



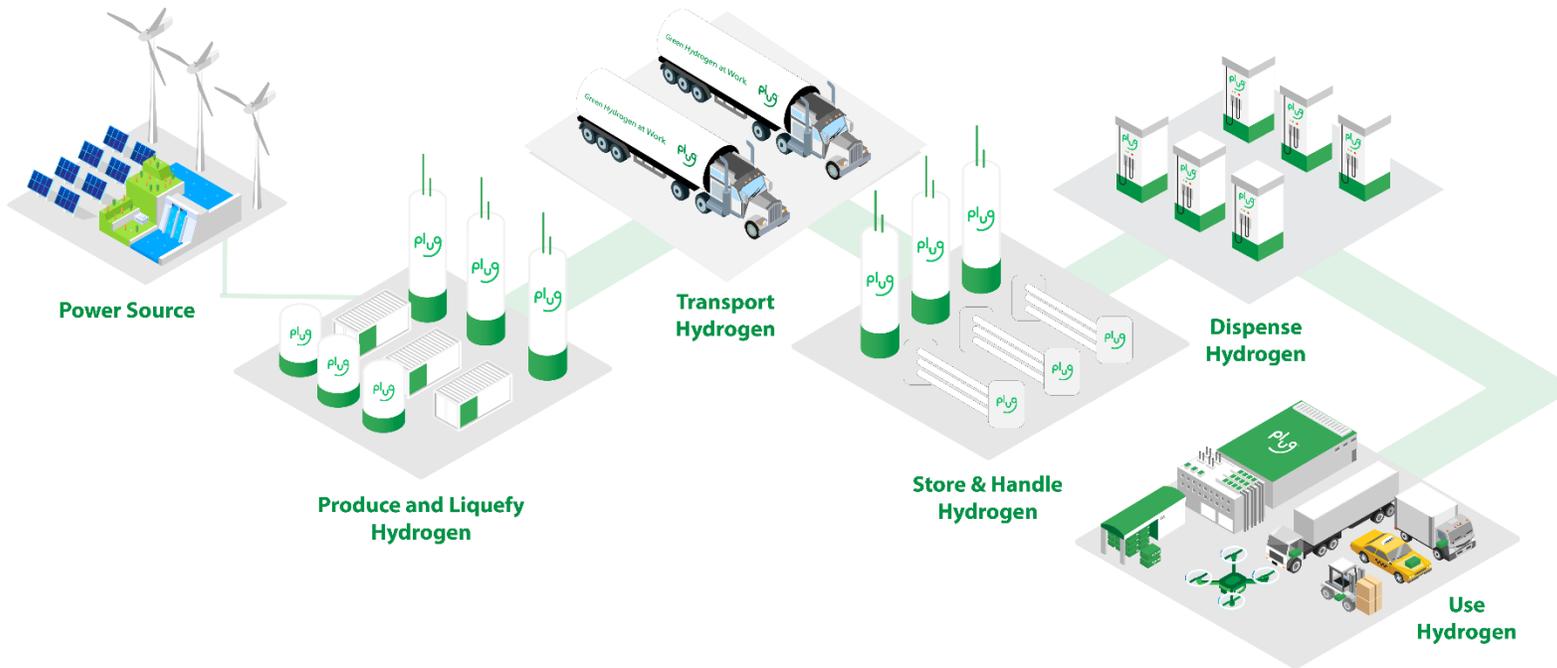
# TEM 106 Boulder

Brenor Brophy, Vice President Products

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# Plug's Green Hydrogen Ecosystem



- 50 years of innovation
- 3,100+ employees
- World's largest user of liquid hydrogen
- Has built more hydrogen refueling stations than anyone in the world
- Electrolyzer projects underway on 6 continents
- Vertically integrated: industry-leading PEM ELX stack technology and global project execution team





## Green Hydrogen at Work™

The most operational experience in emerging hydrogen markets

**500M+**

Fuel cell hours

**40M**

Electrolyzer hours

**15+ years**

PEM integration experience

**99%+**

Hydrogen availability

**180+**

Private fueling stations

**35+ tons**

Hydrogen dispensed daily

Largest PEM supply chain volume (common to fuel cells and electrolyzers)

- Most PEM fuel cell sales in the world
- Largest membrane electrode assembly manufacturer in the N. America
- Building GW scale manufacturing center in New York state

Plug Power Innovation of PEM Systems

- Leading energy density vs competition
- Fast ramp rates
- Performance advantaged stack technology

Comprehensive product offerings and support

- Hydrogen liquefaction and transportation technology
- Engineering support for broad end-use applications

Source: Plug internal analysis (2022)



