



Patented Technology

**Commercial Grade Energy  
not in the Wave  
but in the Ocean Current below...**



Changing The Way  
We Power The World



**May 2020: President Trump issued an executive order to declare a national emergency over threats to the U.S. power system.**

The Office of Cybersecurity, Energy Security and Emergency Response state that “malicious actors” have targeted our power system for decades. One electromagnetic pulse (EMP) could destroy the U.S.

**The GT Turbine is EMP proof as it is under water.**

**California has rolling blackouts due to the insufficiencies of current “clean solar and wind power” and the demand is increasing due to the shift of electric vehicles.**

There is no doubt that the demand for clean, reliable and affordable electricity is greater than ever. Solar and wind just don’t get it done.

**The patented GT Turbine technology offers low-cost, zero emission power 24-7 and can provide commercial scale power.**



**GT Hydro** is a young company with a patented hydrokinetic technology that harnesses the natural energy of flowing water to generate renewable energy at a very competitive cost with even less of an environmental impact than other renewable energy sources. Commercialized operation requires no government subsidies to compete.

The **GT Hydro** is different from all other hydro technologies.

Most other hydro technologies try to spin faster to get more energy, but the bigger they get, the greater the torque problem. With the **GT Hydro** “wheel”, fluid is pushed through an internal turbine more than 100 times faster than the speed of the wheel!

**GT's** turbines are simple and contain only a few moving parts, thus requiring very little maintenance. The systems are incredibly competitive when compared to other methods of generating electricity. The turbines will be installed in fixed locations in rivers and oceans around the world.



# Today's Sustainable Energy Options

Solar (photovoltaic, thermal)

- higher cost, environmental impact
- ... intermittent source - energy storage?

Wind

- higher cost, environmental impact
- ... intermittent source - energy storage?

Conventional Hydroelectric (dams)

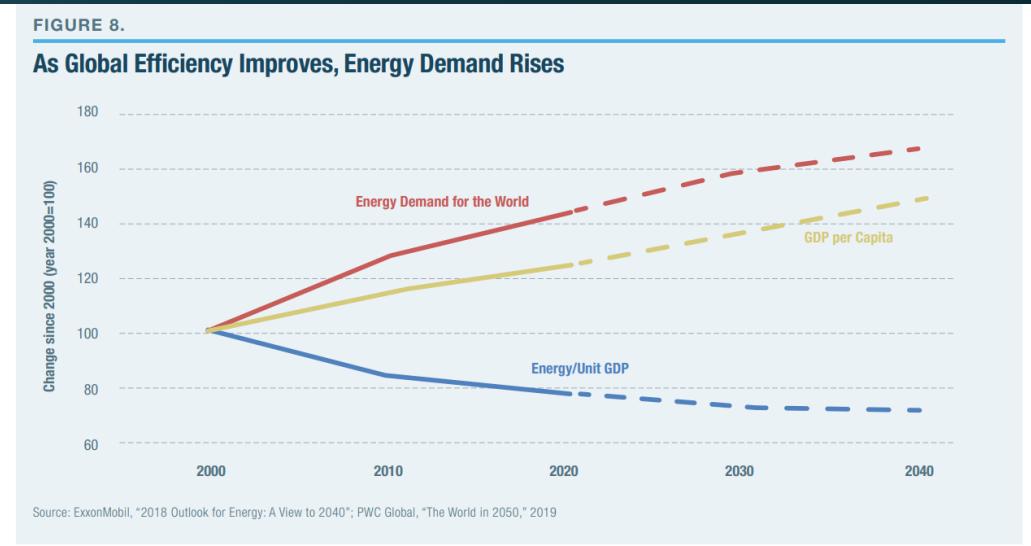
- capital cost, environmental impact, age, natural disaster consequences
- ... new construction unlikely - increase in capacity unlikely

Hydrokinetic (capture energy in moving water)

- lower cost, less environmental impact

**... produces electricity 24/7!!!**

# Demand for Clean Energy



As clean energy technology improves and the industry seeks to be more efficient, the demand for clean energy technology will increase dramatically. Attributes of **GT Hydro** technology will impact these efficiencies and help meet the increased demand. **GT Hydro** is poised to have a huge impact on Hydro renewable energy.

