a Florida Hydro company

Overview

The Gulf Stream Energy Project is an offshore development plan to suspend lightweight generators underwater in the Gulf Stream ocean current to produce clean electricity at a cost competitive with fossil fuels

Agenda

- Energy Resource
- Technology
- Development Plans
- Discussion

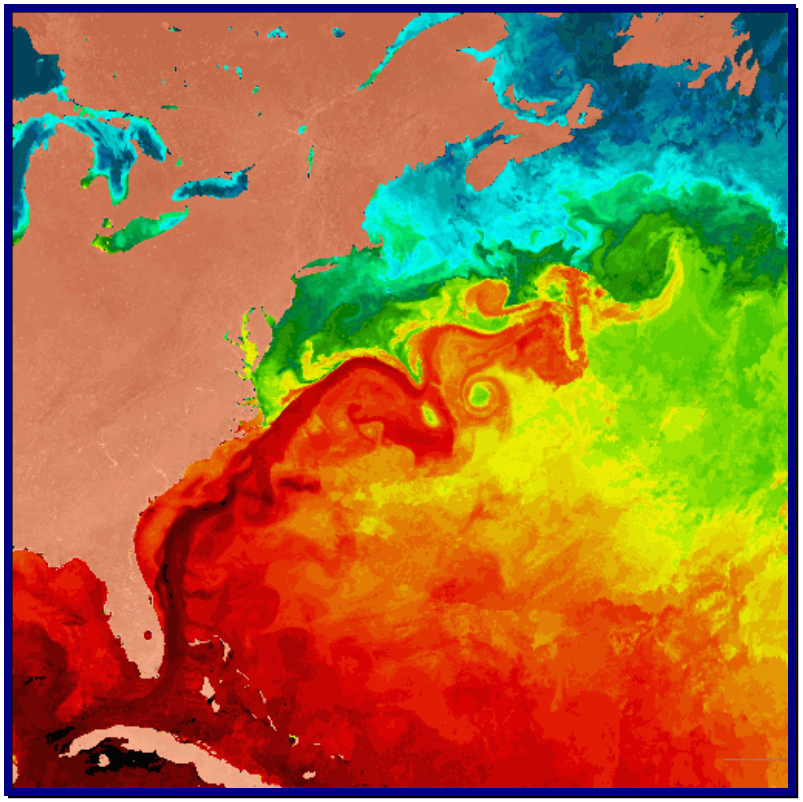
1 The Gulf Stream

Energy Potential

Largest ocean current in the world

30 million cubic meters per second

21,000 times more energy than Niagara Falls

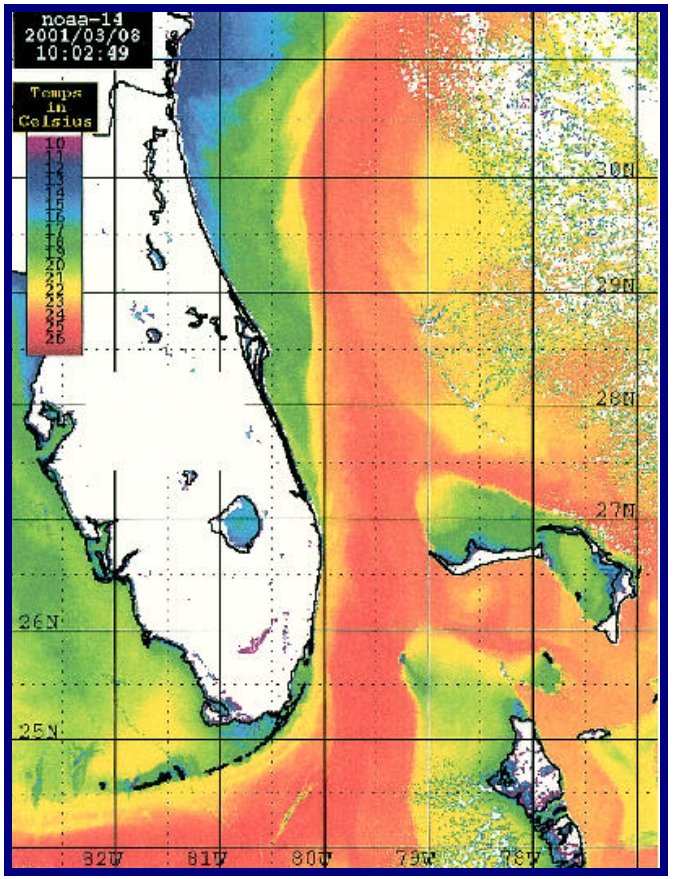


Florida's Gulf Stream

Average sustained flow of 3 knots or higher