# Hybrid Wind + Solar Hydrogen Plants

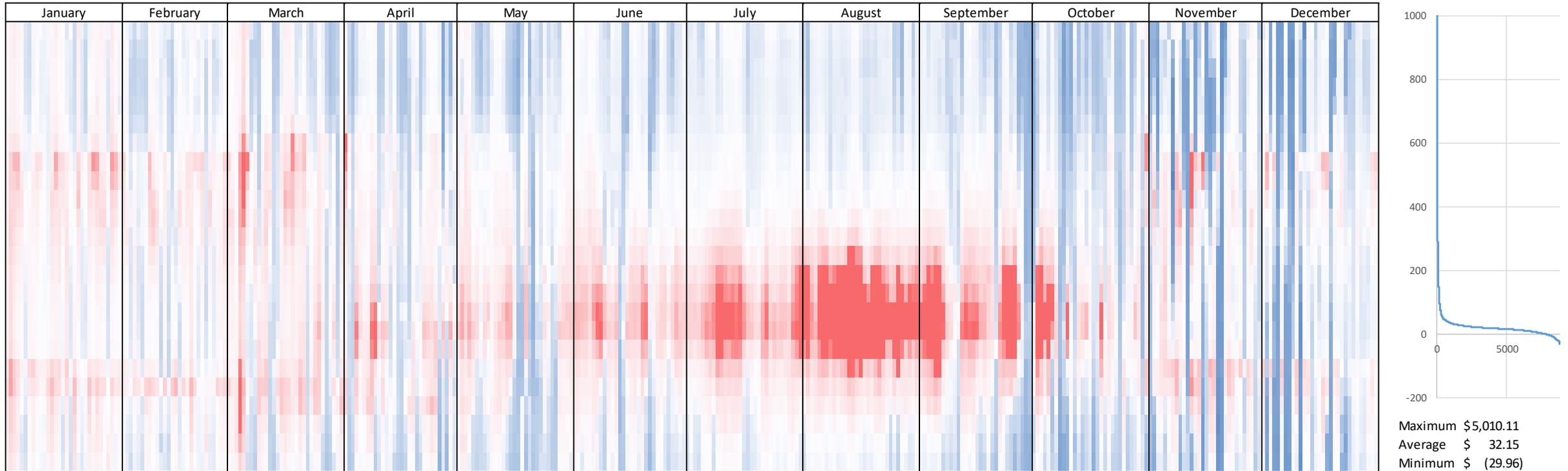


# Hybrid Plant Architecture



- This is architecture for a plant located in Texas currently under development
- Existing merchant wind-farm, new build solar
- Renewable plant sizes constrained by existing footprint and available land
- Offtake by pipeline to existing petrochemical plant
- Renewables are behind the meter
- Excess renewable energy is exported to grid at real-time wholesale price
- Deficit energy is imported as needed at real-time prices if they fall below a threshold price, else the plant is curtailed to the available renewable energy

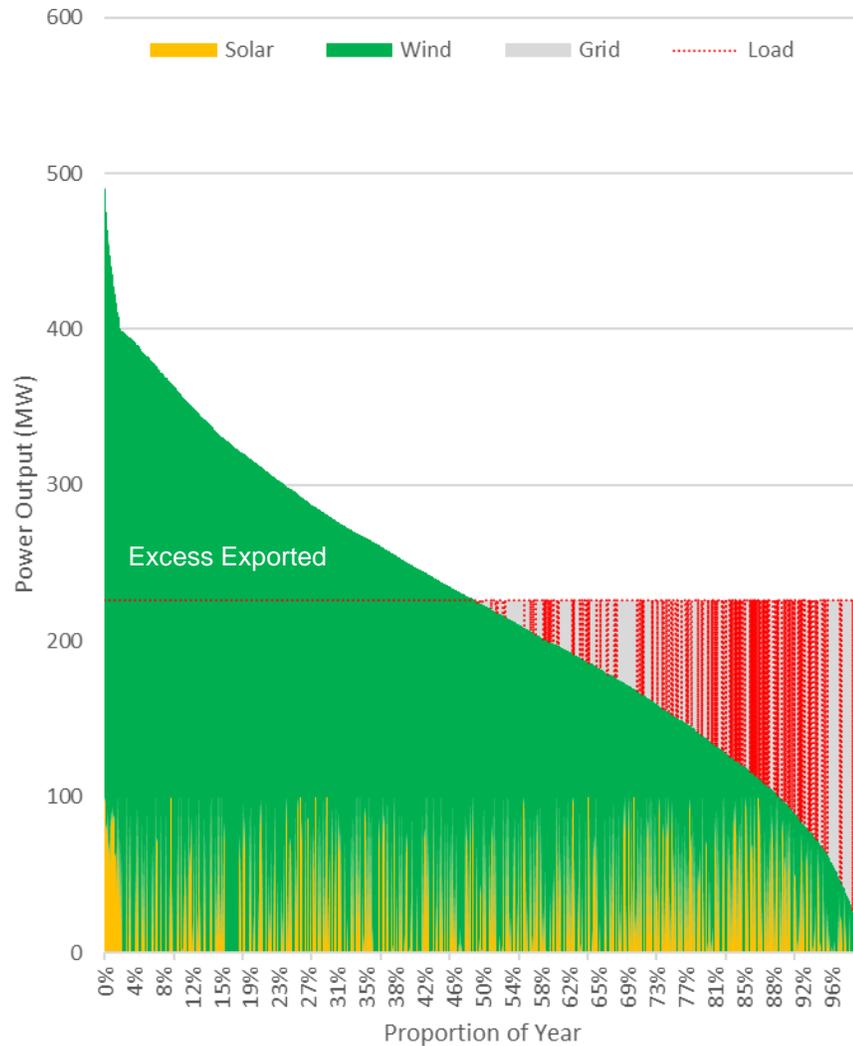
# Real-Time Grid Energy Prices (2022 Data)



