

# Lower-cost Hydrogen or Ammonia Fuel from Distributed Wind via Paralleled Self Excited Induction Generator (SEIG) and Close-coupled Electrolysis at Multi-turbine Off-grid Windplants

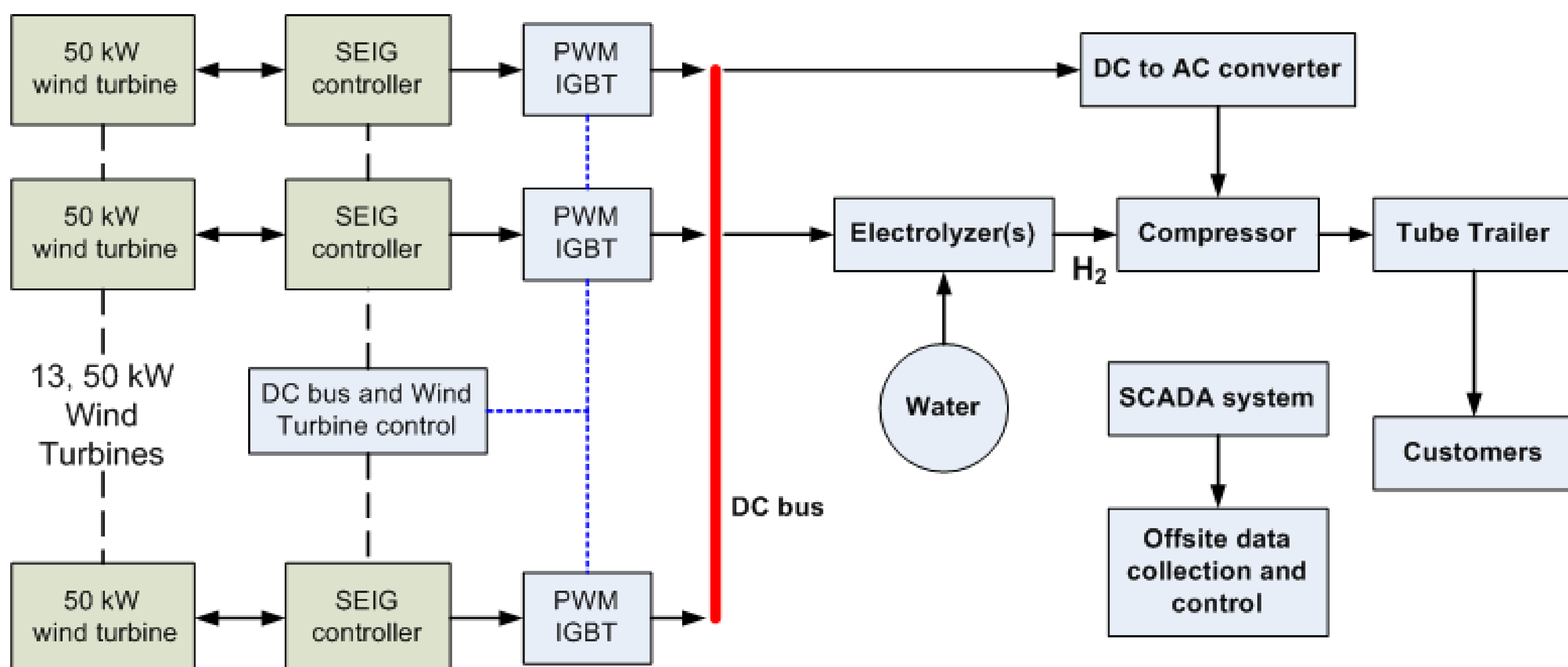
Alaska Applied Sciences, Inc. Juneau, Alaska USA

www.AlaskaAppliedSciences.com 907-586-1426 Bill Leighty, Principal wleighty@earthlink.net Cell 206-719-5554

