Secretary Janet Yellen
Treasury Department
1500 Pennsylvania Avenue NW
Washington, D.C. 20220

***Dear Secretary Yellen,***

***Re:*** ***Comments on Section 45V Credit for Production of Clean Hydrogen; Section 48 (a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property (Notice of REG-117631-23)***

Ørsted appreciates the opportunity to submit the following comments in response to the Request for Comments on the Inflation Reduction Act's ("IRA") Section 45V Credit for Production of Clean Hydrogen and Section 48 (a)(15) Election to Treat Clean Hydrogen Production Facilities as Energy Property Notice.

## I. About Ørsted

Ørsted's goal as a global developer, builder, owner, and operator of renewable energy projects is to create a world that runs entirely on green energy. Ørsted is not only the global leader in offshore wind, with a portfolio including 3GW under development off the east coast of the U.S., we are one of the largest land-based renewable energy companies in the world. Our 4GW land-based U.S. portfolio includes 11 wind farms, four solar farms, and one battery energy storage facility operating and under construction in the U.S., with additional projects in various stages of development.

Ørsted established a Power-to-X ("P2X") business unit five years ago. We realized that while the first and largest decarbonization targets are those that can be electrified and supplied with renewable power, there are many hard-to-electrify sectors for which a renewable molecule will be needed for full economy-wide decarbonization.

P2X is currently building FlagshipONE, which when operational in 2025 will produce 55,000 tons of e-methanol a year from a 70MW electrolyzer. We have a

pipeline of P2X projects in the US, including Project Star, which when operational will provide 300,000 tons per year of e-methanol to Maersk for its growing fleet of methanol-powered ships.

Ørsted and our partners were successful in being selected as a hydrogen hub by the Department of Energy ("DOE"). This $7 billion program funded by the Bipartisan Infrastructure Law ("BIL") will provide $1.2 billion to the HyVelocity Hydrogen Hub which includes Project Star. We are proud to be a part of this transformative effort to create a robust hydrogen economy. Ørsted believes that 45V's final guidance and the hub program will be foundational in growing the nascent hydrogen economy and positioning the U.S. to be the global leader in providing the fuels of the future.

## II. Summary

Ørsted applauds the work of the Treasury Department on the draft guidance for Section 45V, the Hydrogen Production Tax Credit ("PTC"). We believe the economic and decarbonization potential that green hydrogen and e-fuels holds for the US is tremendous; but, that substantial supply chain build up, midstream ecosystem establishment, and cost out is needed before the industry can reach a sustainable growth level to realize this opportunity. The hydrogen PTC is the key to setting the right pace of progress, and therefore the rules of the 45V must be established in a way that adequately incentivizes supply into the market. Ørsted believes modifications and clarity on three aspects of the draft guidance will ensure that the intent of the bills' sponsors and the Biden-Harris Administration is realized: to accelerate the growth of the US clean hydrogen economy while reducing carbon emissions and encouraging domestic economic growth.

As such, Ørsted proposes three changes to the draft guidance:

- Temporal Matching adjustment: Allow up to 15 percent of the electrolyzer capacity when "start of construction" occurs no later than January 1, 2028, and "placed in service" no later than January 1, 2032, to qualify for the life of the PTC by matching Energy Attribute Credits (EACs) annually, with the remaining 85 percent capacity required to match hourly starting in 2032.

- Additionality allowance: Use a simple Formulaic Approach to allow up to 10 percent of the capacity of zero carbon generation projects that were operational before Jan 1, 2023 to satisfy the additionality requirement.

- GREET Model application: Lock in the GREET Model version at "start of construction" for the full 10-year PTC term for that project; rather than requiring that projects comply with a GREET Model that changes annually.

Ørsted believes these measures strike the right balance of facilitating the growth and maturation of the nascent green hydrogen industry in the US, creating good paying jobs that can't be offshored, catalysing billions of dollars of capital investment, and ensuring a reduction in carbon emissions. If the final guidance incorporates our recommendations, market liftoff will occur and with it the tremendous economy-wide decarbonization potential of green hydrogen and e-fuels will be realized.

## III. Temporal Matching

Ørsted recommends the final rule allow up to 15 percent of the electrolyzer capacity to qualify for the life of the PTC by matching Energy Attribute Credits ("EACs") annually for projects where "start of construction" occurs no later than January 1, 2028, and "placed in service" no later than January 1, 2032. The remaining 85 percent capacity would be required to match hourly EACs starting in 2032 per the original guidance.

