I'd like to submit that for wind and/or solar powered electrolysis systems, if they are also connected to the electric power grid, that if these systems do not include key accounting requirements (a) and (b) below, then they stand to have serious unintended consequences including: (1) increased co2 emissions; (2) increased stress on our bulk power grids; and (3) stimulating the direct need for new dispatchable fossil power generation capacity.

To avoid the serious unintended consequences #1-3 above, two key accounting principles are needed: (a) the wind and solar power ascribed to the electrolyzer via PPA or RECs needs to be "local" to the electrolyzer in the sense of being in the same electrical pool via interconnected transmission; and (b) the correlation of the wind and solar energy production to the electrolyzer load need occur, and be accounted for, on an "hourly" or sub-hourly basis.

Without key accounting principles (a) and (b) above, the "green" hydrogen 45V subsidy stands to have serious unintended consequences #1-3 listed above, and this would be a double shame because of just how extraordinarily large the total "green" hydrogen subsidy is.

The key to understanding just how large this subsidy is is to understand that the IRA seems to explicitly allow a double subsidy on the same overall process including the $3/kg production tax credit ("PTC") for the hydrogen produced, on top of the wind and/or solar subsidies on the electricity input to the electrolyzer to produce the hydrogen. So it's a double PTC on the same process, you use the electricity to produce the hydrogen as end product, but you get a subsidy on the electricity input, and then again on the hydrogen output. Furthermore, electrolysis is an inefficient energy process with 35-45% of the energy lost, or destroyed, in the process to producing hydrogen at the "gate" (and more losses for liquefaction, transport, etc.). With the double PTC subsidy though the IRA would allow wind PTC subsidy on all of this destroyed or lost electricity, and then again another PTC subsidy for the resulting hydrogen.

So when you add up the wind PTC (including subsidy for electricity losses in the process to h2), plus the $3/kg hydrogen PTC, the subsidy per CO2 avoided *if* you assume net-zero hydrogen is an absolutely staggering $500 per ton!!! For context, this compares to a decarbonization cost for standard wind electricity onto the grid of ~$70/ton CO2 avoided, and CCS (carbon capture and sequestration) 45Q subsidy amount of $85/ton CO2 avoided. So the "green" hydrogen total subsidy per CO2 avoided is roughly 7x(!) more subsidy (or cost) per unit of decarbonization than CCS or standard wind/solar grid power. This incredible all-in subsidy level of $500/ton is not sustainable and not an effective decarbonization strategy or fair or sustainable use of taxpayer money, our world can get multiples (7x!) better "bang for the buck" in the energy transition of decarbonization by incentivizing standard wind, solar, storage, and CCS. At a $500/ton level it is a terribly inefficient decarbonization strategy even if you assume the "green" hydrogen is net-zero.

However even more concerning is that if key accounting principles (a) and (b) are not follow above, then the subsidy will critically be $500/ton for a *false* CO2 avoided. In fact, it will be massive subsidy to achieve unintended consequences #1-3 above including more co2 emissions, more new fossil power capacity need, and more stress on our electric grids. I do not believe this is the intention, and so this is why I feel the guidance on this specific IRA provision is most critical to responsible energy and decarbonization policy. If Treasury allows annual and/or non-local correlation of wind or solar PPA/RECs with electrolyzer load for the production of "green" hydrogen, then they will be effectively subsidizing "greenwashing", and at massive levels. If this were ultimately picked up by the media it could breed a lose of confidence in energy and climate policy, and counterintuitively slow the energy transition and continued progress on decarbonization.

Thank you for considering these serious concerns and comments regarding the 45V $3/kg H2 PTC for "green" hydrogen production.