

# Reducing the cost of transporting hydrogen by road

11<sup>th</sup> May 2023

Stephen Livermore  
Senior Systems Modeling Engineer

All-Energy, Glasgow



# LIFTE H2 – Unique Hydrogen Solutions

→ LIFTE H2's mission is to empower **energy-intensive businesses** to decarbonize by designing, delivering, and operating clean, affordable, and innovative **hydrogen solutions**.

**LIFTE H2 is a hydrogen infrastructure development company.**

We are a one-stop solutions provider, enabling cost-effective, safe, and reliable infrastructure and operations for our H2 customers.

• EUROPE | NORTH AMERICA | UK



# The LIFTE H2 Team: Unparalleled Hydrogen Expertise

Over 50 employees with an average of eight years of hydrogen experience per person.

Everything needed to ensure customers trust hydrogen for their decarbonization journey:

- Commercial Development
- Project Engineering
- Product Development
- Project Delivery
- Technical Operations
- Supply Chain Development
- Digital Platform

Companies we have worked for:

NUVERA®

RWE



# Customers Struggle to Adopt Hydrogen Solutions Today

## High Cost

Projects built with available products and services are not cost competitive

## Poor Performance

Current systems, and the way they are built and operated, are disruptive to existing operations

## High Barrier to Entry

Saying yes to hydrogen means high upfront capital cost, long lead times, challenging integration

## Poor Reliability

Technologies need iteration, and deployment into projects that are optimized at the supply chain level

### Examples of challenges that limit adoption of Hydrogen Solutions:

- Interfaces between adjacent systems are not optimized
- Regulations, codes, and standards are underdeveloped
- Data access and operations are siloed by technology
- Skilled hydrogen O&M and engineering services are rare
- Business models of incumbents are unfavorable to end-users
- Connecting hydrogen to users requires complex coordination

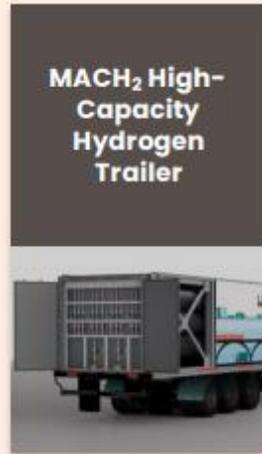
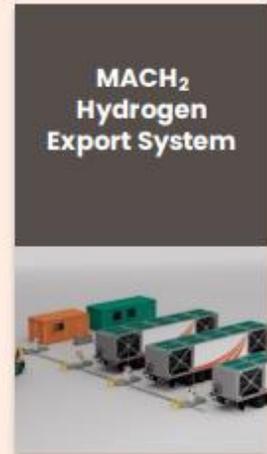
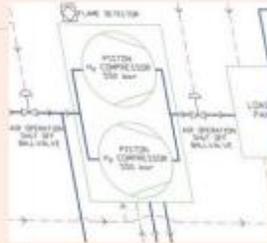
# LIFTE H2: Global Engineering Company with Deep H2 expertise

We develop, deliver, and operate **cost-effective, safe, and reliable** next-generation hydrogen infrastructure that investors want to own and consumers want to use



## SERVICES

LIFTE H2 sells services across the full lifecycle of an asset and based on bona fide hydrogen experience and expertise

