



Marine Renewable Energy

Reliable Power from Tides, Rivers & Oceans



New York, New York



Free Flow System



Anglesey, Wales

2018

Executive Summary

Unique Product, Meeting Energy Needs, Experienced Team



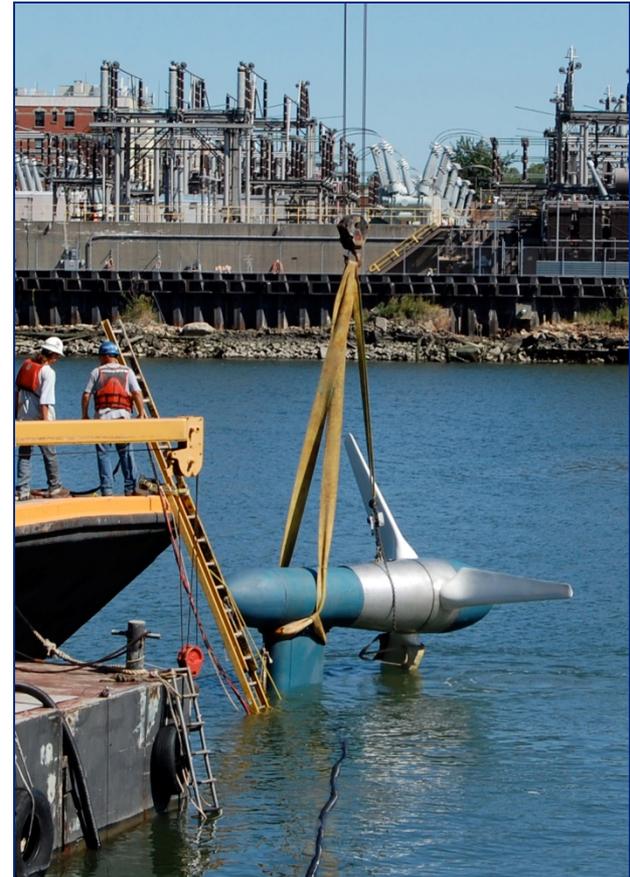
- **Overview:** Verdant Power, a New York-based company founded in 2000, is an industry leader having developed proprietary, proven disruptive technology that converts energy from water currents into clean power.
- **Milestones:** Fifteen years and \$37.5 million accomplishing world-firsts bringing a working prototype to commercialization with project feasibility studies underway and a focused plan to develop market in 2020.
- **Management Team:** Extensive industry experience and relationships with key industry participants.
- **Technology:** Company's 5th generation (Gen5) proprietary turbine systems are readily scalable and technologically more advanced than competitors' having: greater applications - sited near power needs; less expensive CAPEX and lower O&M costs; simpler and lighter modular designs; and higher efficiencies.
- **Competition:** Competitor systems are costly, complex, and heavy designs having fewer applications.
- **Market:** The market for marine renewable energy is global, large, and expected to be an \$80 billion industry by 2028, growing 7X within the next three years; customers include end-users or project sponsors including utility companies, independent power producers, investor sponsors, and owner/operator entities.
- **Financials:** Verdant Power's revenues and profits will be derived from selling marine renewable energy turbine systems, conducting feasibility studies, and providing life-cycle maintenance services to its customers. Strong investor returns are forecast.

Overview

Verdant Power, Inc.



- A New York-based company founded in 2000, Verdant Power has developed proprietary, proven disruptive technology that converts hydrokinetic energy from underwater currents into clean power - Kinetic Hydropower System (KHPS) or Free Flow System (FFS)
- To date, \$37.5 million of funding for Milestones 1 and 2 has been raised from management, private investors, New York State Energy Research & Development Authority (NYSERDA) and U.S. Department of Energy (an additional \$3 million pending with equal match)
- The Company currently is undertaking a \$1 million Crowdfunding investment with a pre-money valuation of \$35 million, as bridge funding, to complete Milestone 3 at its NYC demo site, the Roosevelt Island Tidal Energy (RITE) Project, leading to a global market launch in 2020