Constant and predictable

Only 5 miles offshore in southern FL



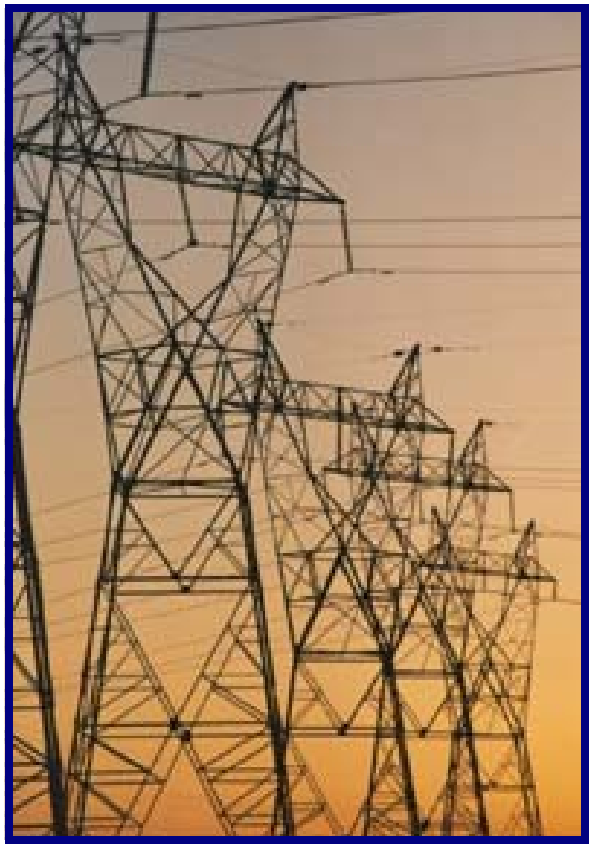
Energy Characteristics

Water has 832 times more density than air

3-knot current has the kinetic energy of a 100+mph wind

Electrical Capacity

Taking just 1/1000th of the available energy from the Gulf Stream would supply 35% of Florida's electrical needs



Florida's Market

- 4th largest market in the United States
- 200,000,000 Megawatt-hours consumed per year (5% of U.S. Total)

Why Hasn't This Been Done?

The idea has been widely explored, but no developer has been successful due to:

