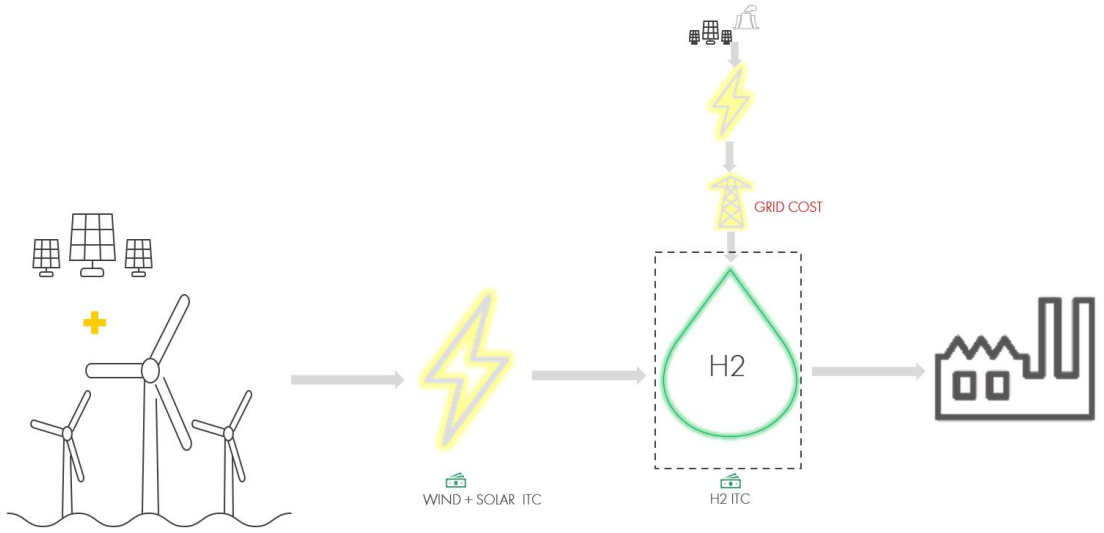
Offshore Power to X

Addressing adoption of Offshore Wind within the 2030+ clean hydrogen economy



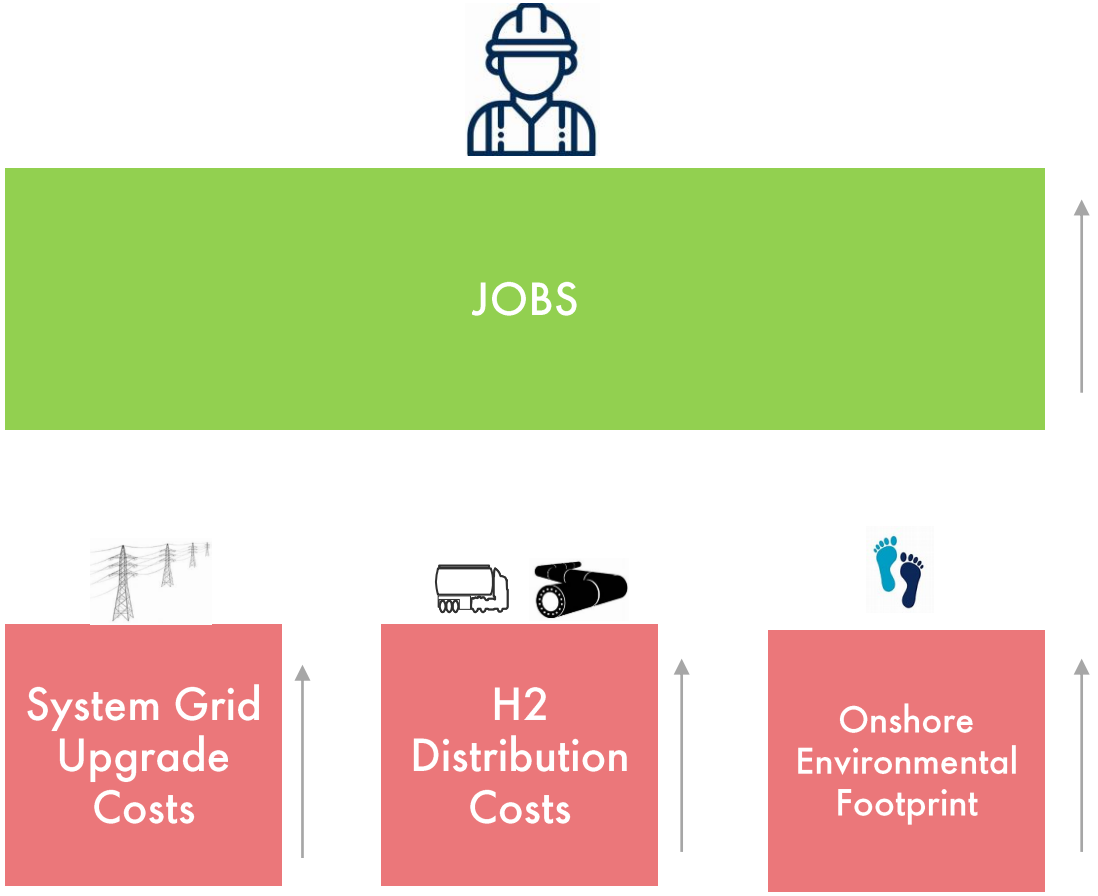
Drew Burke - Head of New Business Development
Offshore Power Americas