Free Flow System
NYC's East River - Roosevelt Island

Milestones

\$1 Million Equity Supports Funding to Complete Milestone 3



Milestone 1 (2002-05): FFS Prototype Test in NYC East River

Milestone 2 (2006-17): Design & Innovation - New York project (Demo)

- World's first grid-connected array of tidal power systems (RITE Project)
- First-ever Federal Energy Regulatory Commission (FERC) issued pilot commercial license and first-ever Trade & Development Agency support
- Government and institution support: U.S. DOE & Department of Commerce, U.S. Navy, NYSERDA, NYCEDC, Sustainable Development Technology Canada (SDTC), and Cornell University

Partners & Supporters



Milestone 3 (2018-21): Demonstration, Qualification & Implementation

- Qualify Gen5 FFS by demonstrating commercial standard system
- Design/scale/demo Gen5, 7m & 10m FFS in operational environments
- Implement IP plan
- Complete resource assessment & feasibility analysis (RAFA)
- Transition RITE Project to world-class demonstration facility



Milestone 4 (2020-28): Launch of Commercial Projects

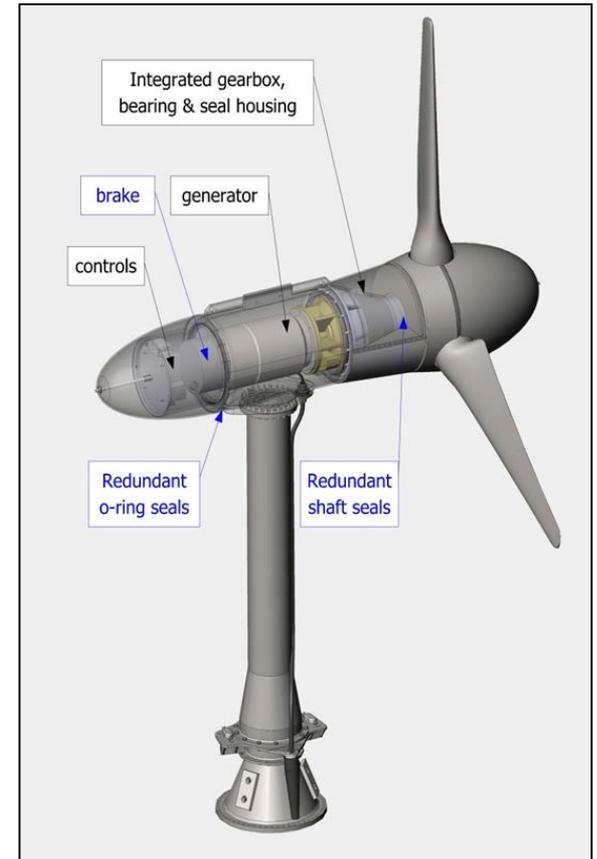
- New York projects build-out and commercial operation
- Ireland, the UK, China, and other tidal energy projects
- Canada, southern Africa, SE Asia, and other river energy projects



Management Team

Deep Functional, Technical & Industry Experience

- **John Banigan:** CEO / CFO, global corporate finance and investment banking career with Chemical Bank; HSBC; and others
- **Trey Taylor:** Co-founder & CMO, formerly with Edison Electric Institute; P&G; British Telecom; BGE; and Price Waterhouse
- **Ron Smith:** Co-founder & COO, formerly with Booz-Allen; Bendix Aerospace Group; Harvard Business School
- **Dean Corren:** CTO, innovator of Verdant's systems beginning in the 1980s; NYU Research Scientist; M.S. Energy Science
- **Jonathan Colby:** Director of Technology Performance; a recipient of an American National Standards Institute Award
- **Aaron Hernandez:** Director of Corporate Development; 15 years of contract management and communications experience
- **Mary Ann Adonizio, PE:** Director RAFA team; NYC Project manager; 35+ years of electric utility & hydropower experience
- **Jeff Calkins:** Manufacturing Quality Control Consultant, 35 years of operations management / manufacturing engineering experience



