

**A Financial Model for Evaluating Projects with Performance Contracts
Report to the Energy Efficiency Financial Task Force**

June 24, 2003

Authors:

**Thomas H. Stoner, Jr. ; CEO, Econergy International Corporation
Alan D. Poole; Instituto Nacional de Eficiência Energética and Ibmec**

Report to World Bank/IBMEC & USAID

TABLE OF CONTENTS

Introduction	3
Review of Model Provided to IBMEC Finance Team and Recommendations for Use	5
Review of Possible Funding Sources	8
Use of Financial Guarantees	8
Key Risks and Mitigation Strategies	9
Brazilian Performance Contract Issues and Recommendations	10
Conclusions	12

LIST OF ACRYNMS

BCEEP	Brazil Clean and Efficient Energy Program
EIC	Econergy International Corporation
ESCO	Energy Service Company
FAMPE	Guarantee Fund for Small and Medium Firms
FGPC	Guarantee Fund to Promote Competitiveness
FTF	Financial Task Force
IBMEC	Brazilian business school coordinating the FTF
INEE	National Institute for Energy Efficiency
IRR	Internal Rate of Return
NGO	Non-governmental organization
NPV	Net Present Value
SPE	Special Purpose Entity
USAID	U.S. Agency for International Development

Introduction

This report is a summary of the key issues regarding the use and application of a Financial Modeling Tool provided by Eenergy International Corporation (EIC) for use by the Brazilian Financial Task Force (FTF) finance team. Financial support for the model has been provided by the United States Agency for International Development (USAID) and the World Bank. The purpose of the model is to aid the FTF in developing and evaluating financially viable energy efficiency projects in Brazil as part of its program supported by the World Bank and administered by IBMEC.

In 2003 Brazil possesses approximately two dozen firms that can fairly characterize themselves as energy services companies or ESCOs. Some of these companies have experience, though limited, in the application of performance contracting as seen in the USA, Europe, Asia, and other emerging markets.

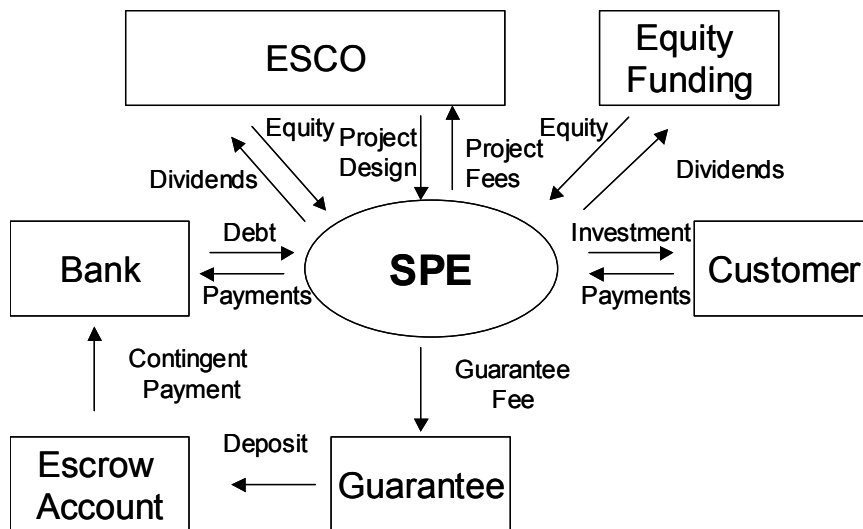
In early 2001 the FTF was formed in Brazil to begin working on how to create commercial financing for ESCO projects in Brazil with the support of USAID and Winrock International through the BCEEP program. Eenergy and INEE have participated from the beginning. Over time the constituency has expanded and additional support has been obtained from the World Bank

A key theme throughout much of the early discussions has been that some form of third party “financial guarantee” will be required in Brazil to make financing available for performance contracting. Brazil suffered from hyper-inflation during the 1980s. As a result, most banks require adequate guarantees in excess of the loan amount to cover accrued interest during any collection period. In early discussions with both BNDES and Banco de Brasil, INEE and Eenergy were told that a minimum of 150% of the loan amount would have to be guaranteed by a third party or collateralized by such an amount and pledged to the lender. In contrast, most of the energy efficiency guarantee programs in Europe have provided a 50% guarantee. Other programs have been implemented but none have exceeded a 90% guarantee level.

