



**Industrial
Innovation
Initiative**

a partnership between Great Plains Institute and
World Resources Institute

From: Industrial Innovation Initiative, I³

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Re: Request for Comments on Energy Security Tax Credits for Manufacturing Under Sections 48C and 45X

Background

The Treasury Department and the Internal Revenue Service have a crucial role to play in advancing the tax provisions needed to support the full scope of necessary for industrial decarbonization by midcentury. This task, however, cannot be accomplished alone and there is a critical need for cross-agency coordination if the US is to decarbonize these sectors effectively and efficiently. In response to the Request for Comments on Energy Security Tax Credits for Manufacturing Under Sections 48C and 45X, the Industrial Innovation Initiative (I³) has prepared the following document.

About I³

The [Industrial Innovation Initiative \(I³\)](#) is an ambitious coalition which aims to advance solutions key to decarbonizing the industrial sector through policy development and implementation, technology demonstration and adoption, and demand-side market development. The Initiative builds on years of stakeholder engagement and extensive work by its co-conveners, Great Plains Institute and World Resources Institute (WRI), to collaborate with government officials and advance decarbonization solutions important to the industrial sector.

I³ values a stable climate, a safe and healthy environment, thriving livelihoods for American workers, and a strong US economy. I³ supports policies that will put American industry on a path to net-zero emissions, retain and create high-wage jobs, and advance technology leadership and economic competitiveness. The Initiative convenes key industry, environmental, labor, and other stakeholders, to advance cross-cutting strategies, policies, and programs for achieving industrial decarbonization by midcentury.

.02 Qualifying Advanced Energy Project Credit (§ 48C)

(1) Section 48C(c)(1)(A)(i), as amended by the IRA, includes additional types of equipment and property that may be produced or recycled at a project that re-equips, expands, or establishes an industrial or manufacturing facility.

(a) Is guidance needed to define “equipment designed to refine, electrolyze, or blend any fuel, chemical, or product which is renewable, or low-carbon and low-emission”? If so, how should this be defined?

Guidance to define “equipment designed to refine, electrolyze, or blend any fuel, chemical, or product which is renewable, or low-carbon and low-emission” is needed, and should include equipment to both produce the “fuel, chemical, or product,” (i.e., hydrogen electrolysis equipment) and that equipment which captures onsite emissions but does not “refine, electrolyze, or blend” (i.e., point source carbon capture equipment).

To define “low-carbon and low-emission”, comprehensive lifecycle assessment (i.e., well-to-gate) carbon accounting should be used as the basis for standards and requirements to qualify for the 48C credit. In the case of low-carbon hydrogen, we encourage consistency with the Clean Hydrogen Production Standard (CHPS) established as required by the Bipartisan Infrastructure Law (BIL).

Hydrogen will be an instrumental chemical and fuel to reduce industrial feedstock, heat, and power emissions. Currently, 95 percent of hydrogen is produced from steam methane reforming with natural gas, the vast majority of which releases byproduct CO₂ into the atmosphere. Scaling up clean hydrogen (as defined by the CHPS) will require technologies that produce low- and zero-carbon hydrogen, including:

- Electrolysis using electricity generated from renewable, nuclear, geothermal, or hydroelectric energy; Electrolyzers should include but are not limited to polymer electrolyte membranes (PEM), alkaline, and solid oxide.
- Natural gas with carbon capture technology designed to capture at least 95% of emissions at the point of production or methane pyrolysis that prevents CO₂ formation in the first place;
- Biomass gasification with carbon capture technology, using waste biomass rather than purposefully grown energy crops.

Such technologies should be included in these definitions. Additionally, while lowering carbon emissions is critical to achieving U.S. climate goals, IRS and Treasury should, wherever possible, take into consideration the other environmental pollutants which can adversely affect the health of communities in and around industrial facilities.

(c) What should the Treasury Department and the IRS consider in determining “other advanced energy property designed to reduce greenhouse gas emissions”?

In addition to Property Type V, technology designed to manufacture low-carbon industrial feedstocks may also be considered, likely under “energy efficiency” guidance. Inclusion of clean hydrogen as a reducing agent in steel production or chemical plants creating clean methanol, ammonia, or converting CO₂ and hydrogen to syngas with reverse-water-gas-shift has significant potential to reduce emissions.

