



Mississippi River Hydrokinetics Project Development

2011 Smart Rivers Conference

September 2011

Corporate Vision



Free Flow Power is positioning itself as a leading independent power producer (“IPP”) and service provider currently focused on hydropower in the US and internationally, pursuing a strategy comprising several components:

Acquire,
improve,
manage
hydropower
assets

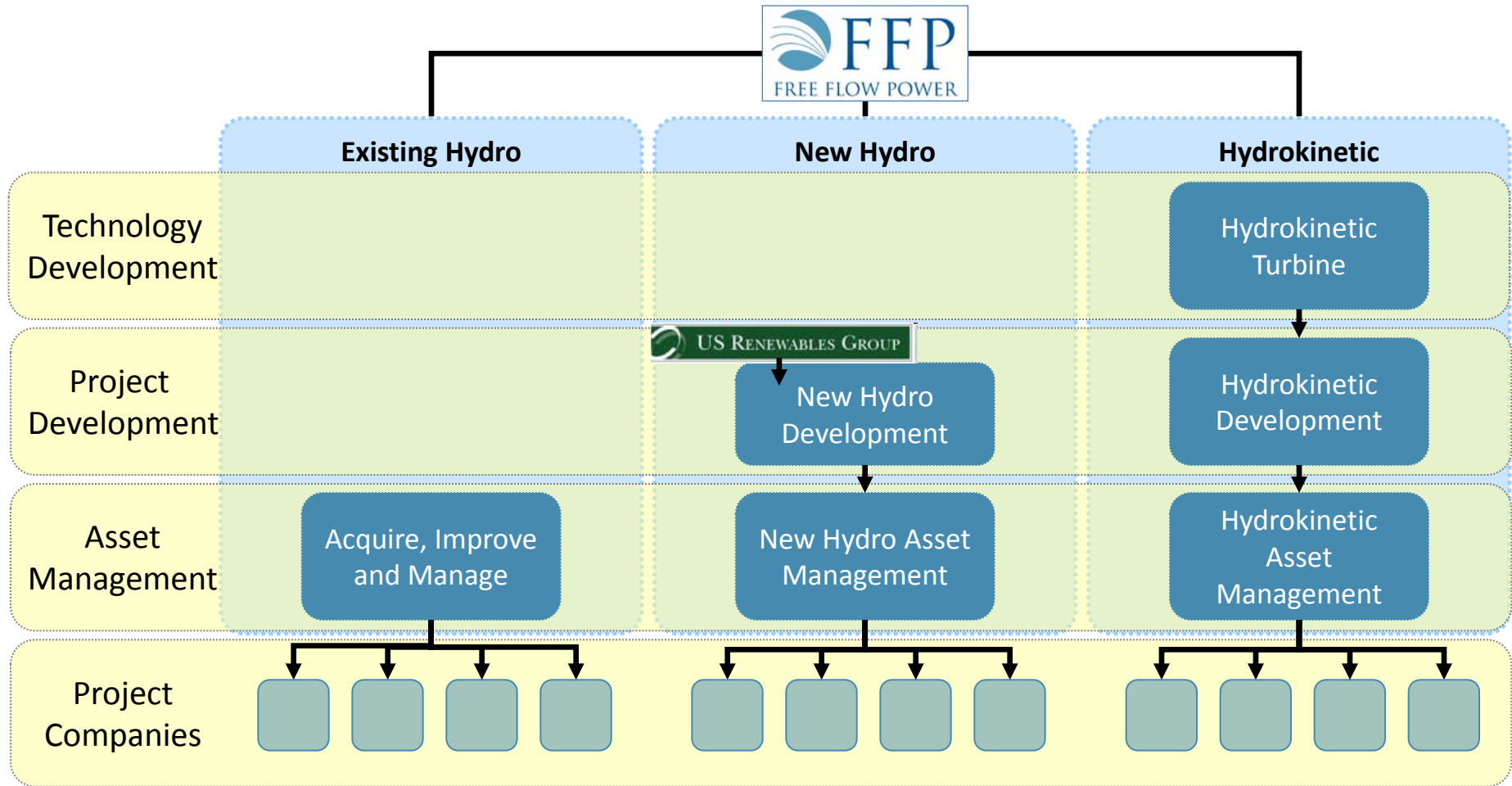
Develop new
pumped
hydropower
storage

Develop new
conventional
hydropower

Develop
hydrokinetic
generation

Services businesses that complement other segments

Corporate Structure



Project Pipeline Overview

- Background
 - Founded in 2007
 - In 2008, acquired Black Brook Environmental, a 20 year old hydropower project developer
 - 29 professionals, many with 15-30 years experience in hydropower, large project finance, & electric power conversion technology