Gen5 Free Flow System

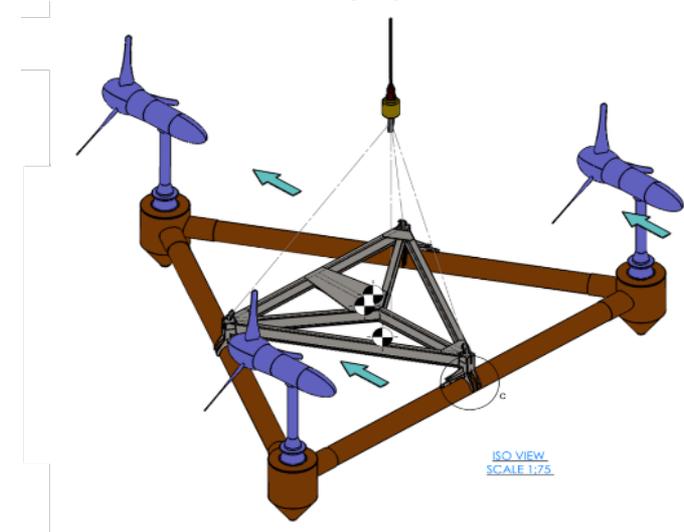
Technology

Competitive Advantage - Tailored to Sites



- Gen5 FFS with state of the art rotor sizes being scaled and extended for higher velocity currents and deeper waters (Gen5, 10m FFS)
- TriFrame™ mounting system supports three Gen5 FFS at once onto seabed cost-effectively
- Benefits of the new mounting system:
 - Provides for utility-scale systems ranging from 100 kW to 1.5 MW or more on each TriFrame™
 - Allows greater adaptation for utility and village-scale systems in more common water conditions than those found off the coast of Scotland or in the Bay of Fundy
 - Lowers O&M costs due to faster deployment and retrieval

Gen5 FFS TriFrame™ Mounting System



Power (kW) Generated by Gen5 FFS with Various Rotor Sizes (m) and Velocity Currents (m/s)

FFS Turbine	Rotor size (m)	2 m/s (kW)	3 m/s (kW)	4 m/s (kW)
Gen5, 5m	5	28	95	224
	7	55	190	450
Gen5, 10m	10	115	385	920
	11	138	470	1,110

The Gen5 Free Flow System was designed for simplicity in order to make it robust and reliable, as well as to minimize assembly and maintenance costs

Technology

Development Roadmap: Path to Competitiveness



The Company's long-term competitive advantage stems from its developmental philosophy focused on rugged and simple technology, extending service life, and minimizing costly on-water work that reduces OPEX costs:

Focus on Operations: Hardware is designed to allow minimization of on-water work time e.g., TriFrame™

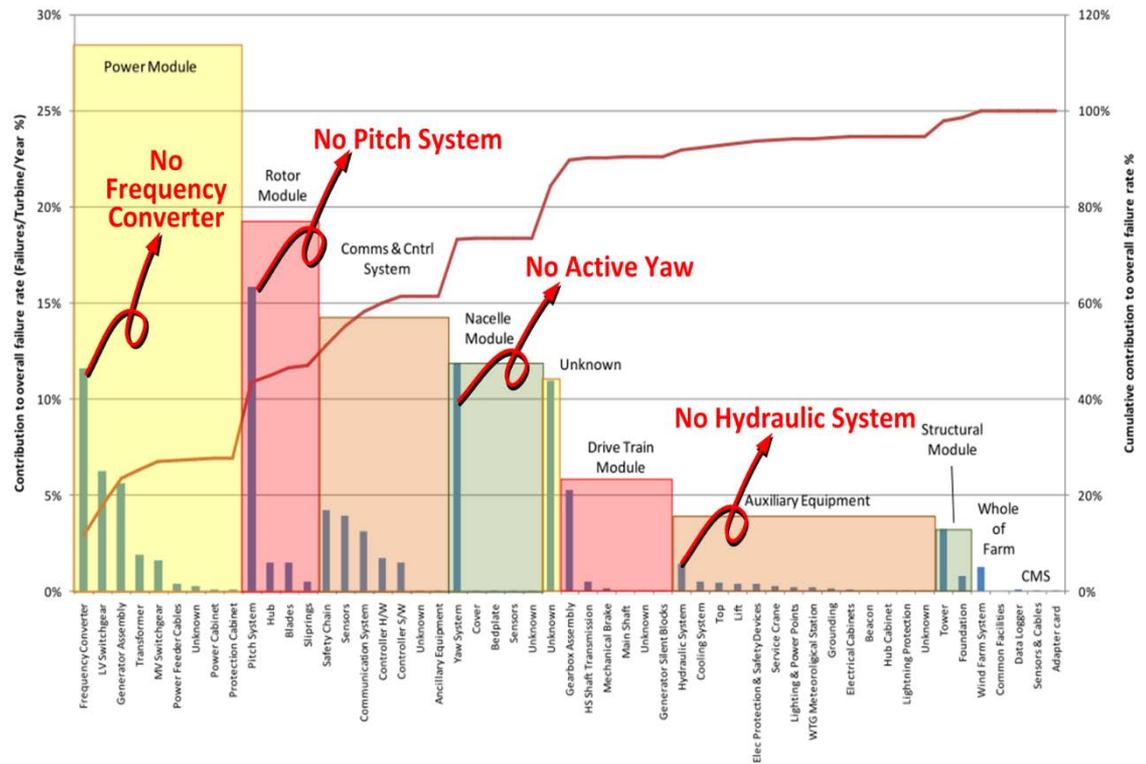
Simplicity: Eliminating complicated components that are expensive, delicate and unreliable.

