Sustainably Siting Green Hydrogen Infrastructure

Chelsea Anderson ENV SP

Introduction

International sustainability disclosures and standards can help developers navigate volatile political structures, inconsistent land use regulations, and various environmental permitting requirements. Sustainability assessments can also be used to educate stakeholders and develop consensus needed for early adopters paving the way.

Methods

Using the Envision framework, developed by the Institute for Sustainable Infrastructure, develop siting and permitting questions that we should consider and use to inform the sustainability, compatibility, and potential for local impacts of green hydrogen infrastructure.

Sustainably site green hydrogen projects by using sustainability assessments that bridge the gap for existing land use and environmental policy.

Complete this survey and join the sustainable green hydrogen conversation!

Results will be posted to my linked-in on a rolling basis following the conference.

verdantas @ CLEANPOWER

Contact me

AMERICAN CLEAN POWER

Discussion

- Utilizing advanced asset monitoring systems to track specific operational data can also be used to inform future siting criteria.
- Water resource assessments for use and disposal (30-80%) are needed that also reflect regional and community specific needs.
- Timing of electrolyzer replacements (~5 yrs.), risk and lifecycle assessments, and availability needs to be considered prior to siting.
- Green hydrogen projects require a combination of skills from both oil and gas and renewables.
- Results that satisfy the widest possible swath of the community come from collaboration discussing items such as byproduct synergies and social benefits during or before the siting process.

A common but false perception that incorporating sustainability is more expensive than conventional approaches, but that is a result of adding sustainability 'features' as an afterthought.

These assessments can be done at any time, prior to siting or during construction and operation.

References

Arsad et al. 2023. Hydrogen electrolyser technologies and their modelling for sustainable energy production: A comprehensive review and suggestions http://www.kit-power-engineering-lab.jp/paper_sougoukougaku2/6%20Hydrogen%20electrolyser%20technologies.pdf

Falcone et al. 2021. Hydrogen economy and sustainable development goals: Review and policy insights. https://www.sciencedirect.com/science/article/pii/S2452223621000626

NRDC et al. 2023. Success of Hydrogen Hubs Requires a Step Increase in Transparency https://www.nrdc.org/bio/erik-kamrath/success-hydrogen-hubs-requires-step-increase-transparency

Tatarenko et al. 2024. Hydrogen State of the Union: Where We Stand in 2024. https://rmi.org/hydrogen-state-of-the-union-where-we-stand-in-2024/?utm_medium=email&utm_source=spark&utm_content=spark&utm_campaign=2024_04_25&utm_term=title-1

World Economic Forum. (2021). 4 technologies accelerating the green hydrogen revolution. Retrieved from https://www.weforum.org/agenda/2021/06/4-technologies-accelerating-green-hydrogen-revolution/