PN-ACQ-186

ECO

Energy Conservation and Commercialization Project

A Program of USAID, Ministry of Power and ICICI

Report On Workshop on ESCO Financial Structure

December 2000

MILESTONE 1A

Prepared for: United States Agency for International Development (USAID), American Embassy, Chanakya Puri, New Delhi 110 021.
Contract No. LAG-I-00-98-0000

23865-809.0007

Implemented by:

Nexant Inc., *ID II Parkwood Estate, Rao Tula Ram Marg, New Delhi 110 022.*
Tel: +91 11 6188816, +91 11 6181376. Fax: +91 11 6190022. email:nexant@vsnl.com

Nexant Inc., *408 Dalamal Tower, Nariman Point, Mumbai 400 021*
Tel: +91 22 2884554, +91 22 2825869. Fax: +91 22 2884555. email:nexantm@vsnl.net

Table of Contents

S.No.	Description	Section	# Pages
1	**Workshop Main Report:** • Preface • Executive Summary • Introduction • Participant Profile • Workshop Structure & Report on Two Workshops • Conclusions & Recommandations • Participant Feedback	A	12
2	**Workshop Agenda: Mumbai** **Workshop Agenda: New Delhi**	B	2
3	**Participant List: Mumbai** **Participant List: New Delhi**	C	2
4	**Participant Feedback: Mumbai** **Participant Feedback: New Delhi** **Sample Feedback Forms**	D	5
5	**Workshop Presentation:** Performance Contracting by KIONA International	E	4
6	**Workshop Notes:** Performance Contracting by KIONA International	E	4
7	**Workshop Presentation:** Financing Energy efficiency by KIONA International	F	4
8	**Workshop Notes:** Financing Energy efficiency by KIONA International)	F	6
9	**Workshop Presentation:** The Money Side of Energy by KIONA International	G	2
10	**Workshop Notes:** The Money Side of Energy by KIONA International	G	10
11	**Workshop Presentation:** ESCO Project Risk & Financing Implications by KIONA International	H	2
12	**Workshop Notes:** ESCO Project Risk & Financing Implications by KIONA International	H	9
13	**Workshop Presentation:**	I	2

	Performance Contracts by KIONA International		
Table of Contents Contd.			
S.No.	**Description**	**Section**	**# Pages**
14	**Workshop Notes:** Performance Contracts by KIONA International	I	11
15	**Workshop Presentation:** Barriers to Raising Financing for Energy Efficiency Projects: Promoter, ESCO and Financial Institute (FI) Perspective by 3EC Consultants Private Limited	J	4

Preface

This report is part of the deliverable for Milestone 1A, Conduct 2 workshops on ESCO Financial Structure, of the ECO project. The report covers work done under this Milestone from August 2000 through November 2000.

The ECO project is being implemented by Bechtel National Inc (Nexant Inc) under a USAID contract, LAG-I-00-98-0000. This contract has been issued by the USAID Mission in New Delhi as a part of the IQC (Indefinite Quantity Contract) currently in place through USAID's Global Bureau. The project contract was signed on February 29, 2000, and continues through December 2003.

Executive Summary

Two two-day workshops were held in Mumbai and Delhi. The purpose of these workshops was to bring together a group of financial institutions, ESCO managers, and project sponsors to determine innovative financing and lending mechanisms with which lenders as well as borrowers are comfortable. The outcomes of these workshops are to form one of the starting point of discussions during the meetings of the lenders forum that has been set up as part of the ECO project.

There were several financing schemes discussed, the two models generally in use across the world (the North American and French) plus a number of modifications of those models the program participants felt might work in India. Some models which were thought to have more potential then some other models are: modification of the French model in which an equipment supplier might join in a working partnership with an ESCO and bear a portion of the financial exposure as well as carry the portion of the performance risk related to equipment installed; a model utilizing a special purpose entity especially was seen as having value as the ESCO business is being established in India; a variation of the special purpose entity was proposed as a way to finance very large projects; i.e., major DSM projects, etc., and insurance as a way to guarantee the repayment of loans for energy efficiency projects was seen as a possible viable solution to the "weak balance sheet" problems or as a risk mitigation mechanism.

Important recommendation of these two workshops is that, as further work is done toward the establishment of an ESCO industry in India there are two groups that need additional attention; customers and lenders. An effort must be made to make customers aware of the way in which performance contracting works and the opportunity it offers them in terms of savings and productivity. An effort should also be made to make commercial banks aware of the performance contracting concept and of the opportunities an ESCO industry presents. It is quite clear the major banks will have difficulty dealing with the smaller loans typical of ESCO projects. A way needs to be found to assist the smaller commercial banks to understand the process and see the opportunities if the industry is to grow.

Workshop Main Report

1.0 Introduction

A two-day workshop was held (at two different locations) within the context of the ECO project. The ECO project, in the main, aims to promote widespread commercialization of energy efficiency technologies and services in India by assisting stakeholders and institutions that are involved in developing, designing, constructing, implementing and operating energy efficiency projects ("Markets" component of ECO project), and by assisting government agencies and institutions in creating a supportive market environment for the commercialization of energy efficiency ("Policy" component of the ECO project).

The workshop forms an integral part of the larger activity which is under the "Markets" component of the ECO project, and which aims to facilitate the increase in number of energy efficiency projects that achieve financial closure and become operational. The specific purpose of these workshops was to bring together a group of financial institutions, ESCO managers, and project sponsors to determine innovative financing and lending mechanisms with which lenders as well as borrowers are comfortable.

The workshop, entitled "ESCO Financial Structure" was held as scheduled in Mumbai on 1-2 November and in New Delhi on 7-8 November 2000, under joint responsibility of Nexant, KIONA International and local subcontractors Energy, Economy and Environmental Consultants (3EC). Both sessions of the workshop, which had identical content, achieved or exceeded the minimum attendance levels and were very well received by participants. The workshop participant profile, structure, conclusions and recommendations, and feedback from participants are summarized below.

2.0 Participant Profile

The workshop held in Mumbai was attended by 31 participants, while the workshop held in New Delhi had 32 participants. This met the target class size, which was intended to have a minimum of 25 at each location. While detailed list of participants is enclosed in Section C, summary profile has been provided in the Table below.

These workshop sessions were intended to attract a broad range of participants, including representatives from ESCOs, consulting firms, financial institutes, end-users, and government ministries. It was felt that these were the people and decision-makers that would be able to contribute most to the workshop discussions. By including end-users and energy efficiency consultants as project promoters or as promoters' representatives, ESCOs and financial institutes, it was felt that all parties could come up with some viable financing mechanisms or at least viable risk mitigation solutions.

Marketing of the workshop was by invitation. As mentioned earlier, the audiences specifically targeted were: ESCOs, end-users, financial institutes, policy makers, and energy efficiency consultants. Within the financial community, invitations were sent to all the major all India financial institutions, including IREDA and SIDBI, public sector, private sector and foreign commercial banks, state financial institutions, insurance companies and insurance consultants, and non-banking financial companies and leasing companies. Assistance of the association of leasing and financial services companies was also sought to enhance

participation from this segment. Despite these efforts, however, only a limited participation could be had from financial community as, besides representatives of major all India financial institutions, participation from other segments of the financial community was very limited. Nevertheless, as can bee seen from workshop report, this in no way brought down the level of discussions.

Invitee and attendance lists from previous ECO workshops, clients of major ESCOs, and firms/companies short listed under national energy conservation award scheme, members of ECO advisory committee, members of the lenders forum were other important segments targeted. Nexant and Conserve handled workshop marketing and logistical aspects.