- Development Pipeline:
 - Hydrokinetic (HK): 1,000MW+, 68 sites permitted or pending
 - New Hydro on Existing Dams: 400MW+, 75 sites permitted or pending
 - Pumped Storage Hydro (PSH): 7,210MW, 10 sites permitted or pending
 - Acquire, Improve & Manage Existing Hydro: 4,700MW+ identified

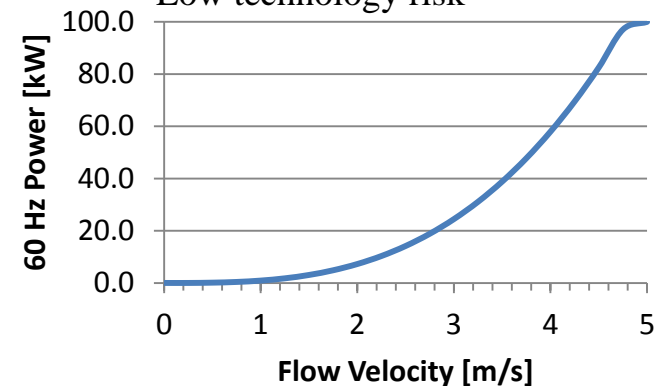
Conventional and Hydrokinetic Sites



FFP Technology Advantage

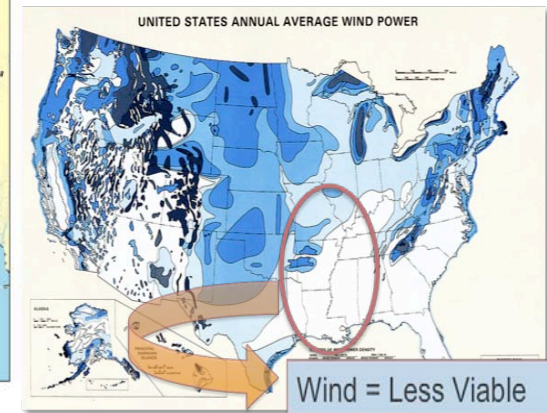
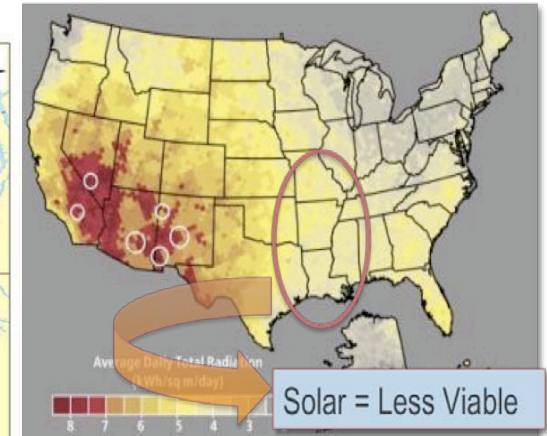


- First full-scale prototype built 2010
 - 3 meter diameter x 4.5 meter length
 - 2.25-m rotor, 7 blades (2:1 TSR)
- Successful testing
 - Structural Integrity
 - Fish Passage
 - Electrical Generation
 - Hydraulic Performance
- Primary Advantages
 - Low cost of energy potential
 - Environmentally friendly
 - Low technology risk