- Technological Limitations
- Financial Failures
- No Federal Support

2 Technology

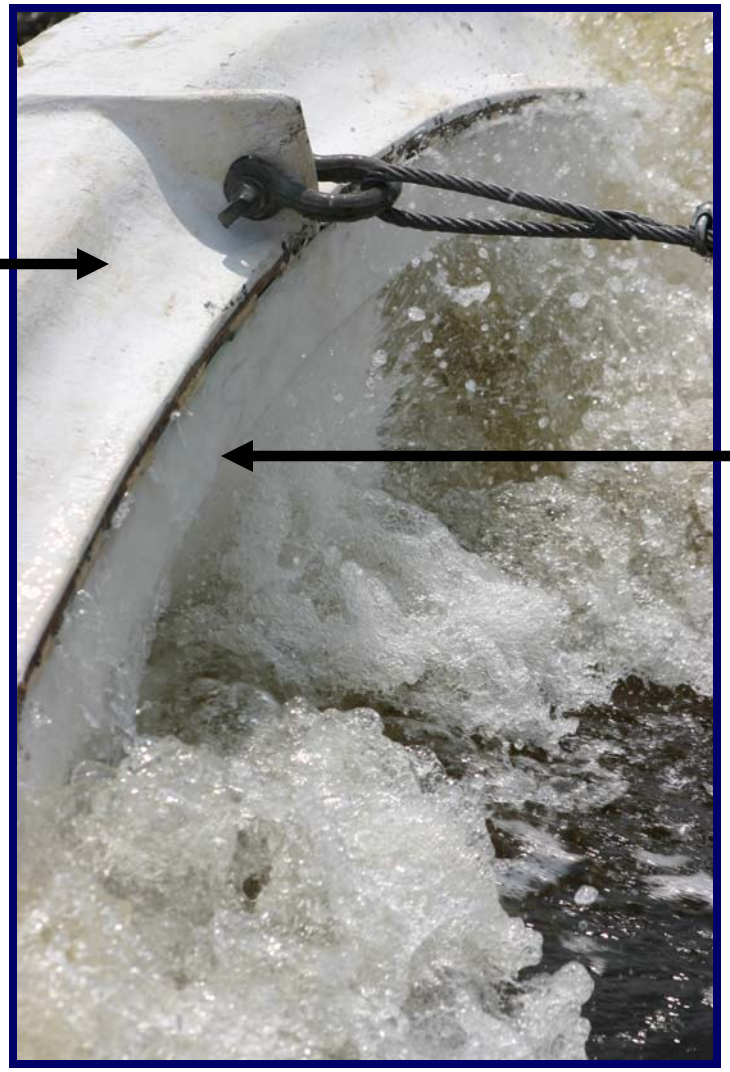
The Open-Center Turbine

Capable of converting energy of Gulf Stream into usable electricity

Each unit is a stand-alone generator

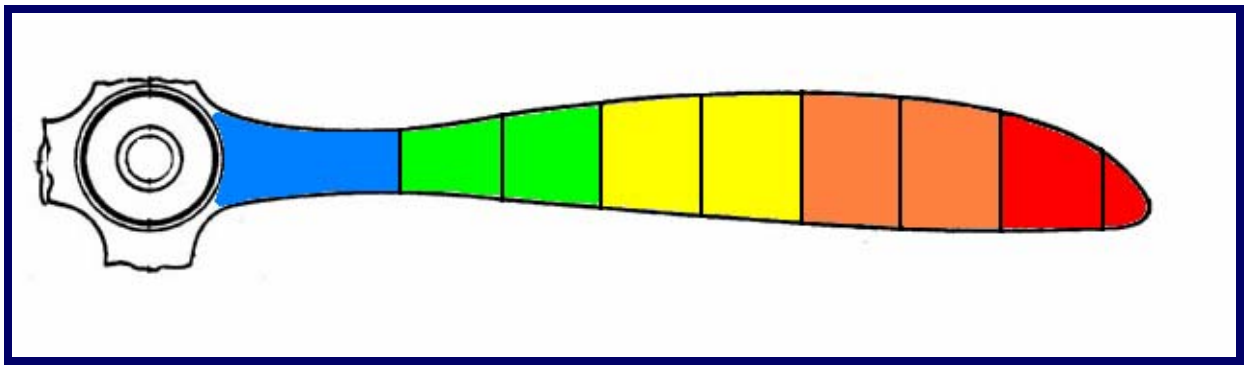
Operating Principle

Fixed outer rim

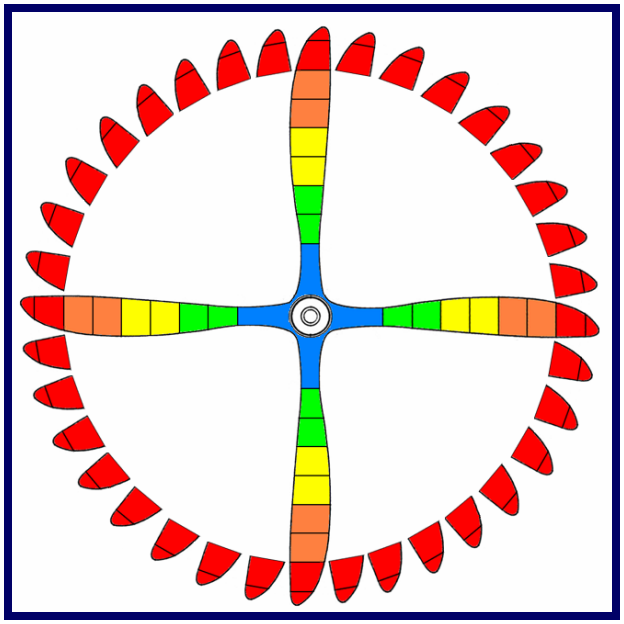


