

Suspend the Rules and Pass the Bill, H.R. 7535, With an Amendment

(The amendment strikes all after the enacting clause and inserts a new text)

117TH CONGRESS
2^D SESSION

H. R. 7535

To encourage the migration of Federal Government information technology systems to quantum-resistant cryptography, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 18, 2022

Mr. KHANNA (for himself, Ms. MACE, and Mr. CONNOLLY) introduced the following bill; which was referred to the Committee on Oversight and Reform

A BILL

To encourage the migration of Federal Government information technology systems to quantum-resistant cryptography, 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 “Quantum Computing
5 Cybersecurity Preparedness Act”.

6 **SEC. 2. FINDINGS; SENSE OF CONGRESS.**

7 (a) FINDINGS.—The Congress finds the following:

1 (1) Cryptography is essential for the national
2 security of the United States and the functioning of
3 the economy of the United States.

4 (2) The most widespread encryption protocols
5 today rely on computational limits of classical com-
6 puters to provide cybersecurity.

7 (3) Quantum computers might one day have the
8 ability to push computational boundaries, allowing
9 us to solve problems that have been intractable thus
10 far, such as integer factorization, which is important
11 for encryption.

12 (4) The rapid progress of quantum computing
13 suggests the potential for adversaries of the United
14 States to steal sensitive encrypted data today using
15 classical computers, and wait until sufficiently pow-
16 erful quantum systems are available to decrypt it.

17 (b) SENSE OF CONGRESS.—It is the sense of Con-
18 gress that—

19 (1) a strategy for the migration of information
20 technology systems of the Federal Government to
21 post-quantum cryptography is needed; and

22 (2) the Governmentwide and industrywide ap-
23 proach to post-quantum cryptography should
24 prioritize developing applications, hardware intellec-

1 tual property, and software that can be easily up-
2 dated to support cryptographic agility.

3 **SEC. 3. INVENTORY OF CRYPTOGRAPHIC SYSTEMS; MIGRA-**
4 **TION TO POST-QUANTUM CRYPTOGRAPHY.**

5 (a) INVENTORY.—

6 (1) ESTABLISHMENT.—Not later than 180 days
7 after the date of the enactment of this Act, the Di-
8 rector of OMB shall establish, by rule or binding
9 guidance, a requirement for each executive agency to
10 establish and maintain an inventory of each cryp-
11 tographic system in use by the agency.

12 (2) ADDITIONAL CONTENT IN RULE OR BIND-
13 ING GUIDANCE.—In the rule or binding guidance es-
14 tablished by paragraph (1), the Director of OMB
15 shall include, in addition to the requirement de-
16 scribed under such paragraph—

17 (A) a description of information technology
18 to be prioritized for migration to post-quantum
19 cryptography;

20 (B) a description of the information re-
21 quired to be reported pursuant to subsection
22 (b); and

23 (C) a process for evaluating progress on
24 migrating information technology to post-quantum

1 tum cryptography, which shall be automated to
2 the greatest extent practicable.

3 (3) PERIODIC UPDATES.—The Director of OMB
4 shall update the rule or binding guidance established
5 by paragraph (1) as the Director determines nec-
6 essary.

7 (b) AGENCY REPORTS.—Not later than 1 year after
8 the date of the enactment of this Act, and on an ongoing
9 basis thereafter, the head of each executive agency shall
10 provide to the Director of OMB, the Director of CISA,
11 and the National Cyber Director an inventory of all infor-
12 mation technology in use by the executive agency that is
13 vulnerable to decryption by quantum computers.

14 (c) MIGRATION AND ASSESSMENT.—

15 (1) MIGRATION TO POST-QUANTUM CRYPTOGR-
16 RAPHY.—Not later than 1 year after the date on
17 which the Director of NIST has issued post-quan-
18 tum cryptography standards, the Director of OMB
19 shall issue guidance requiring each executive agency
20 to develop a plan, including interim benchmarks, to
21 migrate information technology of the agency to
22 post-quantum cryptography.