Feedstocks can complicate energy efficiency accounting in the industrial sector; a key example of which can be found in industrial chemicals. Chemical production is the largest industrial energy user because it includes energy within the fossil feedstocks that are converted into products and the energy needed to power the manufacturing process. Guidance will be needed to determine if feedstock efficiency will be counted as power and heat savings.

(2) Section 48C(c)(1)(A)(ii) adds to the list of eligible projects any project which re-equips an industrial or manufacturing facility with equipment designed to reduce greenhouse gas emissions by at least 20 percent through the installation of certain systems, including through the installation of energy efficiency and reduction in waste from industrial processes.

(a) Is guidance needed to define “energy efficiency”? If so, how should this be defined?

Guidance to define “energy efficiency,” and guidance regarding the framework and standards that will be used to determine if a 20 percent reduction has been achieved will be necessary. Guidance should consider the scope of emissions (for example, per the Greenhouse Gas Protocol, will energy be measured across Scopes 1-3?), if energy will be quantified in watts or British Thermal Units (BTUs), and if energy efficiency will include electricity, heat, and feedstock energy.

(b) Is guidance needed to define “reduction in waste from industrial processes”? If so, how should this be defined?

Additional guidance should be given related to waste reduction as waste can be understood from both material and energy perspectives.

Waste heat may be utilized on site by cascading waste heat from processes that generate and require high temperatures to those that require less heat. This kind of process allows for a reduction in the overall energy needed while reducing energy waste.

Material efficiency includes innovative processes to reduce the inputs needed or the waste generated, novel mixes or feedstocks, and the use of recycled materials in the production process. These innovations allow for less waste and fewer carbon emissions throughout each life-cycle stage.

(c) Is guidance needed to define baseline criteria, boundary conditions and/or timeframe to determine achievement of the 20 percent threshold?

Guidance will be needed to ensure that there are consistent and meaningful emissions reductions. The guidance should utilize full lifecycle assessments, clarify where along the lifecycle that 20 percent reduction is achieved, and to whom it is attributable to if reductions are achieved. Emission reductions can occur at material extraction, transport, processing, and use, but the activities are attributable to different entities. Would the project operator still receive the tax credit if reductions were attributable to another entity along the lifecycle? These types of boundary considerations must be defined, possibly with further clarifications on transferability of credits where needed.

(3) What should the Treasury Department and the IRS consider in determining “any other industrial technology designed to reduce greenhouse gas emissions”?

Is guidance needed to include eligibility of facilities currently producing industrial materials for use in the construction or alteration of buildings and infrastructure projects (such as concrete, steel, asphalt, and flat glass) that can be retrofitted to produce materials that have substantially lower levels of embodied greenhouse gas emissions?

If it is the intention of the Treasury Department and IRS to include property types which currently produce construction materials, then additional guidance will be necessary. The current emphasis on “energy” in the text would seem to preclude other forms of low-carbon manufacturing. Retrofitting construction material manufacturing is one way to decarbonize up the supply chain for clean energy projects which utilize things like steel, however, ensuring the manufacturers benefitting from this credit create products which end up in clean energy projects would take additional reporting. As the credit is competitive and capped at \$10 billion in value, additional guidance will be needed to ensure the correct manufacturers apply for the credit and it is distributed effectively.

(7) Please provide comments on any other topics that may require guidance.

Related to Section 2.02 (4) Denial of Double Benefit, we recommend this provision be revisited, as broad deployment of Property Types IV (carbon capture, removal, use, and sequestration) and V (such in the case of clean hydrogen) may be challenging when faced with a choice between 48C and 45Q/45V, respectively. Costly upgrades and retrofits will be required in the initial rollout of these technologies, and credit stacking will help support early adopters.

I³'s coalition of industry stakeholders are here to connect

The information contained within this document represents a small fraction of the collective knowledge and expertise of our participants. Additionally, this document was prepared with the input and feedback of I³ participants but does not reflect the express opinion of each participating organization. Members of I³ are ready and willing to connect with the Treasury and IRS to provide key industry, labor, environmental, and business perspectives from our stakeholder group. The Initiative meets bi-monthly and is happy to schedule ad hoc meetings to facilitate vital discussions such as these. If you would like to connect with us directly, please reach out to I³ Project Manager, Gabrielle Habeeb, at ghabeeb@gpisd.net, and we will gladly arrange a meeting.