Category	Number of Participants : Mumbai	Number of Participants : New Delhi
ESCOs	7	5
Energy Efficiency Consultants/Auditors Energy Efficiency Product Manufacturers	10	8
Policy Makers	0	2
Utilities	0	1
Institutions/NGOs/Autonomous Societies	2	3
Financial Institutions	10	5
End-Users	2	2
Others	0	6
Total	**31**	**32**

3.0 Workshop Structure & Report on the Two Workshop Sessions

The workshop was seen as an idea generation and "brain-storming" forum to arrive at possible mechanisms for financing of ESCO/energy efficiency projects. In this sense, the workshop was mainly to be used as a forum for discussions. However in order to have meaningful and focused discussions it was felt necessary to include 2 lecture sessions to provide the necessary background information and to set the agenda for discussions. Accordingly, the workshop structure included a session by 3EC on barriers to financing of energy efficiency projects in India: an ESCO, promoter and financial institute perspective. This was followed by a session by KIONA international on ESCO financial structure which included brief presentations on performance contracting, financing energy efficiency projects, the money side of energy and ESCO project risks and financial implications. While the first lecture session provided the status of energy efficiency financing in India and came up with a list of issues to be addressed, the second session provided information on various models being used elsewhere in the world and adaptation possibilities for these to India. The two sessions together, thus, provided an ideal setting - listing of barriers on the one side and listing of some of the models being used in other parts of the world to overcome similar and other barriers on the other hand – for discussion sessions.

Dr. Shirley Hansen and Mr. James Hansen from KIONA International and Mr. Govind Rao from 3EC acted as the main resource persons.

Report on the Workshop in Mumbai

Day 1: 1 November 2000

Mr. Govinda Rao discussed, in broad terms, what he saw as the barriers to the obtaining of adequate financing for energy efficiency projects. He pointed out that the energy problem is made more acute by the distribution of energy use in India; i.e., 30% agricultural, 30% industrial and the remainder divided between commercial and residential uses. Because the agricultural sector is subsidized by the government the energy cost load falls on the other end-use sectors, complicating the problem.

He said a potential saving of nearly 34% of energy use was theoretically possible in all sectors of the economy together, requiring an investment of more than $17 billion with a one to three year payback. He thus provided an indication of the magnitude of the funding required, which, inter alia, was also an indication of the magnitude of the business that is there for ESCOs and financial sector.

He listed a number of barriers he perceived that stand in the way of adequate energy efficiency financing. He stated that engineers do not understand financing; financiers do not understand engineering and too often do not believe what engineers can do. Lack of data about potential achieved savings and financial considerations too often leads to the failure of ESCOs to present truly "bankable projects" to financial houses.

Rao presented financing models he thought might be used to get efficiency projects moving. They were primarily focused on financing the equipment needed in a project and not on the overall savings and service components of energy efficiency work as practiced by full service ESCOs.

After the Rao presentation there was a period of general discussion during which the bankers present said they needed more assurance that projects will work, the ESCO people said they can guarantee results. There was little apparent understanding in either direction.

Dr. Shirley Hansen and Mr. James Hansen presented an overview of energy efficiency financing approaches as used around the world. To set the stage the presentation included a general introduction to performance contracting and the ways in which energy and money interact. Dr. Hansen discussed the two predominant models of energy efficiency financing, the French Model, essentially shared savings with the ESCO carrying both the financial risk and the performance risk; and the North American Model in which the customer carries the credit risk, the ESCO carries the performance risk and guarantees the savings to be sufficient to cover the customer's debt service.

The concept that the financing mechanism for energy efficiency is basically risk management was discussed in detail and it was emphasized that risk analysis and evaluation was the key to successful ESCO operation. This process includes the necessity for quality investment grade audits, which add solid risk considerations to the traditional audit components. The point was made, but will need to be made repeatedly to financial institutions (FIs) , that the ESCO actually adds a layer of risk protection for financiers to projects typically brought by owners/engineers to FIs.

Dr. Hansen emphasized the fact that ESCOs really provide savings and service, with equipment merely the tools to deliver the savings. This was a difficult concept for engineers, used to thinking in terms of "hardware" to grasp and it was also difficult for the financial community, used to loaning on equipment alone.

In this context, Dr. Hansen noted that the financial models Mr. Rao presented will only work if the ESCO brings a value added component to the process. Relying totally on the manufacturer's warrantee for the performance guarantee brings nothing to the process that the customer cannot get by going directly to the manufacturer.

Following the presentation the attendees were divided into four working groups and asked to consider the barriers to financing, how they could be overcome and the financing models that might work best in India. In order to make the discussion groups as effective as possible, each group included banking and ESCO personnel so that viewpoints could be shared. They were asked to be prepared to report their ideas to the workshop session the following day. Shirley and Jim Hansen circulated among the groups to answer questions and provide explanations about material covered when needed.

Day 2: 2 November, 2000

After some initial discussions and questions, the working groups re-assembled and were asked to continue their deliberations, prepare a report and appoint a spokesperson to present their ideas. It was evident from conversations that the subjects being explored had, in several instances, been discussed over night, a solid indication of the seriousness and interest level of the participants.

As the results were presented several common themes were evident. All were concerned that the financial institutions would have difficulty making loans not totally asset based and, would be very skeptical of guarantees offered by an ESCO with a limited balance sheet. (It should be restated here that each of the discussion groups included at least one representative of a financial institution.)

The groups also expressed concern that customers would not believe that the guarantee mechanism was real and would somehow interpret the offer of a guarantee as indicating especially high risk.

Some discussions showed the quite normal tendency to think of equipment as the basis for an energy efficiency project rather than the service and knowledge that an ESCO can bring to the table. One group suggested a financial model that would rely on equipment suppliers for the essential performance guarantees. Under this approach a customer would soon see no need for an ESCO, settling for the manufacturer's warranties on particular pieces of equipment rather than energy savings guarantees. The dialogue underscored the need for internalization of the term SERVICE (Energy Service Company). This often requires a "mind shift" for engineers who have always thought in terms of hardware.

All the groups expressed concern over what they felt would be the tendency of customers to withhold payments and/or walk away from contracts. They also felt there would be problems in ensuring that savings would actually be used to repay debt.

There was some discussion of accounting practices that left no room in firms annual budget for services; considering equipment as capital but providing no category in which to place the service portion of an efficiency project. The feeling was that the "soft costs" (non equipment costs) would be very hard to cover in standard budgets.

The financial models selected by the groups were mostly modifications of the French model in which the ESCO obtained the financing and carried both the financial and performance risk. This approach could be modified in several ways. One suggestion was to have a financial institution take an equity position in an ESCO to provide a necessary comfort level. Another group suggested that escrow accounts might be set up to satisfy the financial institution that savings were actually going to be used to retire debt.

Another idea expressed was to involve venture capital in the funding process to spread risk and shore up ESCO equity. It was suggested that individual ESCOs, which seek such capital or venture funding, might provide an "insurance" fund, which could be accessed more broadly by the industry.

There was general agreement on the necessity for an ESCO to develop a solid relationship with a financial institution no matter what financing model was used.

The bank representatives in the groups seemed to agree with the premise that the relatively small loans normally needed for ESCO projects are difficult for banks like ICICI and IDBI to make. There was broad agreement that there needs to be an effort to make commercial banks aware of the opportunities in energy efficiency financing and for ESCOs to establish relationships with those banks.

It was quite obvious by the end of the day there was a much increased understanding of the barriers to financing and the approaches through which those barriers might be overcome. Financial people and ESCOs, and some end users were talking to each other and realizing a common problems long after the workshop formally closed. This is the first step in finding solutions.

Report on the Workshop in New Delhi

Day 1: 7 November 2000

The general presentation format offered in Mumbai was followed in New Delhi on Day one of the workshop.

Day 2: 8 November 2000

After some discussion of material covered during the previous day, the attendees were divided into working groups. Dr. Shirley Hansen outlined the charge to the groups to consider:

1. What we can do through, credit enhancement, risk mitigation, insurance or other strategies to provide a comfort level for the financial community.

