

Using Agreements To Cover Gaps In Hydrogen Storage Regs

By **Omar Samji, Sarah George and Manushi Desai** (June 29, 2023)

Hydrogen is an emerging winner in optimizing the energy transition and reducing dependency on fossil fuels following the inclusion of tax credits for stand-alone storage for the first time under the Inflation Reduction Act.

As of April 3, a staggering \$3 billion has been invested in hydrogen storage projects through 303 deals.[1]

The U.S. Department of Energy recently closed on a \$504.4 million loan guarantee to the Advanced Clean Energy Storage project in Utah, the world's largest hydrogen production and storage facility.[2] This was the first loan guarantee for a new clean energy project by the DOE in almost 10 years, evidencing the rapid growth of investment in hydrogen storage.

Hydrogen storage offers significant advantages due to its high energy density, surpassing that of any other fuel. While it may have a lower energy per unit volume, its higher storage capacity makes it preferable to batteries for small-scale applications and pumped hydro or compressed air energy storage for large-scale utility projects.

The importance of hydrogen extends to its three primary uses — mobility, storage and industrial applications — where it has the potential to decarbonize various industries, including steel, petrochemicals, heavy-duty transportation and public utilities.

Incentives Under the Inflation Reduction Act for Hydrogen Storage

Subject to certain exceptions, Section 48(c)(6) of the IRA defines "energy storage technology" eligible for an investment tax credit to include:

- Properties that store and deliver energy for conversion to electricity or, in the case of hydrogen, store energy, in each case with a nameplate capacity of at least five kilowatt hours; and
- "Thermal energy storage property," which is defined to include systems that facilitate heating or cooling for residential or commercial buildings, and that are directly connected to heating, ventilation or air conditioning systems.

Notably, under Section 48(a)(15) of the IRA, producers have the option to consider clean hydrogen production facilities as energy property, opening the door to investment tax credits. The base amount of this credit is equal to a percentage of the cost of the facility, ranging from 1.2% to 6%, based on the facility's lifecycle greenhouse gas emissions.

With these incentives under the IRA, hydrogen storage facilities have a unique opportunity



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to leverage financial benefits and contribute to a cleaner, more sustainable energy future.

Legal Considerations in Hydrogen Storage Investments

While the IRA is building momentum, the U.S. currently lacks federal regulation governing transportation, production, storage and licensing of hydrogen facilities.

Given the developing nature of regulatory framework and technology, there are some important risk factors to consider, and future uncertainties that may need to be mitigated through project agreements.

Change in Law

Change in law clauses, specifying cost allocation and renegotiation provisions to mitigate risks associated with the introduction of new renewable energy laws and the amendment of existing laws, should be included.

This is particularly important given that clean hydrogen storage tax credits are linked to specific definitions in the IRA, which could potentially be amended. Such clauses should have flexible price changes for both positive and negative impacts.

Ensuring Predictable Revenue Stream

From a financing standpoint, ensuring long-term contracted revenues and back-to-back arrangements signals that the project's cash flows will be sufficient to service the debt, and that the supply chain is synchronized to avoid disruptions — especially for stand-alone storage projects linked to external production, transportation and distribution facilities.

Upgradation Requirement

Given the developing landscape for hydrogen technologies, adequate investments in research and development and allocation of capital for technology and infrastructure upgrades will be needed.

Agreements should anticipate the future obligations of the developer to maintain technology as per industry standards, allocate costs for upgrading technology, and include a right of first refusal for facility expansion or additional supply chain linkage.

Mitigating Operational Risks

Long-term tie-ups for critical feedstock during the production stage, and alternative feedstock supply arrangements in case of force majeure or termination of ancillary agreements, may prove useful. Investors should assess the distance between hydrogen production, storage and end-use sites, and whether adequate transportation infrastructure exists.

Conversion to hydrogen for storage, and conversion from hydrogen for the end use, both cause losses in volume. Liquidated damages can help mitigate transportation or conversion losses.

Liquefied natural gas contracts clarifying transfer of title, quality requirements and other important aspects of energy storage and transportation can be modified for use in hydrogen agreements.

Delays in Project Completion

There are specific deadlines in the IRA for availing the energy storage tax credits. Given the rapidly developing nature of the technology, the law and the hydrogen sector as a whole, completion of construction may occur following the expiration of the tax credits.

Investors should ensure that project agreements capture milestones for project completion adequately. Permit delays could be mitigated by including termination clauses, risk allocation provisions and detailed milestones.

Additional Risks to Consider

Specific industry-related risks such as hydrogen leaks — a concern raised by several technical experts — should be mitigated through insurance coverage, risk allocation, indemnification and performance guarantees.

For emerging technologies, to ensure a guaranteed stable market, long-term off-take agreements that cannot be terminated for convenience upon the arrival of less expensive alternative renewable technologies are crucial.

As tax credits are linked to specific requirements and definitions under the IRA, agreements should include representations, warranties and covenants for compliance with these technical parameters.

Developers should ensure that there are no issues with ownership of land, which can be done by acquiring a clear title or entering into a long-term lease agreement. Investors should ensure that there are specific termination rights in case of any adverse factors affecting ownership.

To encourage uniformity in hydrogen, certification standards may be included in financing agreements — which should also include the ability to incorporate additional standards as they are developed, since most hydrogen certification standards are in the draft stage.

For example, the DOE has released a draft clean hydrogen production standard, and clarified that this standard would be guidance rather than a regulatory standard — leaving flexibility for investors and developers to decide the best method of hydrogen production.[3]

Conclusion

The Inflation Reduction Act has spurred investment in hydrogen storage and production. Despite rapid developments, the U.S. lacks comprehensive regulations surrounding hydrogen and the hydrogen economy is still in its early stages.

Uncertainties can be mitigated through well-crafted project and financing agreements that anticipate growing demands, and changing laws, policies and practices.

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[1] Pitchbook, Emerging Space Brief: Hydrogen Storage, April 13, 2023, <https://pitchbook.com/news/reports/2023-emerging-spacerief-hydrogen-storage>.

[2] U.S. Department of Energy, DOE Announces First Loan Guarantee for a Clean Energy Project in Nearly a Decade, June 8, 2022, <https://www.energy.gov/articles/doe-announces-first-loan-guarantee-clean-energy-project-nearly-decade> (last visited June 12, 2023).

[3] U.S. Department of Energy Clean Hydrogen Production Standard (CHPS) Draft Guidance available at <https://www.hydrogen.energy.gov/pdfs/clean-hydrogen-production-standard.pdf> (last visited May 1, 2023).