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(Original Signature of Member)

116TH CONGRESS
1ST SESSION

H. R. 2044

To accelerate smart building development, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Mr. WELCH introduced the following bill; which was referred to the Committee
on _____

A BILL

To accelerate smart building development, 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.**

4 This Act may be cited as the “Smart Building Accel-
5 eration Act”.

6 **SEC. 2. FINDINGS.**

7 Congress finds that—

8 (1) the building sector uses more than 40 per-
9 cent of the energy of the United States;

1 (2) emerging building energy monitoring and
2 control technologies are enabling a transition of the
3 building sector to “smart” buildings that have dra-
4 matically reduced energy use and improved quality
5 of service to occupants;

6 (3) an analysis of select private-sector smart
7 buildings by the Department of Energy would docu-
8 ment the costs and benefits of the emerging tech-
9 nologies, promote the adoption of the technologies,
10 and accelerate the transition to the technologies;

11 (4) with over 400,000 buildings, the Federal
12 Government is the largest building owner in the
13 United States; and

14 (5) the Federal Government can also accelerate
15 the transition to smart building technologies by dem-
16 onstrating and evaluating emerging smart building
17 technologies using existing programs and funding to
18 showcase selected Federal smart buildings.

19 **SEC. 3. DEFINITIONS.**

20 In this Act:

21 (1) DEPARTMENT.—The term “Department”
22 means the Department of Energy.

23 (2) PROGRAM.—The term “program” means
24 the Federal Smart Building Program established
25 under section 4(a).

1 (3) SECRETARY.—The term “Secretary” means
2 the Secretary of Energy.

3 (4) SMART BUILDING.—The term “smart build-
4 ing” means a building, or collection of buildings,
5 with an energy system that—

6 (A) is flexible and automated;

7 (B) has extensive operational monitoring
8 and communication connectivity, allowing re-
9 mote monitoring and analysis of all building
10 functions;

11 (C) takes a systems-based approach in in-
12 tegrating the overall building operations for
13 control of energy generation, consumption, and
14 storage;

15 (D) communicates with utilities and other
16 third-party commercial entities, if appropriate;

17 (E) protects the health and safety of occu-
18 pants and workers; and

19 (F) is cybersecure.

20 (5) SMART BUILDING ACCELERATOR.—The
21 term “smart building accelerator” means an initia-
22 tive that is designed to demonstrate specific innova-
23 tive policies and approaches—

24 (A) with clear goals and a clear timeline;

25 and

1 (B) that, on successful demonstration,
2 would accelerate investment in energy effi-
3 ciency.

4 (6) INTERNET OF THINGS TECHNOLOGY SOLU-
5 TION.—The term “internet of things technology so-
6 lution” means a solution that improves energy effi-
7 ciency and predictive maintenance through cutting
8 edge technologies that utilize internet connected
9 technologies including sensors, intelligent gateways,
10 and security embedded hardware.

11 **SEC. 4. FEDERAL SMART BUILDING PROGRAM.**

12 (a) ESTABLISHMENT.—Not later than 1 year after
13 the date of enactment of this Act, the Secretary shall, in
14 consultation with the Administrator of General Services,
15 establish a program to be known as the “Federal Smart
16 Building Program”—

17 (1) to implement smart building technology;
18 and

19 (2) to demonstrate the costs and benefits of
20 smart buildings.

21 (b) SELECTION.—

22 (1) IN GENERAL.—The Secretary shall coordi-
23 nate the selection of not fewer than 1 building from
24 among each of several key Federal agencies, as de-
25 scribed in subsection (d), to compose an appro-

1 priately diverse set of smart buildings based on size,
2 type, and geographic location.

3 (2) INCLUSION OF COMMERCIALY OPERATED
4 BUILDINGS.—In making selections under paragraph
5 (1), the Secretary may include buildings that are
6 owned by the Federal Government but are commer-
7 cially operated.

8 (c) TARGETS.—Not later than 18 months after the
9 date of enactment of this Act, the Secretary shall establish
10 targets for the number of smart buildings to be commis-
11 sioned and evaluated by key Federal agencies by 3 years
12 and 6 years after the date of enactment of this Act.

13 (d) FEDERAL AGENCY DESCRIBED.—The key Fed-
14 eral agencies referred to subsection (b)(1) shall include
15 buildings operated by—

16 (1) the Department of the Army;

17 (2) the Department of the Navy;

18 (3) the Department of the Air Force;

19 (4) the Department;

20 (5) the Department of the Interior;

21 (6) the Department of Veterans Affairs; and

22 (7) the General Services Administration.

23 (e) REQUIREMENT.—In implementing the program,
24 the Secretary shall leverage existing financing mechanisms

1 including energy savings performance contracts, utility en-
2 ergy service contracts, and annual appropriations.