Electric vehicles will play a significant role in the increased demand for cleaner renewable energy. By 2040, the expectation is that 57% of all passenger vehicle sales, and over 30% of the global passenger vehicle fleet, will be electric. \*

\*  
Electric Vehicle Outlook 2019, BloombergNEF



# Technology and Renewable Energy

- The World energy market is going through significant upheaval as operators wrestle with an imbalance between supply and demand.
- With a greater focus on efficiencies and cost containment it will push the boundaries of future technology in renewable energy.
- Solar and Wind has made huge improvements in efficiencies, but are reaching a number of physical limits on power output with today's technology and mechanical components. Require a tremendous amount of land.
- Hydro power also faces its physical limitations. Even with huge strides in the renewable hydropower sector it also is reaching similar technology and mechanical limitations today.
- Torque is one of the major components and issue in producing renewable utility scale power. **GT Hydro** patented technology replaces mechanical devices with an internal sealed fluid drive system solving the Torque problem.

# Energy and Utility Market

In 2019 renewables as a whole, including hydroelectric recorded nearly 22 percent of the US capacity. Surpassing coal fired plants for the first time.

Target Customers:

- Utility and Power Generation Companies
- Government Entities
- Gas and Oil Industry
- Industrial Companies

Partner with an IT company to build an IoT solution that can be offered with the lease of the technology.



# Kinetic Energy in a Flow

Basic Physics: Any moving object has Kinetic Energy (KE)

$$KE = (1/2)mv^2$$

- Naturally occurring fluid motion (wind, river) contains KE
- How to capture KE and put it to work?

Challenge for Wind & Water:

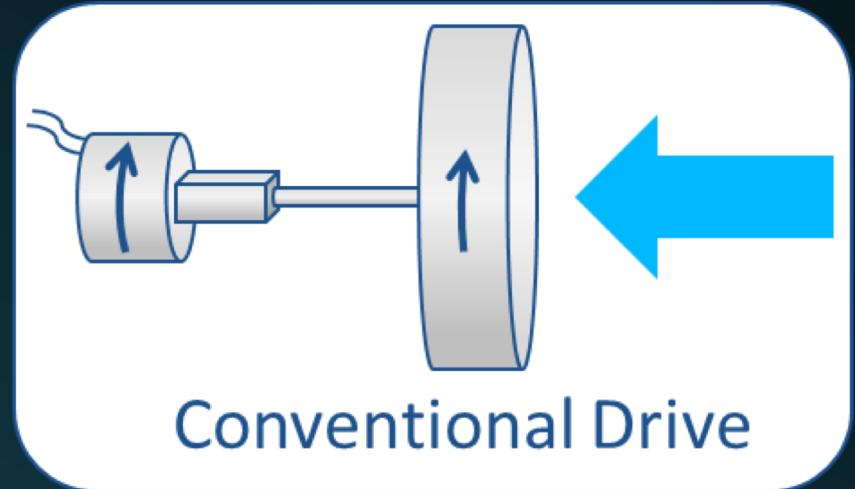
- Efficiency requires a mechanical transmission to increase internal speed
- This has an effect on the amount of electricity that is generated

Why don't we already have more hydrokinetic power generation?

← The Torque Problem →

# The Torque Problem

Faced by wind & hydrokinetic turbines:  
double diameter → **4** x(power)  
double diameter →  $\frac{1}{2}$  x(Rotational Speed)  
double diameter → **8** x(torque)



## Transmitting

1kW	@ 30 rpm.....requires ... 235 ft-lbof torque
1 kW	@ 1 rpm.....requires ... 7,000 ft-lb
10 kW	@ 1 rpm.....requires ... 70,000 ft-lb(≈locomotive)
1 MW = 1,000 KW@1 rpm....	requires ... 7,000,000 ft-lb(≈Nimitz)

