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Our reference: Filed electronically (Federal eRulemaking Portal – IRS-2022-58)
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December 2, 2022

Internal Revenue Service
CC:PA:LPD:PR (Notice 2022-58)
Room 5203, P.O. Box 7604
Ben Franklin Station
Washington, DC 20044

Dear Sir or Madam,

thyssenkrupp nucera appreciates the opportunity to provide comments in response to IRS Notice 2022-58, particularly as it relates to the clean hydrogen production credit under § 45V of the Internal Revenue Code ("§ 45V credit"). We recognize the significant effort of the U.S. Government to pass legislation including the Bipartisan Infrastructure Law ("BIL") and the Inflation Reduction Act ("IRA") and administer federal programs including the Department of Energy's ("DOE") Hydrogen Shot Program to accelerate the production and utilization of low-cost clean hydrogen in the United States. We also recognize that these historic achievements build upon years of bipartisan efforts to grow support for clean hydrogen policies. These policies are essential to scaling up clean energy solutions, addressing climate change, creating well-paying jobs for millions of Americans, and making energy cleaner, more affordable, and secure across the United States.

thyssenkrupp nucera shares the U.S. Government's view of the important role of clean hydrogen in meeting climate and decarbonization targets, and stands ready to support its wide-scale deployment across the country. Our company plays a critical role in helping to realize this vision through our leading technologies and solutions for high-efficiency industrial scale electrolyzers, including water-electrolysis technology and chlor-alkali electrolysis technology. Importantly, given the federal investments, incentives, and guidelines laid out by the U.S. Government, we understand the lowest carbon intensity to be electrolytic "green" hydrogen, which we produce. For the purposes of this comment, we will use the term "clean hydrogen" to refer to federally supported hydrogen projects.

By way of background, thyssenkrupp nucera is part of thyssenkrupp, a global player in technology with more than 100,000 employees worldwide. Headquartered in Dortmund, Germany, we have six locations in Perth, Riyadh, Houston, Milan, Shanghai, and Tokyo, as well as testing facilities in Okayama, Duisburg, and Gersthofen. Our U.S. headquarters are in Houston, Texas and we are pursuing several large-scale projects across the United States.

At thyssenkrupp nucera, we have more than 50 years of experience and extensive knowledge in the engineering, procurement, and construction of electrochemical plants and a strong track record of more than 600 projects with a total rating of over 10 gigawatts ("GW") already successfully installed worldwide. Based on the longstanding success of our chlor-alkali business, we are able to provide world-leading electrolysis technology on an industrial scale for green value chains and an industry fueled by clean energy – a major step towards climate-neutrality. Our 20 megawatt ("MW") alkaline water electrolysis ("AWE") technology unit is setting a benchmark in water electrolysis technology worldwide. It offers high current density operation with an optimized footprint, and matches the highest market and cyclical green energy (e.g., solar, wind, hydro) production demands. Prefabricated modularized AWE units can be easily transported, installed, and interconnected to obtain the desired plant capacity. Importantly, the carbon

operational expenditure footprint is reduced to zero using 100% clean energy, and no CO2 is emitted during operation.

thyssenkrupp nucera hopes to ensure that the clean hydrogen production tax credit and all related U.S. policies are designed to achieve their intended goal of accelerating the production and adoption of low-cost clean hydrogen. This is our objective as a global company with a long-standing presence in North America, where we have already realized a total capacity of over 1.4 GW of electrochemical projects in the last 30 years, and where we are exploring opportunities for expansion. To this end, we have laid out several general considerations in response to Notice 2022-58 below, pertaining to:

1. The need for simple regulations that encourage the production of the least carbon-intensive, lowest-cost clean hydrogen through a phased approach.
2. Alignment with the Clean Hydrogen Production Standard and the need for consistency across all federal incentives.
3. The importance of practical and feasible recordkeeping and reporting requirements.
4. The importance of an efficient and effective rulemaking and implementation process.

In addition, we are providing high-level thoughts on the following specific questions, drawing from our experience supporting various stakeholders across the clean hydrogen market with electrolysis technologies:

1. *Section 3.01.01.c.i;* and *3.01.01.c.ii:* How should lifecycle greenhouse gas emissions be allocated to clean hydrogen that is a by-product of industrial processes, such as in chlor-alkali production or petrochemical cracking?; and How is byproduct hydrogen from these processes typically handled (for example, venting, flaring, burning onsite for heat and power)?

2. *Section 3.01.01.e.ii:* What granularity of time matching (that is, annual, hourly, or other) of energy inputs used in the qualified clean hydrogen production process should be required?