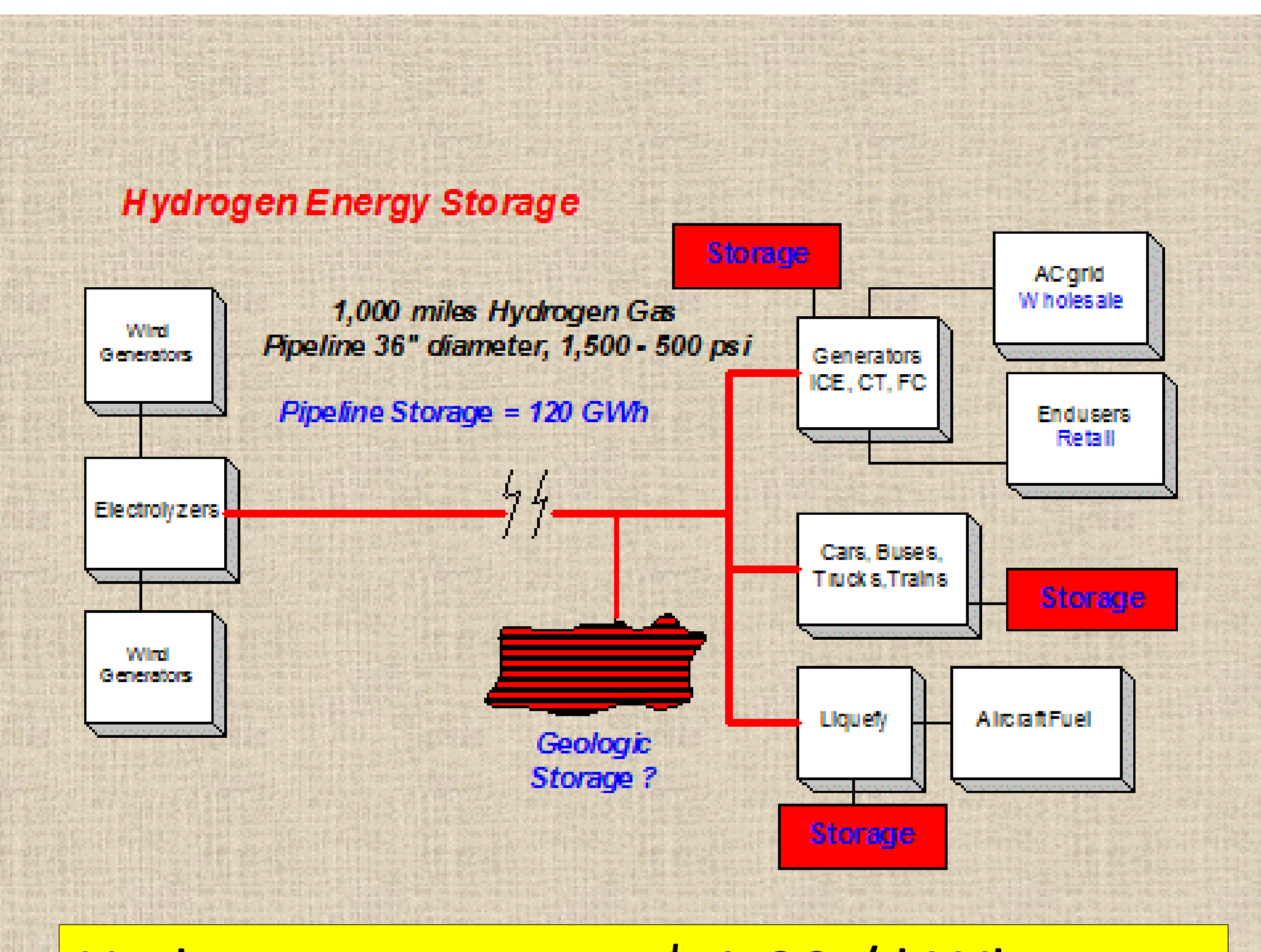
- > All captured wind energy delivered as Hydrogen or Ammonia, Carbon-free transportation and CHP fuels
- > No grid connection: big capex and O&M cost savings, opens large land areas without electricity "Transmission"
- > By 2050, in California: Hydrogen transportation fuel is bigger market for wind and solar than the electricity Grid
- > New, dedicated, underground, high-purity Hydrogen or Ammonia pipeline "Transmission" systems needed
- > Enables annual-scale firming energy storage at < \$ 1.00 / kWh capex in Hydrogen salt caverns, Ammonia tanks