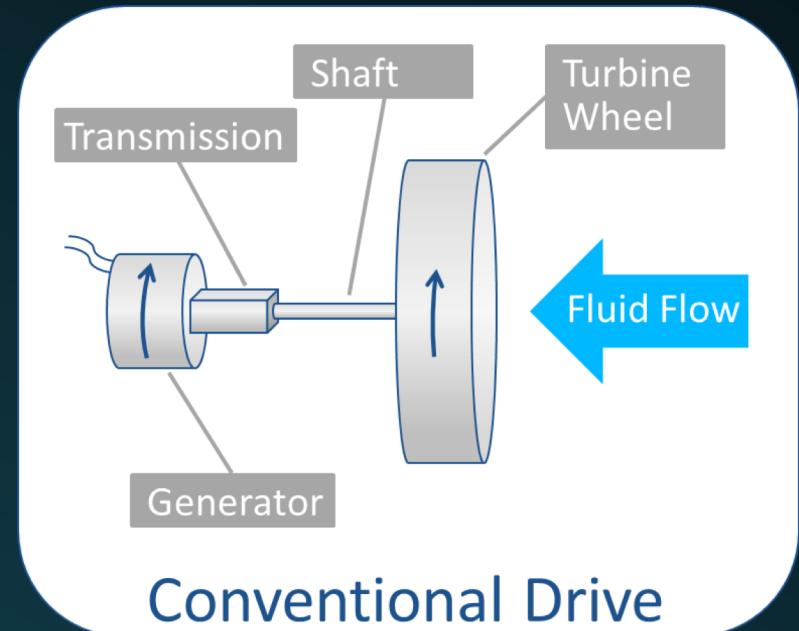
As machine size increases, the **transmission and shaft** required for conventional drive machines become more and more **EXPENSIVE to design, purchase, and maintain**

# Capturing Kinetic Energy

Conventional mechanical drive  
works well for modest size wheels

Scale up to large wheels  
introduces ...The Torque Problem

The **GT Hydro** technology  
has solved...The Torque Problem



## **GT Hydro Turbine**

*Power in the flow is proportional to wheel diameter squared*

**Double the Diameter → Quadruple the Power!**



# The **GT Hydro** Turbine Advantage

› ***The GT Hydro Turbine***

... replaces a conventional mechanical drive  
with a “Sealed Fluid Drive”

› ***The GT Hydro Turbine***

... eliminates The Torque Problem

› ***The GT Hydro Turbine***

... performance improves with increasing size  
with Zero Emissions!



Conventional hydroelectric power generation

- brings a flowing river to a stop in a reservoir
- drops the water through a turbine
- falling water spins turbine → drives generator

### **The GT Hydro Turbine**

- captures hydrokinetic energy
- lifts internal fluid (closed system)
- drops the internal fluid through a turbine
- falling internal fluid spins turbine → drives generator

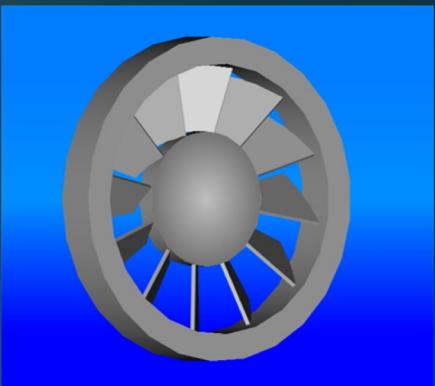
Capture hydrokinetic energy

- ... to provide mechanical power
- ... to lift internal fluid
- ... replace the dam!