Mississippi River Basin Advantage

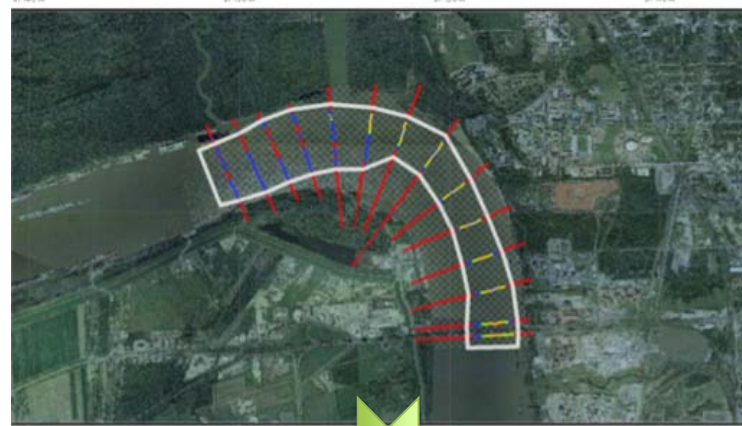
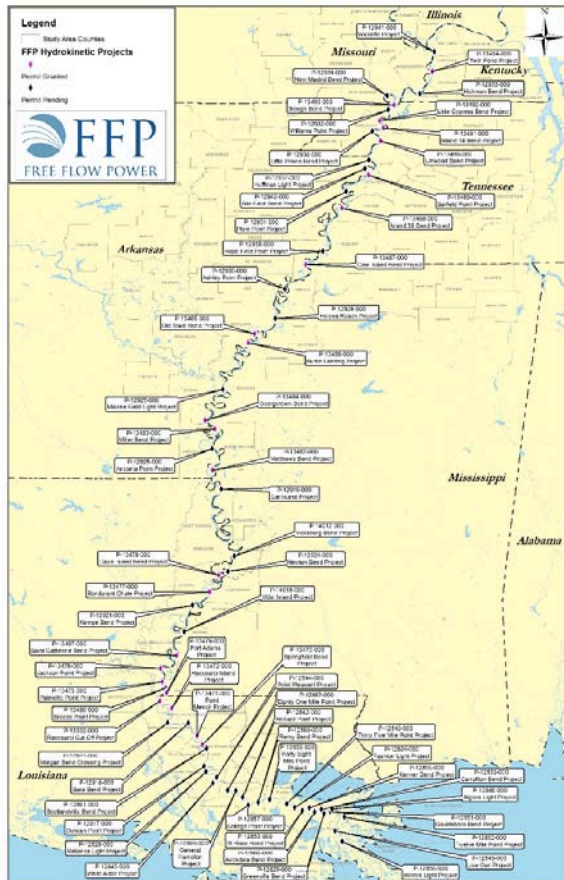
- Significant river hydrokinetic opportunity in Southeast U.S.
- Geographies have limited other renewable sources
- Generation potential near load centers
- FFP has established foothold in Mississippi River Basin
 - FERC preliminary permit site control
 - Total FFP site capacity for 1GW+
- FFP has built a two to three year lead over its competitors for river hydrokinetic FERC licensing



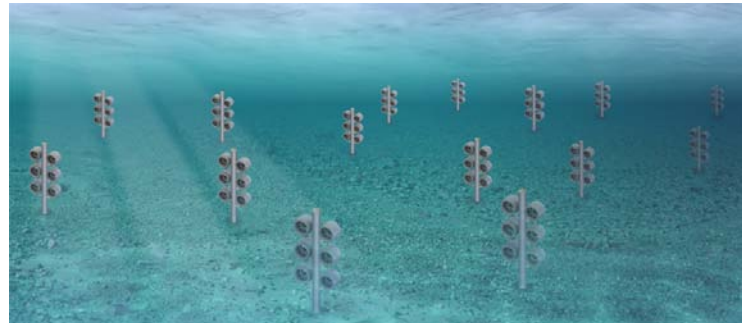
FFP Commercial Scale Pipeline Advantage

Project Sites >GW

Each Site from 5 to 50+ MW



Piling-Mounted Turbine Arrays



FFP Rapid Advancement

2007

2008

2009

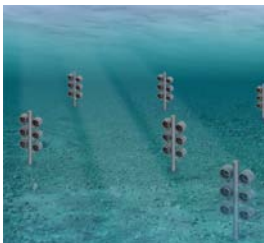
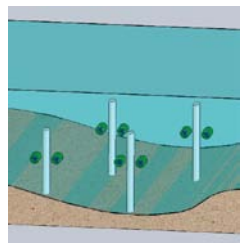
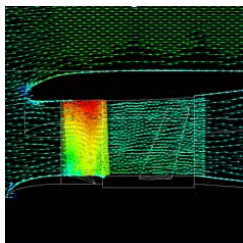
2010