The FTF has considered several possible financial structures for dealing with the guarantee issue. It has considered the formation of a specialized Fundo de Aval exclusively for energy service companies, an equity fund exclusively for energy service companies, and a SuperESCO structure that provides a third party “leasing” approach to ESCO development. All three of these structures have been reviewed by the FTF and none have emerged with a single consensus.

In preparation for the April 2nd International Roundtable hosted by IBMEC and the World Bank, the FTF finance team recommended using a Special Purpose Entity (SPE) for the first half dozen projects that will allow a multiple of different solutions to arise to complete a financing. The goal of the finance team is to try to decouple the different parts of the overall project, specifically separating the balance sheet of the ESCO from the balance sheet of the project. For example, by forming an SPE the ESCO can become a de facto third-party guarantor of the project. Any third party guarantee would be complimentary to the guarantee provided by the ESCO. Moreover, the SPE model would allow any third party “equity fund” to invest with a clean investment structure (specifically in the project at hand) and receive a natural “exit” by simply running out the term of the energy services contract.

Figure 1: Relationship between different organizations in an ESCO project



In addition, structuring the ESCO project in this way also has the added benefit of reducing risk for several of the other participants. Specifically, by using the SPE structure the ESCO revenue stream associated with project design and implementation is more certain and not tied to energy savings (although a performance guarantee could be included). Also the SPE structure reduces the risk of default on debt by removing the project revenue stream from the ESCO balance sheet (and the risk of project failure due to ESCO corporate bankruptcy.) , for example, if an ESCO is unable to perform maintenance or operational services on a project there may be a contract default jeopardizing the revenue stream.

Our recommendation is to proceed with the SPE approach as suggested by the finance team. Long-term, other options may emerge and more typical ESCO financing may occur without an SPE structure. However, for the first few projects, the transaction costs to set up an SPE will be minimal compared to the overall due diligence to make these first few projects finance worthy. By virtue of decoupling the project economics from the financial status of the ESCO, the review required by a financial intermediary providing credit to the project will be minimized. This will likely offset the transaction costs associated with the formation of the SPEs, keeping overall transaction costs roughly the same while reducing the overall risk profile of the project.

Review of Model Provided to IBMEC Finance Team and Recommendations for Use

The Financial Modeling Tool is a dynamic Excel spreadsheet that provides users with an ability to characterize the full financial parameters of an energy service project. A sophisticated user (with a background in project finance and an understanding of Excel) will be able to identify nearly all of the financial risks facing an energy service company or provider in the set up and implementation process of a performance contract based energy project. Moreover, it will allow the user to adjust key contracting features, applications of individual energy efficiency measures, capital structures, contracting terms, etc. to achieve workable scenarios.

The model will provide a Net-Present Value (NPV) and Internal Rate of Return (IRR) calculation, an income statement, balance sheet and amortization table that will allow the user to access key financial ratios to see if the project is viable for all the parties involved in a project (the SPE, the ESCO, the Financier, and the customer). Parameters can be instantly manipulated to achieve balances in the project and contract structure to satisfy customer concerns around pricing for the service, ability of the project to adequately amortize its debt payment schedule, and meet the financial returns required to meet the capital requirements of the ESCO and its shareholders.

For the customer, the model will provide key financial information on the customer as well as a projection of the impact of the project on the customer's financial situation. The model provides for a projection of the customer's balance sheet and income statement and shows the impact on the net-return provided to the customer. The user can determine what ability the customer will have to meet the terms of its contractual responsibilities and its ability to meet its guarantee for payment to the SPE. It also has the added feature of demonstrating the value proposition of the project to the customer in pure financial terms.

The model will provide key financial information on the ESCO as a guarantor of the project performance. The ESCO will design and build the project and will be paid a lump-sum by the end of the construction period (based upon a percentage of completion). The project will likely have a significant impact on the ESCO's financial statements during the year of construction. By profiling the ESCO, the model user can evaluate the ability of the ESCO to sustain itself during project construction as well as its ability to stand behind the results of the project in the form of a possible performance guarantee.

