INFORMATION SHEET
RENEWABLE DEVELOPMENT FUND

Investing in Renewable Energy

LOWER SAINT ANTHONY FALLS HYDROELECTRIC FACILITY PROJECT

Project Description

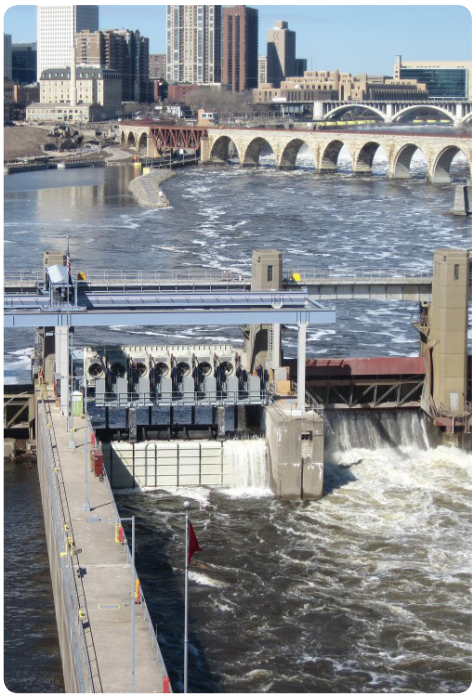
SAF Hydroelectric, LLC (SAF) installed a 9.176 MW run-of-river hydroelectric facility in the auxiliary lock at Lower Saint Anthony Falls that is estimated to generate sufficient electric energy annually to power about 7,500 homes. The facility consists of concrete encased draft tubes that have downstream gates to control water flow and removable turbine modules on the upstream side. A set of four spillway gates were installed to provide additional control of river flow. The facility utilizes an array of 16 submerged matrix turbines, which are unique in the United States. A successful demonstration of this technology may lead to greater use at run-of-the river locations elsewhere in the United States.

Methodology

In 2001, SAF submitted a license application to the Federal Energy Regulatory Commission (FERC). After the evaluation and study of project impacts, FERC license #12451 was issued on February 21, 2006. The license provided the authority to construct and operate a hydropower facility on the Mississippi River at Lower Saint Anthony Falls Lock and Dam in Minneapolis. Throughout the process, SAF worked with the U.S. Army Corps of Engineers (USACE) on design and construction standards. The project can utilize up to 6,201 cubic feet per second of river flow. The tragic collapse of the I-35W Mississippi River bridge in August 2007 delayed the project by approximately two years. Construction began in April 2009 and the facility achieved commercial operation in December 2011.

Executive Summary

Sixteen StrafloMatrix turbines were placed in the auxiliary lock chamber of USACE's Lower Saint Anthony Falls Lock and Dam in Minneapolis. The auxiliary lock chamber had been built to allow for continued navigation growth, but its use for this purpose has become unnecessary. The SAF facility will generate clean, zero emission, renewable power. The new facility restores hydropower production at Lower Saint Anthony Falls with minimal impact on the river, the dam, and the surrounding area.



Grantee: SAF Hydroelectric, LLC
Project Dates: 6/5/2006 – 1/31/2012
RDF Funding Cycle: 2nd
Project Funding: $2,000,000 RDF Grant (Total project cost $39,993,881)
Project ID: EP-34
RDF Mission: To increase renewable energy market penetration, assist renewable energy projects and companies, and support emerging renewable energy technology through research and development.

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Electricity generated qualifies for the state's renewable energy standard and is sold to Xcel Energy through a 20 year power purchase agreement.

Benefits

- Placement of the facility in the existing USACE dam utilized an existing civil works feature and simplified the construction process
- Construction activities did not interfere with regular lock operations and the completed project allows continued safe use of the lock for commercial and recreational river traffic
- Obermeyer spillway gates help maintain consistent water levels in the pond
- Useful in the re-evaluation of other hydropower project sites that could utilize run-of-river technology

Lessons Learned

- StrafloMatrix turbines well suited for low-head rivers such as the Mississippi
- Power purchase agreement, RDF Grant, Renewable Energy Production Incentives and Federal stimulus funding allowed this project to be economically viable
- Unforseen delays and product challenges lead to a more expensive project than initially projected
- Lessons learned regarding coating and cable enclosures should improve product design and installation for future projects

Outcomes

- Restore electrical generation potential of the Mississippi River to the heart of Minneapolis
- Interpretive display increases awareness of hydropower history at the site
- Demonstrates run-of-the-river turbine technology
- Demonstrate how existing dams can be economically developed for renewable hydroelectric generation

Authority

Licensing of hydropower facilities is governed by Part I of the Federal Power Act, 16 U.S.C. §§ 791(a) – 825(r). Licensing at USACE facilities is also governed by a 1981 Memorandum of Understanding between FERC and the USACE.

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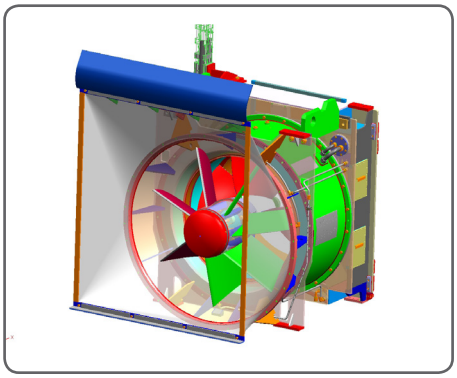

StrafloMatrix turbine

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