraph (2); and

23 (4) identifying the research and technologies  
24 necessary to understand the interactions of building

1 systems and effectively predict the outcomes of such  
2 interactions.

3 (c) DEFINITIONS.—In this section, the following defi-  
4 nitions apply:

5 (1) BUILDING INFORMATION MODELING.—The  
6 term “building information modeling” means the de-  
7 velopment and use of a computer-based model to  
8 document a building design and simulate the con-  
9 struction and operation of a building with respect to  
10 which various users can extract and add information  
11 to generate feedback on and improve the building’s  
12 design, construction, operation, and maintenance.

13 (2) COMMISSIONING.—The term “commis-  
14 sioning” has the meaning given that term in section  
15 4(c) of this Act.

16 (3) INTEGRATED DESIGN PROCESS.—The term  
17 “integrated design process” means a process for the  
18 design and construction of a building or space that  
19 involves the collaboration of architects, engineers,  
20 contractors, building owners, commissioning agents,  
21 occupants, management staff, and other appropriate  
22 personnel during all phases of the design and con-  
23 struction of such building or space with the goal of  
24 reducing waste and duplication and achieving high-



1 performance building characteristics identified at the  
2 beginning of the project.

3 **SEC. 6. REPORTING OF FEDERAL BUILDING PERFORMANCE**

4 **DATA.**

5 Section 543 of the National Energy Conservation  
6 Policy Act (42 U.S.C. 8253) is amended—

7 (1) by redesignating the second subsection (f),  
8 as added by section 434(a) of the Energy Independ-  
9 ence and Security Act of 2007 (Public Law 110–  
10 140), as subsection (g); and

11 (2) in subsection (f) by adding at the end the  
12 following:

13 “(12) REPORTING ON COMMISSIONING AND EN-  
14 ERGY AND WATER SAVINGS MEASURES.—

15 “(A) IN GENERAL.—Each energy manager  
16 shall submit the evaluations, commissioning re-  
17 ports, plans, measurements, and verifications  
18 under paragraphs (3) and (5) to the Web-based  
19 system established under paragraph (7) or to  
20 another publicly available Web-based system  
21 identified by the Secretary.

22 “(B) STANDARDIZING REPORTING FOR-  
23 MATS.—Not later than one year after the date  
24 of enactment of this paragraph, the Secretary,  
25 in consultation with the Administrator of Gen-

1           eral Services and representatives of relevant  
2           professional societies and industry associations,  
3           shall recognize or develop a standardized format  
4           for obtaining and submitting the information  
5           specified in subparagraph (A).

6           “(13) ANNUAL REPORT ON FEDERAL BUILDING  
7           ENERGY AND WATER CHARACTERISTICS.—Not later  
8           than one year after the date of enactment of this  
9           paragraph, and annually thereafter, the Secretary  
10          shall submit to Congress and other Federal depart-  
11          ments and agencies, and make available to the pub-  
12          lic, a report summarizing the energy use, water use,  
13          and high-performance attributes of Federal build-  
14          ings, which shall include—

15                 “(A) energy use, water use, and green-  
16                 house gas emissions data by Department of En-  
17                 ergy climate zone, building type, primary build-  
18                 ing use, department or agency, and building  
19                 vintage;

20                 “(B) data on total energy usage and en-  
21                 ergy usage by heating, ventilation, and air-con-  
22                 ditioning, water heating, lighting, plug-loads,  
23                 and other subsystems;

24                 “(C) data on the energy, water, greenhouse  
25                 gas emissions, and cost savings attributable to

1 compliance with relevant Federal law and the  
2 baseline used for a determination of such sav-  
3 ings;

4 “(D) a description of the requirements and  
5 programs relating to energy use, water use, or  
6 greenhouse gas emissions applicable to the de-  
7 sign and operation of Federal buildings and the  
8 outcomes, including energy, water, greenhouse  
9 gas emissions, and cost savings, of such re-  
10 quirements and programs (such requirements  
11 and programs include green building and en-  
12 ergy rating systems and energy codes and  
13 standards);