The model will provide two other important features that may be required to make the project work. The model will allow the user to plug in a cost for a third party guarantee in the form of an annual guarantee cost. Secondly, the model will allow for third party equity to be infused into the SPE and will show the equity investor a projected yield on its return over the life of the project. By virtue of these two features, two other parties can enter into the overall transaction to make it viable in a Brazilian context consistent with international standards.

Figure 3: Model Outputs

PROJECT SUMMARY AND FINANCIAL INFORMATION		
Financial Assumptions		
Project Cost	-	
Debt Ratio	#DIV/0!	
SPE Loan Amount	-	
SPE Loan Interest Rate	0.00%	
SPE Loan Term (yrs)	-	
SPE Loan Grace Period (yrs)	-	
SPE Loan Amortization	Level Principal	
Annual Debt Service	-	
Debt Coverage Ratio	#DIV/0!	
Interest During Construction	-	
SPE Equity	-	
SPE Discount Rate	0.0%	
Cost of Loan Guarantee	0.0%	
Construction Loan	<input type="checkbox"/> Construction Loan	
SPE Construction Interest	0.00%	
SPE Construction Period (months)	0	
ESCO Operating Costs		
Annual O&M Cost to ESCO	0.00%	
Annual M&V Cost to ESCO	0.00%	
Percentage of SPE Equity Ownership	0.00%	
Profit Target for Consulting & Design Services	0.00%	
Equipment Costs		
Equipment Costs	-	
Duties and taxes	-	
Contingency	0%	
Subtotal Hard Costs		
Soft Costs, Overhead & Profit		
Soft Costs		
Technical Audit Cost	-	#DIV/0!
Engineering	-	0.0%
Construction Mgmt. Fee	-	0.0%
Subtotal Soft Costs		
Overhead		
Other	-	#DIV/0!
Marketing Fee	-	-
Project Management. Fee	-	-
Legal	-	#DIV/0!
Interest During Construction	-	#DIV/0!
Subtotal Overhead		
Subtotal Hard, Soft and Overhead		
Profit		
Profit Target for SPE	-	0.0%
Duties and taxes		
Total Project Cost		
Savings and Contract Assumptions		
Contract period (yrs)	0	
Annual Projected Savings	-	
Savings Split to SPE	0%	
Savings Split to Client	100%	
SPE Interim Savings Split	0%	
Share Maintenance Savings	<input type="checkbox"/> Share	
Net Savings to Company		
Energy Escalators for Savings	-	
Electric Energy Cost Escalator	0.0%	
Fuel Energy Cost Escalator	0.0%	
Maintenance Cost Escalator	0.0%	
SPE Operating Costs		
Annual Inflation	0.0%	
Income Tax Rate	0.0%	
Duties and Taxes on Equipment	0.0%	
Duties and Taxes on Services	0.0%	
Taxable Services	-	
Depreciation	8 yrs	
Depreciation Schedule	Straight Line	
Equipment Salvage Value	-	
O&M Charges to ESCO	-	0.0%
O&M Charges to Facility	-	0.0%
M&V Costs for ESCO	-	0.0%
Annual M&V Costs for Customer	-	0.0%
M&V Program Term	0	
Legend		
Energy Savings Activity (project Level)		
SPE Company (corporate level)		
Customer Company (corporate level)		
ESCO Company (corporate level)		

CORPORATE SUMMARY INFORMATION (Before Project Implementation)

SPE Corporate Financial Data (Pre-project)	Customer Corporate Financial Data (Pre-project)	ESCO CORPORATE FINANCIAL DATA (Pre-project)
Income Statement		
Income	-	-
Other Expenses	-	-
Interest Expenses	-	-
Depreciation Expense	-	-
Energy Expenses	-	-
Balance Sheet		
Long-term or Fixed Assets	-	-
Non-cash Current Assets	-	-
Long-term Liabilities	-	-
Current Liabilities	5,000	-
Cash Flow		
Other Operating Activities	-	-
Total Investing Activities	-	-
Total Financing Activities	-	-
Cash increases in debt	5,000	-
Debt Payments	-	-
Cash balance (beg of period)	-	-
Production Data		
Units Produced	-	-
Unit Price	-	-
Energy Cost per Unit	0%	-