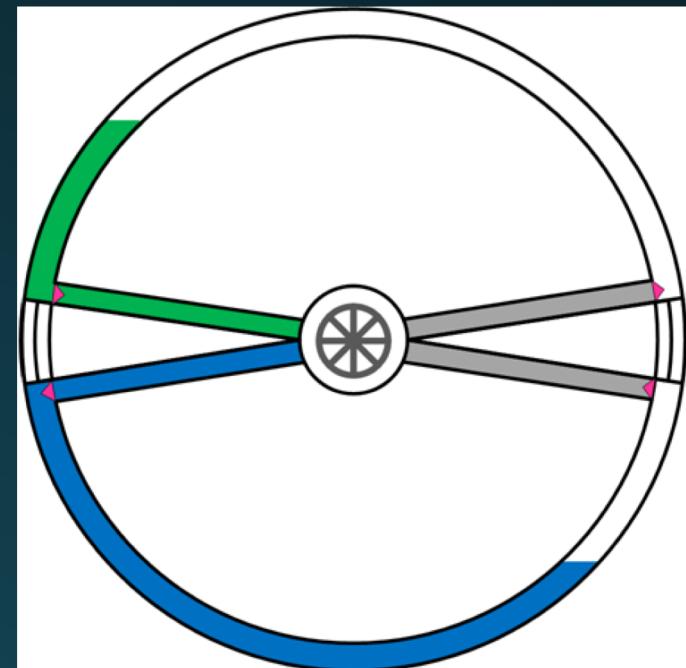
Prototype Deployment  
Front View

# What is a Fluid Drive?



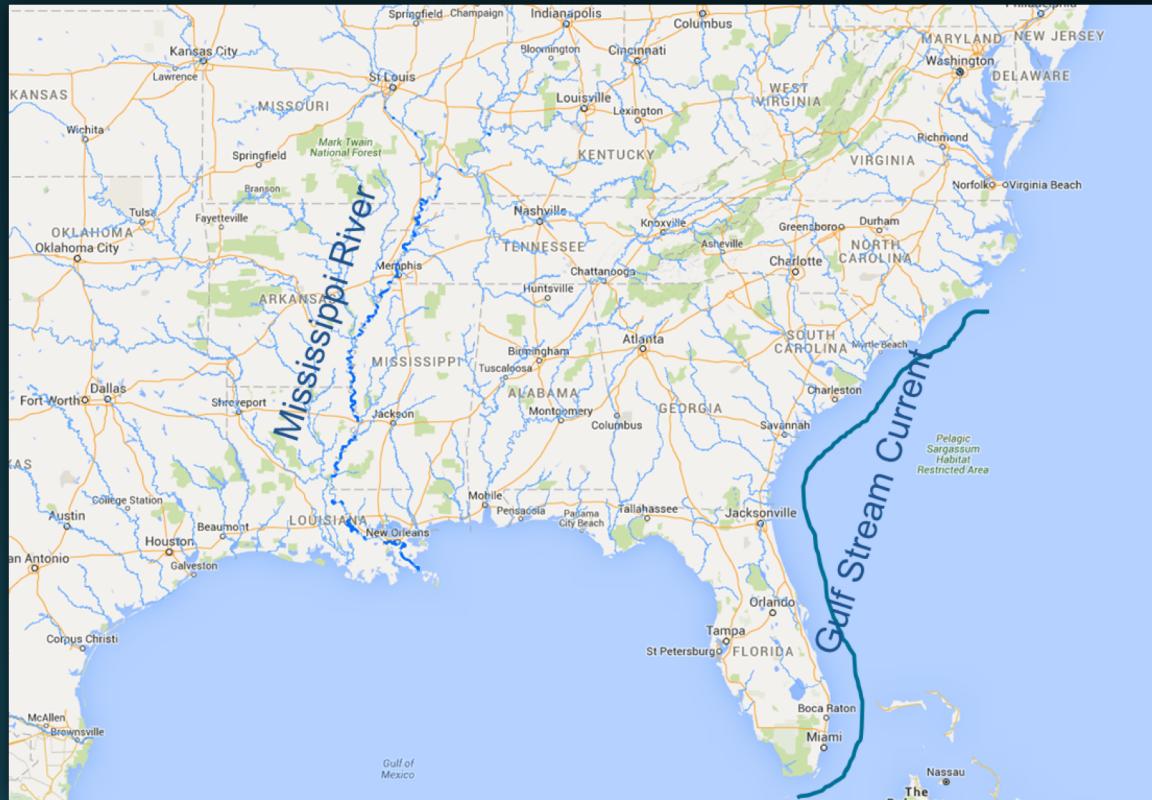
Water flows through the turbine wheel.  
Flow strikes the blades and spins the wheel.