14 “(E) a description of the use of design or  
15 technological features that contribute to reduc-  
16 tions in energy and water use, including fea-  
17 tures relating to building controls, heating and  
18 cooling, ventilation, efficient lighting, lighting  
19 controls, daylighting, plumbing fixtures, water  
20 heating systems, food preparation equipment,  
21 building envelopes, orientation, site selection,  
22 integrated design, building information mod-  
23 eling, commissioning, and other features deter-  
24 mined appropriate for inclusion by the Sec-  
25 retary;

1           “(F) a description of any lessons learned  
2 from and case studies included in the informa-  
3 tion submitted under paragraph (12);

4           “(G) a description of the characteristics of  
5 high-performance buildings and high-perform-  
6 ance green buildings, as such terms are defined  
7 under section 401 of the Energy Independence  
8 and Security Act of 2007 (42 U.S.C. 17061),  
9 including with respect to—

10                   “(i) indoor environmental quality;

11                   “(ii) air and water pollution;

12                   “(iii) waste generation;

13                   “(iv) impacts on transportation due to  
14 building location and site design;

15                   “(v) safety, security, and resiliency at-  
16 tributes;

17                   “(vi) historic preservation; and

18                   “(vii) operation and functionality  
19 characteristics; and

20           “(H) additional information determined  
21 appropriate for inclusion by the Secretary.”.

22 **SEC. 7. VERIFICATION OF COMPLIANCE WITH REQUIRE-**  
23 **MENTS.**

24           (a) **POSTCONSTRUCTION REPORTING.**—Not later  
25 than one year after the date of substantial completion of

1 the construction or alteration of a building, the construc-  
2 tion or alteration of which was approved under section  
3 3307(a) of title 40, United States Code, and biennially  
4 thereafter, the Administrator of General Services shall  
5 submit to the Committee on Transportation and Infra-  
6 structure of the House of Representatives, the Committee  
7 on Environment and Public Works of the Senate, and the  
8 Director of the Office of Management and Budget a report  
9 with respect to such building demonstrating compliance  
10 with requirements under part 3 of title V of the National  
11 Energy Conservation Policy Act (42 U.S.C. 8251 et seq.),  
12 subtitle II of title 40, United States Code, subtitle F of  
13 title I of the Energy Policy Act of 1992 (42 U.S.C. 8262  
14 et seq.), sections 305 and 306 of the Energy Conservation  
15 and Production Act (42 U.S.C. 6834 and 6835), and other  
16 laws and regulations relating to the design, construction,  
17 and alteration of public buildings.

18 (b) VERIFICATION OF POSTCONSTRUCTION REPORT-  
19 ING.—Not later than one year after the date of enactment  
20 of this Act, the Director of the Office of Management and  
21 Budget, in consultation with representatives of relevant  
22 private sector organizations, shall recognize or develop  
23 mechanisms for the measurement and verification of com-  
24 pliance with the requirements specified under subsection  
25 (a).

1 (c) INSPECTOR GENERAL REVIEW.—

2 (1) IN GENERAL.—Each Inspector General ap-  
3 pointed under the Inspector General Act of 1978 (5  
4 U.S.C. App.) shall conduct reviews of the depart-  
5 ment or agency applicable to such Inspector General  
6 with respect to the compliance, and cost savings at-  
7 tributable to the compliance, of such department or  
8 agency with requirements under part 3 of title V of  
9 the National Energy Conservation Policy Act (42  
10 U.S.C. 8251 et seq.), subtitle II of title 40, United  
11 States Code, and other laws and regulations relating  
12 to the design, construction, and alteration of public  
13 buildings, to the extent that such reviews are not in-  
14 consistent with the performance of the required du-  
15 ties of such Inspector General.