- 8760 map of prices – 24-hours x 365 days
- Red hours are prices >\$100/MWh

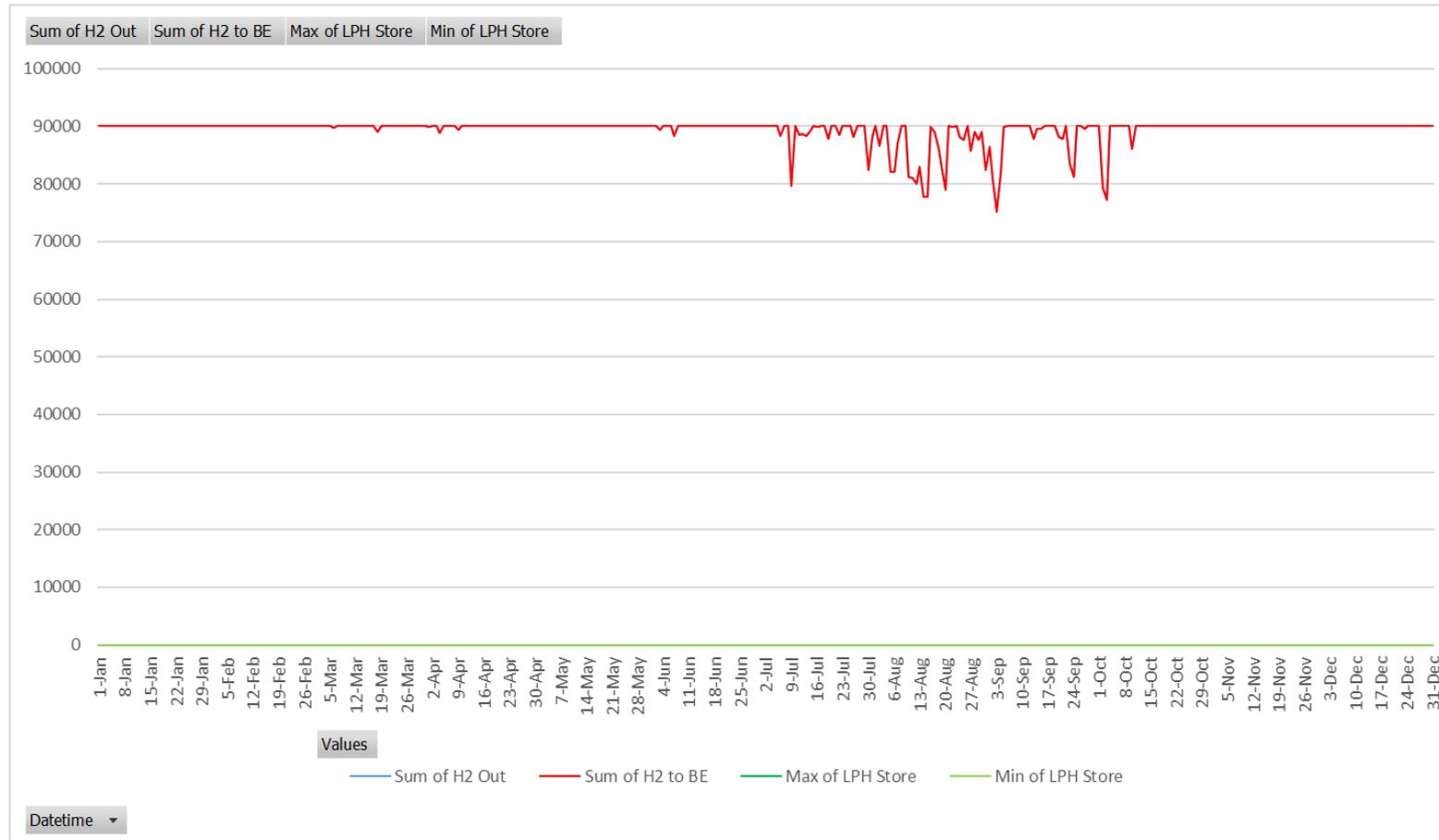


# Plant Annual Operational Profile



- 8760 hours of the year, sorted (left to right) by the sum of wind & solar generation
- Total plant load 226 MW
- Excess is exported when renewable generation exceeds max plant load
- Grid is used to supplement renewables when renewable generation is less than max plant load
- If grid energy costs exceed a strike-price then plant is curtailed to available renewable energy
- Plant delivers 99.3% of nameplate capacity

# Plant Annual Performance to Nameplate Capacity: 99.3%



- Only a few summer days with very high energy prices and insufficient renewable generation result in deliveries below nameplate
- Overall annual performance is 99.3% of nameplate for the given energy strike-price of (\$83/MWh)





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