Reliability: 5-yr service interval target between maintenance with near zero downtime.

Ruggedness: Enhanced ability to withstand extreme conditions and long-term fatigue without failure.

Testing & Experience: No computer modeling nor model testing can replace need for Verdant's in-water full-scale testing.

Competitive Advantage is Keeping it Simple - the Key to Reliability



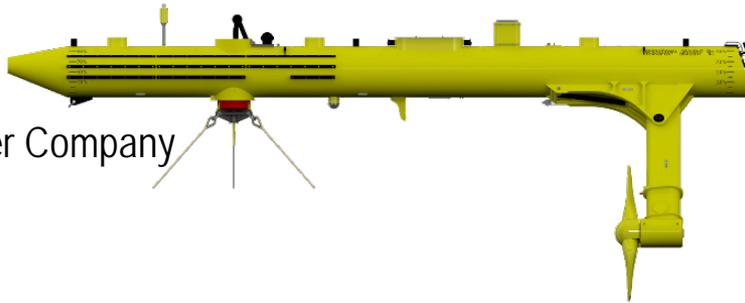
Wind Turbine Sub-System Failure Rates (ReliaWind database)

Competition - River

Complex, Costly Surface Systems Subject to Fouling

Competitors (All but one Euro-based)

- Scotrenewables
- Tocardo
- Ocean Renewable Power Company
- Nautricity
- Smart Hydropower



River Competitor Disadvantages

- Sited on surface - subject to floating debris and slower flows
- Ducted systems - represent higher CAPEX and O&M, more fouling and environmental concerns due to entrainment
- Limited operating times, complex designs, reliability risks due to debris and fouling



Verdant Power Advantages (Gen5, 7m FFS)

- Bottom mounted; rotors near fastest water flows
- Un-ducted system - less fouling potential
- Readily scaled; greater site application
- Fewer moving parts and higher efficiency
- Market leader - tested and proven technology



Market

Growing Demand for Hydropower as Distributed Generation



- Hydropower represents 76% of all global renewable energy and could reach 2,000 GW capacity by 2050 according to the World Energy Council (May 2015)
- Hydropower as DG, or hydrokinetic energy, is sited near population centers in tidal straits, which are more predictable than wind or solar, and in rivers, which are more reliable than either, with capacity factors ranging up to 80%
- IPCC, 2011: Intergovernmental Panel on Climate Change Special Report on Renewable Energy Sources states: *"While (hydrokinetic energy) includes generation from ocean tides and currents, it is believed that its most practical application in the near term is to be in rivers."*
- Company is seizing opportunity with its Gen5 FFS or commercial standard system that is tailored to sites, e.g.,
 - Rivers and tides near load centers and urban areas
 - Additional capacity for dams as "incremental power"
 - Create capacity for non-hydropower dams
 - Replace diesel generators in remote communities