2. Equity issues. How can risks be shared through an equity mechanism.

3. What kind of a financial model for energy efficiency financing (through ESCOs) will work in India.

The groups, each including a financial representative as well as an ESCO (incipient or real), auditors and an end user. They deliberated, argued and discussed the questions posed for about two hours and then prepared reports to the group as a whole.

Circulating between the groups it was apparent, as in Mumbai, the financial community, as represented by those present, will have difficulty making loans of the generally small size needed by the ESCO industry. This is a problem that must be overcome if the industry is to grow. It seems to be accepted as a truism that it is much easier to borrow very large amounts for huge projects than to acquire modest loans for smaller projects. Transaction costs are nearly as high for a small loan as a large one. In addition, the perception was voiced that the seeker of a small loan is probably not as creditworthy as someone who goes after very large amount.

The first group to report noted that the funding of ESCOs and efficiency projects is not "hot" with the financial institutions. They suggested the current approach left the ESCO as merely a consultant and the key transactions were simply between customers and lenders based on the customer's balance sheet, with the ESCO getting a fixed fee and providing no guarantees (thus not a performance contract). This probably describes the operation of most of the companies in India who currently consider themselves ESCOs.

The group presented model, which they felt, might work for very large projects, i.e.; a major DSM project for a State Electricity Board. This would involve the establishment of a Special Purpose Vehicle (SPV) to be jointly owned by an ESCO, a client, a bank (or banks) and one or more multilateral agencies (AID, World Bank, etc.). The SPV would be the coordinating body (manager) and the ESCO would interact with the customer and do the project. The ESCO would presumably provide the usual guarantees and collections and distributions would be handled by the SPV.

Since an ESCO would need to be part of an EPV for each of its projects it was pointed out the scenario described would become impossibly cumbersome as applied to the numerous small projects that are typical in the ESCO industry, although it might be applicable for very large and complex projects. Discussion produced the idea that the establishment of an SPV on a much more limited basis might be a solution for the financing problems faced by ESCOs on the first few projects.

Another idea that was also raised in Mumbai was the possible use of venture capital to finance the ESCOs themselves; business financing as opposed to project financing. The business costs that must be absorbed by an ESCO before project income begins to flow are substantial (sales costs, engineering costs, overhead etc.) especially as a result of the fairly long sales cycle typical in the industry. It was noted that ICICI has a substantial venture capital fund; however, there was no ICICI representative present to explain their program.

The second group reviewed the requirements for an ESCO to bring to a financier an acceptable, bankable project. This requires establishing the credibility of the ESCO (technical and financial) and the identification of credible opportunities to achieve measurable and verifiable savings in a client's facilities. The client must have access to financing sources and equity and/or assets (creditworthiness) to satisfy a lender.

They suggested that credit enhancement might be accomplished through additional guarantees, shared collateral security (with ESCO) and through project insurance. They felt than any credit enhancement scheme would require very careful contract construction. Discussions stressed that the financial representative in the group was especially concerned in the way that force majeur would be defined in such a contract.

Under the legal system in India the enforcement of contracts through the courts can be so protracted as to be essentially useless. In addition there is no recourse to liquidated damages so that losses in production and/or income stream cannot easily be recovered. There was strong support for the inclusion of an arbitration requirement in contracts. This mechanism exists in India and the group felt it could be effective in ESCO contract disputes.

4.0 Conclusions and Recommendations

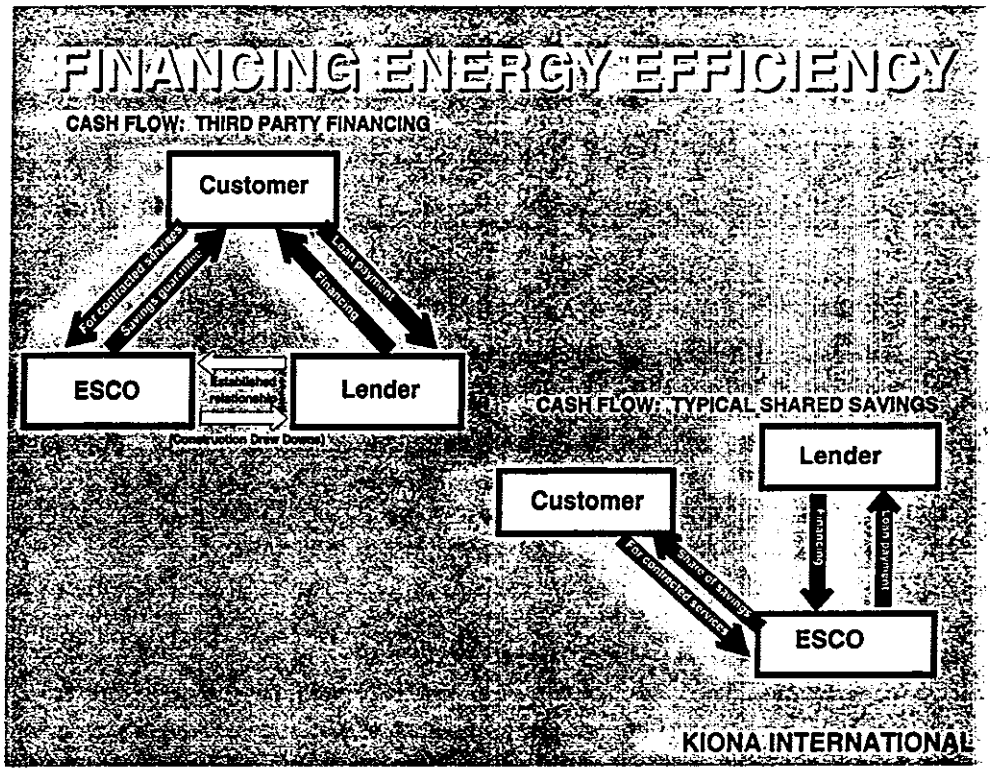
Based on preliminary research done by the Indian consultants and discussions in the workshops the following conclusions and recommendations are submitted.

Conclusions

There were several financing schemes discussed, the two models generally in use across the world plus a number of modifications of those models the program participants felt might work in India.

1 The North American model, illustrated on the left in Figure below is apt to become the most frequently used model as it is ultimately most favorable to the ESCO, the customer and the financial institution. In this model, the customer carries the financial risk, the ESCO carries the performance risk and guarantees sufficient savings to cover debt service and the financial institution has the benefit of two grantees, that of the customer and the ESCO. This extra surety lowers the cost of money where this model is in use.

2 Until the financial community in India becomes comfortable with the performance contracting concept, the model of choice will probably be some modification of the "French" model, illustrated on the right, below. In this model, the ESCO carries the financial and performance risk and the financial institution



loans funds to the ESCO, based upon the balance sheet of the ESCO itself. The ESCO and the customer share savings achieved. This system has the obvious limitation imposed by the financial strength (balance sheet) of the ESCO.

3. A modification of the French model was discussed in which an equipment supplier might join in a working partnership with an ESCO and bear a portion of the financial exposure as well as carry the portion of the performance risk related to equipment installed. This model has some possibilities; however, it would tend to lock an ESCO (and customer) into specific kinds of equipment when another piece of equipment might be more appropriate. It also tends to obscure the fact that the most important factor in an energy efficiency project is not the equipment but the expertise and service provided by the ESCO.

4. Several versions of a model utilizing a special purpose entity were discussed and these may have value as the ESCO business is being established in India. These would involve setting up companies jointly held by; (1) a bank and ESCO; or (2) a customer and an ESCO, specifically for the purpose of implementing an efficiency project or multiple projects. As an example, if an entity were to be set up between an ESCO and a bank, both would hold an equity position and the bank, in effect, would loan money against its own balance sheet. This could be a viable approach if, through special assignment of funds, banks could participate and benefit in such arrangements.