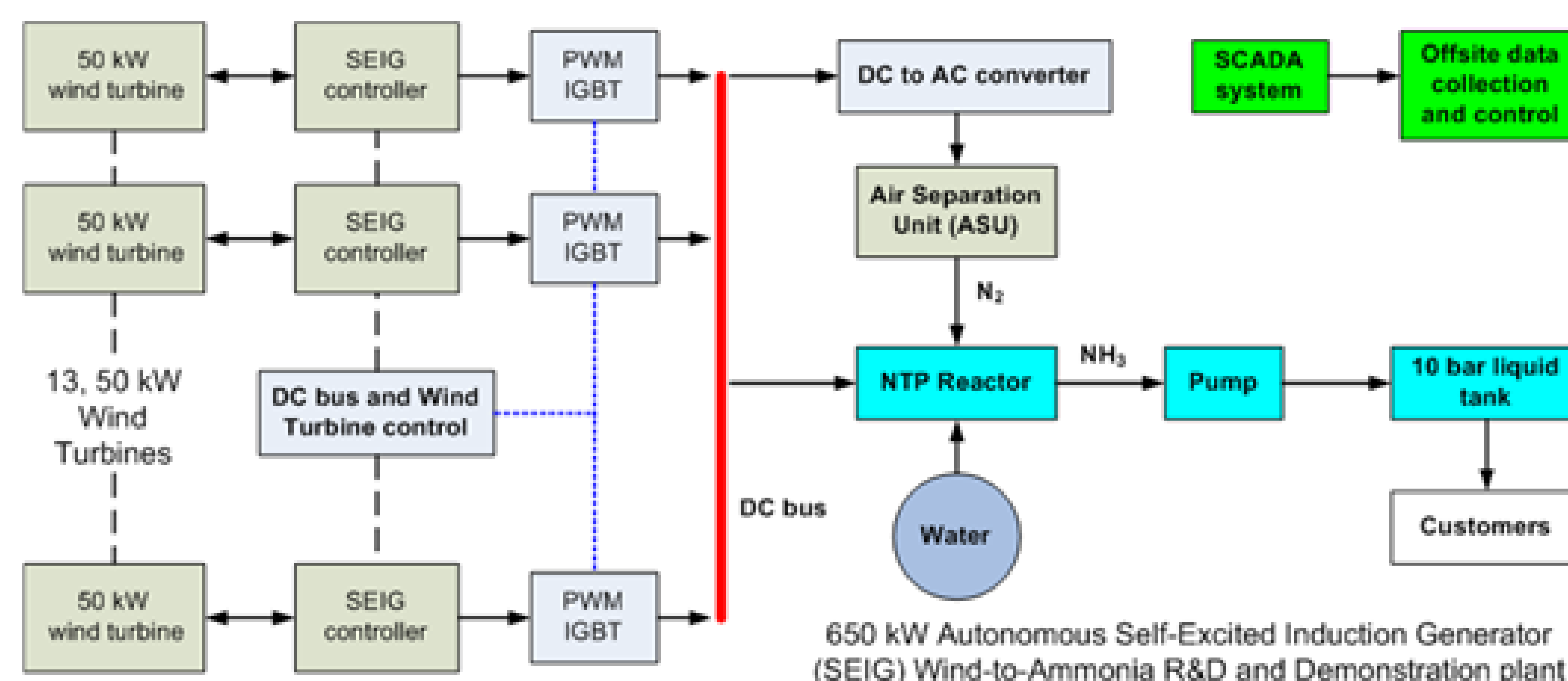
Alaska Applied Sciences, Inc.  
13-turbine Palm Springs windplant  
Ideal R&D&D test bed for SEIG to Hydrogen