Key Challenges / Opportunities for 2035 Green Hydrogen – Gulf of Mexico

"How do we...."

Maximize the use of offshore wind as an anchor within green H2 to drive scale in industry & material economic benefits

Minimize/ offset the overuse of grid-backed electricity – "leverage dedicated electrons - behind the meter"



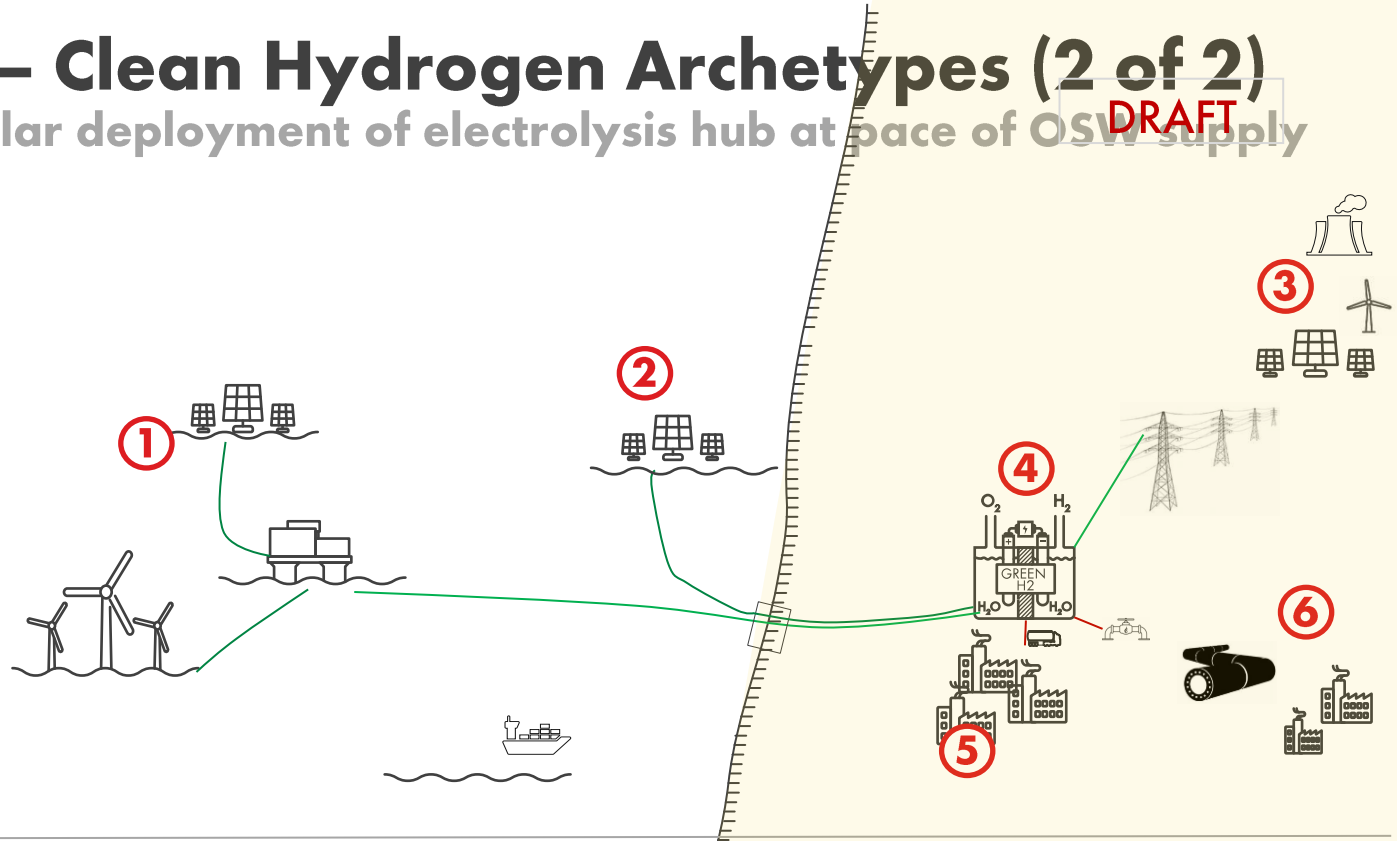
2035 Integrated Energy Basin – Clean Hydrogen Archetypes (2 of 2)

