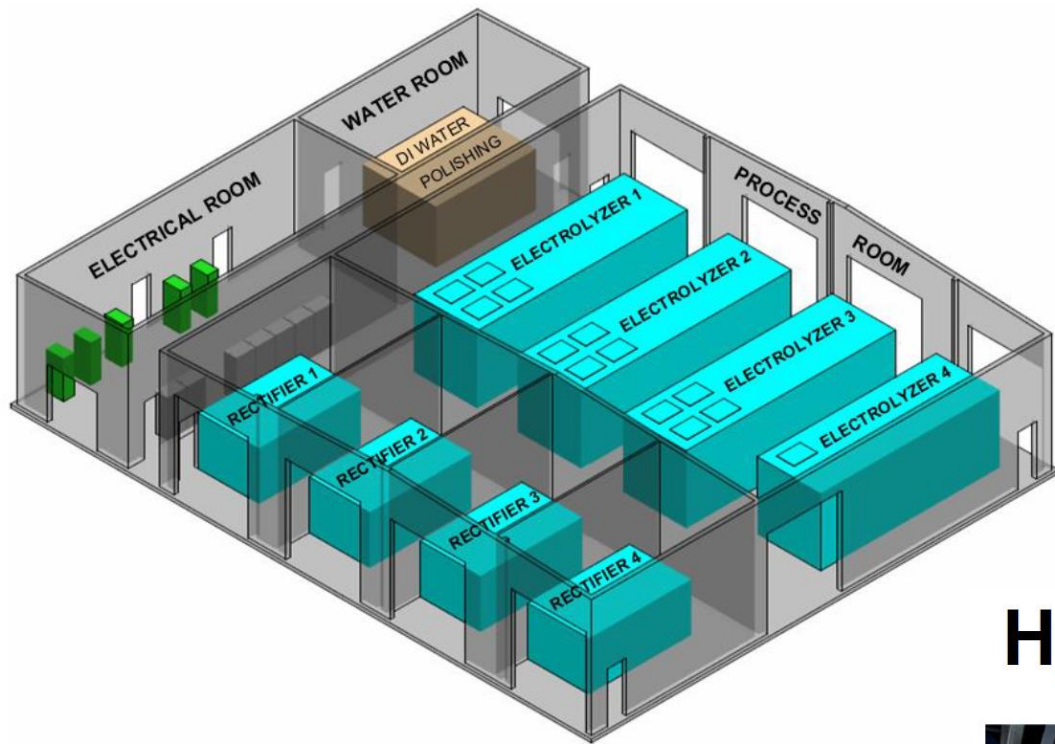


Douglas PUD Hydro to H2



Renewable Hydrogen Pilot Project

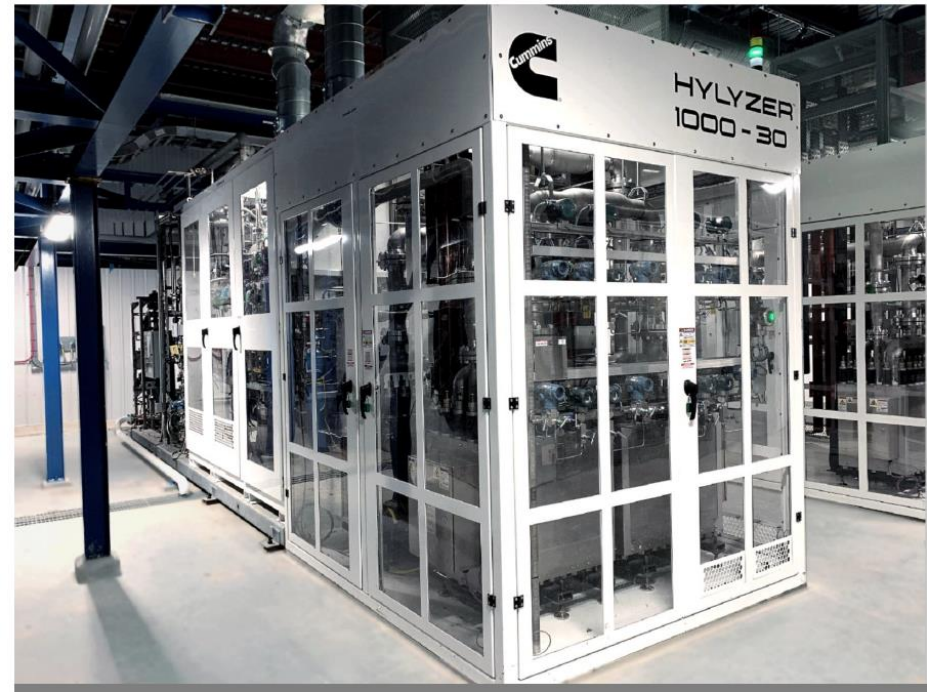
- 5MW electrolyzer producing 2-tons of hydrogen per day
- Hydrogen sold wholesale for industrial and transportation uses
- Facility is expandable to meet demand
- Long-term storage is a future goal



Equipment Overview

HyLYZER[®]-1000

Facility is expandable to meet demand



Why Renewable Hydrogen?