U.S. & Canada - Moses-Saunders Dam
St. Lawrence River



More than 2,000 "diesel villages"
Amazon River Basin



Market

Customers & Market Approaches

- Customers of Verdant Power's technologies and services are end users or project sponsors including utility companies, independent power producers, investor sponsors, and owner / operator entities.
- Four basic and integrated DG approaches:
 - Incremental power e.g., dam owner / operators
 - Utility-scale power e.g., Wales tidal project
 - Village-scale power e.g., Victoria Falls river project
 - Hybrid power e.g., with wind, solar, biomass, etc.
- Business development methodology and political will
 - U.S. government approach e.g., International Trade Administration, Advocacy Center, USAID & USTDA
 - State government approach e.g., Empire State Development and NY Global
 - NGO/donor approach e.g., United Nations Development Program, Green Climate Fund, and the World Bank
 - Nonprofit approach e.g., Anchor Coalition



Wales - Anglesey's Morlais Demo Zone
Holyhead



Zimbabwe - Water-Energy-Food Nexus
Victoria Falls

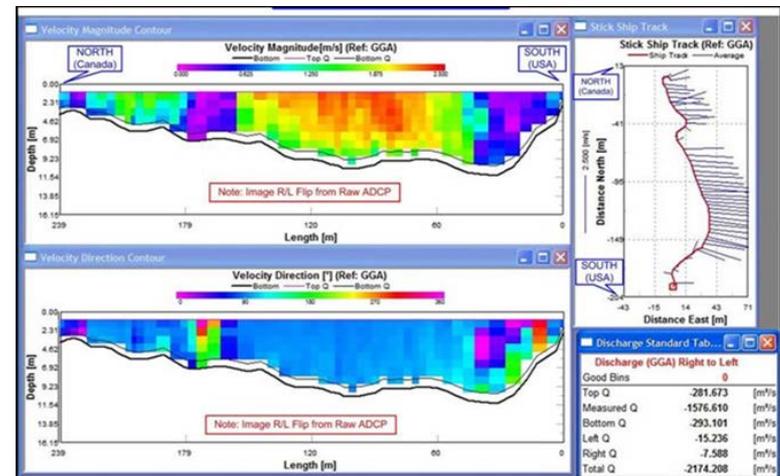
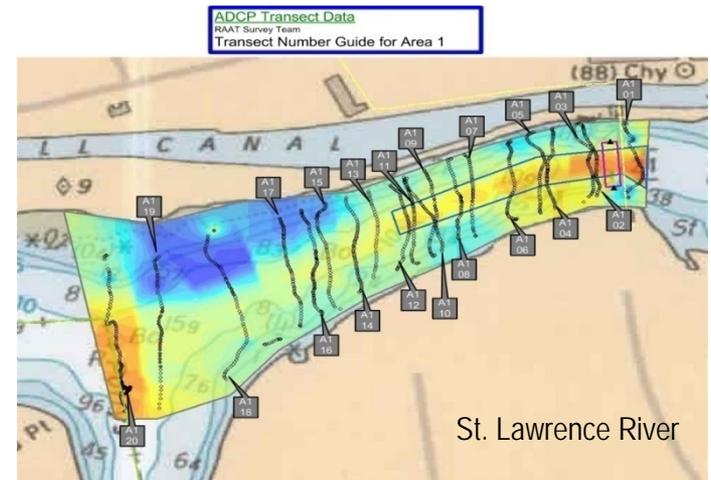


Market

Begins with In-Country Partners & Feasibility Studies



- Verdant forms in-country partnerships and with its unique experience, acquired in the U.S. and internationally, conducts resource assessment & feasibility analysis ("RAFA") in determining economic viability of a site
- Given Verdant's expertise with grid-connected arrays and on-water surveys, it provides services to:
 - Evaluate sites (using Geographic Information System [GIS] modeling techniques to analyze a site's topography, velocity, depth, and current); and
 - Tailor its Gen5 FFS to optimize array performance at that site using its proprietary techniques
- RAFAs or feasibility studies are undertaken as a revenue stream and to build an active order book
- U.S. Trade & Development Agency (USTDA) supported Verdant's feasibility study concluded in Turkey for river projects below dams with in-country partner - General Directorate of State Hydraulic Works (DSi)