Looking downriver, inside the wheel,  
fluid in upper tank (green)  
... drains through the hub,  
... into the lower tank (blue),  
... spins the turbine in the hub, and  
... drives the generator.  
*(gray is fluid trapped by check valves)*

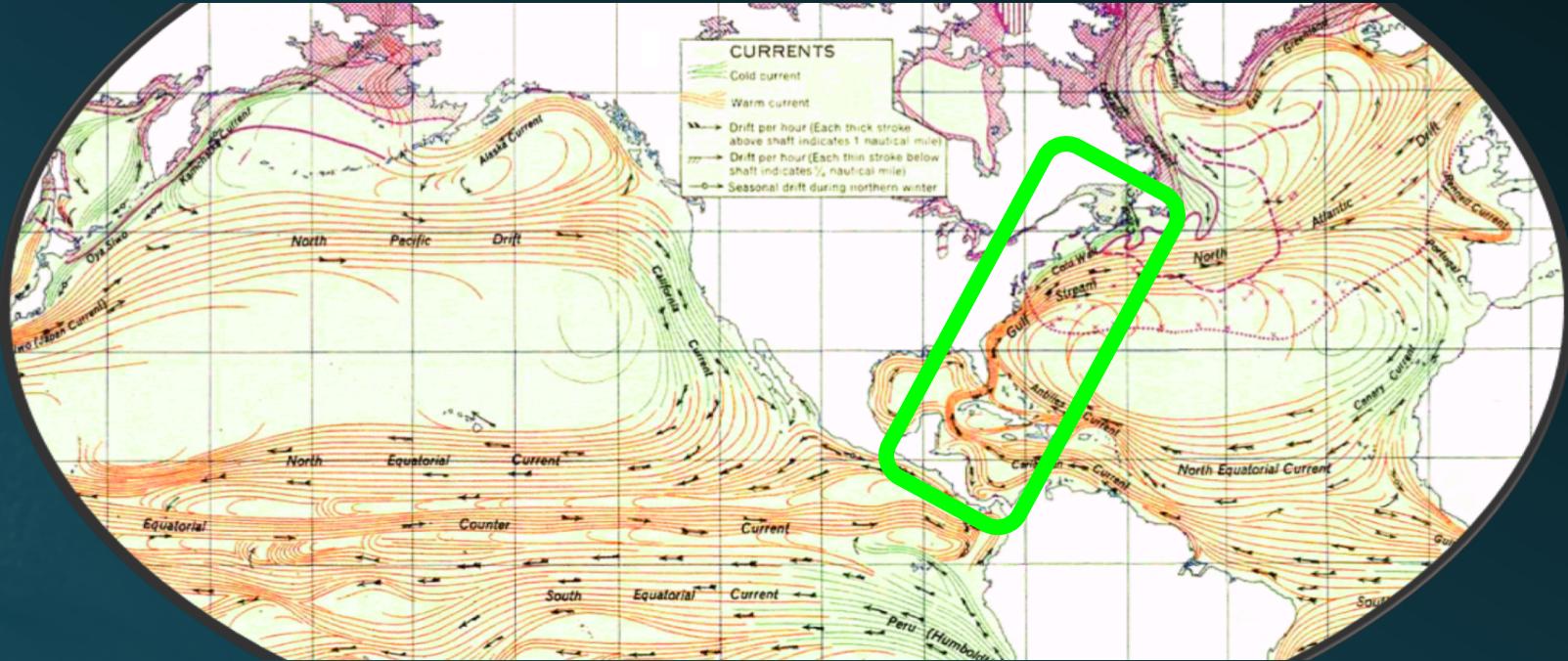


# Primary Focus Areas

**GT** Hydrokinetic units will be deployed in high volume, deep water areas



# Gulf Stream Power



Once the Gulf Stream gains enough strength after circulating in the Gulf of Mexico, it then moves east, rejoins the Antilles Current, and exits the area through the Straits of Florida. In this location, the Gulf Stream is a powerful underwater river that transports water at a rate of 30 million cubic meters per second. [ref: About.com]



# **GT Hydro Turbine** - Attributes

Requires a hydrokinetic flow of sufficient depth

Benefits:

- Zero carbon footprint in operation
- Zero fuel cost
- Simplicity leads to reliability & durability
- Environmentally benign
- Can be scaled-up to provide multiple MW per unit...  
**Double the Diameter → Quadruple the Power!**
- Generates power 24/7
- Economically competitive with other energy sources
- Faster Return On Investment



**GT Hydro** recently reorganized into a Board managed entity to take advantage of technical, financial and business savvy resources that will enable the company to commercialize a proven sustainable technology.