16 (2) TIMING.—Reviews under paragraph (1)  
17 shall be conducted at least biennially by each Inspec-  
18 tor General, unless the applicable department or  
19 agency has not engaged in the design, construction,  
20 or alteration of a public building and has not pro-  
21 vided for the operation and maintenance of a public  
22 building since the last such review of such depart-  
23 ment or agency.

24 (3) TRANSMISSION OF REPORTS.—Each Inspec-  
25 tor General shall submit to the Director of the Of-

1        fice of Management and Budget, the Secretary of  
2        Energy, the Committee on Appropriations of the  
3        House of Representatives, and the Committee on  
4        Appropriations of the Senate a report on each review  
5        conducted under paragraph (1) by that Inspector  
6        General. The Secretary of Energy shall include re-  
7        ports submitted to the Secretary under this para-  
8        graph in the annual report required under section  
9        543(f)(13) of the National Energy Conservation Pol-  
10       icy Act (as added by section 6 of this Act).

11 **SEC. 8. AVAILABILITY OF FUNDS FOR DESIGN UPDATES TO**  
12 **MEET STANDARDS.**

13        With respect to a building or space receiving approval  
14 under section 3307(a) of title 40, United States Code, the  
15 design of which has been substantially completed but the  
16 construction of which has not yet begun, the Adminis-  
17 trator may use amounts from the Federal Building Fund  
18 Capital Account to update the design of such building or  
19 space to meet Federal building energy and water efficiency  
20 standards. With respect to each such building or space,  
21 amounts used under this section may not exceed 125 per-  
22 cent of the estimated energy, water, operations and main-  
23 tenance, and other cost savings determined to be associ-  
24 ated with the applicable design update by a life-cycle cost  
25 analysis.

1 **SEC. 9. UPDATING FEDERAL BUILDING ENERGY EFFI-**  
2 **CIENCY PERFORMANCE STANDARDS.**

3 Subparagraph (B) of section 305(a)(3) of the Energy  
4 Conservation and Production Act (42 U.S.C. 6834(a)(3))  
5 is amended to read as follows:

6 “(B) Not later than one year after the date of ap-  
7 proval of each subsequent revision of the ASHRAE Stand-  
8 ard or the International Energy Conservation Code, the  
9 ASHRAE Standard or the International Energy Con-  
10 servation Code specified in subparagraph (A)(i)(I) shall be  
11 treated as updated to the revised version unless the Sec-  
12 retary has determined that, based on cost effectiveness,  
13 the percentage identified in such subparagraph should be  
14 adjusted.”.

15 **SEC. 10. ESTABLISHING AND UPDATING FEDERAL BUILD-**  
16 **ING WATER EFFICIENCY PERFORMANCE**  
17 **STANDARDS.**

18 (a) ESTABLISHMENT.—Not later than 2 years after  
19 the date of enactment of this Act, the Secretary of Energy,  
20 in consultation with appropriate Federal departments and  
21 agencies and relevant codes and standards development  
22 organizations, shall issue regulations establishing Federal  
23 building water efficiency standards that require Federal  
24 buildings constructed after the date on which such regula-  
25 tions are issued to incorporate water efficiency measures  
26 that are technologically feasible and economically justified.



1 (b) CONTENTS.—The standards established under  
2 subsection (a) shall—

3 (1) include water efficiency measures that meet  
4 or exceed the water efficiency measures of national  
5 consensus-based minimum plumbing codes published  
6 as of the date of enactment of this Act; and

7 (2) to the extent practicable, use the same for-  
8 mat as such codes.

9 (c) UPDATES.—At least once every 3 years, the Sec-  
10 retary shall review the Federal building water efficiency  
11 standards established under subsection (a) and, if signifi-  
12 cant water savings would result, shall revise such stand-  
13 ards to include additional water efficiency measures that  
14 are technologically feasible and economically justified.

15 (d) CONSIDERATIONS.—In considering revisions  
16 under subsection (c), the Secretary shall consider any  
17 water-related provisions of the most recent versions of na-  
18 tional consensus-based above-minimum plumbing codes.

○