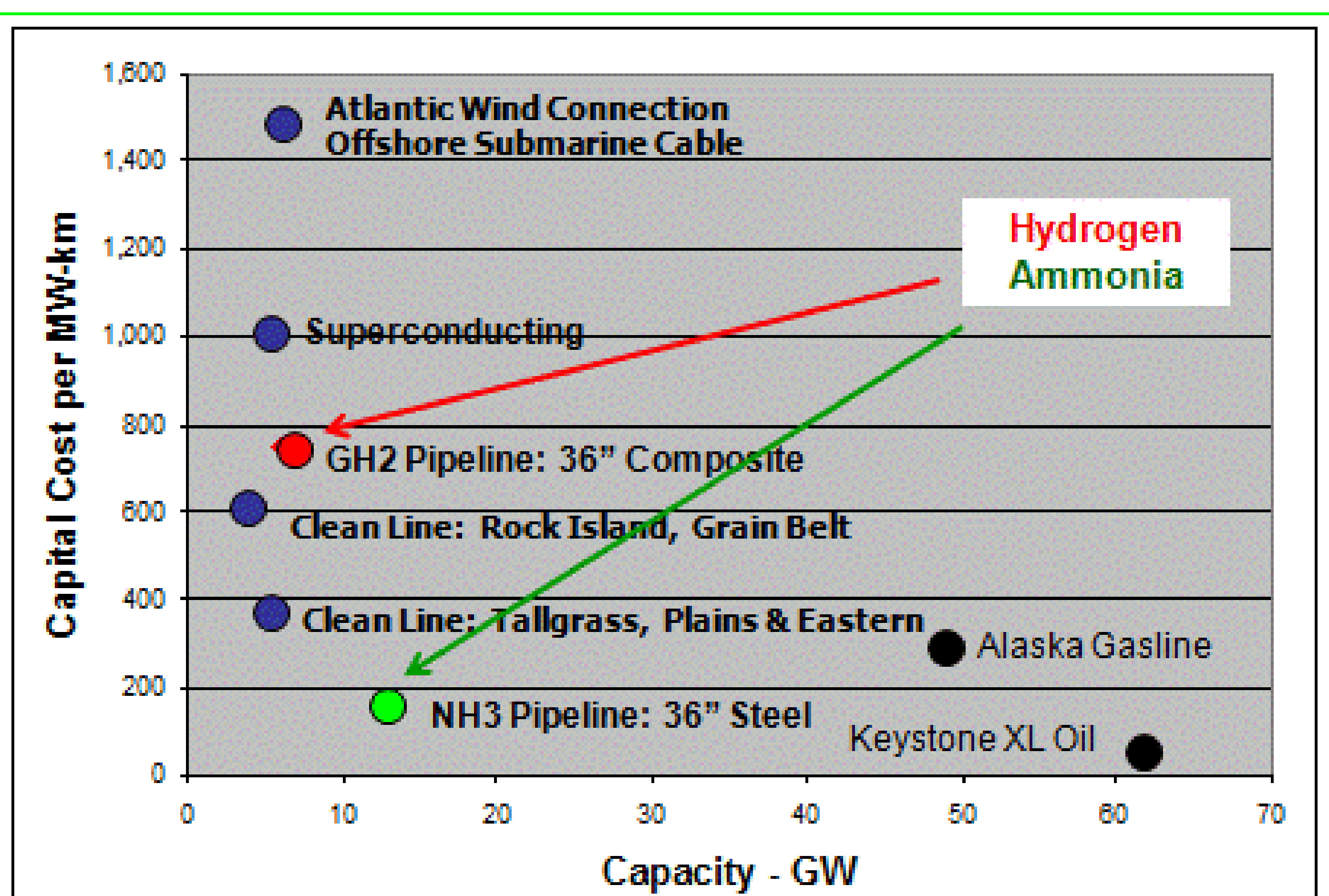
Wind-to-Hydrogen fuel production: Fuel cell vehicles, stationary CHP, low-cost storage



