

119TH CONGRESS
1ST SESSION

S. _____

To amend the Internal Revenue Code of 1986 to expand the advanced manufacturing production credit to include fusion energy components.

IN THE SENATE OF THE UNITED STATES

Mr. CURTIS (for himself and Ms. CANTWELL) introduced the following bill;
which was read twice and referred to the Committee on

A BILL

To amend the Internal Revenue Code of 1986 to expand the advanced manufacturing production credit to include fusion energy components.

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 “Fusion Advanced Man-
5 ufacturing Parity Act”.

1 **SEC. 2. INCLUSION OF FUSION ENERGY COMPONENTS IN**
2 **ADVANCED MANUFACTURING PRODUCTION**
3 **CREDIT.**

4 (a) IN GENERAL.—Section 45X of the Internal Rev-
5 enue Code of 1986, as amended by section 70514 of Public
6 Law 119-21, is amended—

7 (1) in subsection (b)—

8 (A) in paragraph (1)—

9 (i) in subparagraph (L)(ii), by strik-
10 ing “and” at the end,

11 (ii) by redesignating subparagraph
12 (M) as subparagraph (N), and

13 (iii) by inserting after subparagraph
14 (L) the following new subparagraph:

15 “(M) in the case of a fusion energy compo-
16 nent, an amount equal to 25 percent of the
17 sales price of such component, and”,

18 (B) in paragraph (3)—

19 (i) in subparagraph (A), by striking
20 “and (D)” and inserting “, (D), and (E)”,

21 (ii) by redesignating subparagraphs
22 (D) and (E) as subparagraphs (E) and
23 (F), respectively, and

24 (iii) by inserting after subparagraph
25 (C) the following new subparagraph:

1 “(D) PHASE OUT FOR FUSION ENERGY
2 COMPONENTS.—

3 “(i) IN GENERAL.—In the case of any
4 fusion energy component sold after Decem-
5 ber 31, 2031, the amount determined
6 under this subsection with respect to such
7 component shall be equal to the product
8 of—

9 “(I) the amount determined
10 under paragraph (1) with respect to
11 such component, as determined with-
12 out regard to this paragraph, multi-
13 plied by

14 “(II) the phase out percentage
15 under clause (ii).

16 “(ii) PHASE OUT PERCENTAGE.—The
17 phase out percentage under this clause is
18 equal to—

19 “(I) in the case of a fusion en-
20 ergy component sold during calendar
21 year 2032, 75 percent,

22 “(II) in the case of a fusion en-
23 ergy component sold during calendar
24 year 2033, 50 percent,

1 “(III) in the case of a fusion en-
2 ergy component sold during calendar
3 year 2034, 25 percent, and

4 “(IV) in the case of a fusion en-
5 ergy component sold after December
6 31, 2034, 0 percent.”, and

7 (2) in subsection (c)—

8 (A) in paragraph (1)(A)—

9 (i) by redesignating clauses (iv) and
10 (v) as clauses (v) and (vi), respectively,
11 and

12 (ii) by inserting after clause (iii) the
13 following new clause:

14 “(iv) any fusion energy component,”,

15 (B) by redesignating paragraph (6) as
16 paragraph (7),

17 (C) by inserting after paragraph (5) the
18 following new paragraph:

19 “(6) FUSION ENERGY COMPONENT.—

20 “(A) IN GENERAL.—The term ‘fusion en-
21 ergy component’ means any of the following
22 components which are intended for the oper-
23 ation or use of a fusion energy machine:

24 “(i) A high-temperature super-
25 conducting magnet.

1 “(ii) A fusion chamber or plasma vac-
2 uum vessel.

3 “(iii) A blanket system.

4 “(iv) High-temperature super-
5 conductor tape or wire.

6 “(v) A high-energy laser.

7 “(vi) A fusion heating system.

8 “(vii) A high-voltage capacitor.

9 “(viii) Films used in high-voltage ca-
10 pacitors.

11 “(ix) Plasma compression systems.

12 “(x) High-power switches.

13 “(xi) Packaging used in high-power
14 switches.

15 “(xii) High-voltage conductors and
16 insulators.

17 “(xiii) Composite materials used in fu-
18 sion chambers or vacuum vessels.

19 “(xiv) Fused quartz parts and ceram-
20 ics used in fusion chambers or vacuum ves-
21 sels.

22 “(xv) Plasma formation devices.

23 “(xvi) Fuel processing and storage
24 components.

25 “(xvii) Cooling system components.

1 “(xviii) Fusion targets.

2 “(xix) Dielectric fluids and systems.

3 “(xx) Controls equipment.

4 “(B) FUSION ENERGY MACHINE.—The
5 term ‘fusion energy machine’ means a fusion
6 machine (as defined in section 11 of the Atomic
7 Energy Act of 1954 (42 U.S.C. 2014)) which is
8 used for the production of electricity or process
9 heat, as well as any associated system (such as
10 for fuel and exhaust processing).