The current guidance proposes that hourly matching be required by January 1, 2028. Ørsted's analysis suggests that this contradicts the Administration's goal to incentivize early movers and achieve market actuation for the clean hydrogen sector. The guidance appears intended to provide an economic benefit to early mover projects before 2028, however, as proposed, will provide no such incentive and instead burdens all projects with the same hourly cost requirements. We are concerned this will delay supply chain buildup and prevent the needed virtuous cost-out cycle, stifling the green hydrogen industry in the U.S. The result will be the U.S. failing to realize tremendous economic growth, creation of good paying jobs, and the benefits of decarbonizing hard to electrify sectors.

The draft guidance's hourly matching requirement, during any period of the PTC term, effectively requires the project to design for hourly matching from the start of project development. This puts the cost burden of hourly matching on all

projects and does not incentivize early movers. An operating project switching from annual to hourly matching will need to either immediately reduce its electrolyzer capacity factor and production volume or add new electrolyzer capacity to produce the same volume at the new, lower capacity factor. Reducing volume output is challenging because the nascent green hydrogen market requires long-term offtake contracts to finance projects, which are not amenable to reducing offtake volume during the term. The project would need to build substantial onsite storage or connect to a hydrogen pipeline network to buffer the now intermittent output for offtakers, the majority of which require steady state supply. Alternatively, to increase capacity to maintain the same production, a green hydrogen facility must now make a substantial capital investment, undergo meaningful re-engineering of the facility, upsize the grid interconnection or increase onsite renewable power supply, and introduce various new commercial risks. Some of those risks include procuring additional renewable power, water, transportation and storage, and other feedstocks and services critical to the success of the project's business case.

These capital investments or commercial risks during the operational phase of a project not only substantially negatively impact the project's business case but are untenable to tax equity investors or other financing options. Ørsted has heard this concern directly expressed from several tax equity and renewable financing market participants. Critically, this means that any project that must change mid-operations to an hourly matching paradigm will simply design and build their facility to be hourly matching at COD, effectively burdening itself with all the additional CAPEX and OPEX costs through the life of the project as if there were no period of annual matching.

The solution to this is to provide projects certainty of their temporal matching paradigm through the term of the PTC. Orsted proposes incentivizing early movers and compensating them for the higher cost basis and risk they incur as such, by allowing their projects to maintain some annual matching allowance through full 10-year PTC term.

Ørsted's analysis of temporal matching finds that the majority of the LCOH benefit of annual matching can be achieved with a small allowance measured as a percentage of the electrolyzer's capacity, with the majority required to hourly match. Analysing two hypothetical electryolyzers in CAISO procuring EACs from

solar projects, we found that up to 15 percent of electrolyzer capacity being matched annually for the life of the PTC can provide 75 percent or more of the LCOH benefit that would be achieved if 100 percent of capacity were allowed to match annually (Figure 1). This logic holds true in other markets, and in fact should be even more pronounced in markets with ready access to both wind and solar resources.

