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Section 45X (Advanced Manufacturing Production Credit) and the Proposed Regulations: A Review

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On December 15, 2023, the Treasury Department and the IRS released Proposed Regulations under Code Section 45X (Advanced Manufacturing Production Credit). Comments on the proposed regulations are due by February 13, 2024, and a public hearing is scheduled for February 22, 2024. The Proposed Regulations are Sections 1.45X-1 through 1.45X-4 (referred to herein as the "Guidance"). A detailed review of Section 45X and the Guidance is provided below.

Editorial note: Section 45X is quite complex. We are setting forth the relevant rules in an outline and bullet point format. Italicized words and phrases are important defined terms in the rules. Relevant examples from the Proposed Regulations are simplified.

OVERVIEW OF SECTION 45X

Section 45X is a general business credit under Code Section 38. It provides a tax credit equal to the sum of the specific credit amounts listed under Section 45X(b) for each *eligible component produced by a taxpayer within the United States or a U.S. territory* (including continental shelf areas described in Code Sections 638(1) and (2)) during a taxable year and *sold by the taxpayer to an unrelated person* in the taxpayer's trade or business.

Section 45X(b)(1)(A) through (M) and section 45X(b)(2) set forth the credit amounts for each type of *eligible component* that is sold by the taxpayer to an *unrelated person*. With the exception of the production and sale of applicable critical minerals, the tax credit amounts under Section 45X are subject to phase-out rules. Specifically, for any eligible component sold during calendar years 2030, 2031, and 2032, the phase-out percentages are 75 percent of the otherwise allowable credit amount in 2030, 50 percent of the otherwise allowable credit amount in 2031, and 25 percent of the otherwise allowable credit amount in 2032. After December 31, 2032, no Section 45X credit is permitted, other than for the production and sale of applicable critical minerals.

The term *eligible component* is generally defined in Section 45X as any solar energy component, any wind energy component, any inverter described in Section 45X(c)(2)(B) through (G), any qualifying battery component, and any applicable critical mineral listed therein.

The box below provides a detailed summary of the specific kinds of eligible components and their credit amounts set forth in Section 45X. Feel free to skip over this box and continue reading the summary of the Guidance.

GENERAL CATEGORIES OF ELIGIBLE COMPONENTS AND CREDIT AMOUNTS*

Inverters. Section 45X(c)(2)(A) generally defines an "inverter" as an end product that is suitable to convert direct current (DC) electricity from one or more solar modules or certified distributed wind energy systems into alternating current (AC) electricity. Section 45X(c)(2)(B) through (G) define the following different types of eligible inverters: central inverter, commercial inverter, distributed wind inverter, microinverter, residential inverter, and utility inverter. The credit prices for inverters are as follows:

- The credit price is an amount equal to the product of (i) the *applicable amount* with respect to such inverter multiplied by (ii) the capacity of such inverter (on a per alternating current watt basis).

The *applicable amount* with respect to any inverter is:

- central inverter, 0.25 cents
- utility inverter, 1.5 cents
- commercial inverter, 2 cents
- residential inverter, 6.5 cents
- microinverter or a distributed wind inverter, 11 cents

* Section 45X and the Guidance provide more specific definitions for each solar, wind, inverter and battery component for which credits are allowable.

Solar energy component. Section 45X(c)(3)(A) defines a “solar energy component” as a solar module, photovoltaic cell, photovoltaic wafer, solar grade polysilicon, torque tube, structural fastener, or polymeric backsheet. The credit prices for solar energy components are as follows:

- thin film photovoltaic cell or a crystalline photovoltaic cell, an amount equal to the product of (i) 4 cents, multiplied by (ii) the capacity of such cell (on a per direct current watt basis)
- photovoltaic wafer, \$12 per square meter
- solar grade polysilicon, \$3 per kilogram
- polymeric backsheet, 40 cents per square meter
- solar module, an amount equal to the product of (i) 7 cents, multiplied by (ii) the capacity of such module (expressed on a per direct current watt basis)

Wind energy component. Section 45X(c)(4)(A) defines a “wind energy component” as blades, nacelles, towers, offshore wind foundations, and related offshore wind vessels. The credit prices for wind energy components are as follows:

- if the component is a related offshore wind vessel, an amount equal to 10 percent of the sales price of such vessel
- otherwise for all other components, the credit price is an amount equal to the product of – (i) the applicable amount with respect to such component, multiplied by (ii) the total rated capacity (on a per watt basis) of the completed wind turbine for which such component is designed

