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Economic, energy, and environmental impact of the Louisiana Energy Fund

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Abstract

The Louisiana Energy Fund is a public–private cooperative endeavor created by the Louisiana Department of Natural Resources in partnership with the Louisiana Public Facilities Authority, Hibernia National Bank and Lehman Brothers to provide publicly funded institutions in the state with low cost, tax exempt financing to implement energy and water conservation projects. In September 2002, the Louisiana Bond Commission authorized the issuance of $15.3 million dollars in tax-exempt bonds to fund seven energy and water retrofit performance contracts. The purpose of this paper is to evaluate the expected economic, energy, and environmental impact of the performance contracts. An input–output model is developed to quantify the expected total economic benefit, and based on the terms of the performance contracts, the expected energy and environmental impacts of the program are estimated.

Keywords: Energy conservation legislation; Impact assessment; Evaluation

1. Introduction

The Louisiana Energy Fund is a public–private cooperative endeavor created by the Louisiana Department of Natural Resources (DNR) to provide publicly funded institutions with low cost, tax exempt financing to implement energy and water conservation projects under a performance-based energy efficiency contract.[1] The Energy Fund was created by DNR in partnership with the Louisiana Public Facilities Authority (bond issuer), Hibernia National Bank (credit analysis/co-underwriter), and Lehman Brothers (investment banking/co-underwriter).

The Louisiana Energy Fund serves as an interest rate reduction vehicle for energy conservation projects implemented in accordance with the guidelines established by the United States Department of Energy and the Louisiana Legislature. According to Louisiana state law, R.S.39:1494, a performance based energy efficiency contract is defined as a contract for energy efficiency services and equipment in which the payment obligation for each year of the contract is either:

- set as a percentage of the annual energy cost savings attributable to the service or equipment under the contract, or
- guaranteed to be less than the annual energy savings attributable to the services or equipment under the contract.

Energy service agreements may extend up to 20 years, and annual maintenance and the elimination of deferred maintenance may be included as savings.

In September 2002, the Louisiana Bond Commission authorized the issuance of $15.3 million dollars in tax-exempt bonds to fund energy and water retrofit performance contracts for seven projects in the state: Allen Parish School System, Avoyelles Parish School System, Evangeline Parish Police Jury, Iberville Parish School System, Natchitoches Parish School System, St. Charles Parish School System, and St. James Parish School System (see Fig. 1). Applications to the Energy Fund were pooled, and a revenue bond was issued backed by the Measured and Verified (M&V) energy savings associated with the projects and credit enhancement provided by DNR.

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[1] http://www.dnr.state.la.us.

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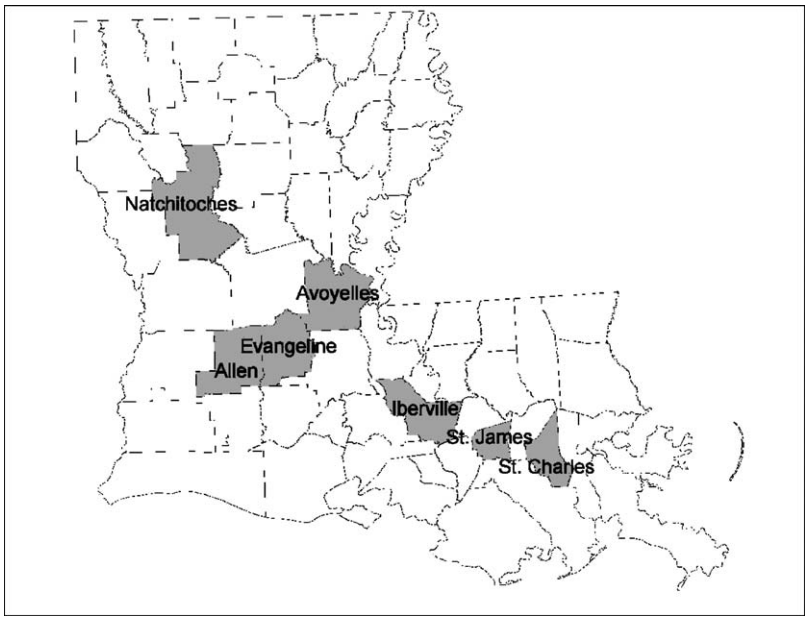

Fig. 1. The geographic distribution of the Louisiana Energy Fund projects (2003).

The purpose of this paper is to quantify the expected economic, energy, and environmental impact of the program. Specifically, we shall determine

1. The economic impact of the program in terms of expected jobs created, taxes generated, and the multiplier effects of dollars turned over in the local parishes,
2. The energy impact of the program in terms of M&V energy savings and dollars, and
3. The environmental impact of the program in terms of reduced emissions for the three criteria pollutants SO_2, CO_2, and NO_x.

The outline of the paper is as follows. The operation of the Energy Fund is described in Section 2 along with a discussion of the projects selected for the initial phase of funding. In Section 3, the methodology of the study is described, and in Section 4, the expected economic impact for each project is presented. In Section 5 and 6, the aggregate energy and environmental impacts are summarized, and in Section 7, the limitations of the analysis are described. Conclusions are presented in Section 8.

2. The Louisiana Energy Fund

Since the late 1970s, performance contracting has become a widely accepted, cost effective and reliable way to make energy improvements, and today, energy service companies (often called ESCOs) follow industry standards on reporting M&V energy savings (Waltz, 2003; Energy Performance Contracting, 2000; International Performance Measurement and Verification Protocols, 2000). The Louisiana Energy Fund is designed to provide publicly funded institutions support to implement energy conservation projects under performance-based contracts (Kaiser et al., 2003).

The Louisiana Energy Fund operates as follows. Refer to Fig. 2.

(1) Publicly funded institutions performing M&V energy conservation projects and requiring loans of $\$Z_i$ per project are pooled within the Energy Fund. The total loan requirement of the projects is $\$Z = \sum Z_i$.
(2) By pooling projects together and providing additional funding in the amount $\$A = \$0.1Z$, DNR is able to "buy-down" the interest rate of the revenue bond than would otherwise be available on an individual or commercial basis.
(3) Bank writes a $\$Y_i$ loan to each institution to perform energy efficiency improvements. The loan repayment is $\$y_i$/yr.
(4) Institution contracts with ESCO to perform energy efficiency improvements. The contract terms and work performed vary with the institution and service provider, but each ESCO is required to guarantee a level of energy savings $\$z_i/\text{yr} > \$y_i/\text{yr}$ for the duration of the contract.
(5) Guaranteed energy reduction means that the energy savings incurred by the facility services the loan in full.
(6) DNR recoups loan amount $\$A$ less grant amount ($250,000) over the term of the contracts.

The impact of pooling projects and injecting additional money into the funding pool prior to issuing the revenue bond is difficult to ascertain, but a 0.5–1.0%