5. A variation of the special purpose entity was proposed as a way to finance very large projects; i.e., major DSM projects, etc. This would involve setting up an entity owned by the customer, ESCO and Bank together, which would act as the administrative body for the project and, in effect, contract with the ESCO to do the work. This

would not be a practical approach for an ESCO doing a number of the smaller projects, but might have utility for very large efforts for a single customer. The method would, however, detract from the close "partnership" relationship between ESCO and customer, that is an important part of achieving savings in a successful performance contract.

6. Insurance as a way to guarantee the repayment of loans for energy efficiency projects may be a viable solution to the "weak balance sheet" problem. Insurance for performance contracting is quite common in many countries and the cost is usually in the range of three percent (3%) of the project costs. This may be a viable approach in India if an initial insurance fund can be set up. Commercial insurers are probably not yet ready to serve the Indian market, however, if seed money could be found through a consortium of banks or by funding from USAID or other multilateral source this concept might provide a way to move the concept ahead quite rapidly.

Recommendations

As further work is done toward the establishment of an ESCO industry in India there are two groups that need additional attention; customers and lenders. The recommendations below address both of these groups. The suggestions are in no particular order of priority.

1. An effort must be made to make customers aware of the way in which performance contracting works and the opportunity it offers them in terms of savings and productivity. Because it is a "new" concept, customers tend to be suspicious of the guarantees offered, feeling that guarantees somehow suggest more risk. An effort to explain the process and to provide examples of success will make a difference. During the industry's beginning stages some extra educational activity is important.

2. A corollary to point #1. There is a great need to assist ESCO personnel in learning how to sell performance contracting. Because a performance contract is primarily a financial transaction, rather than a hardware purchase, the sales approach must be quite different. Engineers sometimes have difficulty in dealing with the unfamiliar financial terms that are essential to a performance contract, preferring to talk about equipment.

3. An effort should be made to make commercial banks aware of the performance contracting concept and of the opportunities an ESCO industry presents. It is quite clear the major banks will have difficulty dealing with the smaller loans typical of ESCO projects. A way needs to be found to assist the smaller commercial banks to understand the process and see the opportunities if the industry is to grow. Ways the major financial houses (ICICI and IDBI) could place funds with smaller banks for the purpose of project financing should be explored. Interest rates would be above the loan rates of the large institution, but money would be available for the scale of lending needed.

4. The multinational financial institutions represented in India have had much experience in financing energy efficiency projects in other countries. They should be encouraged to bring in people familiar with performance contract financing from within their own organizations so that such lending could become available in India. Those especially widely involved are G.E. Capital. CitiGroup, ABN-Amro. ABB Financial Services (Energy Capital), and others.

5. Explore the possibility of the establishment of a "lending pool", perhaps financed jointly by the major banks or by an agency such as the World Bank or Asian Development Bank. This pool would spread single project risks, could create an entity for insurance purposes and could be dedicated to the smaller loans typical of energy efficiency projects and priced accordingly.

6. A related possibility would be to seek funding from the World Bank or Asian Development Bank to buy down interest rates on loans from commercial banks.

5.0 Participant Feedback

A combination of structured and open-ended questions was used to obtain feed back from workshop participants. While structured responses were sought on aspects such as, workshop content (relevance, coverage, structure), quality of resource persons/faculty, delivery methodology, venue, administrative arrangements, handout material and publicity and invitations; open ended responses were sought on reasons for attending the workshops/expectations from the workshops, extent to which expectations were fulfilled, and follow-up actions planned by the participant in the workshop focus area. A sample feedback form, along with summaries of the responses from each of the two workshops has been enclosed in Section D. The principal conclusions provided from these summaries include the following:

Goals in attending the course.

While good number of participants sought generally to: look for a workable ESCO mechanism/model and share experiences in this regard, or to know the intricacies involved in ESCO funding; because the ESCO concept is relatively new in India, many participants have mentioned that they came to the workshop to learn about the ESCO concept. The financial institute persons have mentioned that their purpose was mainly to understand energy efficiency projects in a better a way and to explore the potential business opportunities and issues related to them.

Extent goals met by the course.

Generally, the participants claimed that goals had been met.

Actions to be taken to follow-up the course.

There were a wide variety of specific responses, some of the interesting ones have been produced below:

- Discuss these issues with senior management of Financial Institutions
- The insurance is becoming a highly specialized field and they can assess they complex situation and suit the projects which should change risk perceptions. Specific comment: Experts from the insurance sector must add value to the interaction and suggest some remedies

Program

Workshop On ESCO Financial Structure

Sponsored By USAID

DATE: **1-2 November 2000**
VENUE: **Holiday Inn, Juhu, Mumbai**
TIME: **0930 – 1700**

DAY 1: 1 November 2000

0930	Registration	
1000 – 1115	**INAUGURAL SESSION**	
	Welcome address	CONSERVE
	About the ECO Project	Dr. Ashok Sarkar, Project Manager, ECO-Project, USAID
	Introductory Remarks	Mr. S. Padmanabhan, Senior Advisor, Energy, USAID.
	Energy Efficiency Financing	Mr. Anil Malhotra, Vice President, Technology Division, ICICI
	Address by Ministry of Power	Mr. Shashi Shekhar, Director, Energy Management, Ministry of Power
	Introduction to the Workshop & Vote of thanks	Nexant, Inc.
1115 – 1130	**TEA BREAK**	
1130 – 1300	Barriers to raising finances for energy efficiency projects" – Promoter, ESCO & FI Perspective	3EC: Mr. R. Govinda Rao
1300 – 1400	**LUNCH BREAK**	
1400 – 1515	Innovative financial models for energy efficiency/ESCO project financing	KIONA, USA: Dr. Shirley Hansen and Mr. Jim Hansen
1515 – 1530	**TEA BREAK**	
1530 – 1630	Innovative financial models for energy efficiency/ESCO project financing	KIONA,USA , Dr. Shirley Hansen and Mr. Jim Hansen
1630 – 1700	Preparatory discussion for Day 2 program	Nexant

DAY 2: 2 November 2000

0930 – 1100	**Break out sessions:** Participant groups will discuss about the possible nature of viable loan/lending mechanisms	Lead by 3EC & KIONA :
1100 – 1115	**TEA BREAK**	
1115 – 1300	Group presentations	Lead by 3EC & KIONA :
1300 – 1400	**LUNCH**	
1400 – 1515	Topic wise discussion on group presentation	Lead by 3EC & KIONA:
1515 – 1530	**TEA BREAK**	
1530 – 1700	Summary of workshop outcomes, recommendations and follow up action	Lead by 3EC & KIONA :

Program

Workshop On ESCO Financial Structure

Sponsored By USAID

DATE: 7 – 8 November 2000
VENUE: India International Centre, Annex Lecture Hall, New Delhi
TIME: 0930 – 1700

DAY 1: 7 November 2000

0930	Registration	
1000 – 1115	**INAUGURAL SESSION**	
	Welcome address	CONSERVE
	Introductory Remarks	Dr. Ashok Sarkar, Project Manager, ECO-Project, USAID
	Energy Efficiency Financing	Mr. Anil Malhotra, Vice President, Technology Division, ICICI
	Address by Ministry of Power	Mr. Shashi Shekhar, Director, Energy Management, Ministry of Power
	Introduction to the Workshop & Vote of thanks	Nexant, Inc.
1115 – 1130	**TEA BREAK**	
1130 – 1300	Barriers to raising finances for energy efficiency projects" – Promoter, ESCO & FI Perspective	3EC: Mr. R. Govinda Rao
1300 – 1400	**LUNCH BREAK**	
1400 – 1515	Innovative financial models for energy efficiency/ESCO project financing	KIONA, USA: Dr. Shirley Hansen and Mr. Jim Hansen
1515 – 1530	**TEA BREAK**	
1530 – 1630	Innovative financial models for energy efficiency/ESCO project financing	KIONA,USA , Dr. Shirley Hansen and Mr. Jim Hansen
1630 – 1700	Preparatory discussion for Day 2 program	Nexant