23 (2) DESIGNATION OF SYSTEMS FOR MIGRA-
24 TION.—Not later than 90 days after the date on
25 which the guidance required by paragraph (1) has

1 been issued, the Director of OMB shall issue guid-
2 ance for agencies to—

3 (A) designate information technology to be
4 migrated to post-quantum cryptography; and

5 (B) prioritize information technology des-
6 ignated under subparagraph (A), on the basis
7 of the amount of risk posed by decryption by
8 quantum computers to such technology, for mi-
9 gration to post-quantum cryptography.

10 (d) INTEROPERABILITY.—The Director of OMB shall
11 ensure that the designations and prioritizations made
12 under subsection (c)(2) are assessed and coordinated to
13 ensure interoperability.

14 (e) REPORT ON POST-QUANTUM CRYPTOGRAPHY.—
15 Not later than 15 months after the date of the enactment
16 of this Act, the Director of OMB shall submit to Congress
17 a report on the following:

18 (1) A strategy to address the risk posed by the
19 vulnerabilities of information technology systems of
20 executive agencies to weakened encryption due to the
21 potential and possible capability of a quantum com-
22 puter to breach such encryption.

23 (2) The amount of funding needed by executive
24 agencies to secure such information technology sys-
25 tems from the risk posed by an adversary of the

1 United States using a quantum computer to breach
2 the encryption of information technology systems.

3 (3) A description of Federal civilian executive
4 branch coordination efforts led by the National In-
5 stitute of Standards and Technology, including
6 timelines, to develop standards for post-quantum
7 cryptography, including any Federal Information
8 Processing Standards developed under chapter 35 of
9 title 44, United States Code, as well as standards
10 developed through voluntary, consensus standards
11 bodies such as the International Organization for
12 Standardization.

13 (f) REPORT ON MIGRATION TO POST-QUANTUM
14 CRYPTOGRAPHY IN INFORMATION TECHNOLOGY SYS-
15 TEMS.—Not later than 1 year after the date on which the
16 Director of OMB issues guidance under subsection (c)(2),
17 and annually thereafter until the date that is 5 years after
18 the date on which post-quantum cryptographic standards
19 are issued, the Director of OMB shall submit to Congress,
20 with the report submitted pursuant to section 3553(e) of
21 title 44, United States Code, a report on the progress of
22 executive agencies in adopting post-quantum cryptography
23 standards.

24 (g) DEFINITIONS.—In this Act:

1 (1) CLASSICAL COMPUTER.—The term “clas-
2 sical computer” means a device that accepts digital
3 data and manipulates the information based on a
4 program or sequence of instructions for how data is
5 to be processed and encodes information in binary
6 bits that can either be 0s or 1s.

7 (2) DIRECTOR OF NIST.—The term “Director
8 of NIST” means the Director of the National Insti-
9 tute of Standards and Technology.

10 (3) DIRECTOR OF OMB.—The term “Director of
11 OMB” means the Director of the Office of Manage-
12 ment and Budget.

13 (5) EXECUTIVE AGENCY.—The term “executive
14 agency” has the meaning given the term “Executive
15 agency” in section 105 of title 5, United States
16 Code.

17 (6) INFORMATION TECHNOLOGY.—The term
18 “information technology” has the meaning given
19 that term in section 3502 of title 44, United States
20 Code.

21 (7) POST-QUANTUM CRYPTOGRAPHY.—The
22 term “post-quantum cryptography” means a cryp-
23 tographic system that—

1 (A) is secure against decryption attempts
2 using a quantum computer or classical com-
3 puter; and

4 (B) can interoperate with existing commu-
5 nications protocols and networks.

6 (8) QUANTUM COMPUTER.—The term “quan-
7 tum computer” means a computer that uses the col-
8 lective properties of quantum states to perform cal-
9 culations.

10 **SEC. 4. DETERMINATION OF BUDGETARY EFFECTS.**

11 The budgetary effects of this Act, for the purpose of
12 complying with the Statutory Pay-As-You-Go Act of 2010,
13 shall be determined by reference to the latest statement
14 titled “Budgetary Effects of PAYGO Legislation” for this
15 Act, submitted for printing in the Congressional Record
16 by the Chairman of the House Budget Committee, pro-
17 vided that such statement has been submitted prior to the
18 vote on passage.