FINANCIAL RETURN SUMMARY INFORMATION

SPE Return	Customer Return	ESCO Return
SPE Annual Payment	Total Project Savings	Fees for Project Design (Soft Cost)
SPE Simple Payback (on shared amount)	Net Annual Savings to Customer	Sale of Equipment (Hard Cost)
SPE Discounted payback (on shared amount)	Payment (Net Payment to ESCO)	ESCO NPV
SPE Cumulative Net Cash Flow	Value of Increased Output	ESCO Cumulative Net Cash Flow
SPE IRR	Present Value of Customer Savings	ESCO IRR
Total Fees Paid to Loan Guarantor	Term (Contract Period)	Cash Profit on Lump Sum Contract
NPV for ESCO w/Performance Contract	Principal (Turnkey Cost)	ESCO Project Cost + NPV of Net Cash Flow
Cash Profit on Lump Sum Contract	Effective Interest Rate for Customer	
SPE Project Cost + NPV of Net Cash Flow		
Lump Sum Price to Customer		
Project Return		
Project Cost (Amount Financed)	-	
Project Simple Payback (hard costs only)	#DIV/0!	
Project IRR (hard costs only)	#DIV/0!	
Project Simple Payback (hard and soft costs)	#DIV/0!	
Project IRR (hard and soft costs)	#NUM!	

Review of Possible Funding Sources

There is little in the way of financial choices in Brazil for energy projects, especially for small-scale generation, cogeneration, and energy efficiency. Most energy efficiency projects in Brazil to date have been paid for by the customer or have been financed through the retained earnings of the energy services companies or their affiliates, tapping existing bank lines, or capital calls on existing shareholders. Such financing is still available for ESCO projects but is severely limited and wholly inadequate for any maturation of the ESCO industry in Brazil.

As stated elsewhere, commercial debt financing is impossible without adequate third party guarantees. Commercial banks are interested in new industries but are reluctant to participate. Some form of intermediation will be required to prompt commercial lenders to participate. By leveraging third party guarantees, possibly from the ESCOs themselves, and by inserting third party equity, it may be possible to leverage equity with debt to achieve the necessary total financing.

Equity funds have been seen as an alternative financing source. Sumitomo in Brazil is co-managing MIF funds directed at energy efficiency projects for Latin America (Latin American Clean Energy Services Fund). The Clean Tech Fund is expected to be operational by the fourth quarter of 2003. The Corporación Financiera Ambiental (CFA) is investing in ‘environmentally’ oriented projects. All of these funds would be able to provide equity financing to the Financial Task Force. Based upon discussions with both funds the use of an SPE structure for financing energy efficiency projects would be their preferred modality.

International equity funds would likely be looking for dollarbased returns in excess of 25% per annum. Energy services agreements providing a contracted revenue stream would be very interesting to a private equity play as it would provide a “natural” exit for their investment returns.

Brazilian equity might be an alternative approach. Pension funds might be interested in performance contract financing. While the required return for such a fund is quite modest if the investment is regarded as low risk, the trick will be to make investments in this business be perceived as low risk. Another important issue is the tenure of the loan period. To make a project viable, loan terms may need to be as long as five years. This is an exceptionally long-term in the case of Brazil.

Use of Financial Guarantees.

The basic structure proposed by the FTF provides three natural “guarantors” for the financing of an energy service contract. The customer is the first guarantor entering essentially into a multi year contract to make monthly or quarterly payments. It is signing a contract to pay for the service provided by the ESCO. If this customer has a solid balance sheet and a good credit history, this usually meets adequate guarantees in most other markets, especially if the customer and the ESCO agree to the savings calculations up front and the ESCO guarantees the completion of the construction work. .

The second guarantor can be the ESCO itself. Several Brazilian ESCOs have reasonable balance sheets and income statements from other business activities that can be pledged against the loan to the SPE.

For the purpose of the FTF Project Contest,¹ we would suggest that any project submitted to the Finance Committee by an ESCO must have some provision for guaranteeing the loan in addition to the equity it would be supplying to the project.. Most Brazilian ESCOs will have a particularly tough time providing adequate coverage, thus the necessity for a third party guarantee.

The third guarantor could be provided by a separate financial facility interested in supporting an ESCO activity such as FGPC and FAMPE.