DAY 2: 2 November 2000

0930 – 1100	**Break out sessions:** Participant groups will discuss about the possible nature of viable loan/lending mechanisms	Lead by 3EC & KIONA :
1100 – 1115	**TEA BREAK**	
1115 – 1300	Group presentations	Lead by 3EC & KIONA :
1300 – 1400	**LUNCH**	
1400 – 1515	Topic wise discussion on group presentation	Lead by 3EC & KIONA:
1515 – 1530	**TEA BREAK**	
1530 – 1700	Summary of workshop outcomes, recommendations and follow up action	Lead by 3EC & KIONA :

ECO PROJECT: MILESTONE 1A
Workshop on ESCO Financial Structure
1- 2 November 2000: Mumbai
LIST OF PARTICIPANTS

S.No.	Contact Person	Organization	Address1	Address2	City	Pincode	Phone	Fax	Email
1	Bharat A Bhatt	Synergy Consultants	Ajit Villa, 4th Floor	7 K Sanghi Path, Gamdevi	Mumbai	400007	3805635	3804416	syncon@bom3.vsnl.net.in
2	Mahesh Patnakar	Environmental & Development Consultants	Dwarka,Pushpadhanwa Society	Nahur Road, Mulund (W)	Mumbai	400080	5686876	5606948	mahesh@bom2.vsnl.net.in
3	M S Balasundram	Energy Venture Capital Ltd.	206, Opp. Passport Office	Worli	Mumbai	400025	2341969	5704891	msbdlxit@hotmail.com
4	Manoj Saha	Saha Sprague Limited	266, Dr. A B Road	1st Floor, Worli	Mumbai	400025	4301969		msaha@sahasprague.com
5	Sanjay Agarwal	IDFC	169, Backbay Reclamation		Mumbai	400020	2861009	2838158	sanjay@idfc.com
6	N M Anjenakumar	IDFC	ITC Centre, 3rd Floor	760 Anna Salai	Chennai	600002	8559440	8547597	anjena@idfc.com
7	S S Jha	IFCI	Earnest House,	Nariman Point	Mumbai	400021	2876596	2851016	ssjha@ifmumbai.com
8	D N Bharwada	Asian Eletronics Limited	D-11 Road No.28,	Wagle Ind. Estate	Thane	400604	5835504	5827636	aeltha@vsnl.com
9	S Siva Kumar	IDBI	IBDI Tower,WTCComplex	Cuffe Parade,	Mumbai	400005	2189111	2183619	s.sivakumar@idbi.co.in
10	IVR Kumar	Sri Shakti Alternative Energy Technologies (P) Ltd.	Venus Plaza,	Begumpet,	Hyderabad	500016	7899416	7814411	
11	R V juvekar	Prima Techno-Commercial service	10 Ideal Chabmers,	Ideal Colony, Paid Road,Kothrud,	Pune	411029	5411208	5460259	prima@pn2.vsnl.net.in
12	Milind Chittawar	SEE-Tech Solutions Pvt. Ltd.	H-001, Sanchayani Prestidge,	Swavalambi Nagar	Nagpur	44022	264433	265816	seemil@nagpur.net.in
13	Mubeen Rafat	ASCI	Bella Vista,		Hyderabad	500082	3310952	3312954	mubeeb_rafat@hotmail.com
14	T K Kuruvilla	Reserve Bank Of India	Industrial & Export Credit Dept.	CentralOffice, Central Office Building, Fort	Mumbai	400001	2661602		
15	G S Varma	Agni Energy Services P Ltd	1-A/1 Kautilya	6-3-652, Somajiguda	Hyderabad	500082	6502172	3329933	agniesco@hd2.vsnl.net.in
16	K M D Unnithan	EMC, Kerela	Karamana		Thiruvananthapuram	695002	345597	345587	kmdunnithan@hotmail.com
17	Pushkar Khanna	Yajna Fuel Services	5, Jai Shri Siddhivinayak Coop Hsg. Society	Gr floor, ShivajiNagar, B-Cabin, Thane(W)	Mumbai	400602	5424983	5424983	
18	V Mohile	Bajaj Electricals Ltd.	15/17 Sant Savata Marg	Reay Road	Mumbai	400010	3724192	3730504	mohilev@bajajelectricals.com
19	R N Kamdin	Taj Group of Hotels	66 Residency Road		Bangalore	560025	5584545	5584030	
20	D S Kenkre	ICICI	ICICI Tower	Bandr-Kurla Complex	Mumbai	400051	6536686	6531369	kenkred@icici.com
21	Jaisingh D Dhumal	ICICI	ICICI Tower	Bandr-Kurla Complex	Mumbai	400051	6536475	6531268	dhumalj@icici.com
22	K K Kuchelan	ICICI	ICICI Tower	Bandr-Kurla Complex	Mumbai	400051	6531414	6531268	kuchelan@icici.com
23	D S Shah	ICICI	ICICI Tower	Bandr-Kurla Complex	Mumbai	400051	6531259	6531269	shahd@icici.com
24	Shyam Makhija	Omni Consultany Services	31 K 'Sara, 240 Pali Road	Bandra West	Mumbai	400050	6429696	6434913	omnisme@bom4.vsnl.net.in
25	Shishir Athale	Sundya Indl Services P Ltd	5 Raj Apartment, 28 Pushpak Park	Aundh	Pune	411007	5886501	5898629	sundya@ip.eth.net
26	D M Kamath	Spectrum Enegy Services	Flat No 3, Sri Niketan	Pandurang Wadi, Goregaon (E)	Mumbai	400063	8754155		
27	S K Pasale	Devki Energy Consultancy P Ltd	A-8, La Serena	Orlem, Malad (W)	Mumbai	400064	8823048		
28	Rahul Walawalkar	Tata Infotech Ltd.	SEEPZ, Andheri (E)		Mumbai	400096	8291261		wrahul@vsnl.com
29	Gaurav Singh	ICICI	ICICI Tower	Bandr-Kurla Complex	Mumbai	400051	6536690	6531369	
30	M Pushpajadon	UTISB	Merchant Chamber,		Mumbai		2030125		
31	R Vasu	Intexco Asia Limited	Oakland,114 Ulsoor Road Cross		Banglore	560042	5583726		rvasu@vsnl.com

18

ECO PROJECT: MILESTONE 1A
Workshop on ESCO Financial Structure
7- 8th November 2000:New Delhi
LIST OF PARTICIPANTS