2011

2012

2013

2014



Basic
Research

Applied
Research

Concept
Demo

Full-scale
Laboratory
Testing

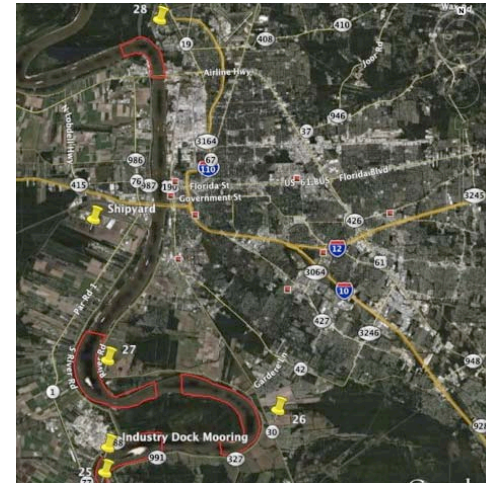
Full-scale In-
River Testing

Pre-
commercial
Deployment

Commercial
Deployment

2011: Mississippi River Prototype Deployment

- Operational Verification
 - Cut-in Speed
 - Power Generation
 - Reliability
- Initial Performance Testing
 - Performance Coefficient
 - Generator Temperature Rise
 - Turbine Drag
- Site Characterization
 - Seasonal velocity profiles
 - Debris
 - Fish
 - Traffic Survey