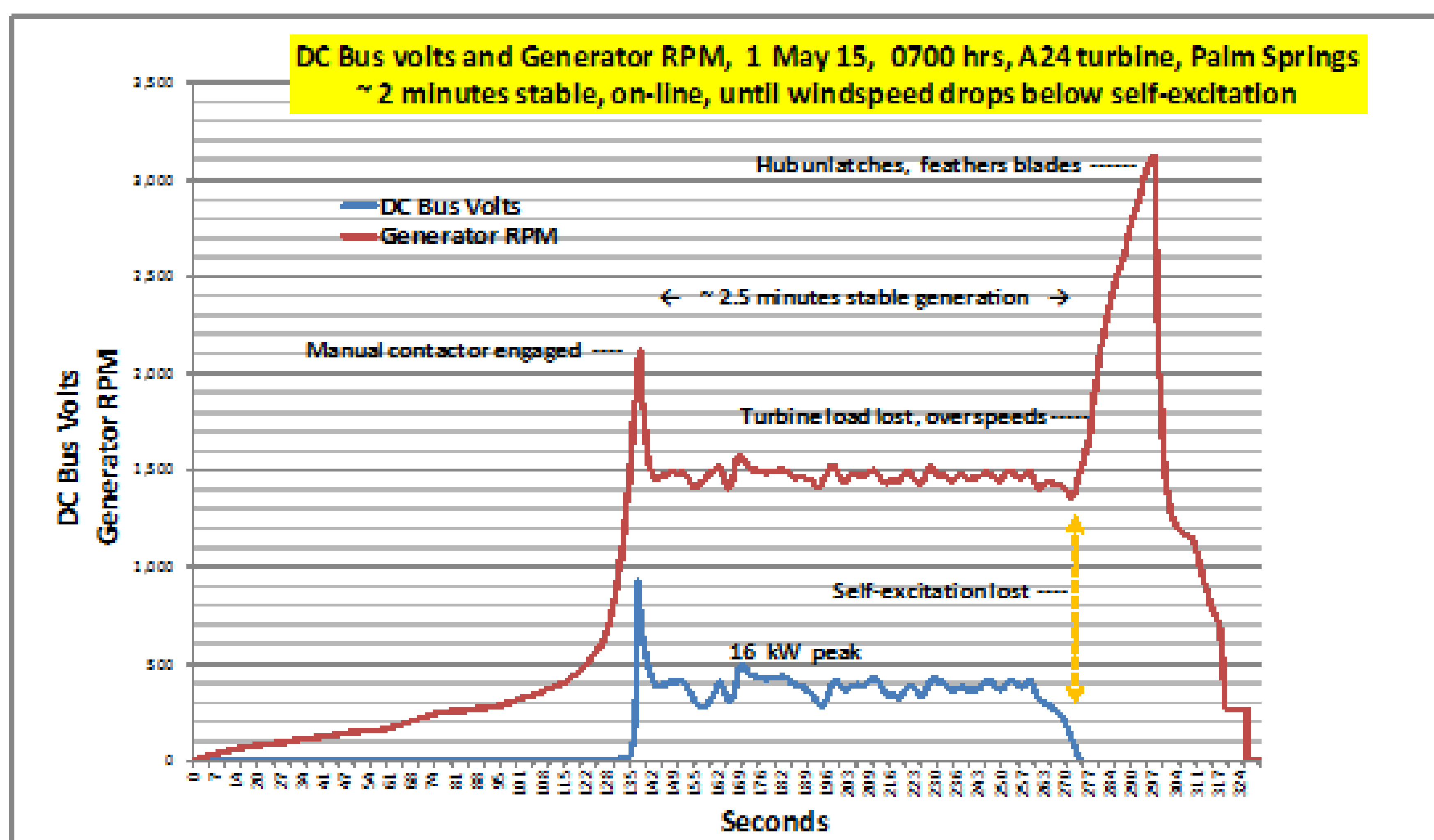
Hydrogen storage < \$ 1.00 / kWh capex by "packing" pipelines and in large solution-mined salt caverns, typically 100,000 MWh each cavern



Wind-to-Ammonia fuel production: Fuel cell vehicles, stationary CHP, low-cost storage



Transmission capital costs per MW-km compared  
Pipelines have large capacity and provide large storage



AASI has demonstrated compatible SEIG mode generation on a Palm Springs, CA windplant turbine