3 (f) EVALUATION.—Using the guidelines of the Fed-
4 eral Energy Management Program relating to whole-build-
5 ing evaluation, measurement, and verification, the Sec-
6 retary shall evaluate the costs and benefits of the buildings
7 selected under subsection (b), including an identification
8 of—

9 (1) which advanced building technologies—

10 (A) are most cost-effective; and

11 (B) show the most promise for—

12 (i) increasing building energy savings;

13 (ii) increasing service performance to
14 building occupants;

15 (iii) reducing environmental impacts;

16 and

17 (iv) establishing cybersecurity; and

18 (2) any other information the Secretary deter-
19 mines to be appropriate.

20 (g) AWARDS.—The Secretary may expand awards
21 made under the Federal Energy Management Program
22 and the Better Building Challenge to recognize specific
23 agency achievements in accelerating the adoption of smart
24 building technologies.

1 **SEC. 5. SURVEY OF PRIVATE SECTOR SMART BUILDINGS.**

2 (a) SURVEY.—The Secretary shall conduct a survey
3 of privately owned smart buildings throughout the United
4 States, including commercial buildings, laboratory facili-
5 ties, hospitals, multifamily residential buildings, and build-
6 ings owned by nonprofit organizations and institutions of
7 higher education.

8 (b) SELECTION.—From among the smart buildings
9 surveyed under subsection (a), the Secretary shall select
10 not fewer than 1 building each from an appropriate range
11 of building sizes, types, and geographic locations.

12 (c) EVALUATION.—Using the guidelines of the Fed-
13 eral Energy Management Program relating to whole-build-
14 ing evaluation, measurement, and verification, the Sec-
15 retary shall evaluate the costs and benefits of the buildings
16 selected under subsection (b), including an identification
17 of—

18 (1) which advanced building technologies and
19 systems—

20 (A) are most cost-effective; and

21 (B) show the most promise for—

22 (i) increasing building energy savings;

23 (ii) increasing service performance to
24 building occupants;

25 (iii) reducing environmental impacts;

26 and

- 1 (iv) establishing cybersecurity; and
2 (2) any other information the Secretary deter-
3 mines to be appropriate.

4 **SEC. 6. LEVERAGING EXISTING PROGRAMS.**

5 (a) **BETTER BUILDING CHALLENGE.**—As part of the
6 Better Building Challenge of the Department, the Sec-
7 retary, in consultation with major private sector property
8 owners, shall develop smart building accelerators to dem-
9 onstrate innovative policies and approaches that will accel-
10 erate the transition to smart buildings in the public, insti-
11 tutional, and commercial buildings sectors.

12 (b) **RESEARCH AND DEVELOPMENT.**—

13 (1) **IN GENERAL.**—The Secretary shall conduct
14 research and development to address key barriers to
15 the integration of advanced building technologies
16 and to accelerate the transition to smart buildings.

17 (2) **INCLUSION.**—The research and development
18 conducted under paragraph (1) shall include re-
19 search and development on—

20 (A) achieving whole-building, systems-level
21 efficiency through smart system and component
22 integration;

23 (B) improving physical components, such
24 as sensors and controls, to be adaptive, antici-
25 patory, and networked;

1 (C) reducing the cost of key components to
2 accelerate the adoption of smart building tech-
3 nologies;

4 (D) data management, including the cap-
5 ture and analysis of data and the interoper-
6 ability of the energy systems;

7 (E) protecting against cybersecurity
8 threats and addressing security vulnerabilities
9 of building systems or equipment;

10 (F) business models, including how busi-
11 ness models may limit the adoption of smart
12 building technologies and how to support
13 transactive energy;

14 (G) integration and application of com-
15 bined heat and power systems and energy stor-
16 age for resiliency;

17 (H) characterization of buildings and com-
18 ponents;

19 (I) consumer and utility protections;

20 (J) continuous management, including the
21 challenges of managing multiple energy systems
22 and optimizing systems for disparate stake-
23 holders;

24 (K) integration of internet of things tech-
25 nology solutions, including measures to increase

1 water and energy efficiency, improve water
2 quality, support real-time utility management,
3 and enable actionable analytics and predictive
4 maintenance to improve building systems long-
5 term viability; and

6 (L) other areas of research and develop-
7 ment, as determined appropriate by the Sec-
8 retary.

9 **SEC. 7. REPORT.**

10 Not later than 2 years after the date of enactment
11 of this Act, and every 2 years thereafter until a total of
12 3 reports have been made, the Secretary shall submit to
13 the Committee on Energy and Natural Resources of the
14 Senate and the Committee on Energy and Commerce and
15 the Committee on Science, Space, and Technology of the
16 House of Representatives a report on—

17 (1) the establishment of the Federal Smart
18 Building Program and the evaluation of Federal
19 smart buildings under section 4;

20 (2) the survey and evaluation of private sector
21 smart buildings under section 5; and

22 (3) any recommendations of the Secretary to
23 further accelerate the transition to smart buildings.