Electrolyzer Integration with the Grid

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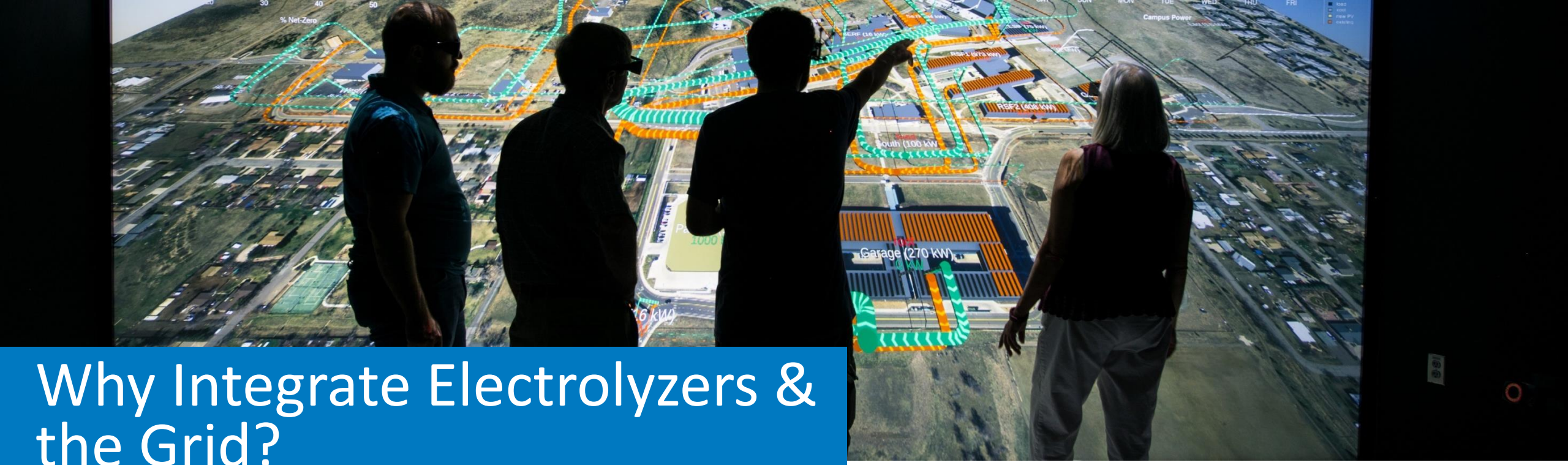
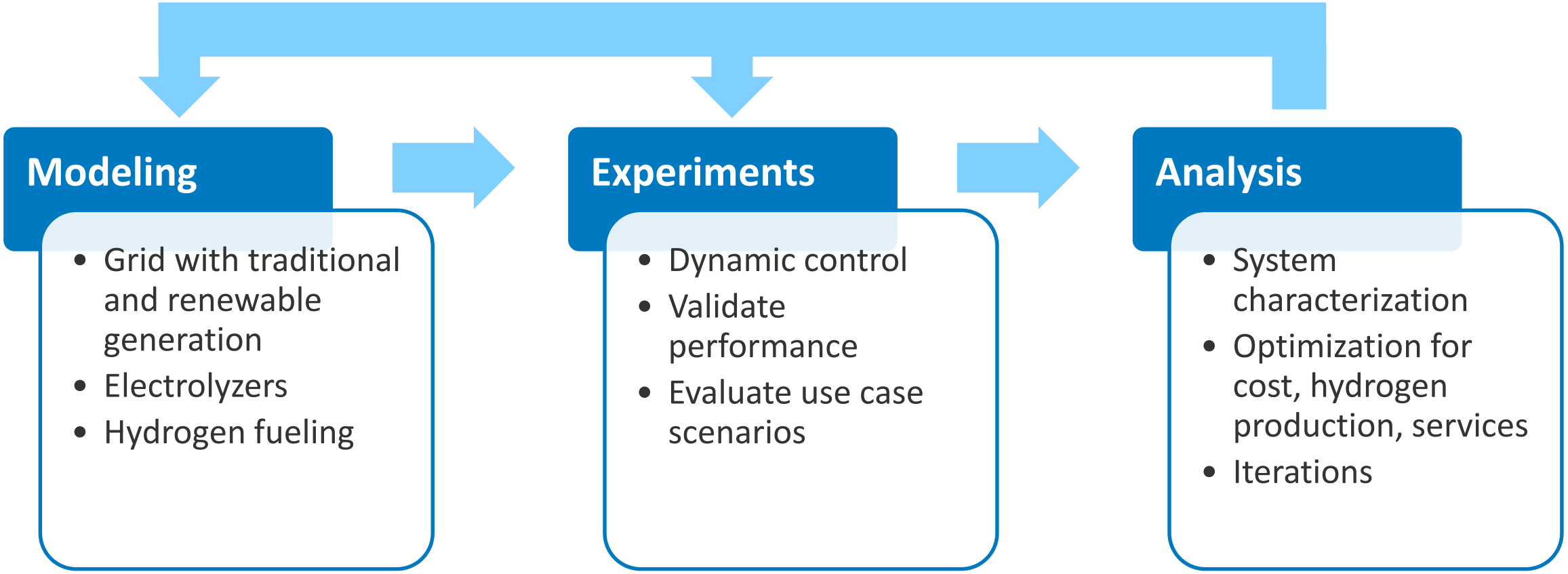


Why Integrate Electrolyzers & the Grid?