General Considerations:

1. **The need for simple regulations that encourage the production of the least carbon-intensive, lowest-cost hydrogen through a phased approach.** To deliver on the U.S. Government's ambitious cost-reduction targets for clean hydrogen, a clear yet simple regulatory framework is required. The sliding scale approach to the tax credit focused on life-cycle carbon emissions provides that framework by setting a clear direction and incentivizing the least carbon-intensive hydrogen. It also takes into account technological developments over time as well as producers' ability to source primary energy inputs that may be contingent on project development and other important factors. Setting overly rigid rules at this critical juncture could have the opposite effect and may be detrimental to technological progress, investment decisions, and, ultimately, clean hydrogen scale-up.

2. **Alignment with the Clean Hydrogen Production Standard and the need for consistency across all federal incentives.** Consistency across diverse federal incentives and regulations - production, permitting, transport, etc. - is key to lowering the costs of producing and consuming clean hydrogen in the United States and, in turn, helping to foster a robust clean energy ecosystem in this country, one that can compete globally as well. If not sufficiently addressed, gaps in the federal hydrogen regulatory structure and the resulting lack of clarity and certainty may hinder investment decisions.

3. **The importance of recordkeeping and reporting requirements that are practical and feasible.** This means focusing on the production aspect of the clean hydrogen equation and not requiring unnecessary and potentially onerous reporting on the deployment of clean hydrogen. This approach will ensure that agency resources are used most efficiently by eliminating complicated tracking and reporting mechanisms for diverse stakeholders.

4. **The importance of an efficient and effective rulemaking and implementation process.** A significant increase in electrolysers will be essential to achieving national and international climate targets and indeed, at thyssenkrupp nucera, our top priority is enhancing the speed and scale of this effort. That's why regulations should be designed to be practical, straightforward, and not overly burdensome to ensure the country can deploy alternative fuels "as fast as possible," as said by U.S. Secretary of Energy Jennifer Granholm. This will make the United States a great place for clean hydrogen producers to do business.

Specific Responses:

1. **Section 3.01.01.c.i; and 3.01.01.c.ii: How should lifecycle greenhouse gas emissions be allocated to clean hydrogen that is a by-product of industrial processes, such as in chlor-alkali production or petrochemical cracking?; and How is byproduct hydrogen from these processes typically handled (for example, venting, flaring, burning onsite for heat and power)?**

   As a leading global supplier of the chlor-alkali membrane technologies needed to produce clean hydrogen, thyssenkrupp nucera feels uniquely qualified to speak on the questions outlined in 3.01.01.c.i and 3.01.01.c.ii and firmly believes that this credit needs to value all clean hydrogen, including clean hydrogen produced as a byproduct of industrials processes including chlor-alkali production and petrochemical cracking as identified in the question itself. Additionally, we understand that clean hydrogen can also be produced as a byproduct of lithium (or other metals) mining recycle brine/water recovery production, and believe that clean hydrogen production process should also be valued alongside the two identified by the IRS. Doing so will further incentivize and promote industry growth, as well as continue to inspire the right environmental behavior by incentivizing the capture and utilization of byproduct clean hydrogen for use itself. However, it is important to note that some byproduct hydrogen may not be able to meet the 4kg CO2/kg H2 production credit standard due to downstream needs for facility location (>=15% green electricity consumption), and without a production tax credit, it may be lost to venting or flaring.

2. **Section 3.01.01.e.ii: What granularity of time matching (that is, annual, hourly, or other) of energy inputs used in the qualified clean hydrogen production process should be required?**

   thyssenkrupp nucera has analyzed questions of qualified clean hydrogen production processes as detailed in 3.01.01.e.ii, and fully recognizes the importance of the principle of additionality, namely the idea that additional renewable electricity consumption should be covered by additional renewable capacity. However, we recommend the IRS express caution around the practical implementation of additionality principle criteria to ensure full incentivization of clean hydrogen.

At thyssenkrupp nucera, we consider clean, electrolytic hydrogen to be a critical tool for decarbonizing diverse sectors, driving an energy transition, and achieving climate targets. We recognize that the IRA and the measures captured in IRS Notice 2022-58 represent important steps toward incentivizing the production and consumption of clean

hydrogen and clean energy in the United States. We hope that our comments can be useful insights as the rulemaking process begins so that implementation is practical and straightforward and takes into account the impact of regulations on all stakeholders. We appreciate your consideration and are available to answer any questions you may have.

Sincerely,

DocuSigned by:
Juergen Grasinger
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Juergen Grasinger
Managing Director
thyssenkrupp nucera USA Inc.