The applicable amount for any of the following wind energy components is:

- blade, 2 cents
- nacelle, 5 cents
- tower, 3 cents
- an offshore wind foundation that uses a fixed platform, 2 cents, or a floating platform, 4 cents
- torque tube, 87 cents per kilogram
- structural fastener, \$2.28 per kilogram

Qualifying battery component. Section 45X(c)(5)(A) defines a “qualifying battery component” as electrode active materials, battery cells, and battery modules. The credit prices for qualifying battery components are as follows:

- electrode active materials, an amount equal to 10 percent of the costs incurred by the taxpayer with respect to production of such materials
- battery cell, an amount equal to the product of (i) \$35, multiplied by (ii) the capacity* of such battery cell (expressed on a kilowatt-hour basis)
- battery module, an amount equal to the product of (i) \$10 (or, in the case of a battery module which does not use battery cells, \$45), multiplied by (ii) the capacity* of such battery module (expressed on a kilowatt-hour basis)

**The capacity with respect to a battery cell or battery module cannot exceed a capacity-to-power ratio of 100:1 (the ratio of the capacity of such cell or module to the maximum discharge amount of such cell or module).*

Applicable critical mineral. Section 45X(c)(6) provides the following list of 50 minerals that if converted or purified to specified purities are considered an “applicable critical mineral” for purposes of the Section 45X credit: aluminum, antimony, arsenic, barite, beryllium, bismuth, cerium, cesium, chromium, cobalt, dysprosium, erbium, europium, fluor spar, gadolinium, gallium, germanium, graphite, hafnium, holmium, indium, iridium, lanthanum, lithium, lutetium, magnesium, manganese, neodymium, nickel, niobium, palladium, platinum, praseodymium, rhodium, rubidium, ruthenium, samarium, scandium, tantalum, tellurium, terbium, thulium, tin, titanium, tungsten, vanadium, ytterbium, yttrium, zinc, and zirconium. The credit price for all applicable critical minerals is as follows:

- an amount equal to 10 percent of the costs incurred by the taxpayer with respect to production of such mineral

In all cases, the Guidance requires detailed substantiation that all requirements for meeting the definition of eligible component and the relevant details of the sales are maintained. In the case of critical minerals, costs include all costs as defined in Reg. 1.263A-1(e) for the production of critical materials only, except direct or indirect materials costs as defined in § 1.263A-1(e)(2)(i)(A) and (e)(3)(ii)(E), respectively, and any costs related to the extraction of raw materials.

OVERVIEW OF PROPOSED REGULATIONS 1.45X-1 THROUGH 1.45X-4

Proposed Regulation § 1.45X-1: General rules, including the definition of the term “produced by the taxpayer” for both primary and secondary production.

The taxpayer claiming a Section 45X credit with respect to an *eligible component* must be the taxpayer that *directly performs the production activities that bring about a substantial transformation resulting in the eligible component, and must sell such eligible component to an unrelated person* (except as described below for certain sales to related persons who then sell the component to an unrelated person).

Eligible components must be produced by the taxpayer.

- This means a process conducted by the taxpayer that substantially transforms constituent elements, materials, or subcomponents into a complete and distinct eligible component that is functionally different from that which would result from mere assembly or superficial modification of the elements, materials, or subcomponents.
 - This does NOT include partial transformation that does not result in substantial transformation.
 - This does NOT include minor assembly of two or more constituent elements, materials, or subcomponents, or superficial modification of the final eligible component, if the taxpayer does not also engage in the process resulting in a substantial transformation.
- Special rule. For solar grade polysilicon, electrode active materials, and applicable critical minerals, the term *produced by the taxpayer* means processing, conversion, refinement, or purification of source materials, such as brines, ores, or waste streams, to derive a distinct *eligible component*.
- Special rule for contract manufacturing arrangement (CMA). If the production of an eligible component is performed in whole or in part pursuant to a *contract manufacturing arrangement (CMA)*, then the party to such

Examples of eligible components produced or not produced by the taxpayer

Example. Taxpayers X, Y, and Z each produce one of three sections of a wind tower that together make up the wind tower. No taxpayer has produced an eligible component within the meaning of Section 45X(a)(1)(A) because no taxpayer has produced all sections of the wind tower.

Example. Same facts as above, but taxpayers X, Y, and Z instead form Partnership XYZ. Partnership XYZ produces all three sections of the wind tower. Partnership XYZ has produced an eligible component within the meaning of Section 45X(a)(1)(A).