DRAFT

Coordinated Clean H2 Hub may require modular deployment of electrolysis hub at pace of OSW supply chain installation

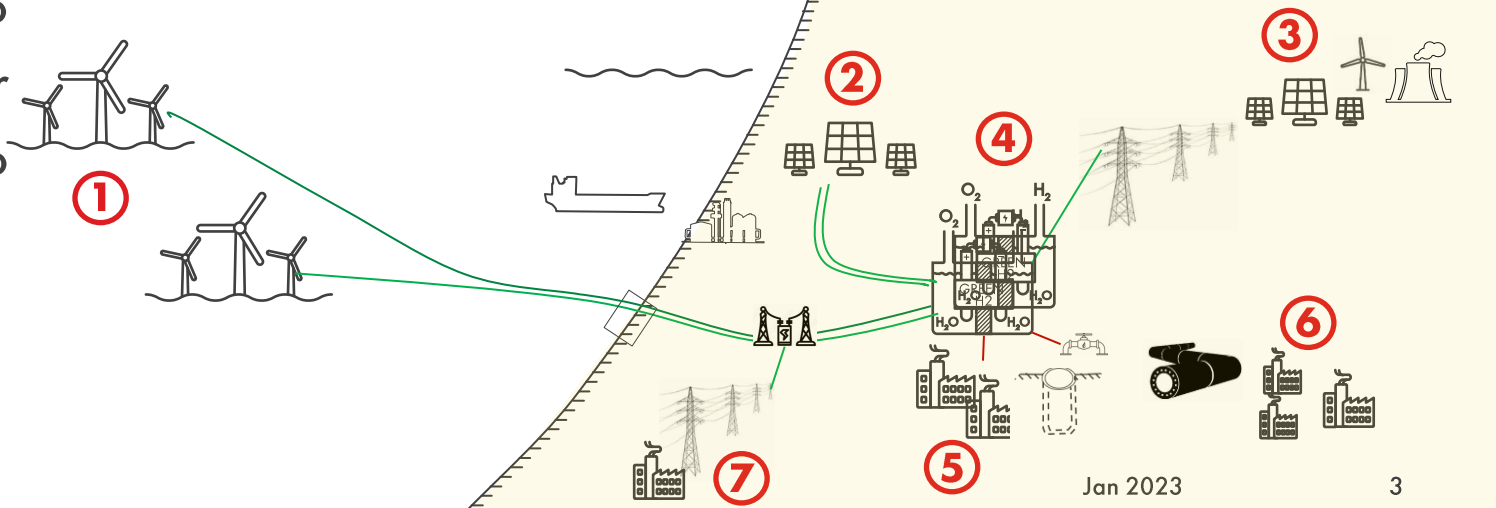
- **Hybridization** Offshore Power backed Clean H2 hub with access to adjacent & remote industrial hubs via distribution pipeline

1. Hybrid OSW + Floating PV
2. Floating PV Solar (State Waters)
3. Onshore Renewables (Grid)
4. Onshore Electrolyzer
5. Adjacent Industrial Hub
6. Remote Industrial Hub



- **Coordinated** Clean H2 hub with access to industrial hubs and access to grid for proportionate share of power offtake to electricity customers

1. Multiple OSW Projects
2. Onshore Solar
3. Onshore Renewables (Grid)
4. Onshore Electrolyzers
5. Adjacent Industrial Hub
6. Remote Industrial Hub
7. OSW Power Offtakes

