23 February 2024

The Honorable Daniel Werfel
Administrator
Internal Revenue Service
1111 Constitution Avenue Northwest
Washington, D.C. 20224

Dear Hon. Mr. Werfel,

On behalf of Industrie De Nora, the world's leading electrodes producer and JV partner in ThyssenKrupp Nucera, I would like to set forth our concerns regarding the proposed guidance for the 45V Tax Credit of the Inflation Reduction Act (IRA).

Founded in Milan, Italy by Oronzio De Nora in 1923, Industrie De Nora has firmly established itself as the global leader in electrode production and is the proud holder of the most patents for water electrolysis technologies worldwide. De Nora has been active in the US since 1997 and today employs over 500 of the country's brightest minds across four states. In Northeast Ohio, De Nora retains over 300 full-time employees at our plant, offices, and R&D facilities. We are currently constructing a hydrogen gigafactory near our headquarters in Milan (with an expected production capacity of 2 GW) and are in the process of planning global expansions focused on the hydrogen economy, including in the US.

De Nora had initially welcomed the release of the IRA and its common-sense approach to kickstart hydrogen. The proposed incentive structure was clear, with varying levels of support linked to every kilogram of H_2 produced. For us this was especially important, as we have seen first-hand the impact that stringent green hydrogen regulations, in particular the European Union's RED II Delegated Acts, can have on a regional hydrogen ecosystem. The three-pillar approach outlined by the EU in 2022 and adopted in 2023, which has been echoed almost word-for-word in the 45V guidance, had significantly reduced our market expectations and affected regional expansion plans. In one of our planning scenarios, expected EU electrolyzer installations in 2030 were reduced by 12.5 GWs, resulting in a missed CO_2e abatement opportunity of ca. 20 MTPA (Pathways to Commercial Liftoff Clean Hydrogen, U.S. Department of Energy).

Although we remain dissatisfied with the EU's approach, we were consoled by the assumption that other geographies, especially the US, would respond with regulations that fully consider the industrial perspective and technical realities of the green hydrogen production process. However, if the US adopts similar rules such as hourly matching and strict incrementality, we expect a similar reduction in projects (decrease of over 10 GWs of expected US electrolyzer installations in 2030) and therefore a lower electrode capacity requirement for the region. As such, we are concerned that the US Treasury could propose regulations that would be less effective in achieving one of the main objectives of the IRA - to develop the domestic clean energy supply chain, including electrolyzers. The current proposed rulemaking does not allay these fears.

Considering the proposed 45V guidance, with stringent requirements such as hourly correlation and strict incrementality, we observe and foresee:

- **Green hydrogen reduced to a niche role in the US**
- Discriminatory treatment compared to other green technologies like Electric Vehicles
- No real phase-in window for temporal correlation considering 20+ year project lifetimes
- **Delayed decarbonization of hard-to-abate sectors including steel, refining, and chemicals**
- Increase of up to 175% in Levelized Cost of Hydrogen (LCOH) according to Wood Mackenzie
- Raised LCOH estimates to $5-8 /kg which exceed the aforementioned sectors' willingness-to-pay
- Delayed hydrogen deployment due to slow permitting and development of grid interconnects
- **Negative impact on the deployment of green hydrogen production projects (>10 GW less by 2030)**
- Ca. 15 MPTA missed CO_2e abatement opportunity according to above estimation and DoE factors
- Lack of first wave of projects needed to fully develop the domestic green hydrogen supply chain
- Reduced need for investment in regional electrode capacity scale-up

The proposed guidelines, if adopted as-is, would not be satisfactory for De Nora, one of the key enablers the hydrogen revolution. Through our JV partner ThyssenKrupp Nucera, we are present within over half of all funded green hydrogen project capacity today. The world's largest projects, such as NEOM (2.2GW), H2GreenSteel (>700MW), and Holland Hydrogen (200 MW) have all been able to take Final Investment Decisions (FID) based on the strength of De Nora's advanced alkaline electrodes in ThyssenKrupp Nucera's electrolysis systems.

As a key player in the hydrogen market, we hope our observations and suggestions will be fully considered. With planned expansions on the table, our US expectations will have to be recalibrated if the legislation remains unchanged. As previously mentioned, such regulation would decrease our installed electrolysis capacity expectations by more than 10 GWs in 2030, further resulting in ca. 15 MTPA of missed CO_2 abatement opportunity. The need to import our world-leading industrial know-how and make immediate capital investments in the US would be quite muted if green hydrogen were reduced to a niche role in the country due to the proposed regulations. By way of example, we have potential investments in the US ranging from $100 - $200 mln that would bring in at least 200 full-time green energy jobs and over $20 mln of disbursed salaries over the next ten years. We are ready to invest strongly in the US hydrogen economy, and specifically in Northeast Ohio, a key Rust Belt community that we would take great pleasure in revitalizing with high-paying STEM jobs, close collaboration with local universities, and significant economic development activities.

In order to properly launch the US hydrogen ecosystem and remain in-line with the goals of the IRA, De Nora suggests amending the current 45V guidance with the following provisions:

- **Capacity exemptions on temporal correlation requirements for all projects taking FID before 2028.** Financial analysis demonstrates that a 15% capacity exemption in all regions except CAISO and other solar intensive regions (such as Arizona, Nevada, and Utah) would enable developers to achieve a competitive LCOH in line with offtaker willingness-to-pay. Solar intensive regions would instead require a 30% exemption to be within range. Additionally, from a technical perspective, continuous operation (even at a reduced capacity) is critical for many offtake sectors such as chemicals and refining, but also for guaranteeing long-term electrolyzer performance by avoiding the inevitable daily startup and shutdowns foreseen with hourly matching. These capacity exemptions are unlikely to impact the merit order dispatch in almost all non-peak hours, and would give developers the certainty needed to launch the first wave of bankable projects that are required to fully develop and scale-up the domestic green hydrogen supply chain.

- **Increased incrementality exemptions to at least 10% for existing renewables, hydroelectric, and nuclear power facilities.** Existing carbon-free energy sources should be utilized, within reason, to kickstart the green hydrogen economy. With strict incrementality, we foresee major delays in hydrogen deployment due to long lead times for electric grid interconnects. Exemptions can also serve to extend the lifespan of aging hydroelectric and nuclear power production facilities.

- **Utilize Hourly Averaging of Carbon Intensity (CI) in the GREET model.** The guidance does not make clear whether the CI calculation is based on hourly or annual averaging. This is also quite linked to the first point - while industrial offtakers can reduce operating capacity, there are operating penalties for ramp ups, ramp downs, and cold starts, for both the industry and electrolyzer.

In our experience, we have seen first-hand that improper regulation can lead to less projects, investments, and jobs. While we can all agree where green hydrogen needs to be in the future, we need to get there with a step-by-step approach that can effectively develop and scale-up the domestic supply chain. De Nora looks forward to working with the IRS on the implementation of the 45V tax credit program. We would appreciate the opportunity to testify during the public hearing on March 25 to present these concerns, and would be happy to address questions at any time. Thank you for the consideration of these comments.

Sincerely,

Paolo Dellachà

CEO, Industrie De Nora