

Introduction

The race to AI proficiency is driving an unprecedented surge in energy demand, with AI server campuses requiring reliable, sustainable power to fuel compute-intensive workloads. Maclvor Energy's Offshore Hydraulic Energy Conversion (OHEC) technology is a near-perfect fit, delivering zero-emission baseload power at 99%+ utilization efficiency, independent of sunlight or wind. OHEC aligns seamlessly with the needs of hyperscalers like Digital Realty and Verrus (example partners, no contracts in place), offering flexible purchase options through power purchase agreements (PPAs) at ~\$50/MWh or proprietary licensing instruments for tailored integration. This \$25M pilot investment validates a 5 MW technology test, unlocking a 900 MW pipeline to power the AI revolution, positioning Maclvor as a transformative leader in clean energy for global coastal markets.

Technology and Engineering Excellence

- How OHEC Works: Injects compressed air (12,000 SCFM at 440 PSI) into a 150-meter water column (104 m³/s flow), driving a hydro turbine for each unit, scalable to 90 MW via 20–40 MW modules. Larger modules achieve higher efficiencies through scaled equipment, maintaining 99%+ uptime, using proven components (ASME, DNV, API, ABS-compliant).
- Empirical Validation:
 - Siemens CFD modeling (STAR-CCM+ with MMP overlay) predicts 2.98 m³/s water flow, within 3% of prior studies, reducing flow uncertainty by 88% (from 1.3–1.8 m³/s to 2.92–2.98 m³/s, SD ~0.03 m³/s) (Siemens CFD Assessment, May 3, 2025).
 - ABS Group and University of Houston confirm feasibility (TRL 7–8), with Norway/U.S. pilots validating 200–300 gal/s lift at 48m depth (Feasibility Study, May 2025).
 - Pilot tests (1/3 scale) and CFD address scale-up risks, with recommendations for nozzle optimization and site-specific data (e.g., sea currents, salinity).

- Nature-Aligned Design: OHEC harnesses the ocean’s constant energy, avoiding wind (40–50% capacity factor) or solar (20–25%) intermittency. Its zero-emission, blade-free design, with pH-stabilized discharge and no pile-driving, minimizes environmental impact.
- Development Milestones: Over 10 years, Maclvor bootstrap completed feasibility studies (2013–2017), physical testing (2015), front-end engineering (2018), and third-party verification (2019), aligning with hydro industry norms for bankability (Development Cost Estimate, 2025).
- Engineering Team: Led by Kristopher M. Evors and Hedda Flage Kukla, with extensive expertise in offshore hydro and infrastructure. Resumes available upon request.
- Tech Due Diligence: We invite investors to engage with our team, review CFD models, pilot data, and Siemens/ABS reports, exploring scalability for AI-driven applications.

Market Opportunity and Gulf Coast Synergy

- AI Data Center Demand: AI workloads (10x denser than traditional) require reliable, sustainable power. OHEC’s 90 MW plants align with hyperscalers like Digital Realty and Verrus (example partners, no contracts in place), targeting coastal markets (Texas, Florida, California, NY Bight, UK, Taiwan).
- Industrial Applications: The 5 MW pilot will likely be sold to an exploration and production company to power an oil and gas production ship, with future plants serving hydrogen manufacturing, crypto mining, or desalination sectors.
- Gulf Coast Synergy for Pilot: The 5 MW pilot leverages a contractually available South Pass 83-A platform (13 NM off Louisiana, BOEM Block 8203E, 110m depth), reducing capex (\$32.4M total, \$7.4M founder equity) and accelerating deployment (Q1 2026 COD). Cost-free abandoned platforms and Gulf Coast regulatory support (BOEM CFR 30, EPA, NOAA-compliant) ensure a FONSI-targeted permitting path (Feasibility Study, May 2025). The American Bureau of Shipping is bullish on OHEC and oversaw the Siemens Computational Fluid Modeling.
- Global Scalability: Pilot success enables deployment in coastal regions worldwide, meeting decarbonization mandates and AI energy demands with a modular 900 MW pipeline.