In April 2011, **GT Hydro** completed a successful “proof of concept” test for the TVA with the launch of an 18' prototype. After the completion of a data flow test, **GT Hydro** will be prepared to move forward with an aggressive commercialization plan.

- **30' Diameter Turbines** – Capable of generating **147 kilowatts** of power in deep rivers.
- **100' Diameter Turbines** – Capable of generating **1.5 Megawatts** of power in ocean currents
- **250' Diameter Turbines** – Capable of generating **10 Megawatts** of power in ocean currents

An initial investment is required to retrofit and deploy the proof of concept system which will create substantial marketing opportunities. Initial investors will gain a significant interest in **GT Hydro** and the good fortune to own the “patented” flagship turbine.

Unlike existing Hydro technologies, the bigger the system, the better it performs.



# **GT Hydro Turbine** – Business Plan

The Prototype has proven the **GT** concept.

**GT Hydro** will conduct a performance test in the Mississippi River to measure the output of electricity, test the efficiency of enhanced components and obtain system data.

**GT Hydro** is seeking an investment to accomplish the following:

- Engineer and build a 30 foot prototype system
- Perform test
- Complete international patents
- Hire an execution team
- Engage EPC and Fabrication firms

Early investors could reap huge profits as this technology surges. Investors will receive ownership interest in **GT Hydro** based on their investment.



# **GT Hydro** – Business Plan

## **GT Hydro** will ...

- Partner with utility companies seeking low-cost, zero-emission energy.
- Charge a one-time Technology Access Fee per unit, and an ongoing royalty for the use of the zero emission technology.
- Sell a complete system, ready for deployment, that will be engineered by an EPC firm and professional fabrication firm.
- Provide ongoing technical support, semi-annual inspections and access to technology upgrades during the life of the contract.
- Offer Turbines in four sizes geared toward various markets depending on water depth and speed.

# **GT Hydro** Phases

**PHASE 1 (PERFORMANCE TEST):** **GT Hydro** with the help of the US Corp of Engineers will build and deploy a 30 foot turbine in the Mississippi River to collect performance and engineering data for 60 to 120 days.

**PHASE 2 (RIVER POWER):** After the test, the performance and engineering data will be used to build additional units for possible deployment in the Memphis area and Cates Landing.

**PHASE 3 (GT 30 COMMERCIALIZATION):** **GT Hydro** will begin a market rollout of the GTH Technology to potential customers. Options would be to build units them self or contract **GT Hydro** to have them built and delivered.

**PHASE 4 (OCEAN POWER):** **GT Hydro** will expand market reach by implementing the patented technology in deep water at a global level to ensure a long product life. **GT Hydro** will begin Phase 4 expansion via the construction of 250' GT Turbines. Each **GT250** will generate **10.0 Megawatts** which is enough to power **7,700 homes**.

# **GT Hydro** Board Members

## **Michael G. Roberts**

Mike Roberts is the Co-Owner of Logix Transport Solution – Transportation Management Company. A resident of Memphis, TN, attended the University Of Memphis while working for his father in a family business. In the late 70's Mr. Roberts went to work in the transportation and logistics industry. Mr. Roberts has over 35 years in transportation and logistics management.

Mr. Roberts has held management position with Viking Freight System, Gainey Transportation and Skyway Freight Systems. As Director of Operations and Security while at Skyway Mr. Roberts was responsible for the development and implementation of distribution and transportation programs for a number of Fortune 500 companies like Apple Computer, HP and Dell Computers.

Prior to starting his own company in 2007 Mr. Roberts was Vice President of Pathmark Transportation for 4 years. Mr. Roberts has been a member of the Associated Transportation Club of Memphis for a number of years has been elected President of the Club twice. Since the startup of Logix Transportation Solutions the company has grown every year with revenues in 2019 that will exceed 5 million dollars.