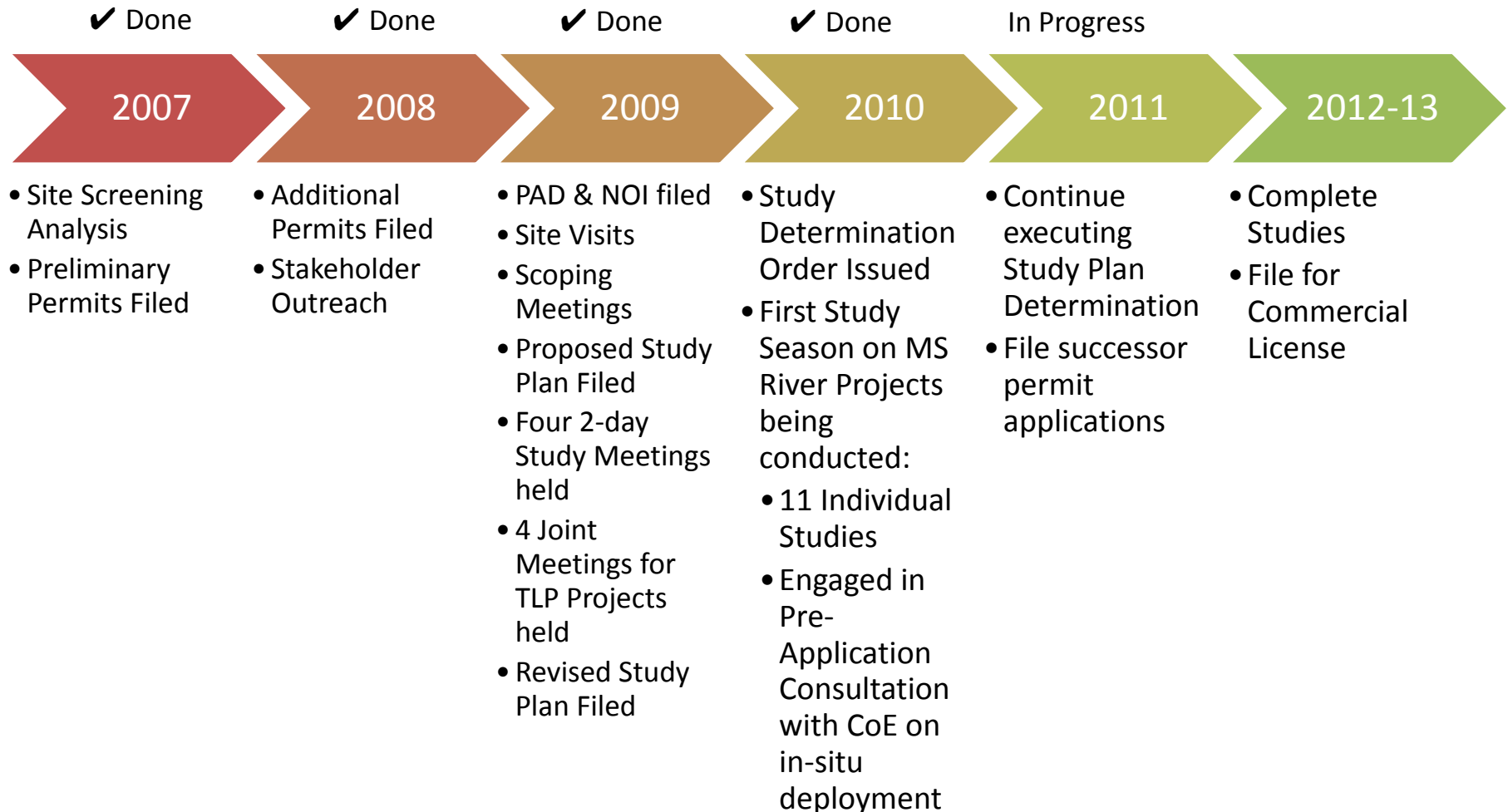


2011: Mississippi River Prototype

Free Flow Power

Mississippi River Deployment June 2011

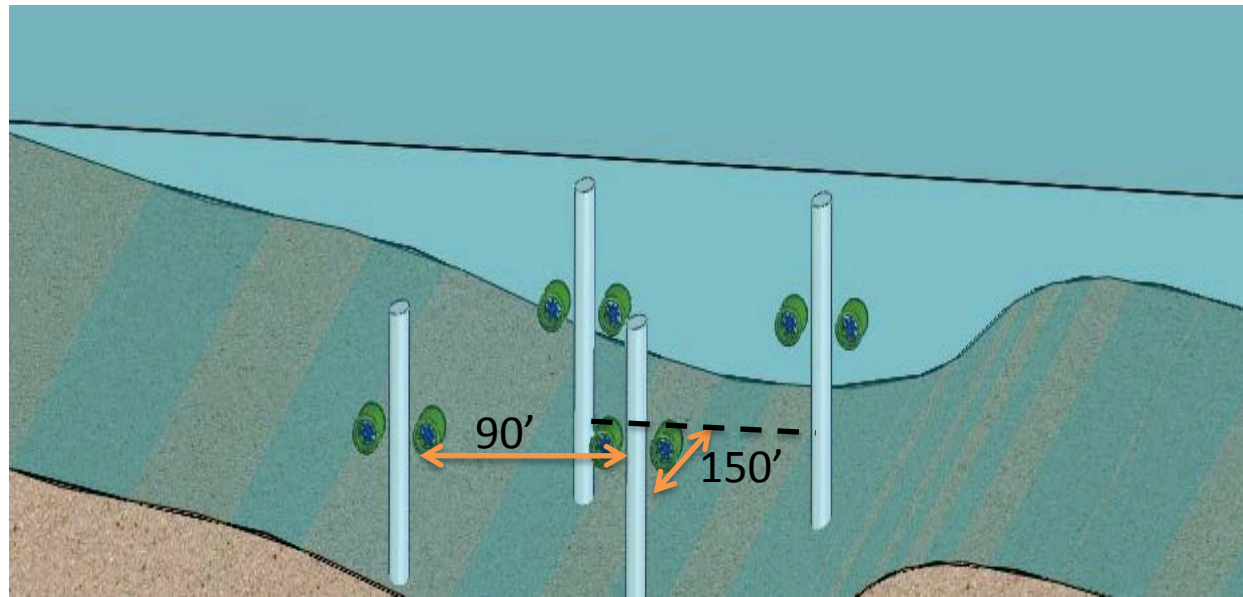
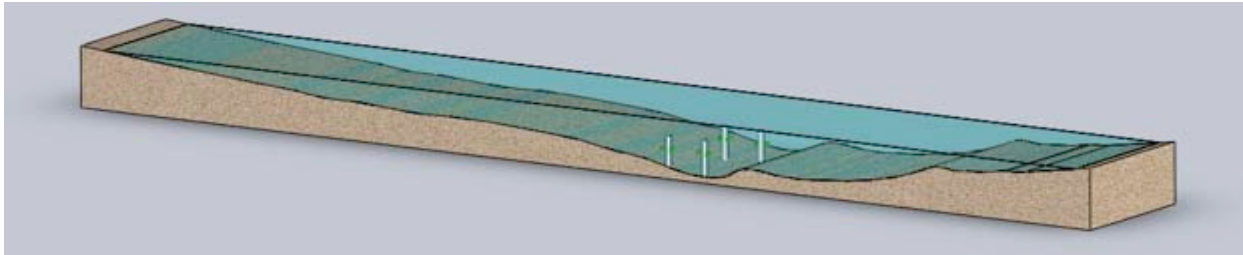
FFP FERC Site Licensing Milestones



