

De-risk green hydrogen development by using smart monitoring and analytics, educating stakeholders, and exploring byproduct synergies.

Green Hydrogen Sustainability and Permitting

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Results will be posted to my linked-in 1 month following the ACP Siting and Permitting conference.

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Introduction

Professionals expanding the conversation by incorporating Envision's sustainability rating system for green hydrogen projects.

Methods

Envision's rating framework was used to develop sustainability-oriented recommendations for how green hydrogen projects can maximize their benefits in terms of sustainability and climate change to support stakeholder engagement and permitting.

Results/Discussion

Consider the following short-term goals to de-risk projects and gain a social license to operate:

- Develop a comprehensive safety and emergency response plan for generation and transportation of hydrogen
- Explore using reject water for agricultural or aquifer recharge and comply with regional water quality board standards
- Consider completing a water resource assessment to determine supply, lifecycle of input and output quality, and long-term availability
- Partner with manufacturers to develop a recycling program for electrolyzer components
- Use certificates of origin to provide traceability to stakeholders and the hydrogen market
- Site projects near customers, existing transportation infrastructure, and in warmer temperatures
- Quantify the net carbon footprint benefits resulting from the project

Long-term goals:

- Request electrolyzer manufacturers design technology to capture oxygen for reuse in the medical industry, atmosphere control, or for wastewater treatment
- Request manufacturers develop a plan to remove or recycle PFAs in electrolyzers

Internet of Things (SCADA)

Advanced monitoring technology, digital twins, and data analytics can be used to maximize production and distribution, quickly respond to changes, and inform offtakers and stakeholders interested in production capacity, optimization, and real-time monitoring of asset health.

Digital twins (AI models) can be used to inform future project designs and balancing components, while considering variables such as weather, demand response, technology upgrades, capital and monitoring expenditure, hydrogen price, and other key-performance-indicators.

These programs are not only a good investment but can be used as an educational or informational tool for a sustainability indicators and to inform stakeholders from policy makers and permitting officials to contractors and investors.

Analytical models can be transformed and used to forecast data for numerous facets of the green hydrogen market including:

- Market Performance
- Job creation and Training Programs
- Grid Reliability
- Public Perception and Awareness

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