## **Kenneth "Pete" Moss**

Pete Moss is the President and owner of Frazier, Barnes & Associates, LLC in Memphis, Tennessee. Pete has 25 years of industry experience, the last 21 of which have been with FBA. While with FBA, Pete has consulted on hundreds of biofuel and bioenergy projects including feasibility studies, business plans, commercialization and engineering services. In addition to FBA, Mr. Moss has formed 3 additional companies that operate successfully in the biofuels and bioenergy space.

Mr. Moss is a regular speaker at industry conferences and is frequently referenced by his published studies and articles. He holds a Bachelor of Science degree in Management from Henderson State University, and has a Masters in Business Administration from the University of Memphis' Executive MBA program. Prior to joining FBA, Pete was the Marketing Director for an oilseed processing firm in Arkansas and served as Vice President for First National Bank, also in Arkansas.

# **GT Hydro** Board Members

## **Dr. John Hochstein**

**Dr. Hochstein**, Professor of Mechanical Engineering, has been on the faculty of the mechanical engineering department at the University of Memphis since 1991 and served as department chair from 1996-2014. Working as an engineer in non-academic positions, he contributed to the design of the Ohio-Class submarines at the Electric Boat Division of General Dynamics and to the design of the Clinch River Breeder Reactor while an engineer at the Babcock & Wilcox Company. The focus of his doctoral studies was computational modeling of spacecraft cryogenic propellant management systems and he has remained involved with NASA research on this topic since that time.

Dr. Hochstein is an Associate Fellow of AIAA and has served on the Microgravity Space Processes Technical Committee from 1986 to 2016. He joined ASME as an undergraduate student and served for 4 years on the K20 Computational Heat Transfer Committee. He has twice been a NASA Summer Faculty Fellow for two consecutive summers.

Dr. Hochstein is a co-author of two textbooks widely adopted for use with introductory fluid mechanics courses. His current primary research interests are the capture of hydrokinetic energy to produce electricity, increasing the effectiveness and reliability a novel geometry for enhanced cooling of the trailing edge of gas turbine blades, and the use of hydrophobic materials to manipulate fluids in a reduced gravity environment.

## **Christina L. Williams**

Christina Williams is currently an Executive level administrative assistant for the Vice President of Security, U.S. at FedEx Express with sixteen years of business experience. In her present role, she supports an organization of 500+ employees which reports to the General Council of Express. She is currently attending Western Governors University – Tennessee to complete a Bachelor's of Science in Business Management. Mrs. Williams is Project+, and QDM (Quality Driven Management) certified. She is also CERT (Community Emergency Response Team) certified and has participated in Disaster Recovery projects. Mrs. Williams has designed and implementing specialized training for analytical and reporting systems, and has twelve years in project management, conducting budget audits, procurement, and executive presentation development.