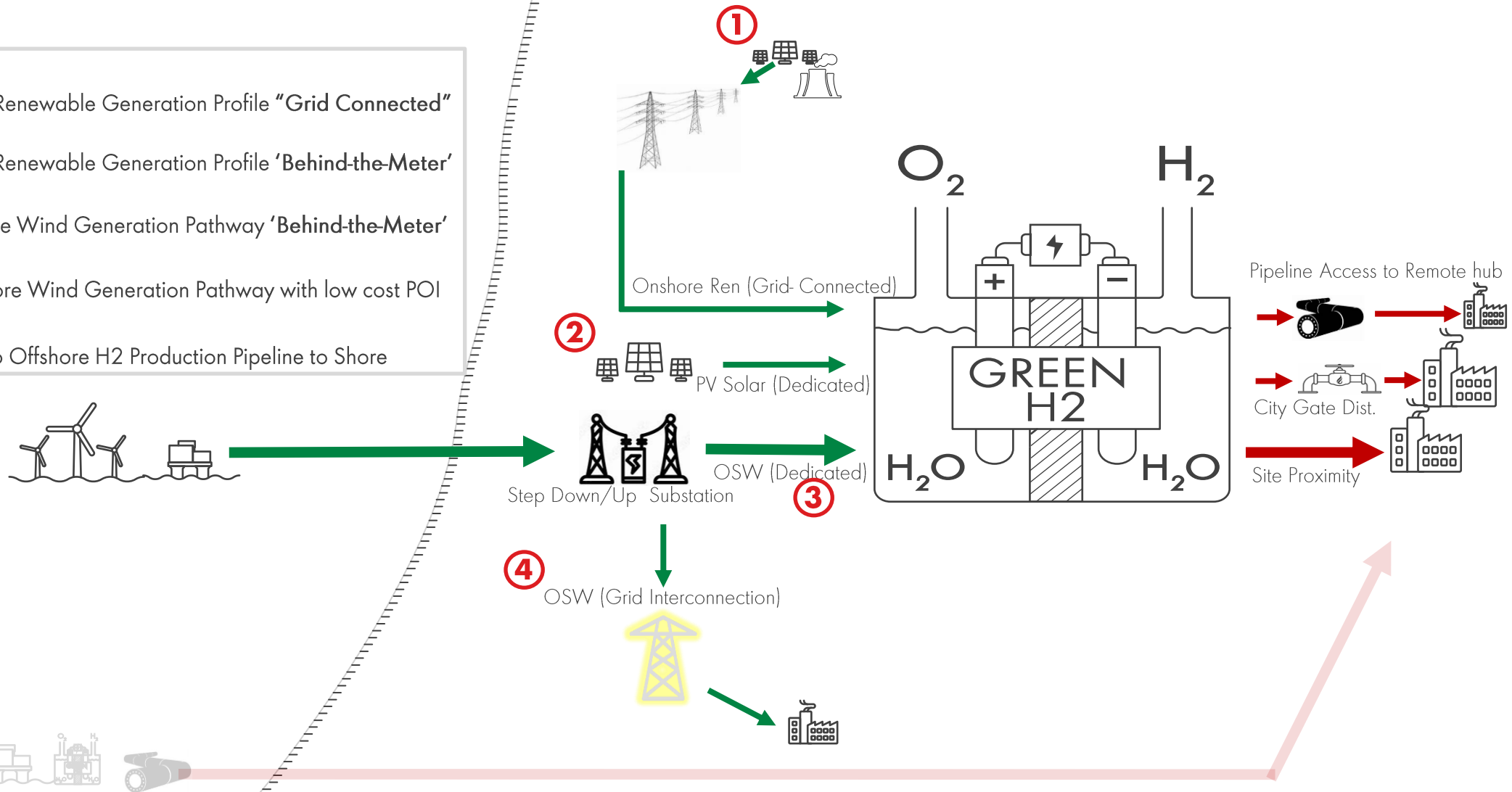


NOTE: Project team work still needed to further differentiate what value chain archetypes offer the most affordable solution to customers whilst enabling offshore wind at scale

Optimization of Green H2 at Scale

Maximizing Offshore Wind and Onsite Solar PV Supply followed by grid connected resources

1. Complementary Renewable Generation Profile **"Grid Connected"**
2. Complementary Renewable Generation Profile **'Behind-the-Meter'**
3. **'Anchor'** Offshore Wind Generation Pathway **'Behind-the-Meter'**
4. **'Residual'** Offshore Wind Generation Pathway with low cost POI
5. **'Anchor'** OFW to Offshore H2 Production Pipeline to Shore