- Forecasting:
 - Pilot (Q1 2026): Validates scalability, targeting \$35M asset sale to an industrial buyer.
 - Commercial Phase (2026–2035): 900 MW pipeline (10 x 90 MW plants), \$43–49M EBITDA per plant, \$4.5–6.3B portfolio valuation (\$500–700M per plant).
 - Financial Metrics: \$42/MWh LCOE, \$45–54M/year revenue per 90 MW plant at \$50/MWh + \$18–25/MWh RECs, 41–52% IRR (Feasibility Study, May 2025).

Economic Cooperation with Nature

- Philosophy: OHEC collaborates with nature by tapping the ocean’s constant energy, avoiding reliance on variable sunlight or wind. Its zero-emission, minimal-impact design aligns with AI data centers’ sustainability goals (e.g., Digital Realty’s 2030 climate-neutral target, Verrus’s carbon-free focus).
- Environmental Benefits: Neutral discharge, noise-controlled platforms, and BOEM-compliant permitting ensure minimal ecological impact, supporting global net-zero mandates and REC eligibility (\$18–25/MWh).
- Gulf Coast Advantage: Repurposing abandoned platforms for the pilot minimizes costs and environmental footprint, setting a precedent for sustainable global deployment (Development Cost Estimate, 2025). Abandoned platform should be readily available given restoring the platform to “actively in use” status relieves the platform of abandonment costs (5-20mn\$).

Investment Proposition

- Initial Funding Need: \$25M to complete \$32.4M capital stack (\$7.4M founder equity committed) for 5 MW pilot, funding procurement, installation, and commissioning. Total development costs of \$7.4M align with hydro industry norms (\$2.5–7M for 5 MW projects) (Development Cost Estimate, 2025).
- Equity Offered: 17.5% for \$25M, implying a \$143M valuation (comparables: Verdox, 15–20% for \$80M at \$200M, 2022; QuantumScape, \$3–5B post-pilot, 2023).

- Return Potential on initial \$25mn:
 - Short-Term (Q3 2026): \$35M pilot sale yields ~\$6.125M for 17.5% equity (2.45x MOIC, ~60% annualized IRR over ~1.5 years).
 - Long-Term (2033): \$4.5–6.3B portfolio yields \$787.5M–\$1.1B for 17.5% (31.5–44x MOIC, 41–52% IRR).
 - Post-Pilot Valuation: \$200–500M, driven by de-risked 900 MW pipeline and AI demand.
- Risk Mitigation: Siemens/ABS validations, Maclvor-led EPCM (Kiewit, Technip backups), Con Edison revenue management, and Gulf Coast permitting ensure execution certainty.

Team and Leadership

- Bios:
 - Kris Evors: Founder and rotational equipment expert, Consulting Engineer for conventional and renewable energy firms including Kinder Morgan, Exxon, Caterpillar, and BP.
 - Hedda Kukla: Full-time Consulting Engineer (Renewables) for major firms including Royal Dutch Shell, Statoil, and BP.
- Expertise: Our team brings decades of experience in offshore hydro, compressed air systems, and infrastructure, ensuring technical and operational success.

Addendum: Capital Requirements for 905 MW Pipeline

- Total Program: 905 MW across 2 phases (5 MW pilot + 10 x 90 MW plants).
- Total Capital (2026–2035): ~\$2.0–2.2B, with \$25M for pilot (2026–2027) and ~\$1.98–2.18B for 10 plants (2028–2035) (Project Capital Requirements, 2025).
- Phased Timeline:
 - Phase 1 (2026–2027): 5 MW Mjølner pilot, ~\$25M capex.

- Phase 2 (2028–2035): 10 x 90 MW plants, ~\$200–220M per plant, launched in staggered pairs every 2 years.
- Funding Strategy: Staged drawdowns, bankable EPC milestones, equity/debt blend, with front-loaded equipment orders and final-stage payments for cables/installation (Project Capital Requirements, 2025).

Call to Action

- Engineering Deep Dive: Access our data room (CFD models, pilot data, Siemens/ABS reports) via Kristopher Evors (ke@macivorinc.com, +1 832-963-8069).
- Partnerships: Propose PPAs at ~\$50/MWh with Digital Realty (Andrew Power, digitalrealty.com/contact), Verrus (Jeff Bladen, verrusdata.com/contact), and industrial buyers for coastal co-location (no contracts in place).
- Next Steps: Schedule virtual meetings to discuss \$25M investment, Gulf Coast pilot, and global scale-up potential.

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