Market

Marine Renewable Energy Increasing Sevenfold



Global Total Addressable Market (TAM) - 250 GW

- River - 140 GW (World Energy Council)
- Tidal - 60 GW (Ocean Energy Council)
- Canal - 50 GW (Federal Energy Regulatory Commission)

Industry Serviceable Available Market (SAM) - 23 GW

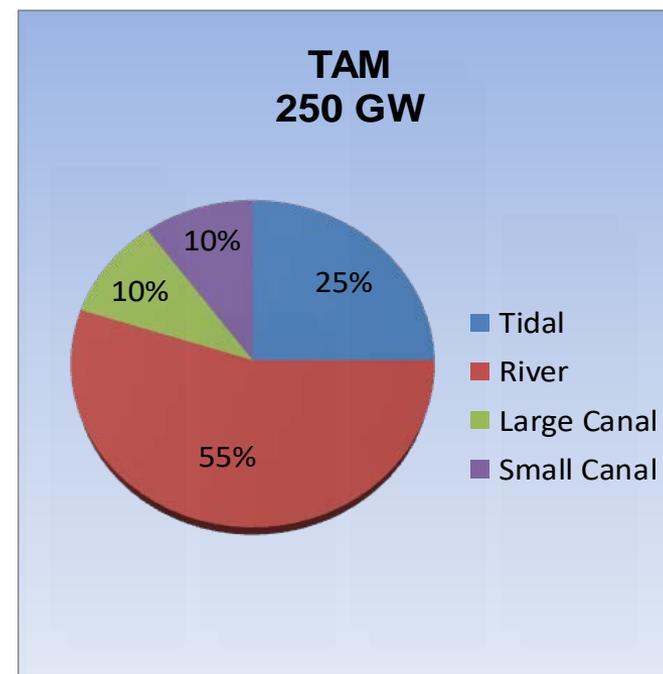
- Capacity to reach 23 GW by 2028 (\$80 billion) - Electric Power Research Institute (EPRI)
- Installed capacity to increase 7X by 2021 - PIKE Research Report

Verdant Power's Share of Market (SOM) - 3 GW

- Projected financials and pipeline by 2028
- Developing countries - 1.8 GW
- Developed countries - 1.2 GW

New York State Market - 1 GW, according to NYSERDA

- New York City region - Long Island Sound area
- Upstate New York - St. Lawrence River and Niagara River areas