Inner rotating disc

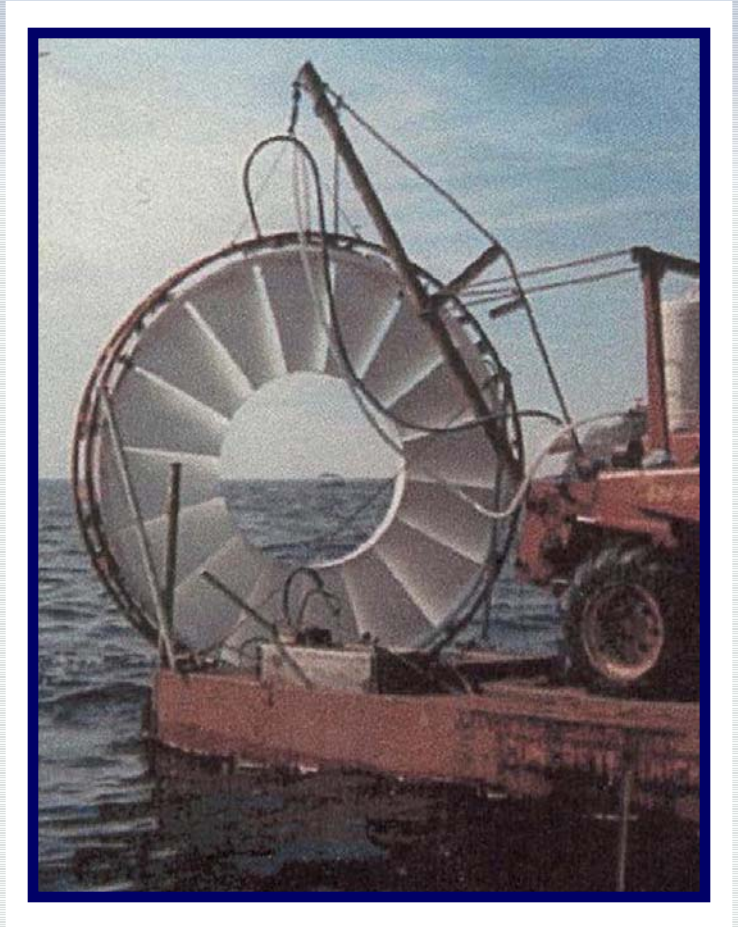
Concept Origin



Concept Design

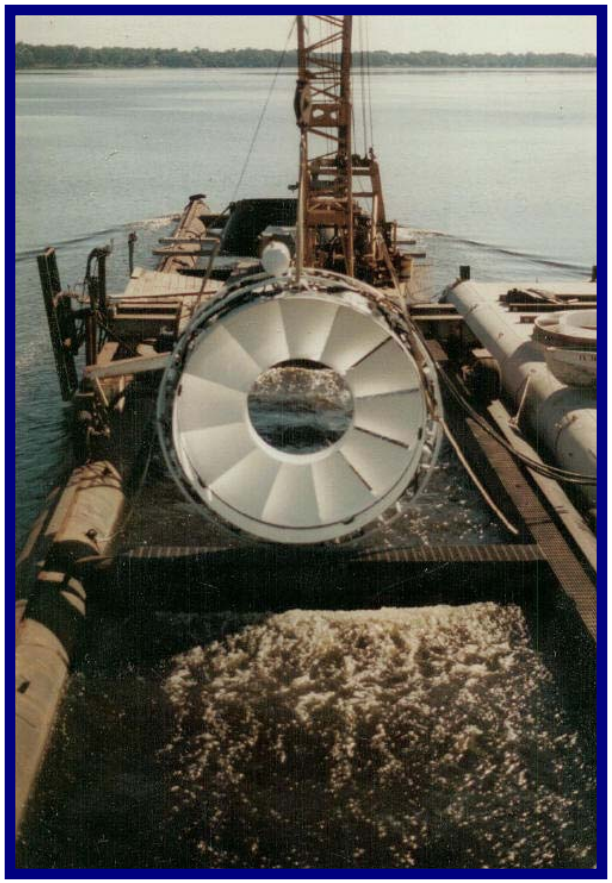


The First Prototype



The Second Prototype

Testing the Second Prototype



The U.S. Navy

3-Year CRADA

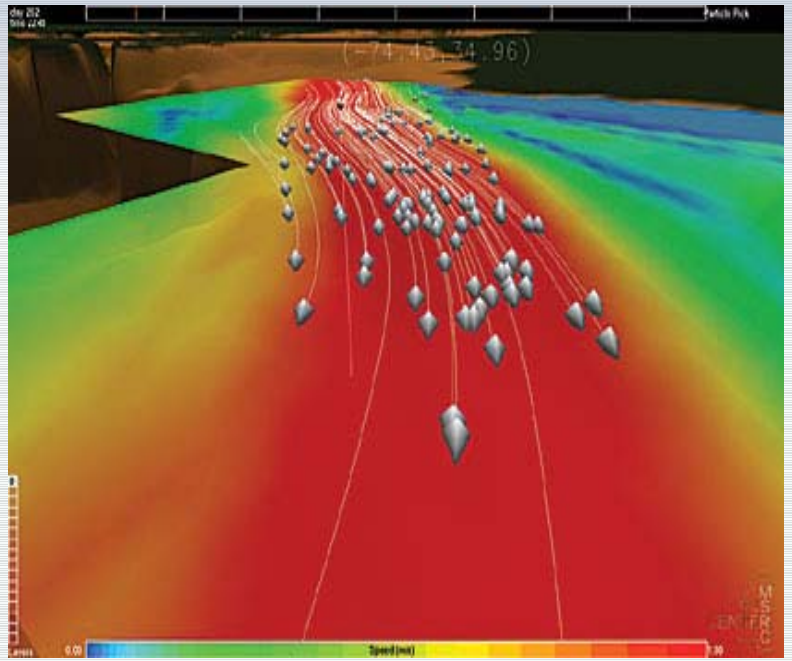
Best Interest of National Security

Head of Marine and Aviation Division

Testing More Prototypes

Technological Advantages

- More efficient
- Cheaper to build
- Uses no fuel
- Produces no pollution
- Scalable
- Unobtrusive
- Maintenance done at surface



Economic Advantages

- For the first time in history a pollution-free source of electricity is possible at a cost below fossil fuels
- Production costs as low as 1 penny per kilowatt (Fossil fuel typically 2-3 cents)

