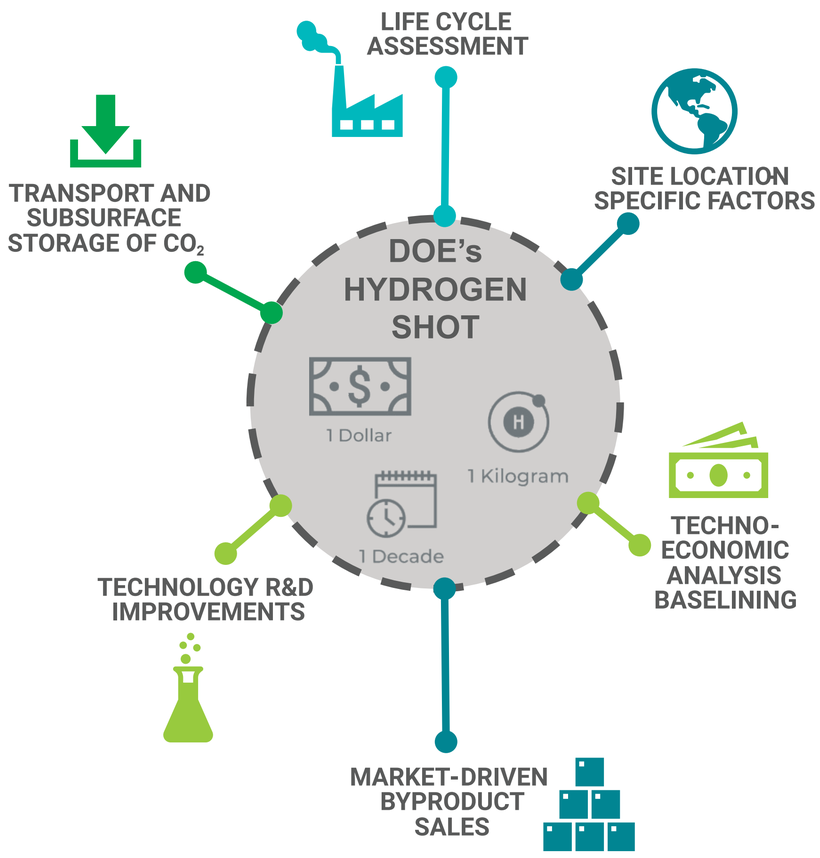
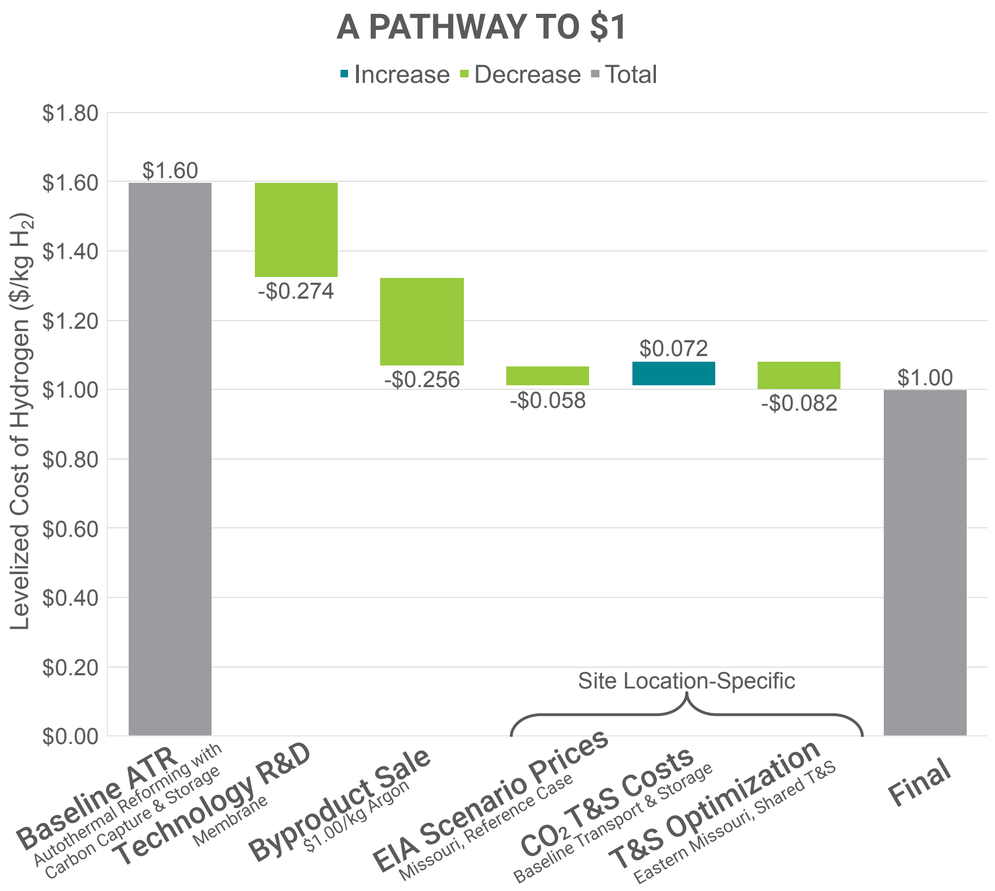
Achieving Affordable Clean Hydrogen To Meet DOE Goals

This pathway study demonstrates the ability of thermal conversion technologies to achieve the DOE Hydrogen Shot Goal of $1/kg H_2 in a decade through a collaborative effort that showcases NETL's competencies.





A multi-competency approach to identify the elements of a successful technology demonstration.

Contributions from multiple NETL competencies were needed to perform integrated system analyses to find pathways to $1/kg H_2 thermal conversion technologies:

- The techno-economic analysis team conducted baseline studies to benchmark costs for commercial technologies. To explore cost reduction options, the team studied plant-scale technologies and implementation of emerging technologies, which can reduce energy consumption or increase conversion efficiencies.
- The energy markets analysis team explored market factors that impact hydrogen costs, e.g., natural gas feedstock and grid electricity prices that can be optimized to reduce hydrogen costs, and recommended byproduct sales options.
- The subsurface team evaluated CO_2 transport and storage options. Hydrogen costs can be lowered by locating plants near geologic storage sites and utilizing shared pipeline infrastructure.
- Since clean hydrogen is essential, the life cycle analysis team evaluated the sensitivity of the system global warming potential to changes in assumptions that impact cost, such as natural gas and grid electricity sources.

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DOE PROGRAM

Hydrogen with Carbon Management

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