FERC Study Plan Determination

Study Title	Site Independent or Specific
Turbine Siting Study	Both
Navigation Study	Both
Hydraulic Study	Both
Fish Entrainment Study	Independent primarily
Damage Turbine Recovery Methods	Independent
Electromagnetic Field (EMF) Study	Independent primarily
Vegetation, Wildlife Habitat & Noxious Weeds Inventory	Both
Commercial Fishing & Recreation Study Plan	Both
Archeological & Historical Resource Investigation	Both
Acoustic Energy Study Plan	Independent primarily
Rare, Threatened & Endangered Species Study	Both

FERC Study Plan: In-Situ Deployment

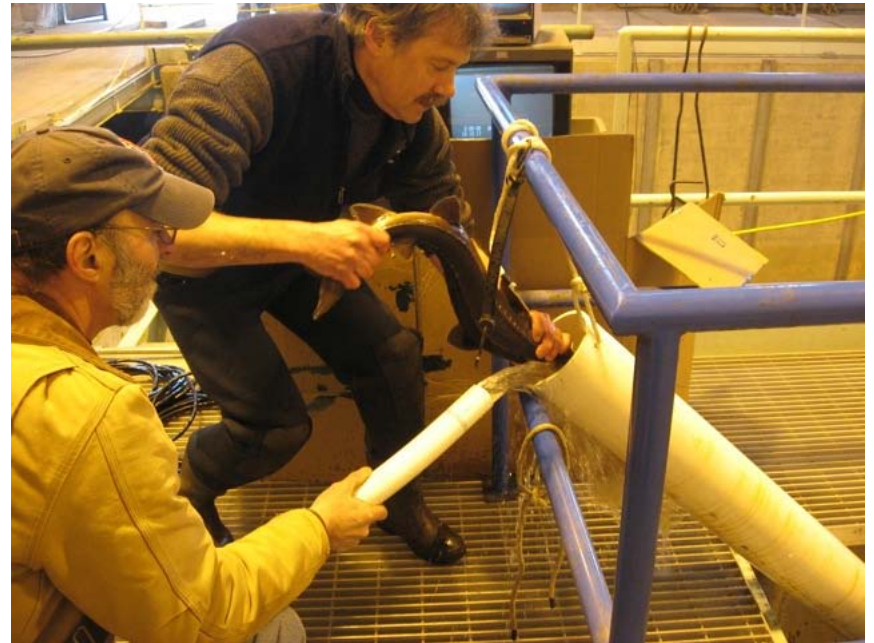


- 1 turbine/piling plan (graphic shows 2)
- 90 feet transverse spacing
- 150 feet downstream spacing
- 45 feet longitudinal offset from upstream piles
- Install gill net & stationary monitoring on at least 1 turbine for fish entrainment validation testing