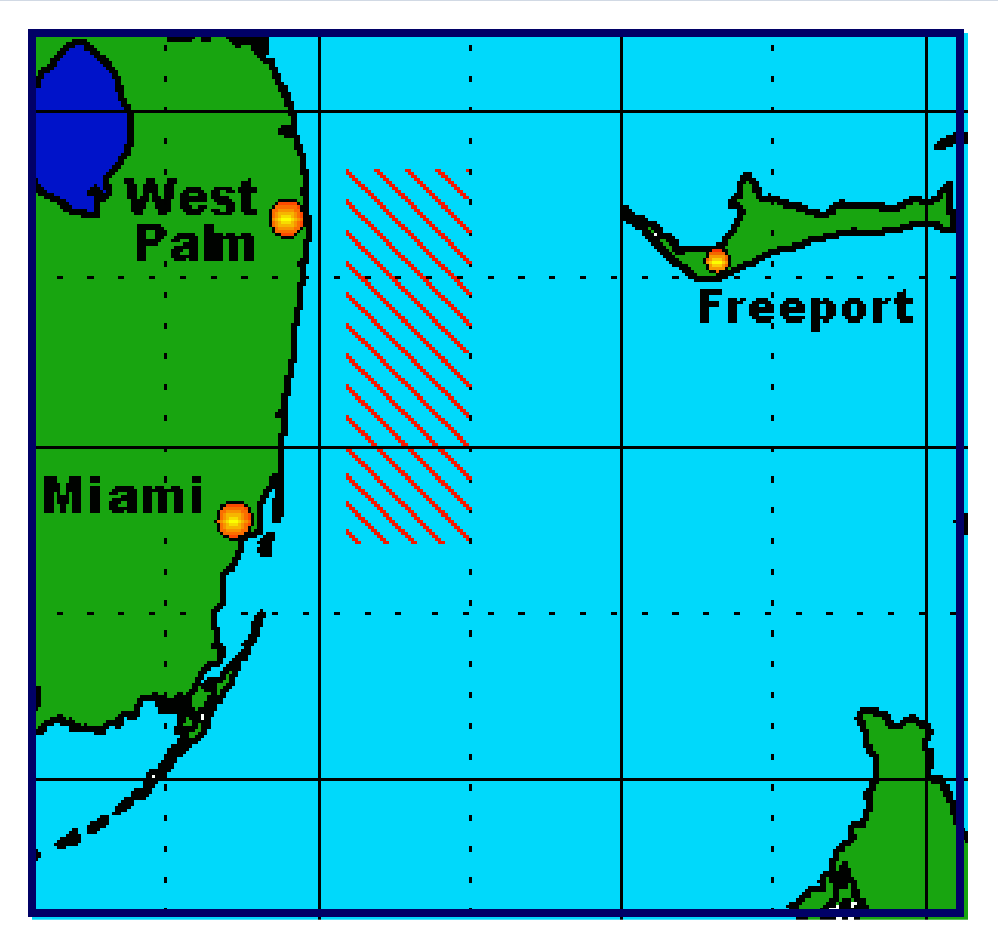
U.S. Naval Surface Warfare Center, Carderock Division

3 Development Plans

Target site

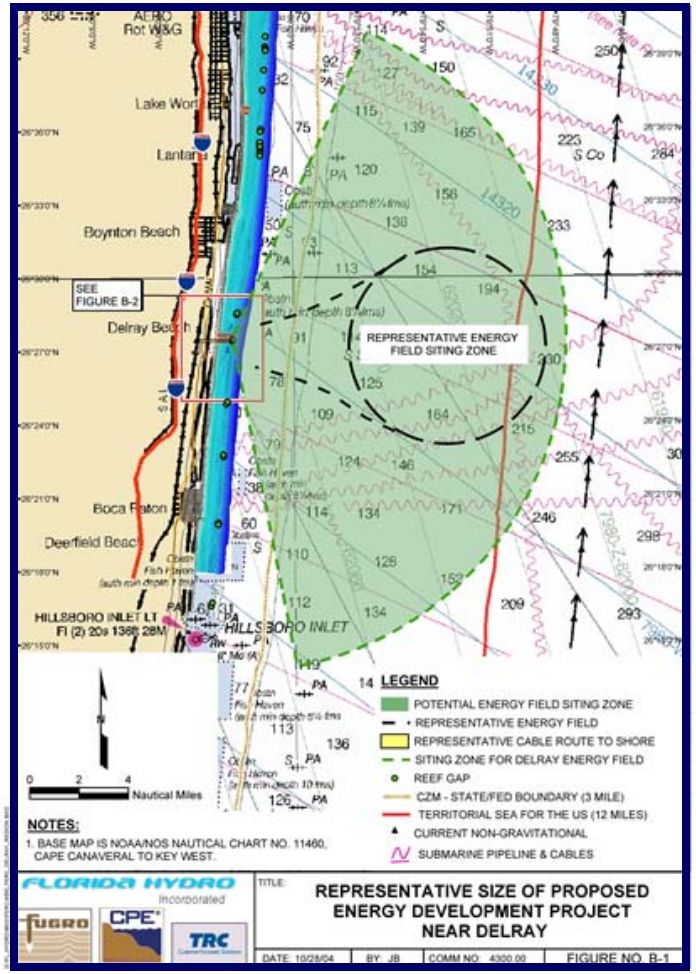
Capable of supporting 3,500 turbine units