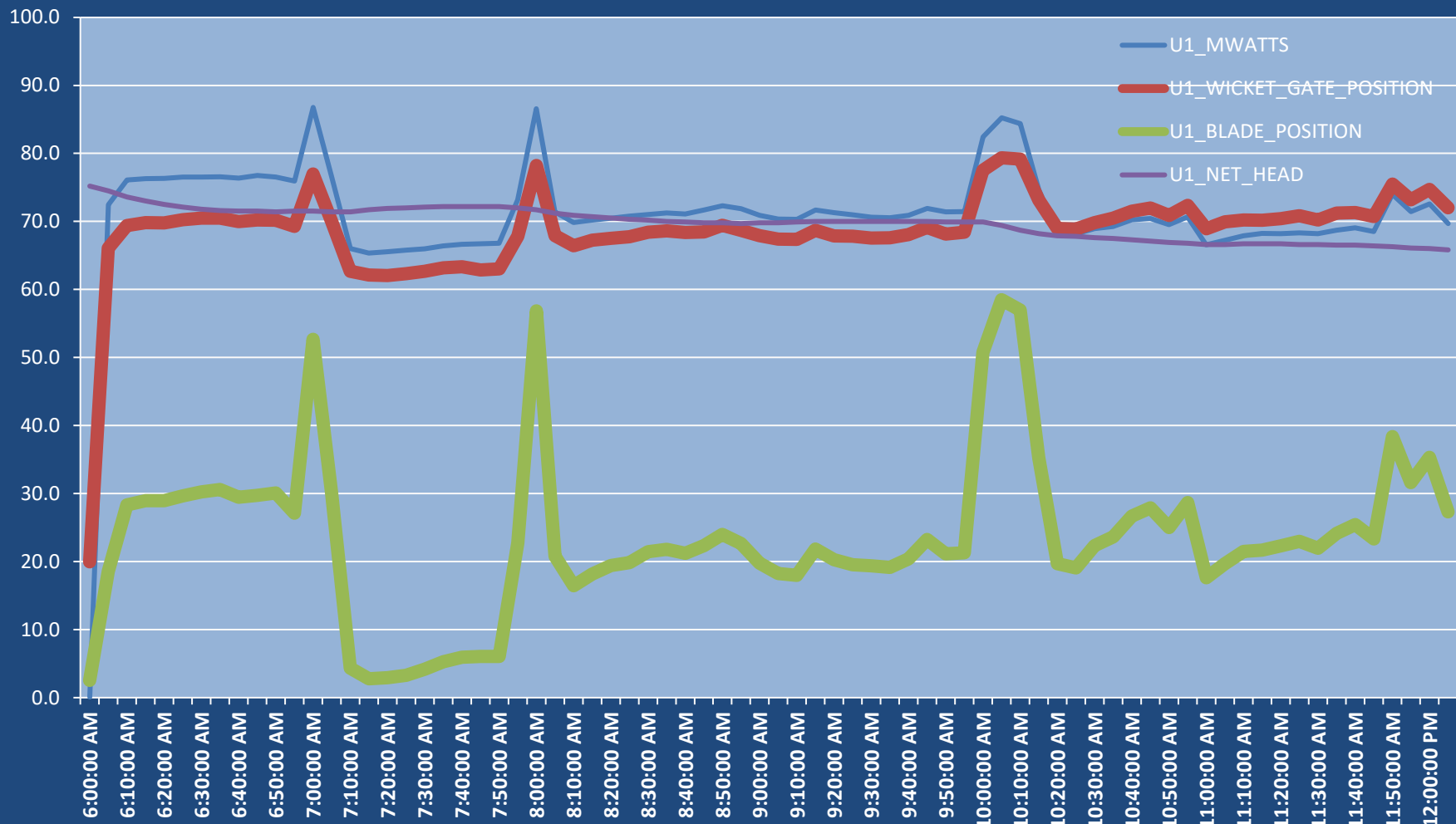
- Passed laws granting PUD's authority to produce hydrogen in 2019
- Helps solve intermittent renewable problems - Hydro, Wind and Solar – predictable fuel
- Input Cost is 70 to 80% Electricity
- Grid Services
 - Reserves
 - Frequency Regulation
 - Load Following

Solving Hydro Production Problems

- **Efficiencies created by hydrogen production**
 - Mechanical wear-and-tear caused by starts and stops, 4 second adjustments to grid demand
 - Seasonal and variable fuel supply
 - Demand response – grid balancing reserves (15 MW)

Units ramping up and down in 24 hours





Wholesale Market