S.No.	Contact Person	Organization	Address1	Address2	City	Pincode	Phone	Fax	Email
1	P K Srivastava	3EC	C 16 X3, Dilshad Garden		Delhi	110095	2113046	2112974	pradeep_sri@hotmail.com
2	Amit Bhatt	ABB Financial Services	Chandiwala Estate, Maa Anand Mai Marg,	Kalkaji	New Delhi	110019	6826100	6826178	amit.bhatt@in.abb.com
3	Asok Dasgupta	ADG Power Consultancy P Ltd	R-64 GK - I		New Delhi	110048	6219639	6219675	adgrdg@yahoo.com
4	Ashok Tayal	AK Tayal, Associated					9810277160		
5	Abhilasha Behl	BEA India Pvt. Ltd.	L-78B, First Floor	Malviya Nagar	New Delhi	110017	6231218	6410734	beain@vsnl.com
6	Prasana Srinivasan	BEA India Pvt. Ltd.	L-78B, First Floor	Malviya Nagar	New Delhi	110017	6231218	6410734	beain@vsnl.com
7	Pramod Singh	BSES Ltd.	BSES Tower	A-2 Sector 24	Noida	201301	4557217	4558908	anilbses@del3.vsnl.net.in
8	M G Devashyam	CEEC			Chennai		4942297		devsaha@vsnl.com
9	Rajesh Parpyani	Consultancy Development Centre	IHC, East Court, Zone IV	2nd floor, Lodhi Road	New Delhi	110003	4602601	4602602	cdc@giasdl01.vsnl.net.in
10	Sarbinder S Khatta	DSCL	5th Floor, Kanchenjunga Bldg.	18 Barakhamba Road	New Delhi	110001	3316801	3318072	dscpower@nde.vsnl.net.in
11	R B Sinha	Energy Audit Services	1116, Sector-17		Faridabad	121002	282132	262576	sinhaeas@ndb.vsnl.net.in
12	KK Chkarvarti	Energy Management Centre	118 A Ashirwad Complex	D-1 Green Park	New Delhi	110016	6864867	6868914	
13	S Ramaswamy	Energy Management Centre	118 A Ashirwad Complex	D-1 Green Park	New Delhi	110016	6864867	6868914	s_ramaswamy@rediffmail.com
14	Hemant Kumar	Enron India P Ltd.	8th floor, Meridien Commercial Tower	Raisina Road	New Delhi	110001	3356301	3356306	hemant.kumar@enron.com
15	Albrecht Kaupp	German Technical Cooperation (GTZ)	21 Jor Bagh		New Delhi	110003	4603832	4603831	eta-pct@eta-team.com
16	V S Ailawadi	HERC	SCO-180 Sector 5		Panchkula	134109	572997	572359	hercpkl@satyam.net.in
17	S S Sharma	Holtec Consulting Pvt Ltd.	A-Block, Sushant Lok		Gurgaon	122001	6385095	6385114	info@holtecnet.com
18	R K Chavali	IFCI Ltd.	IFCI Tower, 61 Nehru Place	PB No. 4499	New Delhi	110019	6487405	6230192	rk.chavali@ho.ifcimail.com
19	H N Belawat	IFCI Ltd.	IFCI Tower, 61 Nehru Place	PB No. 4499	New Delhi	110019	6487241	6488478	hn.belawat@ho.ifcimail.com
20	R Vasu	Intesco Asia Limited	Oakland,114 Ulsoor Road Cross		Banglore	560042	5583726	5596036	rvasu@intescoasia.com
21	P C Bose	Manasa Electronics	B-27 ShyamPark Extn		Sahibabad	201005	9810013068		
22	K R Goyal	National Experts Organization	Bock 2D, Deepa Complex	10 IP Extension	Delhi	110092	2231212	2482953	neoacr@nda.vsnl.net.in
23	S J Raina	NCCBM	34 KM Stone, Delhi Mathura Road	Ballabhgarh	Ballabhgarh	121004	5244469	5242100	nccbm@giasdl01.vsnl.net.in
24	C K Sharma	NCCBM	34 KM Stone, Delhi Mathura Road	Ballabhgarh	Ballabhgarh	121004	5244469	5242100	nccbm@giasdl01.vsnl.net.in
25	R K Iyer	Saha Sprague Limited	No. 805 North Rear Wing, 8th floor	Manipal Centre, 47 Dickenson Rd	Bangalore	560042	5595266	5595463	rkiyer@blr.vsnl.net.in
26	Rakesh Bhargava	Shree Cement Limited	Bangur Nagar		Beawar	305901	20010	21868	shreebwr@datainfosys.net
27	R K Panwar	SIDBI	APCTT Building, Qutab Institutional Area	PO Box 4575	New Delhi	110016	6966509	6856276	panwar@apctt.org
28	P S Thakurta	Somany Floor & Wall Tiles	Kossar		Haryana	124507	8321002	8321006	psthakurta@spl.com
29	Vikash Agarwal	SREI International Finance Ltd.	13 A Atmaram House	1, Tolstoy Marg	New Delhi	110001	3322274	3731542	vikash@sreidel.com
30	Rajesh Jain	Wapp Syatems India Pvt. Ltd.	44E/9, Kishangarh,	Vasant Kunj	New Delhi	110070	6133995	6131911	wapp@del3.vsnl.net.in
31	Koshy Cherail	Winrock International India	7 Poorvi Marg,	Vasant Vihar	New Delhi	110057	6142965	6146004	koshy@winrock.ernet.in
32	Nisha Menon	Winrock International India	7 Poorvi Marg,	Vasant Vihar	New Delhi	110057	6142965	6146004	saroj@winrock.ernet.in

Participant Feedback

A combination of structured and open-ended questions was used to obtain feed back from workshop participants. While structured responses were sought on aspects such as, workshop content (relevance, coverage, structure), quality of resources persons/faculty, delivery methodology, venue, administrative arrangements, handout material and publicity and invitations; open ended responses were sought on reasons for attending the workshops/expectations from the workshops, extent to which expectations were fulfilled, and follow-up actions planned by the participant in the workshop focus area. A sample feedback form, along with summaries of the responses from each of the two workshops has been enclosed.

Structured Responses:
Following table shows participant feedback on Mumbai and New Delhi workshops to the question "What comments would you like to make about each of the following aspects of the event?". The figures indicated in the table show percentage of respondents saying 'poor' or 'satisfactory' etc.

Mumbai Workshop Results:

Description	Percentage of Participants Saying				
	Poor	Satisfactory	Average	Good	Excellent
Content (relevance, coverage)		6%	19%	69%	6%
Content (SeminarStructure)			13%	73%	13%
Resource person/Tutor				56%	44%
Delivery, methodology			6%	69%	25%
Venue				60%	40%
Administrative arrangements			13%	56%	31%
Handout Material			31%	50%	19%
Workshop Publicity/Invitation	13%	19%	19%	31%	19%

New Delhi Workshop Results:

Description	Percentage of Participants Saying				
	Poor	Satisfactory	Average	Good	Excellent
Content (relevance, coverage)		17%		67%	17%
Content (SeminarStructure)		17%	17%	33%	33%
Resource person/Tutor		17%		33%	50%
Delivery, methodology		17%		50%	33%
Venue		17%		33%	50%
Administrative arrangements		17%	17%	67%	
Handout Material		17%	33%	17%	33%
Workshop Publicity/Invitation		17%	33%	33%	17%

Responses to Open Ended Questions

Given below are sample responses to open-ended questions.

Mumbai Workshop Responses:

Sample responses from participants:

What were your goals in attending the seminar?	To what extent do you think these have been met?
Problems faced by ESCO	The seminar has thrown some light on some of the issues need to be discussed further
To see a workable ESCO mechanism	To meet others concerned in the area
To understand the concept & ECO Project and how to overcome the problems in financing such projects	The program succeeded in achieving the goal to a fair degree
To understand financing/needs of ESCO industry	To get to understand the viewpoint of industry and end-users
To understand the intricacies of funding of ESCO & to know the views of financial institutions while agreeing to finance ESCOs	The goals have been reasonably met
To understand the view points of different parties to an energy conversation projects.	To a great extent in understanding the constraints of different groups
To look for workable ESCO model and share own experience	No response
A moderate understanding of the issues evolved in the Energy Services Sector	Concerns of end-users, ESCOs and Financial Issues
To understand practical ways of implementing successful ESCO projects	Could learn possible models, opinions of FI/other ESCOs .
Performance contracting is a relatively new concept for industry. Would like to upgrade my hotel properties through the performance contracting route	Very useful, specially Mr./Mrs. Hansen's presentation
To learn more about financial aspects in ESCO operation	The goal was met to a great extent.
To understand energy efficiency projects in a better way and to explore the potential business opportunities and issues related to them as a financial institutions	
To learn about ESCOs	Goals were met

Sample Responses from Participants:

What action do you plan to take to follow-up this event?
Discuss these issues with senior management of Financial Institutions
Work for implementing ESCO concept
The understanding will help me while formulating the policies in respect of lending
No response
We could take up some projects with our clients

