



## Why Additionality is Not Beneficial to the Clean Hydrogen Production Tax Credit

With the passing of the Inflation Reduction Act (IRA), Congress has made clear its intentions to combat climate change head-on by investing heavily in a broad number of mitigation technologies and strategies. The legislation included several dozen incentives for renewable power development, clean manufacturing, clean buildings, and clean hydrogen, among other things. Specifically, the IRA includes a production tax credit (PTC) providing up to a \$3.00/kg-H<sub>2</sub> production credit for hydrogen produced with less than 0.45 kg-CO<sub>2</sub>/kg-H<sub>2</sub>. As emissions of the hydrogen production increase, the value of the credit correspondingly decreases. Withing the statute, Congress' mandates the emissions be calculated using the Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model or its subsequent updated revisions.

As the Treasury Department considers how to implement all of these various tax incentives, a debate has emerged over whether there should be additional regulations or requirements for hydrogen production to be allowed for the PTC. While well meaning, these additional regulations, such as the "Three Pillars", would only serve to severely restrict the ability of the clean hydrogen economy to scale up and, ultimately, prevent the U.S. from meeting our climate targets.

The Three Pillars framework states that there should be three additional requirements put in place for hydrogen to be eligible for the IRA's tax credits:

- 1) Additionality
- 2) Hourly Time Matching
- 3) Regionality

None of these three concepts are included in the language of the IRA or were considered by members of congress when writing the IRA. In fact, if implemented, these three requirements would be in direct opposition to the express intent of Congress. Each of these concepts is complex and worthy of detailed discussion. Given that, this document will focus solely upon the additionality requirement.

Upon first impression, the additionality principle seems reasonable; however, in practice it would be impossible to administer, counter to Congress' intent, and ineffectual at reducing grid emissions. Here is why:

### 1. Additionality Proposals are Based on Several Oversimplifications and Poor Assumptions

The analysis behind the Three Pillars looked at a static point in time and it assumed that all other existing carbon policies were 100% ineffective. It failed to recognize how federal and state policies are rapidly accelerating investment and improvements in the the grid and its generation mix/cleanliness. For example, significant EPA regulations and government incentives are driving:

- Rapid development and deployment of renewables power sources
- Retirement of old fossil generation assets
- Cleaning of existing grid fossil generation assets

Decarbonizing the electric the grid must be done through regulation of the generators themselves, rather than applying an unprecedented mandate to a single specific industry. Furthermore, modeling by the Princeton group



and projections by organizations such as the IEA have shown that there will be significant renewable power development over the next 10 years – far more than any increased load that green hydrogen production might put on the grid. Moreover, analyses have indicated that an additionality requirement would ultimately do little, if anything, to improve grid emissions.

## 2. Additionality will Massively Complicate and Delay Green Hydrogen Projects and Result in Missed Decarbonization Opportunities

Additionality requirements are adversely impactful to the realities of project development and economy-wide decarbonization. A utility scale green hydrogen electrolysis project will cost hundreds of millions of dollars. A utility scale renewable power project will also cost hundreds of millions of dollars. Compounding these two projects would result in an untenable amount of micro-management and regulatory coordination to ensure that both projects concurrently come online to fulfill additionality requirements. In many instances, this framework would inevitably create stranded assets driven by interconnection backlogs, permitting, construction delays, among a myriad of other project complications. Given the realities of industrial scale project development and the state of existing supply chains, this is a very real possibility. It will be exceptionally hard for a financial institute to finance a project of this scale with the possibility of a production site sitting dormant for potentially several years. The economic risk is too great. Furthermore, bringing these two assets online is no simple task. Interconnecting generation and loads of hundreds of MWs to the existing grid is a feat in and of itself. It will also cost tens of millions of dollars, be dependent upon extremely tight supply chains, have to go through siting, grid analyses, and consideration for how it integrates and ultimately impacts the existing grid development plans.

The interconnection to the grid is a critical point to consider in this. At present, there are ~1,300 GW of renewable projects at various points in the queue. It takes on average 3 years simply to receive approval to build. Given this timing and the rising interconnect costs, the average completion percentages for projects are below 30%. **An additionality requirement would tie hydrogen to this queue and result in a significant delay to when a project could come online.** One PJM official estimated that if a project was put in the queue today (June 2023), it would not be producing before 2030. The window for the PTC would be more than halfway expired. **The reality is that an additionality requirement would fly directly in the face of the intent of Congress, to accelerate the deployment of green hydrogen.**

## 3. Hydrogen Can Make an Immediate Decarbonization Impact Right Now

The proponents of the Three Pillars often point to the potential grid emissions increase that might occur and attribute that to hydrogen. However, this misguided belief fails to recognize that **hydrogen can be used to decarbonize several industries right now and is critically necessary for hard to abate ones** (such as steel, heavy-duty mobility, and ammonia production). Decarbonization policy must consider the decarbonization value of displacing incumbent, carbon-intensive processes substantially contributing to climate change.

Some critics point out that heavy industry, such as steel, is not ready to decarbonize quite yet. Correct – it will be at least 3-5 years before a steel plant is ready to convert to green hydrogen. However, green hydrogen production cannot wait until that point and must scale now. Hard to abate industries require a guaranteed, robust supply of green hydrogen to transition from existing, carbon-intensive practices.



The world cannot afford to delay ramping green hydrogen production until after heavy industry signals its readiness. It will simply take too long to develop, if at all, and the climate crisis will only get worse. **We need to take every action and opportunity to scale green hydrogen production now so that it is sufficiently available enable large scale decarbonization across a range of industries.**

#### 4. Defining Additionality is Complex and Inconsistent

As stated above, to prove that a project was “additional” it must be shown that it would not have been developed in the absence of the green hydrogen electrolyzer project. This would tough to prove given the significant federal and state incentives for renewable development. It could easily be said that a developer was just building a project due to those incentives not the hydrogen facility. This would result in lengthy disputes over whether projects qualify as additional or not. This same challenge was experienced with the Koyoto Protocol, where projects were lost over demonstrating additionality.

In summary, while well-intentioned, the additionality component of **the Three Pillars proposal would only serve to drastically limit the growth and scale up of the green hydrogen economy, if not limit it completely.** The intent of Congress when writing the Inflation Reduction Act was to rapidly incentivize and accelerate the green hydrogen economy, not overly regulate it. If that was the case, then the legislation would have been written far differently. Congress recognized that time is of the essence and the world needs to radically accelerate the adoption of green hydrogen. Imposing the Three Pillars would run directly counter to these goals and our broader climate strategy.