FERC Study Order Lab-Based Fish Entrainment Tests Planned 2012 at USGS Conte Lab



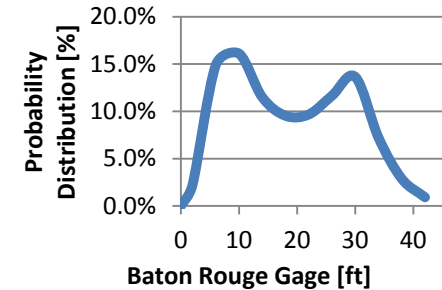
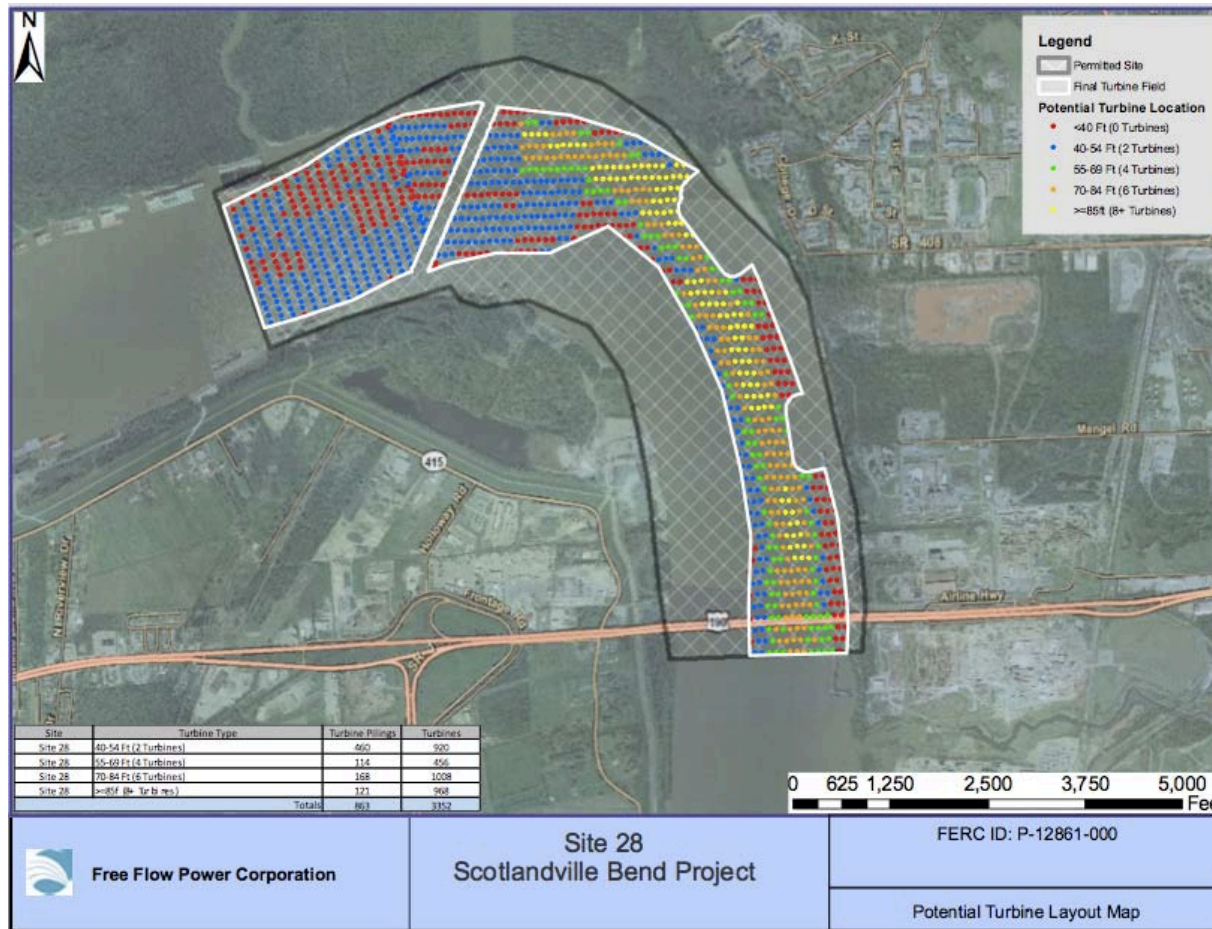
Turbine installed in 10 ft wide flume



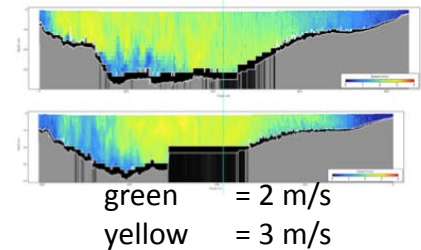
Fish can be tube-injected and captured & monitored downstream