11 “(C) HIGH-TEMPERATURE SUPER-
12 CONDUCTING MAGNET.—The term ‘high-tem-
13 perature superconducting magnet’ means the
14 entire system of electromagnetic coils consisting
15 of high-temperature superconducting tape and
16 structural metals that produce the magnetic
17 fields, which confine, shape, and stabilize the
18 plasma in a fusion energy machine, including
19 toroidal field magnets, poloidal field magnets,
20 and central solenoid magnets.

21 “(D) FUSION CHAMBER OR PLASMA VACU-
22 UM VESSEL.—The term ‘fusion chamber or
23 plasma vacuum vessel’ means the enclosing
24 structure that—

1 “(i) holds fusion targets or creates
2 and maintains a vacuum in the area which
3 contains the fusion plasma, and

4 “(ii) absorbs the plasma heat exhaust
5 and structurally supports other integrated
6 components, such as the plasma facing ma-
7 terial, in-vessel diagnostics, and plasma
8 heating systems in the fusion energy ma-
9 chine.

10 “(E) BLANKET SYSTEM.—The term ‘blan-
11 ket system’ means the containers, pipes, pumps,
12 chemistry control, tritium and fuel extractors,
13 heat exchangers, and liquid metal, salt bath, or
14 other components that are designed to remove
15 the fusion heat, shield components from neu-
16 trons, generate tritium, and transfer heat to a
17 power generation system.

18 “(F) HIGH-TEMPERATURE SUPER-
19 CONDUCTOR TAPE OR WIRE.—The term ‘high-
20 temperature superconductor tape or wire’
21 means the multi-layered tape or foil that carries
22 electrical current with no resistance at high
23 temperatures and magnetic fields.

24 “(G) HIGH-ENERGY LASER.—The term
25 ‘high-energy laser’ means the sources of light

1 and associated optic systems that transfer
2 beams of light to either directly or indirectly
3 implode a fusion fuel capsule to create a fusion
4 reaction.

5 “(H) FUSION HEATING SYSTEM.—The
6 term ‘fusion heating system’ means an auxiliary
7 system used to increase the temperature of fu-
8 sion fuel to create fusion reactions.

9 “(I) HIGH-VOLTAGE CAPACITOR.—The
10 term ‘high-voltage capacitor’ means an elec-
11 trical component designed to store and release
12 electrical energy in circuits operating at high
13 voltage levels above 1,000 volts, as well as cir-
14 cuit components (such as printed circuit
15 boards) used to enable the capacitor system or
16 related power system to function.

17 “(J) FILMS USED IN HIGH-VOLTAGE CA-
18 PACITORS.—The term ‘films used in high-volt-
19 age capacitors’ means metalized and non-metal-
20 ized films used due to their dielectric properties,
21 high breakdown voltage, and thermal stability
22 in windings for high-voltage capacitors.

23 “(K) PLASMA COMPRESSION SYSTEM.—
24 The term ‘plasma compression system’ means
25 mechanical or electrical components, such as

1 electromagnetic coils or gas-driven pistons, used
2 to compress plasma targets.

3 “(L) HIGH-POWER SWITCHES.—The term
4 ‘high-power switches’ means switching devices
5 which—

6 “(i) use semiconductors, electrodes
7 and a gas chamber, or other approaches,
8 and

9 “(ii) are used to control and manage
10 the flow of power in circuits by enabling or
11 interrupting the flow of high voltage or
12 high current greater than 1 kilovolt.

13 “(M) PACKAGING USED IN HIGH-POWER
14 SWITCHES.—The term ‘packaging used in high-
15 power switches’ means covers, terminals, or
16 connections, heat transfer components, or pack-
17 aging surrounding a semiconductor die.

18 “(N) HIGH-VOLTAGE CONDUCTORS AND
19 INSULATORS.—The term ‘high-voltage conduc-
20 tors and insulators’ means power transmission
21 components used to connect high-voltage ca-
22 pacitors to fusion energy machines, including
23 cables and busbars capable of operating greater
24 than 1 kilovolt or 1 kiloampere.

1 “(O) COMPOSITE MATERIALS USED IN
2 VACUUM VESSELS.—The term ‘composite mate-
3 rials used in vacuum vessels’ means fiber rein-
4 forced materials, such as glass-epoxy systems,
5 used to create vacuum chambers for fusion en-
6 ergy machines.

7 “(P) FUSED QUARTZ AND CERAMIC PARTS
8 USED IN VACUUM VESSELS.—The term ‘fused
9 quartz parts and ceramics used in vacuum ves-
10 sels’ means components made of high-purity
11 quartz material or other dielectric ceramics and
12 machined into components used as plasma-fac-
13 ing components on fusion energy machine vacu-
14 um vessels.