Example. Taxpayer U purchases two finished halves of a wind turbine nacelle and combines them into a single nacelle. Taxpayer U has engaged in minor assembly and has not produced an eligible component within the meaning of Section 45X(a)(1)(A).

Example: Contract manufacturing with sale

Taxpayers X, Y and Z are unrelated C corporations that have calendar year taxable years. In 2024, pursuant to a contract manufacturing arrangement, X hires Y to produce a solar module. The contract is a tolling arrangement and provides that Y will produce the solar module according to X’s designs and specifications and using the materials and subcomponents that X provides.

X and Y enter into an agreement providing that X is the sole party that may claim a Section 45X credit for the production and sale of the solar module, and X and Y each sign a certification statement reflecting this agreement. In 2025, Y produces and delivers the solar module to X, and in 2026, X sells the solar module to Z. X may claim a Section 45X credit in taxable year 2026 for the solar module it sold to Z provided all other requirements of Section 45X are met and the certification statements signed by X and Y meet the requirements described in the Guidance and are properly submitted by X. Similarly, Y could claim a Section 45X credit if the agreement between X and Y had designated Y as the sole party that could claim a Section 45X credit for the production and sale of the solar module, provided all other requirements of Section 45X are met and the certification statements signed by X and Y meet the requirements described in the Guidance and are properly submitted by Y.

contract who may claim the Section 45X credit is the party that performs the actual production activities that bring about a substantial transformation resulting in the eligible component. **The parties to a CMA may determine by agreement which party may claim the Section 45X credit. Parties must sign a certification statement as to such agreement. The contents of the certification statement are set forth in the Guidance.**

- A CMA is defined as any agreement providing for the production of an eligible component if the agreement is entered into before the production of the eligible component to be delivered under the contract is completed. A CMA excludes certain routine contracts for off the shelf property.

Produced in the U.S. The eligible component must be produced in the U.S. or its territories. However, constituent elements, materials, and subcomponents used in the production of eligible components are not subject to the domestic production requirement.

Sales of integrated components. A taxpayer is treated as having produced and sold an eligible component to an unrelated person if such component is *integrated, incorporated, or assembled* into another eligible component that is then sold to an unrelated person.

- Integrated, incorporated or assembled means the production activities by which an eligible component that is a constituent element, material, or subcomponent is substantially transformed into another complete and distinct eligible component that is not solar grade polysilicon, an electrode active material, or an applicable critical mineral. The term integrated, incorporated, or assembled does NOT mean the mere assembly or superficial modification of an eligible component used as an element, material, or subcomponent and other elements, materials, or subcomponents that results in a distinct product.
- For solar grade polysilicon, electrode active material, and applicable critical minerals, the term integrated, incorporated, or assembled means the production activities in which an eligible component is processed, converted, refined, or purified to derive a distinct eligible component that is solar grade polysilicon, an electrode active material, or an applicable critical mineral.

Example: Sale of product with incorporated eligible components to an unrelated person

In 2022, X, a domestic corporation that has a calendar year taxable year, begins production of electrode active materials (EAMs) that are completed in 2023 and incorporated into battery cells that X also produces. In 2024, X incorporates those battery cells into battery modules (within the meaning of the Guidance) and integrates the battery modules into electric vehicles. X sells the electric vehicles to Z, an unrelated person, in 2024. X may claim a Section 45X credit for the EAMs, the battery cells, and the battery modules in 2024.

Proposed Regulation § 1.45X-2: Rules for sales to unrelated persons through a person related to the taxpayer.

Relatedness. For purposes of the limitation on sales to related parties under Section 45X, a taxpayer is related to another taxpayer if they would be treated as a single employer under Section 52(b) of the Code. Section 52(b) generally provides that trades or businesses that are partnerships, trusts, estates, corporations, or sole proprietorships under common control are members of a controlled group and are treated as a single employer. See § 1.52-1(b). Corporations that are members of a controlled group of corporations are treated as a single employer. Section 52(a) provides that a controlled group of corporations is defined with reference to section 1563(a) of the Code.

Relatedness Rule #1: General Related Party Sale Rule. A taxpayer is treated as selling an eligible component to an unrelated person if such component is sold to that unrelated person by a person who is a related person to the taxpayer. In other words, a taxpayer sells an eligible component to an affiliate of taxpayer (that qualifies as a related person under the Relatedness rule above) in, for example, an intercompany sale, and the affiliate sells the eligible component to an unrelated taxpayer – this is OK, but take into account the rules below.