What action do you plan to take to follow-up this event?
The insurance is becoming a highly specialized field and they can assess they complex situation and suit the projects which should change risk perceptions. Specific comment: Experts from the insurance sector must add value to the interaction and suggest some remedies
To take up with management for lending funds for ESCOs
Will take up couple of projects down the line
Carry out energy audits (investment grade) and come out with ESCO proposals. Develop consultancy model on sharing basis and implement. This way we can augment on our present business
Would like to have a superior performance contracting solution emerging for the hotel industry
Be in touch with ESCO community and follow up an further proceedings of ECO project
Shall facilitate all the relevant people and evolve strategies that will suit Indian candidates
To be in a closer contact with ESCOs, consultants etc. and seriously look into these projects as business opportunity

New Delhi Workshop Responses

Sample responses from participants:

What were your goals in attending the seminar?	To what extent do you think these have been met?
To find out about the awarenmess of the concept in India, also to assess the viability and methodology of ESCO financing in India	No response
Financing of ESCO projects	I could have a good idea of the activity
My goal was to make myself aware of the different financial strategies of ESCO and its pros and cons	No response
Modern techniques and application in the financing	Learnt a bit about US and French models and methods. I would like to learn much with respect to India. I would like to find a suitable method/procedure for Indian energy situation
To understand 'ESCO' procedure, opportunities and limitations, as a lender primarily.	The basics are touched, but a more exhaustive session, with contracting as the main objective would be more welcome.
To understand the functioning of ESCO and its financing.	The purpose is achieved

Sample Responses from Participants:

What action do you plan to take to follow-up this event?
Would wait for the proposals from ESCOs
As an end-users, will stat interacting with ESCOs
To follow up the events by adopting one by one/stage by stage approach
Look up to opportunities in the future
This is new area. Further development work needs to be done

Eco Project: Workshops Feedback Form

Workshop on ESCO Financial Structure

7 - 8, November, 2000

India International Center, New Delhi

Dear Participant,
We value your views on how you experienced this workshop. Please take a few minutes to complete this form.

1. What were your goals in attending the Workshop? To what extent do you think these goals have been met?

2. What action do you plan to take to follow-up this event?

3. What comments would you like to make about each of the following aspects of the event? (Please indicate your choice on the five point scale below):

	Poor	Satisfactory	Average	Good	Excellent
Content (relevance, coverage)					
Content (Workshop Structure)					
Resource person/Tutor					
Delivery, methodology					
Venue					
Administrative arrangements					
Handout Material					
Workshop Publicity/Invitation					

Eco Project: Workshops Feedback Form

Workshop on ESCO Financial Structure

1-2, November, 2000

Holiday Inn, Mumbai

Dear Participant,
We value your views on how you experienced this workshop. Please take a few minutes to complete this form.

1. What were your goals in attending the Workshop? To what extent do you think these goals have been met?

2. What action do you plan to take to follow-up this event?

3. What comments would you like to make about each of the following aspects of the event? (Please indicate your choice on the five point scale below):

	Poor	Satisfactory	Average	Good	Excellent
Content (relevance, coverage)					
Content (Workshop Structure)					
Resource person/Tutor					
Delivery, methodology					
Venue					
Administrative arrangements					
Handout Material					
Workshop Publicity/Invitation					

PERFORAMANCE CONTRACTING

Notes

PERFORMANCE CONTRACTING:

Financial Considerations

Shirley J. Hansen, Ph.D.
James D. Hansen, Engr.
KIONA INTERNATIONAL

PERFORMANCE CONTRACTING IS ...

A contract with payments based on performance. Generally, it is based on guaranteed future energy savings.

For the owner: PC enables expenses to be redirected into a revenue stream without any up front costs.

KIONA INTERNATIONAL

PERFORMANCE CONTRACTING IS ...

COUNTRY BENEFITS

- improve the economy
  - stretch available energy supply
  - cut operating/production costs
- upgrade facilities
  - using money from wasted energy
- increasing employment
- improve the environment

KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

PERFORMANCE CONTRACTING
Customer Advantages

Use FUTURE energy and operational savings NOW

Upgrade facilities without front-end cost

Cut operating costs; be more competitive

Improve comfort; productivity

KIONA INTERNATIONAL

Notes

PERFORMANCE CONTRACTING
Customer Advantages

Capture a positive cash flow

Use money paid for wasted energy

Gain opportunity value of money

Get guaranteed performance; results

Shed risks

KIONA INTERNATIONAL

PERFORMANCE CONTRACTING IS ...
Services Provided

- ☑ Energy auditing for cost-effective savings; *investment grade*
- ☑ Financing
- ☑ Construction management
- ☑ Project management

KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

PERFORMANCE CONTRACTING IS ...

A simple idea . . .

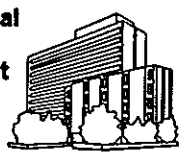
... A COMPLEX PROCESS

KIONA INTERNATIONAL

Notes

PERFORMANCE CONTRACTING

Structuring the Deal



Preliminary Assessment

Investment grade audit

- energy use profiles
- project costs and savings
- identify cost-effective measures

Obtain approval for measures

KIONA INTERNATIONAL

PERFORMANCE CONTRACTING

Structuring the Deal

Arrange financing

Implement approved measures

Maintain equipment; O&M training

Monitor; verify savings

Project management

KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

PERFORMANCE CONTRACTING: FINANCING CONSIDERATIONS

Financing a performance contact requires an understanding of the energy services industry, the money side of energy, how contractors manage the risks, and the manner in which contracts are written to protect the respective parties.

Performance contracting enables a community to enhance its economy and its environment and to do so out of funds now spent on wasted energy. In the process, performance contracting offers exciting business opportunities for the energy service industry and clear advantages for the ultimate recipient, the customer.

WHAT PERFORMANCE CONTRACTING IS

Performance contracting allows the customer eg a commercial business, university, an industry facility, hospital, or state agency, to use future energy savings to upgrade facilities and cut operating costs now. The energy service company (ESCO) identifies energy saving opportunities in the customer's building, equipment and/or industrial processes. The ESCO implements those measures approved by the owner at no initial cost to the owner, maintains the measures for the life of the contract and guarantees the energy savings.

COUNTRY BENEFITS

When performance contracting is implemented in cooperation with an ESCO, a number of benefits are available to the local economy. An ESCO can:

- Offer all market sectors an opportunity to upgrade facilities using current and future monies now spent on wasted energy;
- Improve the economy by cutting operating/production costs and increasing the economic competitiveness;
- Allow increased industrialization without, at the same time increasing in utility generating capacity;
- Increase employment while reducing the needed capitalization for the same quantity of energy; ie, a recent study of Russian conditions showed that making available the same amount of energy through energy efficiency creates five times as many jobs as producing this energy with only one-eighth the capital investment; and
- Improve the environment without incurring the costs usually associated with such efforts. In fact, energy efficiency through performance contracting can significantly reduce pollution emissions, such as So_x and No_x, while it "makes" money.

CUSTOMER ADVANTAGES

An organization can achieve many benefits, including:

- The opportunity to take what facility people already know and put it into practice using avoided utility costs;

- An immediate upgrade of facilities and reduced operating costs – without any initial investment by the owner;

- Availability of ESCOs energy efficiency expertise. Through savings guarantees, ESCOs have learned from experience just how effective specific energy conservation measures are under certain conditions and how soon they can pay for themselves;

- Positive cash flow. (the measures usually generate savings that exceed the guarantee);

- The opportunity to use the money that would have been used for upgrades to meet other needs;

- Improved and more energy efficient operations and maintenance;

- Risk normally incurred by customer are absorbed by the ESCO, including the guaranteed performance of the new equipment for the life of the contract (not just through a warranty period);

- A more comfortable, productive environment; and

- All the services are paid for with the money the customer would have paid the utilities for wasted energy.