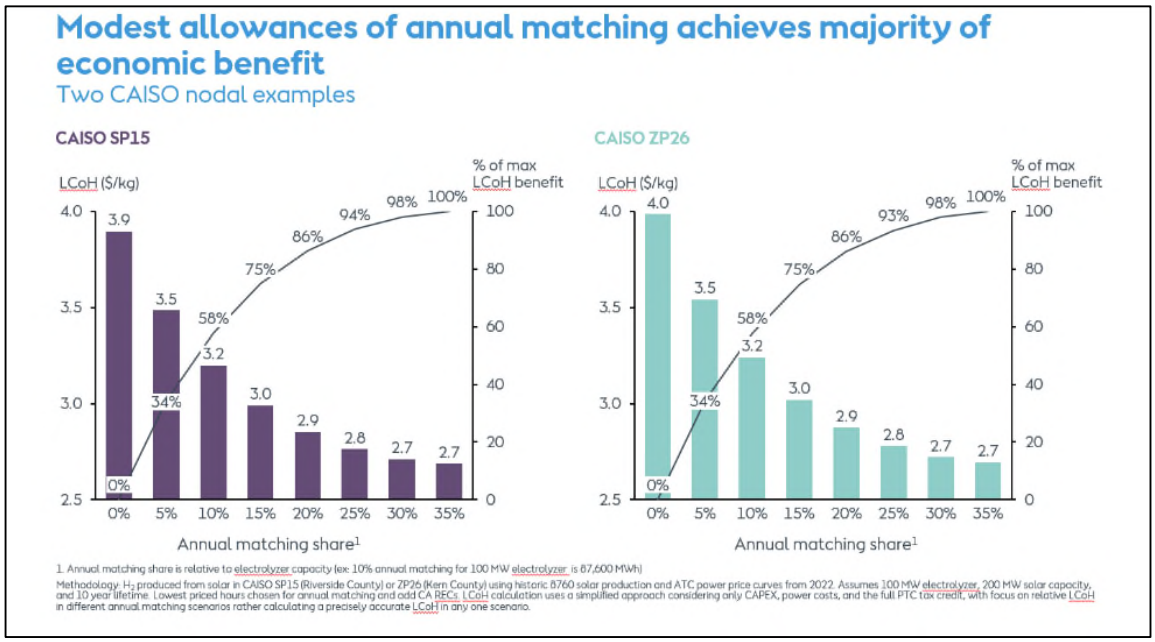

Figure 1. LCOH benefit as a function of percentage annual matching allowed through full 10-year term of PTC

Recognizing the potential induced emissions concerns raised with annual matching, Ørsted proposes this 15 percent allowance as a pragmatic approach. Not only will this approach provide outsized LCOH benefits to projects and result in substantial green hydrogen buildout, but it will minimize any potential emissions concerns relative to a full annual matching scenario.

Furthermore, it should be noted that the current temporal matching guidance's 2028 date for the beginning of hourly matching is too early. The electrolyzer supply chain is still in its infancy and likely will be unable to supply meaningful capacity for early mover projects before this date. It is highly unlikely that a network of regional EAC systems for tracking and recording will be established and well-tested to operate with hourly data by this date across markets. This will create tremendous investment uncertainty preventing financing and limiting the number of projects that would otherwise be economically viable.

As such, Ørsted recommends that Treasury adopt a timeline such that any project where "start of construction" occurs by 2028, and is "placed in service" by 2032, be allowed a 15 percent annual matching allowance through the 10-year PTC term. All other projects would be required to shift fully to hourly matching in 2032. The "start of construction" is a mechanism already in place in the renewable industry and is familiar to tax equity investors and project finance.

## IV. Additionality

Ørsted is supportive of the adoption of a Formulaic Approach using a single nationwide allowance value for the percentage of capacity of assets operating before January 1, 2023, to qualify as additional. Ørsted supports the rationale for the Formulaic approach that Treasury sets out in the draft guidance, emphasizing that the value of simplicity both to project developers and to Treasury cannot be overstated. A more complex case-by-case system would likely lead to large project delays and increased uncertainty for investors.

Ørsted agrees with the draft guidance's use of curtailment as a proxy to determine an appropriate percentage. However, the current recommendation of five percent is too conservative and to achieve that goal up to 10 percent should be allowed, particularly because as renewable penetration increases, curtailment will also increase. If Treasury does not grant the higher allowance percentage, Ørsted recommends that Treasury establish a mechanism to revise the national allowance every three years.

## V. Application of the GREET Model

Ørsted recognizes the value of utilizing the GREET model to track emissions given it is a well-established tool. We recommend modifying the requirements in the guidance to establish that the GREET model that is in place as of January 1st of the year in which "start of construction" occurs applies to that project through its full life. This recognizes the need for developers to accurately predict project compliance to secure financing.

The potential for assumptions of lifecycle emissions to change annually after "start of construction" increases the risk that projects could move in and out of compliance from year-to-year, having a significant impact on the engineering and design of the project. Developers cannot model compliance with a metric that could change in unknown ways throughout the project lifecycle. The level of uncertainty caused by this inconsistent compliance framework would result in an unreliable business case which is a barrier to securing tax equity investment and

project financing. The result of the complexity and uncertainty that could occur will result in fewer projects built in the U.S.

## V. Conclusion

Ørsted appreciates the opportunity to respond to this request for a Notice of REG-117631-23, and we would be pleased to discuss these comments at your convenience.

Sincerely,

Tommy Gerrity
Tommy Gerrity (Feb 26, 2024 15:02 CST)

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Tommy Gerrity
Head of P2X Americas, Ørsted