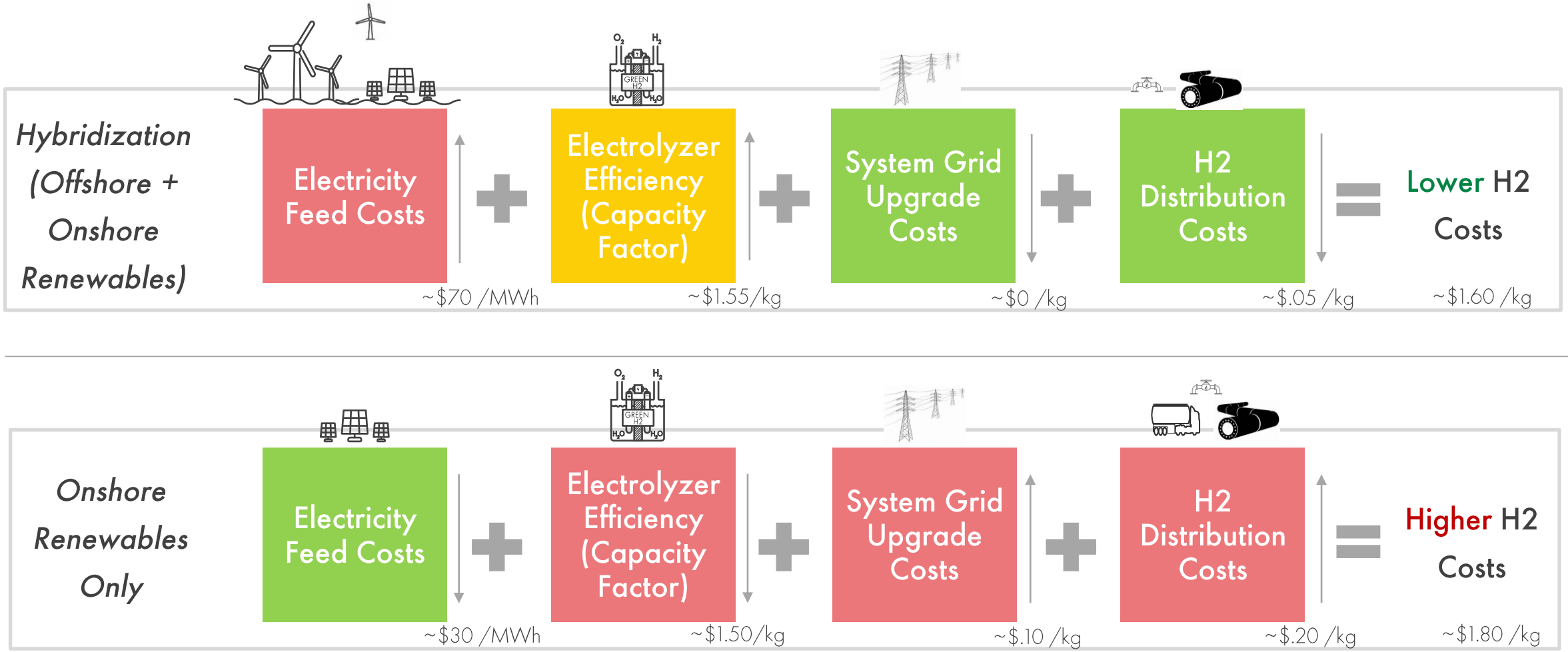


NOTE: Offshore Electrolysis with pipeline production to shore is also under investigation

Green H2 at Industrial Scale – Why Hybridization Matters?

ILLUSTRATIVE

Significant 5+ MMT demand required to decarbonize industrial hubs means significant amount of onshore power generation – siting further from load and more transmission



Indicative 2030 preliminary cost analysis based on work conducted by AFRY, hydrogen consultant to Shell. Grid Upgrade Costs will vary by subregion of market

Key Value Levers for 2035 Green Hydrogen – Gulf of Mexico

1. "Co-Use" of Infrastructure & Corridors for Hydrogen Hub(s)

2. "Co-location" of H2 Production near coastal industrial load centers

3. "Hybridization" (blending) of multiple types of renewable generation feed for electrolyzers with offshore wind as an anchor

Maximize
- Offshore Wind Scale (Anchor)
- Offshore Wind Econ Benefits
- H2 Production
- Federal Tax Credits
- Siting (Electrolyser Facilities, Onsite Ren Gen, Transmission Facilities)

Optimize
- Other Ren Gen
- Power Offtake (if applicable)

Minimize
- Minimize Power Grid Costs
- Minimize H2 Distribution Costs
- Minimize Environmental Footprint
- Minimize "Delivered H2 Costs"