Problem – A mismatch between generation and demand intensifies with more renewable generation and increased demand.

Solution – Dynamically controlled electrolyzers can minimize the discrepancies while also producing valuable hydrogen.

Verifying Electrolyzer Value



Power Hardware-in-the-Loop Electrolysis and Energy Storage

Grid Services

Dispatchable loads (electrolyzers and stations) for grid services

Renewables

Transient operations with AC and DC power operation and analysis

Control

Includes power conversion, system integration, remote, real-time response, simulation, demand response, and safety

Cell/Stack

Multiple stack test beds capable of variable sizes and operation conditions, including BOP

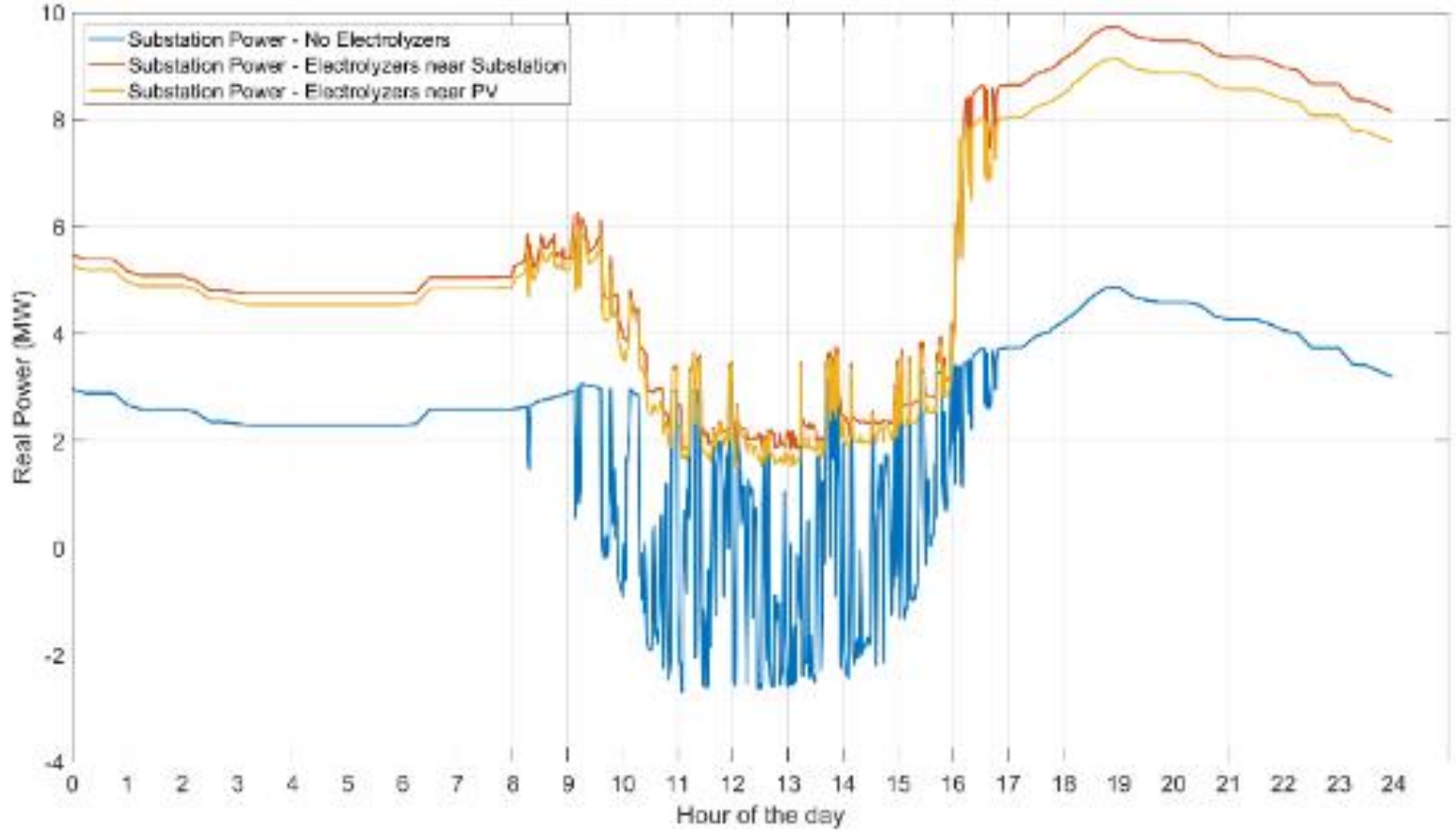
Molecules

Gas fermentation with hydrogen

Images: NREL

Electrolyzers avoid curtailed renewable generation with hydrogen production

Electrolyzers are operated at nearly steady state until PV generation, then the electrolyzer network operates during PV transients to dampen impacts of variable generation on a distribution feeder, utilize what would have been curtailed PV generation, and produce high-value hydrogen.



Thank you

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