Enough energy to supply 10 gigawatts to the State of Florida



Delray Beach

Preliminary Permit Issued March 2005 by FERC

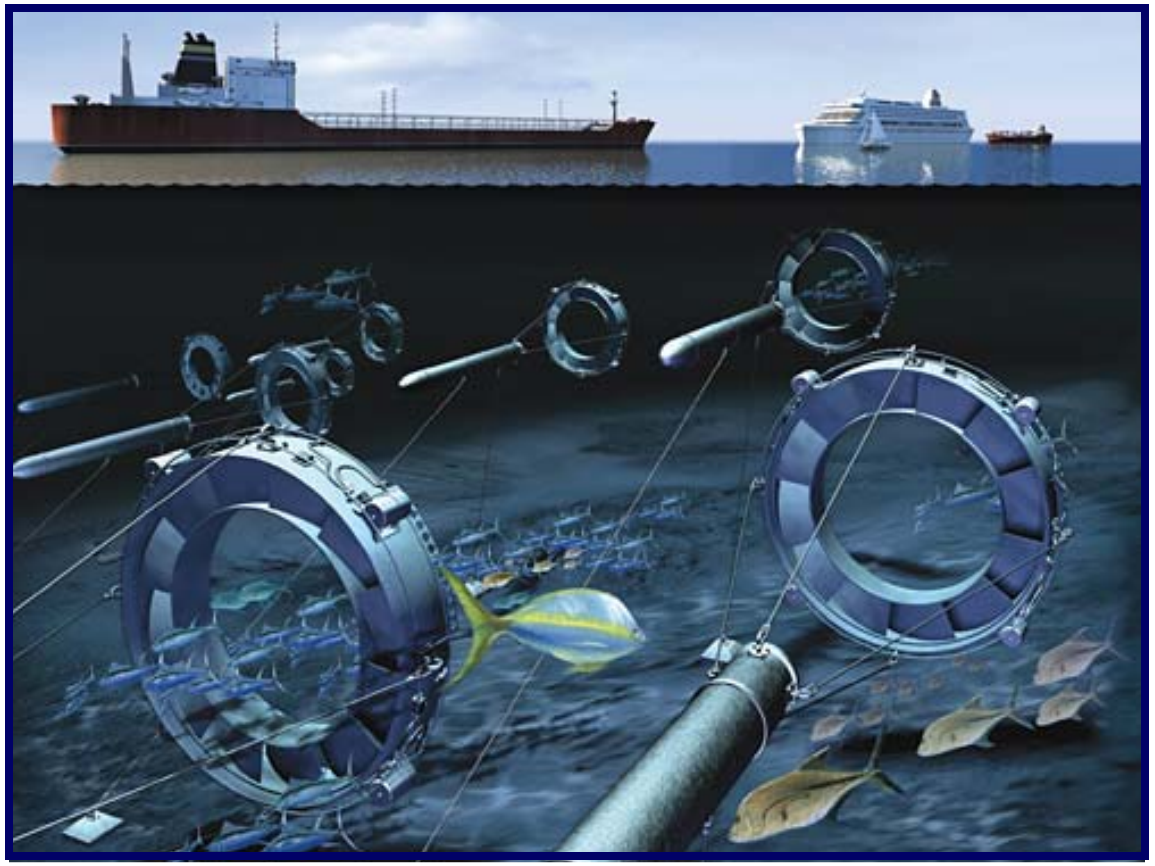


Deployed System

Anchored to seafloor 200 feet below surface

5 miles offshore

Each unit to produce 2.5 MW



Growth in Demand

- 25 – 64% increase in Florida's electricity demand over the next 10 to 20 years
- Utilities currently plan to add less than half of this in generating capacity

Benefits

- Gulf Stream Energy will supplement the grid
- Consumers will benefit from clean electricity at prices less than that of fossil fuels

4 Discussion

Presented by: Michael Hoover