- A taxpayer producing eligible components may make an election under Section 45X(a)(3)(B) (Related Person Election), to treat a sale of eligible components by such taxpayer to a related person as if such sale were made to an unrelated person (based on the fact that the related person will then sell to the unrelated buyer).

- A member of a consolidated group that sells eligible components in an intercompany transaction may make the Related Person Election to claim the Section 45X credit in the year of the intercompany sale.
- A taxpayer must make an affirmative Related Person Election annually on the taxpayer's timely filed original federal income tax return, including extensions. The Related Person Election will be applicable to all sales of eligible components to related persons by the taxpayer for each trade or business that the taxpayer engages in during the taxable year that resulted in a Section 45X credit claim and for which the taxpayer has made the Related Person Election.
- A separate Related Person Election must be made with respect to related person sales made by a taxpayer for each eligible trade or business of the taxpayer. The election is irrevocable for the taxable year for which the election is made.

Relatedness Rule #2: Sales of eligible components integrated into other eligible components. A taxpayer that produces and then sells an eligible component to a related person, who then integrates, incorporates, or assembles the taxpayer's eligible component into another complete and distinct eligible component that is subsequently sold to an unrelated person, may claim a Section 45X credit with respect to the taxable year in which the related person's sale to the **unrelated** person occurs.

Example: Sales of multiple incorporated eligible components to related and unrelated persons

W, X, and Y are domestic C corporations that are members of a group of trades or businesses under common control under Section 52(b), and thus are related persons under Section 45X. Each of W, X, and Y has a calendar year taxable year. W produces electrode active materials (EAMs) and sells the EAMs to X in 2023. In 2024, X incorporates the EAMs into battery cells that it produces and sells the battery cells to Y. In 2025, Y incorporates the battery cells into battery modules (within the meaning of Reg. § 1.45X-3(e)(4)(i)(A)) that it produces and sells the battery modules to Z, an unrelated person.

W may claim a Section 45X credit for EAMs sold to X, X may claim a Section 45X credit for the battery cells sold to Y, and Y may claim a Section 45X credit for the battery modules sold to Z in 2025, the taxable year of each of W, X, and Y in which the battery modules are sold to Z.

Relatedness Rule #3: Special rules applicable to sales of integrated components (Rule #2) and the Related Person Election (Rule #1). If a taxpayer makes a valid Related Person Election under Section 45X, and the taxpayer produces and then sells an eligible component to a related person, who then integrates, incorporates, or assembles the taxpayer's eligible component into another complete and distinct eligible component that is subsequently sold to an unrelated person, the taxpayer's sale of the eligible component to the related person is treated (solely for purposes of the Section 45X credit and the Section 45X regulations, and the regulations under Sections 6417 and 6418 related to the Section 45X credit) as if made to an unrelated person in the taxable year in which the sale to the **related** person occurs.

Proposed Regulation § 1.45X-3: more detailed definitions and credit amounts for certain eligible components, including solar energy components, wind energy components, inverters, and qualifying battery components; and phase-out rules.

The definitions and terms in Proposed Regulation Section 1.45X-3 are highly technical and industry-specific. They provide a closer look at specific items that constitutes solar energy components, wind energy components, and other eligible components as well as the computation of the credit amounts for the various specified components and required substantiation. The reader should refer to the regulatory text for more detail.

Proposed § 1.45X-4 provides definitions and credit amounts for applicable critical minerals that are eligible components.

The definitions and terms in Proposed Regulation 1.45X-4 are highly technical and industry-specific. They provide a closer look at the specific applicable critical minerals, the computation of the credit amounts for such minerals, and the required substantiation. The reader should refer to the regulatory text for more detail.

Anti-Abuse. Finally, it is important to note that while production tax credits in general do not have recapture or a recapture period, the Guidance under Section 45X contains specific anti-abuse provisions (see e.g. Prop. Reg. 1.45X-1(i)(1) (general anti-abuse rule) and 1.45X-2(d)(4) that make "the section 45X credit *unavailable in extraordinary circumstances*" (emphasis added). This includes exploiting Section 45X in a manner that is "wasteful" (for example, where the cost of producing eligible components is less than the credit amount and production is intended simply to exploit this difference) as well as circumstances of duplication, fraud or excessive credit amounts. Taxpayers producing eligible components must be mindful of these rules in connection with any utilization, sale, or direct payment of the Section 45X credits.



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