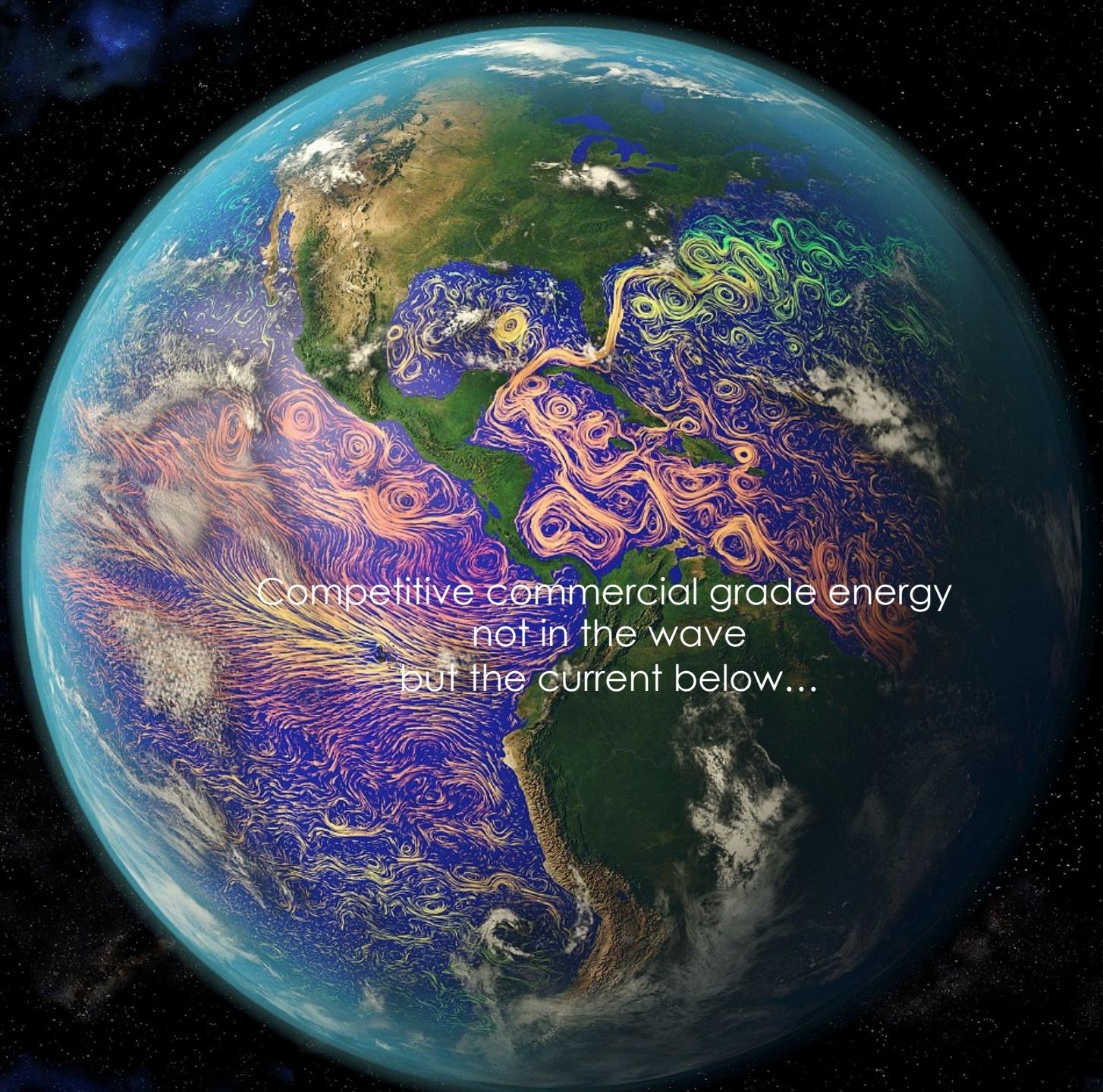
# **GT Hydro** Board Members

## **Christina L. Williams**

Mrs. Williams serves on the Board of Directors for Greene Turbine, LLC. as Secretary and Treasurer of the Board, and she also serves as a motivational speaker/presenter for the non-profit organization, Girls of Grit. This organization provides teen girls educational experiences, tours, and activities designed to develop leadership skills, build confidence, teamwork and promote service to the community.

## **Eddie Robinson**

Eddie Robinson is currently the Chain Sales Director for West Tennessee Crown Distributing Co., responsible for the Grocery and National Chains Sales divisions. WTC is a premier Alcoholic Beverage Distributor serving all counties in West Tennessee. Having spent over 35 years in the Alcoholic Beverage industry, spanning all tiers, Eddie brings a wealth of business knowledge. One of 46 individuals nationally recruited to participate in E & J Gallo Winery sales/management training program, moved to Los Angeles in 1984. Went on to hold multiple Sales and Management roles at E & J Gallo Winery effectively creating and executing strategic brand plans. As an entrepreneur, opened Wine Rack Liquors, growing the business to be in the top 15 retail stores in the West Tennessee market, sold it and went back to the supplier side working for Sazerac then Constellation Brands, covering seven states. Having called on the Tennessee Distributors for over fifteen years, joined WTC to initiate wine sales entering the grocery channel. Eddie holds a B. S. in Business Administration from the University of Tennessee.



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This technology  
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Interested investors should contact  
901-229-1395 or 901-725-7258