Market

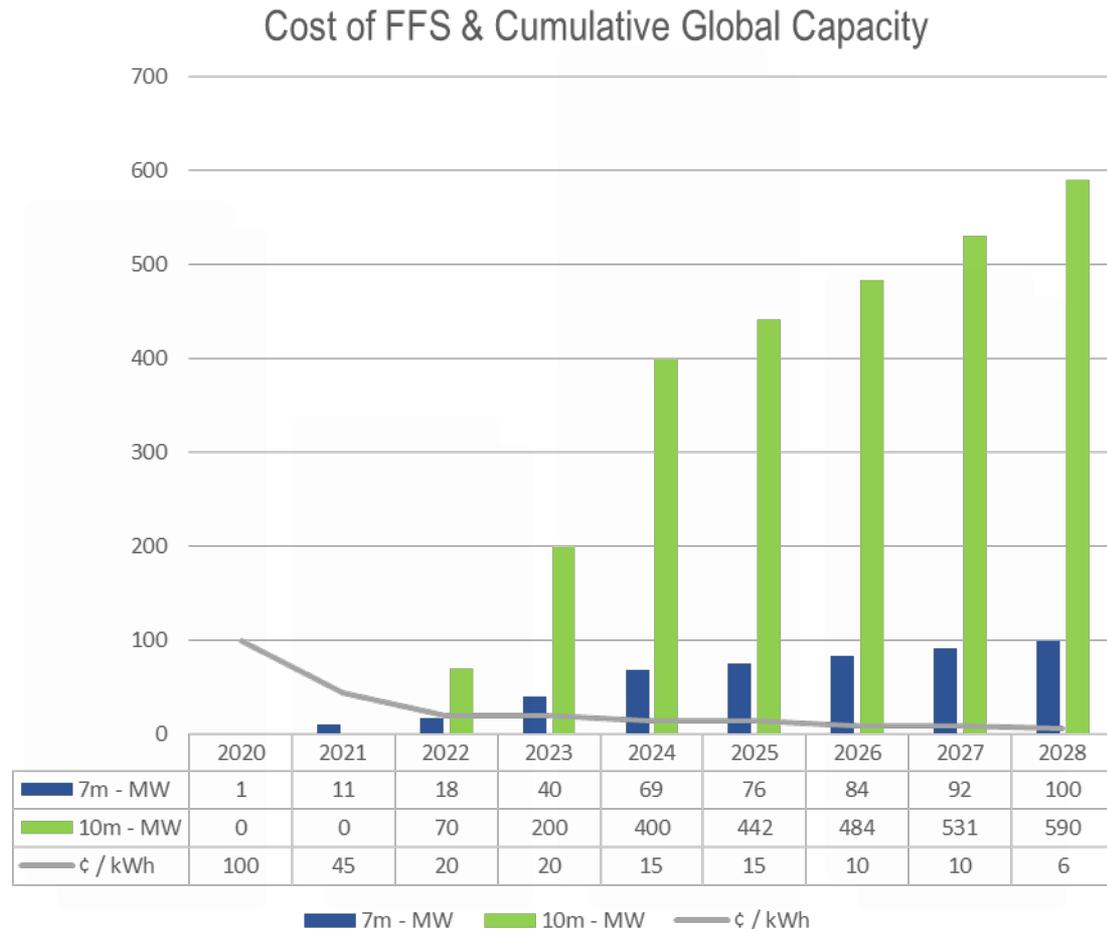
Free Flow System Costs to Decline within Four Years



Chart shows declining FFS costs that are within industry predictions, according to DOE and SEAI*

**Wave and Tidal @
2GW Deployment
€10-20c/kWh**

*Sustainable Energy Authority of Ireland;
February 2016



Financials - Revenue Model, P&L Summary

Multiple Revenue Sources, Favorable Margins



Customers: End users or project sponsors including utility companies, independent power producers, investor sponsors, and other owner/operator entities. The Company's revenues and profits will be derived from feasibility studies, the supply of technology and equipment and maintenance services to full-scale commercial projects.

<u>P & L Statement (\$000)</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>
Gross Revenue							
RAFAs	\$1,500	\$7,250	\$11,500	\$12,750	\$12,250	\$12,750	\$13,250
Turbine Sales	\$0	\$0	\$4,639	\$29,282	\$73,882	\$151,738	\$275,000
O&M Services	\$0	\$0	\$680	\$9,432	\$64,040	\$117,072	\$215,128
Project Promote	<u>\$0</u>	<u>\$0</u>	<u>\$330</u>	<u>\$2,123</u>	<u>\$5,387</u>	<u>\$11,167</u>	<u>\$20,187</u>
Total Revenue	\$1,500	\$7,250	\$17,149	\$53,587	\$155,559	\$292,727	\$523,565
Cost of Goods Sold							
RAFAs	\$1,260	\$6,090	\$9,660	\$10,710	\$10,290	\$10,710	\$11,130
Turbine Sales	\$0	\$0	\$3,436	\$21,691	\$54,728	\$112,399	\$203,704
O&M Services/Project Op Exp.	<u>\$0</u>	<u>\$0</u>	<u>\$567</u>	<u>\$7,860</u>	<u>\$53,366</u>	<u>\$97,560</u>	<u>\$179,273</u>
Total COGS	\$1,260	\$6,090	\$13,663	\$40,261	\$118,384	\$220,669	\$394,107
Gross Profit	\$240	\$1,160	\$3,486	\$13,326	\$37,175	\$72,058	\$129,458
General Selling & Admin Expense	\$2,307	\$4,720	\$6,404	\$9,080	\$15,098	\$21,107	\$29,218
EBITDA	(\$2,067)	(\$3,560)	(\$2,918)	\$4,246	\$22,077	\$51,041	\$100,240