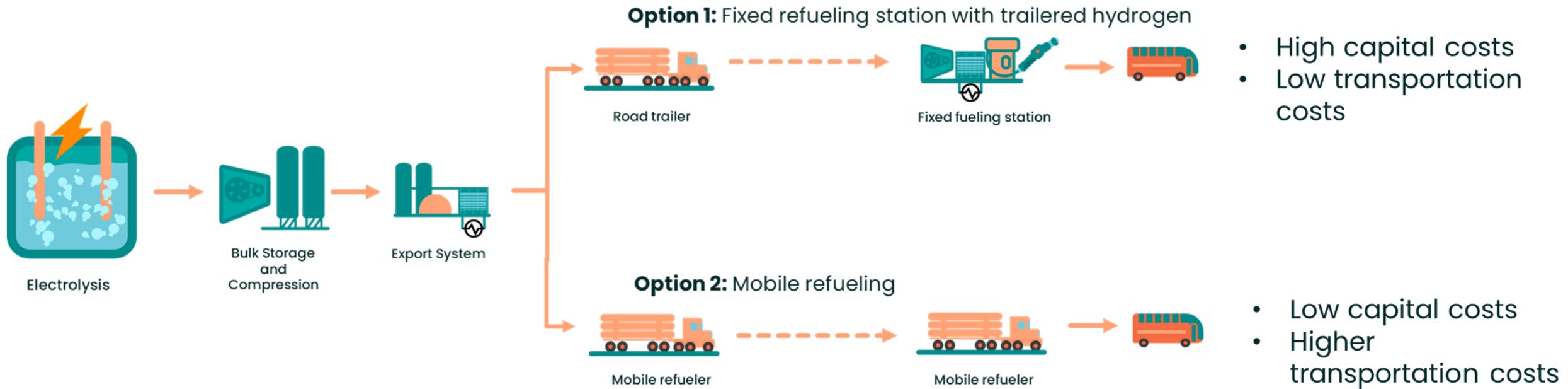


## PRODUCTS

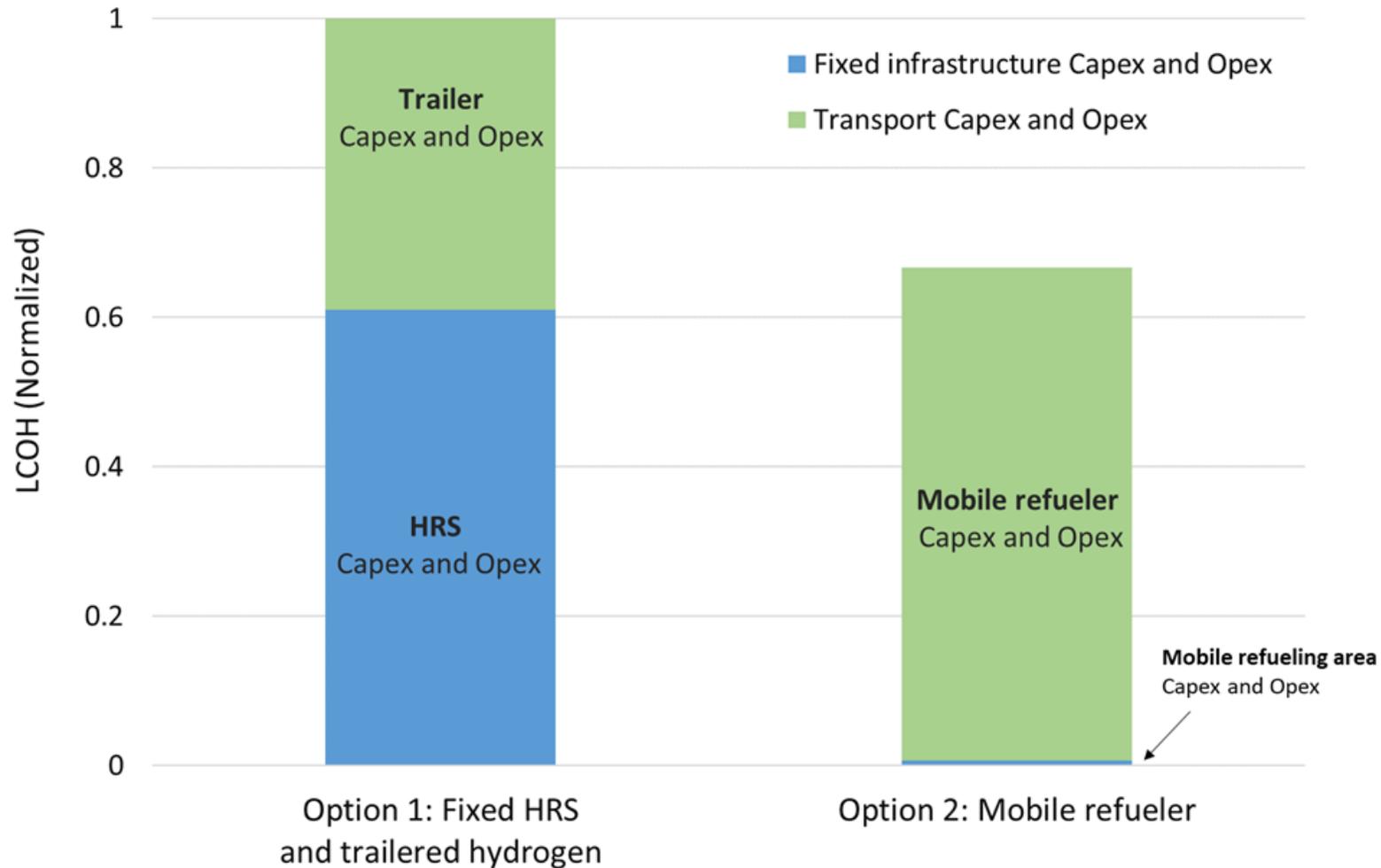
LIFTE H2 sells unique products and a supporting ecosystem, which integrates with partnering technology providers