Key Risks and Mitigation Strategies

The Financial Task Force will have to face certain risks common to all ESCOs, and several risks particular to the SPE structure and to the general market in Brazil.

- *Country Risk.* Brazil experienced significant capital flight in 2001 and 2002 devaluing the Brazilian Real to R\$4 per US\$. Since January 1st, and the inauguration of President Lula da Silva, the markets and currency exchange for the Brazilian Real have improved substantially. However, the Financial Task Force may have trouble securing customers with adequate financial security to make the lenders comfortable as a result of the general downturn in the Brazilian economy. Therefore, the Financial Task Force may have to focus on short-term payback projects, minimizing contract terms to make any payment subject to variable conditions. Financial screening will be critical for its project to be successful.
- *Inflation.* Construction risks can increase sharply once construction begins on a project. Labor and equipment subcontractors often do not have the same terms and conditions that the ESCO is subject to, which can greatly diminish profits and possibly threaten contract completion. Coordination between the sales and engineering teams will be essential to ensure that adequate costs are anticipated prior to construction. The SPE/ESCO model is only as good as the inputs. The cost inputs for equipment purchases and labor estimates for installation must be verified before any financing can occur.
- *Environmental Risks.* Environmental risks apply to particularly large energy users who possess hazardous materials at their plant. These could include large multi-family housing complexes, industrial facilities, and even commercial facilities. A project's contract should specify that the risk of hazardous waste removal is taken on the part of the customer.
- *Performance and Persistence risk.* Problems may arise from disputes about actual energy savings when a facility's operations or energy costs change. The most important contractual provision for the SPE is having the right to review the baseline conditions of its customers' facilities. Often savings degradation results from changes in operating standards at the facility. Increased use of a facility generally leads to greater energy consumption as well as greater savings. Thus, the SPE would need to calculate how changes in operation would effect the facility's energy use prior to the retrofit.

¹ The Financial Task Force is about to launch a call for projects to be evaluated by a Finance Committee. The projects chosen will receive technical assistance for final presentation to investors and/or banks.

- ❑ *Contractual Liability.* This is a risk that is assumed in any business when an extraordinary circumstance causes a facility to close down or when an employee is harmed during construction. In the case of an energy efficiency project where the service provider is paid over a series of quarters and has invested capital at stake there are dozens of possible cases that may hurt the viability of the project such as fire, theft, and even war. Insurance provisions should be reviewed and secured by the SPE and/or the customer to ensure that its activities are covered to the best extent possible.
- ❑ *Currency, Inflation and Interest Rate risk.* Such risk occurs when financing is across currencies and when interest rate assumptions are embedded in the project financials. ESCO/SPE will have to quote its services with the provision that any change in currency will be the responsibility of the customer. This provision could be a sales tool for ESCO/SPE to secure business in a timely fashion.
- ❑ *Sponsor Risk.* As the ultimate sponsor, the SPE accepts the risk for the system design, construction, construction costs and system performance over the contract period. If the SPE outsources its engineering and design work (as we are proposing) to the ESCO, appropriate checks and balances should be instituted to ensure accuracy.
- ❑ *High transactions costs.* Energy efficiency projects are relatively small and generally have low gross returns even though the rate of return on a project makes it an attractive investment. Pre-investment costs can be disproportionately high on small projects. The SPE may find it more costly to develop its projects especially in its targeted market areas.
- ❑ *Long lead times.* The development time, from inception to actual cash flow can be very long. As a result, start up costs may greatly exceed original estimates. The SPE should ensure an adequate cash reserve to ensure project success.
- ❑ *Savings guarantee.* Monitoring and verification is required if the ESCO guarantees the energy savings from its projects (as we are suggesting). The costs associated with M&V can be significant. The SPE and ESCO should include in its contract, a provision to allow the customer to reduce the project costs by agreeing to fixed monthly lease payments to avoid M&V expenditures. Customers may wish to start with a performance based contract and then change to a more conventional leasing arrangement.

Brazilian Performance Contract Issues and Recommendations

One of the burning issues for the development of an international energy service industry is in regard to the preferred contracting mechanisms between the ESCO, the SPE, financing agent, and the customer. The USA and Europe have experienced a certain history with respect to the use of different kinds of contracting modalities and structures. Interpreting this history and what mechanism should be applied provides for an interesting debate among the FTF participants.