Financials - Capital Expenditures

Equity Supports Investments for Commercial Operations



<u>Capital Expenditures (\$000)</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>
Gen5, 5m FFS - Commercialize / TriFrame™	\$4,600	\$3,680	\$920				
Gen5, 7m FFS - Design / Commercialize		\$247	\$741				
Gen5, 10m FFS - Scale / Design / Commercialize			\$1,478	\$3,696	\$9,608		
River Mounting System - Development / Demonstration	\$633	\$3,257	\$633				
Assembly Facility			\$545				
General RD&D				\$125	\$175	\$200	\$250
Gross Capital Expenditure	\$5,233	\$7,184	\$4,317	\$3,821	\$9,783	\$200	\$250
CAPEX Related to Personnel	\$1,356	\$1,791	\$1,488	\$1,269	\$3,299		
Net CAPEX Expenditure	\$3,877	\$5,393	\$2,829	\$2,552	\$6,484	\$200	\$250

Financials - Sources & Uses

Government Grants Leverage Equity Investment



<u>Sources & Uses Summary (\$000)</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>
Operating Cash Flow	(\$2,067)	(\$3,560)	(\$2,918)	\$4,246	\$22,077	\$51,041	\$100,240
Capital Expenditures	(\$3,877)	(\$5,393)	(\$2,829)	(\$2,552)	(\$6,484)	(\$200)	(\$250)
Legacy Liabilities	(\$1,254)						
Transaction Fees	(\$600)						
Government RD&D Grant Funding	\$1,283	\$3,407	\$1,852				
Total Cash Generated	(\$6,515)	(\$5,546)	(\$3,895)	\$1,694	\$15,593	\$50,841	\$99,990
Equity Investment	\$15,000		\$5,000				
Cumulative Cash Position	\$8,485	\$2,939	\$4,044	\$5,738	\$21,331	\$72,172	\$172,162

Important Disclosures & Risk Factors



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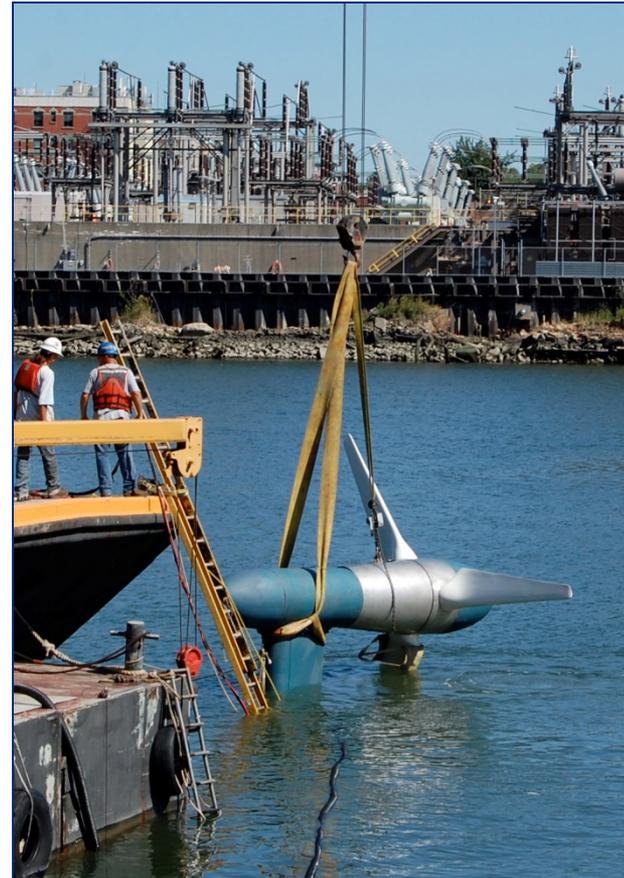
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