15 “(Q) PLASMA FORMATION DEVICE.—The
16 term ‘plasma formation device’ means compo-
17 nents used to form fusion plasmas through
18 methods such as coaxial helicity injection or
19 local helicity injection.

20 “(R) FUEL PROCESSING AND STORAGE
21 COMPONENTS.—The term ‘fuel processing and
22 storage components’ means components used
23 for the manufacture, purification, processing,
24 transport, or storage of fusion fuels, including
25 deuterium, tritium, and helium-3.

11

1 “(S) COOLING SYSTEM COMPONENTS.—

2 The term ‘cooling system components’ includes
3 chillers, fluid coolers, distribution systems, and
4 similar components that cool mechanical or
5 electrical components (such as high-temperature
6 superconducting magnets) during normal oper-
7 ations.

8 “(T) FUSION TARGETS.—The term ‘fusion
9 targets’ means components that—

10 “(i) contain the fusion fuel in the fu-
11 sion chamber, and

12 “(ii) receive energy from lasers or
13 electrical circuits to cause such fusion fuel
14 to undergo a fusion reaction.

15 “(U) DIELECTRIC FLUIDS AND SYS-
16 TEMS.—The term ‘dielectric fluids and systems’
17 means—

18 “(i) electrically-insulated fluids, such
19 as transformer oil or deionized water used
20 for electrical insulation, and

21 “(ii) any associated equipment needed
22 to move and maintain the physical prop-
23 erties of such fluids, such as pumps, filtra-
24 tion systems, and cooling systems.

1 “(V) CONTROLS EQUIPMENT.—The term
2 ‘controls equipment’ means any hardware or
3 software used to electronically control any sub-
4 system of a fusion energy machine.”, and

5 (D) in paragraph (7) (as redesignated by
6 subparagraph (B) of this paragraph)—

7 (i) in subparagraph (D)(i), by insert-
8 ing “beryllium hydroxide, or beryllium flu-
9 oride,” after “copper-beryllium master
10 alloy,”,

11 (ii) in subparagraph (P)(i), by strik-
12 ing “or lithium hydroxide” and inserting “,
13 lithium hydroxide, lithium chloride, lithium
14 fluoride, lithium-6, lithium-7, or lithium
15 tetrafluoroberyllate”,

16 (iii) by striking subparagraphs (X)
17 and (Y) and inserting the following:

18 “(X) TUNGSTEN.—Tungsten which is—

19 “(i) converted to tungsten master
20 alloy,

21 “(ii) converted to ammonium
22 paratungstate, ferrotungsten, tungsten tri-
23 oxide, or tungsten carbide, or

24 “(iii) purified to a minimum purity of
25 85 percent tungsten by mass.

13

1 “(Y) VANADIUM.—Vanadium which is—
2 “(i) converted to vanadium master
3 alloy,
4 “(ii) converted to ferrovanadium or
5 vanadium pentoxide, or
6 “(iii) purified to a minimum purity of
7 85 percent vanadium by mass.”,
8 (iv) in subparagraph (AA)—
9 (I) by redesignating clauses
10 (xxiii) through (xxv) as clauses (xxvi)
11 through (xxviii), respectively,
12 (II) by redesignating clauses (vii)
13 through (xxii) as clauses (ix) through
14 (xxiv), respectively,
15 (III) by redesignating clauses
16 (iii) through (vi) as clauses (iv)
17 through (vii), respectively,
18 (IV) by inserting after clause (ii)
19 the following new clause:
20 “(iii) Deuterium.”,
21 (V) by inserting after clause (vii)
22 (as redesignated by subclause (III) of
23 this clause) the following new clause:
24 “(viii) Helium-3.”, and

1 (VI) by inserting after clause
2 (xxiv) (as redesignated by subclause
3 (II) of this clause) the following new
4 clause:

5 “(xxv) Tritium.”,

6 (v) by redesignating subparagraphs
7 (I) through (AA) as subparagraphs (K)
8 through (CC), respectively,

9 (vi) by redesignating subparagraphs
10 (E) through (H) as subparagraphs (F)
11 through (I), respectively,

12 (vii) by inserting after subparagraph
13 (D) the following new subparagraph:

14 “(E) BORON.—Boron which is converted
15 to boron carbide or ferroboration.”, and

16 (viii) by inserting after subparagraph
17 (I) (as redesignated by clause (vi) of this
18 paragraph) the following new subpara-
19 graph:

20 “(J) COPPER CHROMIUM ZIRCONIUM.—Al-
21 loys or assemblies comprised of not less than 80
22 percent copper.”.

23 (b) CONFORMING AMENDMENT.—Section
24 30D(e)(1)(A) of the Internal Revenue Code of 1986 is

1 amended by striking “section 45X(c)(6)” and inserting
2 “section 45X(c)(7)”.

3 (c) EFFECTIVE DATE.—The amendments made by
4 this section shall apply to components produced and sold
5 after December 31, 2025.