Commercial Sites Planned Using Flow, Depth, & Competing Use Analysis

Exclusion zones (depth, dredging, flow failures, revetments) analyzed



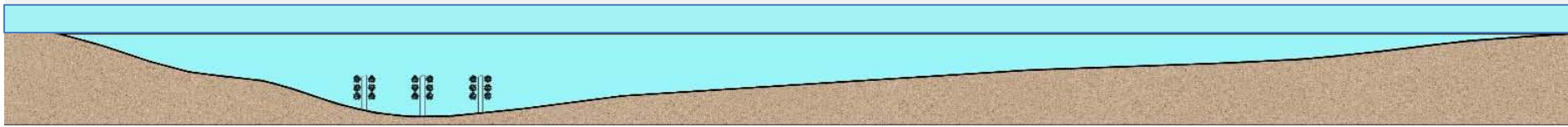
Decades of river gage flow and discharge data analyzed



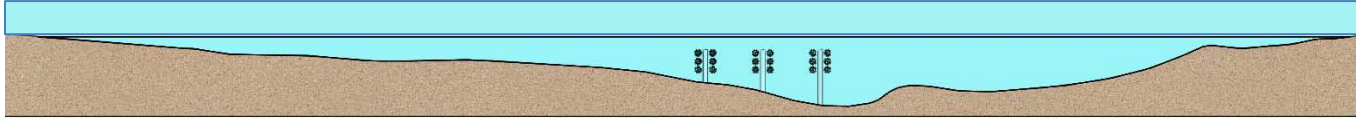
Local velocity surveys conducted, obtained, and analyzed to improve placement

Depth of Commercial Deployments

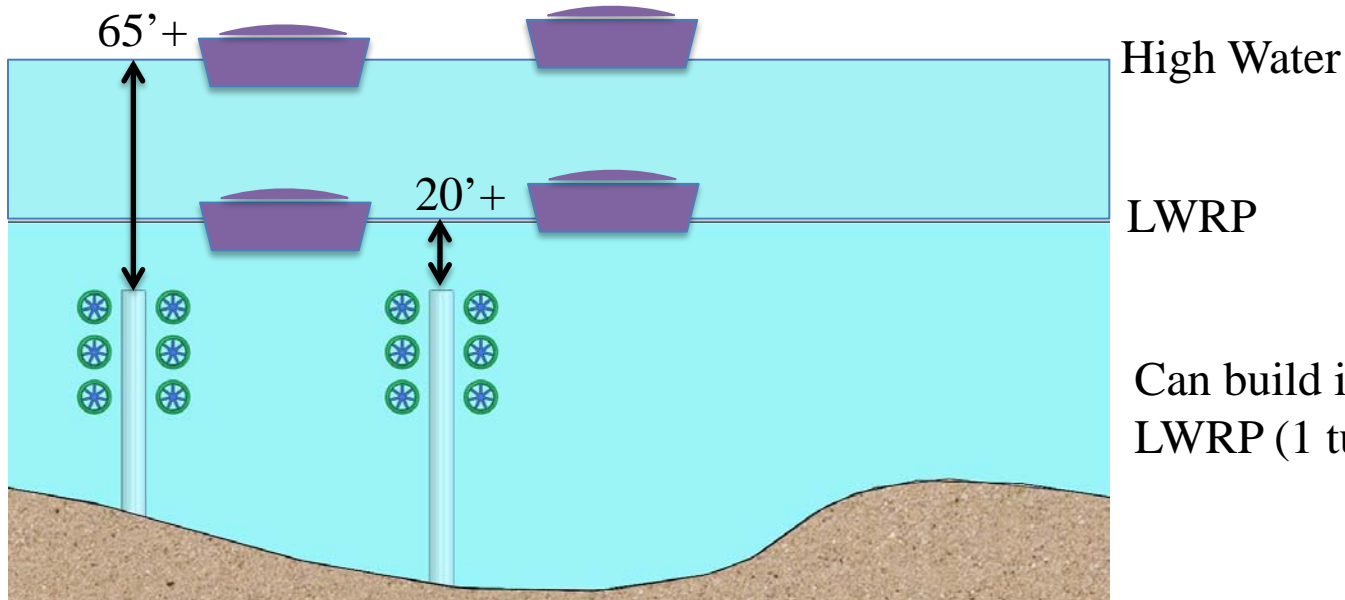
Site 8 in New Orleans (deep draft section)



Site 28 in Baton Rouge (shallow draft section)



Site 28 close-up showing loaded/unloaded barges in high and historical low (LWRP) water ref



Can build in as little as 40' depth from LWRP (1 turbine height per pile)

Contact Information

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