# Supplying hydrogen for fleet refueling – a cost comparison



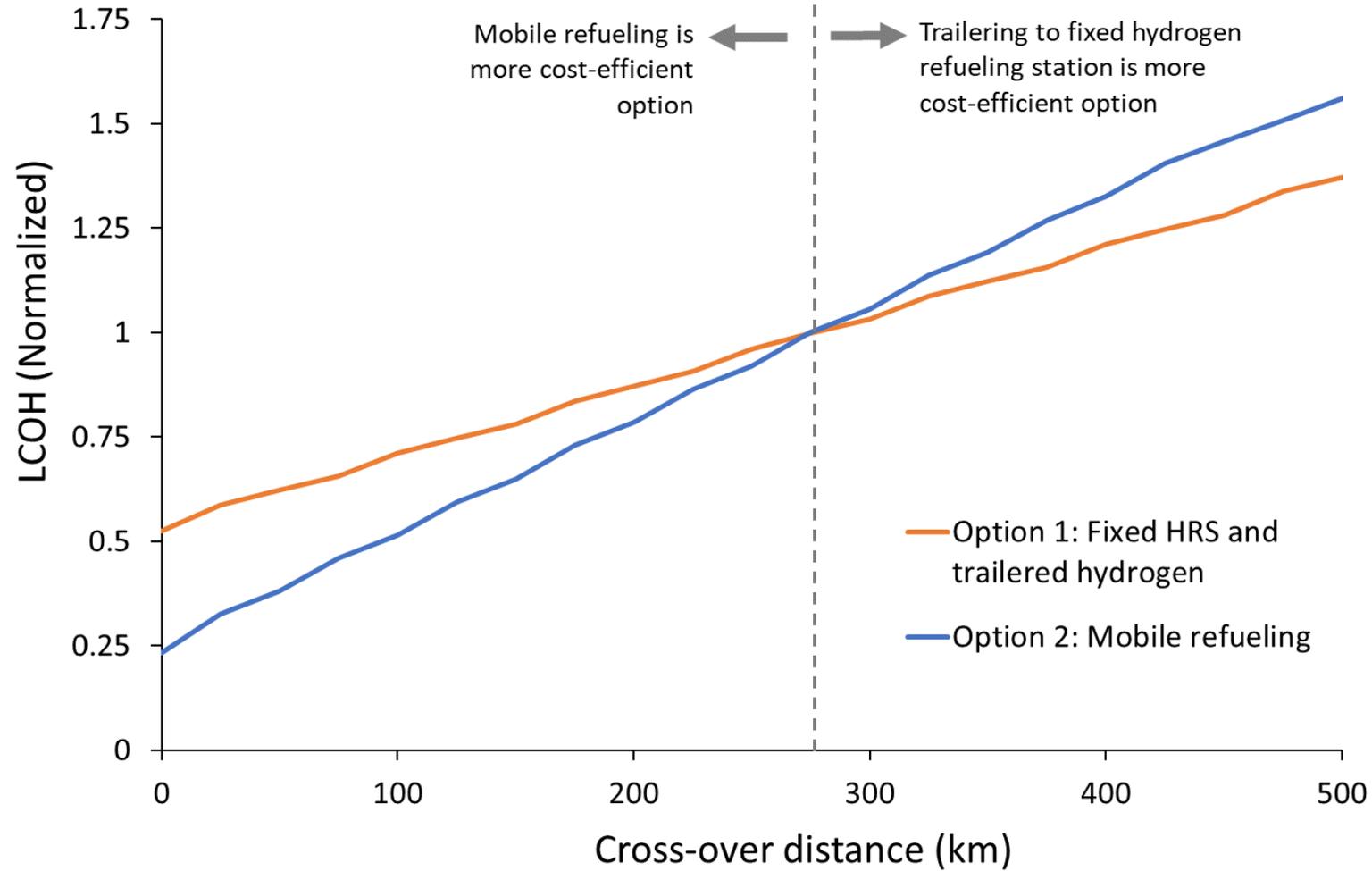
# Cost comparison for 100 km distance



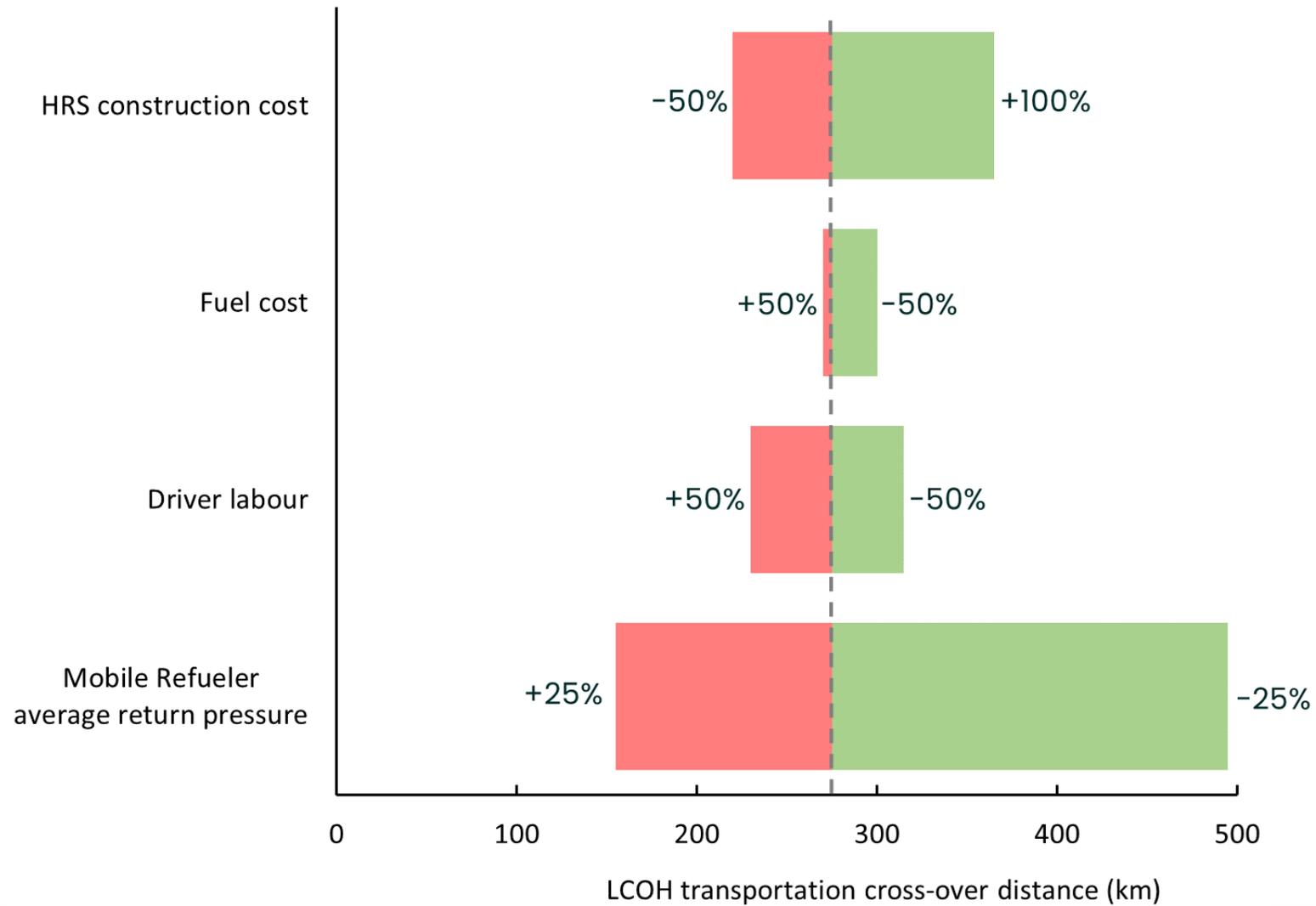
## Assumptions:

- Hydrogen demand: 3 tpd
- 10-year project life
- Discount rate: 8%
- Flat daily vehicle refueling demand (24/7 operation)
- Highest capacity off-the-shelf trailer and mobile refuelers

# Cost comparison by distance



# Impact of key factors



# Key points

- Accurate cost predictions require consideration of how all the subsystems work together and a good understanding of how the overall system will operate in practice.
- Over the life of a project, operating costs (including transportation) can be significant.
- Costs vary by technology and location.
- Break-even distance depends on the project specifics – it will vary with technology, location and to some extent hydrogen demand.



Stephen Livermore  
stephen.livermore@lifteh2.com