



RESEARCH PROJECT CAPSULE [13-3ST]

October 2012

TECHNOLOGY TRANSFER PROGRAM

Effects of Hydrokinetic Turbines on Mississippi River Infrastructure

JUST THE FACTS:

Start Date:

October 1, 2012

Duration:

6 months

End Date:

March 30, 2013

Funding:

State: TT-Reg

Principal Investigator:

Clinton S. Wilson, Ph.D., P.E.

Professor, Department of
Civil & Environmental Engineering
Louisiana State University

Administrative Contact:

Mark Morvant, P.E.

Associate Director, Research
225-767-9124

Technical Contact:

Walid Alaywan, Ph.D., P.E.

Sr. Structures Research Engineer

Walid.alaywan@la.gov

(225) 767-9106

Louisiana Transportation
Research Center
4101 Gourrier Ave
Baton Rouge, LA 70808

Sponsored jointly by the Louisiana
Department of Transportation and
Development and Louisiana State
University

POINTS OF INTEREST:

Problem Addressed / Objective of
Research / Methodology Used
Implementation Potential

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PROBLEM

The Louisiana Legislature through House Concurrent Resolution 128 of the 2012 Regular Session has requested LADOTD to study the effects of hydrokinetic turbines on infrastructure.

The quest for a viable alternative energy today will provide the fuel for tomorrow's energy independence, natural resources conservation, environmental protection, and economic engine. One such alternative energy source is the generation of power from the flow, current, or velocity of water, known as hydrokinetic power, through the installation of turbines on riverbeds, bridge piers, or beneath barges, as opposed to hydropower that traditionally refers to power generated using dams or diversionary structures. Since hydrokinetic power relies simply on the velocity of water, these zero-head power systems can be placed into sources of flowing water with minimal infrastructure or environmental impacts.

Currently there are about 82 permits to install such turbines in different locations in the United States with 43 of those permits located in Louisiana. A permit means that a turbine may be installed. However, to produce electricity, a license has to be issued.

Since Louisiana is on the cutting edge of this technology through authorizing the State Mineral and Energy Board to grant leases for the purpose of developing hydrokinetic power, a study of the effects of this technology on the hydrodynamics of the Mississippi River, including the removal or deposition of sediment around critical infrastructure such as bridges or scouring, is needed.

OBJECTIVE

The objective of this project is to synthesize information on hydrokinetic turbine installation and its potential effects and risks on the Louisiana Department of Transportation and Development (LADOTD) infrastructure.



Figure 1
Deployment of a turbine

[Courtesy: Free Flow Power (FFP) August 2010 progress report submitted to Federal Energy Regulatory Commission]

METHODOLOGY

The proposed work will be accomplished through the following tasks:

Task 1: Perform an extensive literature search to identify all potential technology available in the use of hydrokinetic technology and its effect on the infrastructure.

Task 2: Review Acts 875 and 930 of the 2010 Louisiana State Regular Legislative in accordance with the House Concurrent Resolution No. 128 (Regular Session, 2012) to report on lease stipulations that would affect LADOTD.

Task 3: Investigate potential effects on LADOTD infrastructure.

Task 4: Report on the potential benefits/risks to LADOTD and/or the state of Louisiana.

Task 5: Prepare a final report documenting the entire study.

IMPLEMENTATION POTENTIAL

The findings from this study (e.g., report and presentations) will be utilized by LADOTD and other state agency personnel and state legislators to effectively manage hydrokinetic turbine projects and understand the potential benefits, limitations, and impacts of the technology.



Figure 2

*Commissioning installation of Scotlandville Bend near Baton Rouge, Louisiana
[Courtesy: Free Flow Power (FFP) August 2010 progress report submitted to Federal Energy Regulatory Commission]*