Recent market developments in the USA and Europe have led several observers to conclude that “guaranteed financing” is the preferred structure in general and therefore should be the preferred structure for most customers of an energy service company regardless of market conditions. In the

USA and Europe, credit for industry and commercial property and facility owners is extremely competitive. As a result, the customer has several options and the ESCO has few distinct advantages other than its willingness to assume the performance risk for the project. Therefore guaranteed savings contracts have become increasingly more frequent. In this manner the ESCO is limited to engineering and general contracting services without direct financing and assumption of the credit risk. Under perfect conditions, this appears to be an appropriate allocation of risks and costs.

The use of shared savings is less frequently used in the USA and Europe even though it was commonly used during the early years of the ESCO industries in these regions. Shared savings is typically when the ESCO provides the capital for the project and the customer pays a percentage of the benefits (savings) to the ESCO to amortize the cost of the equipment and the cost of the services provided by the ESCO. One of the benefits of the shared savings approach is that the customer does not have to report the liability on its balance sheet and it does not have to pay if no savings are achieved. The customer sees this structure as a “no lose” proposition since no payments will be made unless there are the results to cover the cost.

As the ESCO industry has become more commonplace in the USA and Europe the concerns over performance risk have also diminished thus decreasing the value of a contract structure where the ESCO only gets paid if it performs as structured under a true performance contract. This form of financing in the USA and Europe has declined substantially as financing for energy efficiency improvements has become more common place and available to industry and commercial property managers. Transactions are common place where the ESCO still finances the project but where the parties have agreed to a payment schedule calculated as a percentage of the savings but is fixed and does not vary as a function of actual savings realized. The financing of the project essentially becomes an operating lease where the ESCO is the lessor and the equipment is an asset on the books of the ESCO.

It is difficult to determine the acceptance of a particular style or structure for an ESCO contract. Markets may be in different stages of development. Emerging markets are more difficult to gauge in terms of their overall interest in guaranteed versus shared savings structures. Most performance contracting in Brazil is done as a “guaranteed” savings, as mentioned above, where the customer essentially pays for the improvements using cash or internal lines of credit. The issue is whether there would be greater market penetration if a shared savings approach could be offered to industrial and commercial customers. These issues are discussed in another report by the authors.²

As credit conditions tighten, and customers experience increased concerns around debt covenant ratios, returning to alternative financing structures may return to USA and European markets.

² See: Poole, A.D. and Stoner, T.; *Alternative Financing Models for Energy Efficiency Performance Contracting*; Eenergy International, Boulder, Colorado and Instituto Nacional de Eficiência Energética, Rio de Janeiro, June, 2003.

Conclusions

The recommendation of this report is for the Brazilian FTF financial team to proceed with the application of the SPE model as articulated at the IBMEC team for the FTF. The SPE model will allow the finance team to easily play with key parameters to make a project eligible for financing. The SPE can receive guarantees from the customer, the ESCO or from third party sources. Similarly, third party equity funds can be tapped to invest in a project to create greater comfort for a lender as well as an equity investment directly from the ESCO. Thus, reducing the risk profile of ESCO projects as perceived by the Brazilian capital markets.

The second recommendation of this report is to apply the use of the Financial Modeling Tool in the evaluation of the proposed projects for financing. The model will provide the user with the key financial information required to evaluate financing for an energy efficiency project. The FTF may consider providing this model as part of its offering to applications to the FTF. By providing this model to applicants they will be guided to what information will be required as well as some of key standards for how the FTF will review possible projects. For example, if a project does not provide a positive IRR or NPV, then it is obviously not viable. Similarly, if the ESCO does not have any capital reserves then it will be clear that a third party guarantee will be required. The model will also allow ESCOs/SPEs to better market projects to customers because it can show the financial impact of the project on the customer's financial statements. Substantially improving the likelihood of customers buying into the ESCO concept.

The third recommendation is for the FTF is to publish a series of performance contract models that will interact with the Financial Modeling Tool. The simple models should be developed and provide alternative possible structures and modifications that reflect key parameters in the Financial Model Tool.