SERVICES BY THE ESCO INCLUDE:

- Investment grade energy audit to identify energy and operational savings opportunities;

- Financing arrangements;

- The purchase, installation and maintenance of the installed energy efficient equipment; possibly maintenance on all energy consuming equipment;

- New equipment training of operations and maintenance (O&M) personnel;

- Training of O&M personnel in energy efficient practices;

- Monitoring of the operations and energy savings, so reduced energy consumption and operating costs persist; and

- Guarantees of the energy savings to be achieved.

Performance contracting is probably the best and quickest way to be sure an organization is operating as efficiently as possible. It offers the customer a risk shedding opportunity. The only true risks to the customer are finding the right ESCO partner and obtaining a contract that best meets the customer's needs. The performance contracting industry has matured in

several industrialized nations and the customer can now satisfy these concerns with very little difficulty.

THE ESCO BUSINESS PERSPECTIVE

Performance contracting started in Europe, has become refined in the United States and Canada and is now widely accepted in many countries by the national governments, states, institutions, businesses and industry. From a business perspective, its popularity is largely due to the opportunities it offers companies to"

- Sell to customers who have no money;
- Serve existing customers better;
- Increase business –at low incremental cost;
- Make more money selling savings and service [reduce productions costs; increase profit];
- Create jobs [energy efficiency vs. production];
- Demonstrate confidence in products and service;
- Hold down energy costs;
- Reduce environmental damage; and
- Increase the company's competitiveness.

The benefits of performance contracting to customers and to the business community are many. Energy efficiency is environmentally benign. It is very cost-effective way to reduce air pollution. Performance contracting can relieve a facility owner of his concerns about energy efficiency....those concerns are delegated to an ESCO who profit depends on producing energy efficiency. It brings productivity and efficiency advantages, which generally can be paid for through the use of funds now being spent on wasted energy.

FINANCING ENERGY EFFICIENCY

Notes

FINANCING ENERGY EFFICIENCY

The dominant world models

Creating *bankable* projects

KIONA INTERNATIONAL

FINANCING ENERGY EFFICIENCY

GUARANTEED SAVINGS. C'a.~ ~ g\\OI~

.level of ~ saved is guaranteed

~e~~ .value of energy saved is guaranteed to m
debt service obligation down to &.118, rice
.owner carries credit risk; \"-

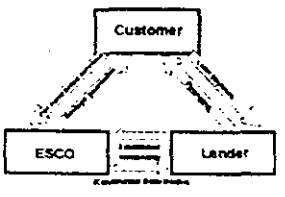
SHARED SAVINGS .\)0(\S .shares % of energy .!t;Q.&l savings .usually
off balance sheet ..n tt\0" .equipment may be leased
.ESCO typically carTies financing; 80 ESCO has
credit and performance risk
.customer has more payment exposure

French Model

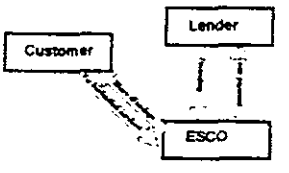
KIONA INTERNATIONAL

FINANCING ENERGY EFFICIENCY

CASH FLOW: THIRD PARTY FINANCING



CASH FLOW: TYPICAL SHARED SAVINGS



KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

FINANCING ENERGY EFFICIENCY

The Dominant World Models

North American Model

- Requires credit-worthy customer
- ESCO carries only performance risk
- Big items usually quicker
- ESCO can do more projects

French Model

- Can serve customers that do n't have credit
- ESCO carries both performance and credit risk
- 4-step process slows down savings
- Carries problems of shared savings

KIONA INTERNATIONAL

Notes

FINANCING ENERGY EFFICIENCY

Financier's Due Diligence

- type of transaction proposed
  - title, purchase options, payment terms
- customer qualifications
- technical aspects
- contract considerations

KIONA INTERNATIONAL

FINANCING ENERGY EFFICIENCY

CREATING BANKABLE PROJECTS

Financier's Due Diligence

Customer pre-qualification:

- longevity of business; prospects
- ownership
- ability to keep savings; incentive to participate and revenue stream for payments
- financial condition
- preliminary project calcs
- type of transaction proposed

KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

Notes

FINANCING ENERGY EFFICIENCY
CREATING BANKABLE PROJECTS
Financier's Due Diligence

TECHNICAL CONCERNS

A quality investment grade audit is key.

Equipment selection and installation.

KIONA INTERNATIONAL

FINANCING ENERGY EFFICIENCY
CREATING BANKABLE PROJECTS
Financier's Due Diligence

MANAGEMENT CONCERNS

Savings will be delivered over time.

Project management plans and strategies

Savings verification and measurement

KIONA INTERNATIONAL

FINANCING ENERGY EFFICIENCY
CREATING BANKABLE PROJECTS
Financier's Due Diligence

LEGAL ISSUES

The contract (and project) is manageable.

The financier's interests are protected.

KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

Getting a project financed should be a shared effort between the ESCO, the customer, and the financier. It is the ESCO's responsibility to put together a bankable project. The ESCO typically arranges the financing. Its reputation and history often adds surety, which offers others financiers added confidence. The financier's due diligence offers the ESCO and the customer reassurance as to the economic viability of the project.

CREATING BANKABLE PROJECTS

What is a "bankable" project? Simply put, it is a clearly documented economically viable project. Building a bankable project starts with sorting out the pieces that make a project economically attractive. The first step is to examine the key compents and make sure each aspect is properly assessed and the plan to effectively manage that aspect is clearly presented. Each component carries a risk factor, and each risk factor carries a price tag. An effective ESCO know how to assess the components eg, customer pre-qualification, audit quality, equipment selection and installation, and savings verification, and how to package them into a project that can be financed.

THE CUSTOMER

Pre-qualifying customers is an art. The critical aspects for the ESCO are developing the criteria, asking the right questions and learning to walk away when a "lucrative" project doesn't match those criteria.

Ironically, one of the major drivers of performance contracting is the owner's need for financing; so it seems like a dichotomy that a primary pre-qualification for a customer that needs financing is to be creditworthy. But a customer can be cash poor and creditworthy at the same time. In fact, a potential customer who is creditworthy and cash poor is an especially promising candidate for performance contracting. A school district, for example, is typically creditworthy and legally backed by the state, but its revenue stream is often sparse.

Most ESCOs have an understanding with a financial house (or houses) as to what constitutes acceptable credit standing. Some financiers even have prescribed forms for the ESCO's sales people to fill out; so all the pertinent information is required and presented in a routine fashion. The credit check at this stage is like most others. Financiers want the information that can reasonably assure them that the loan will be paid back.

The range of information a financial house will need regarding a potential customer will typically include:

- The type of transaction proposed eg; equipment title provision, purchase options, and payment terms;
- The organization's tax status;
- Longevity of the customer's organization ownership;
- Its business prospects;

- Evidence that the customer can keep the savings, the all important revenue stream from which the payments and the incentive to participate are drawn;
- Financial condition with three years of complete and current financial statements, ie bond rating, audited financial statements; and
- Preliminary project calculations.

The above concerns relate to the financial pre-qualification of the customer. Once the ESCO is satisfied with the customer's creditworthiness, consideration can be given to other criteria which will be used to weight the customer's partnership quality, including the administrative, commitment to the project, the attitudes and abilities of the operations and maintenance people, etc. these "people factors" and other critical concerns are generally folded into a scooping audit that assesses project potential. The scooping audit is little more than a walk-through audit with a very educated eye. The purpose is to be sure that further pre-qualification and marketing efforts are warranted.

ENERGY AUDIT QUALITY

A standard energy audit with its "snap shot" of current conditions is not good enough for performance contracting. These audits typically assume present conditions will prevail for the life of a project. When an ESCO bets money on predicted future savings, these assumptions must be tested through a careful risk assessment procedure.

Only an investment grade audit that adds specific risk appraisals to the standard name plate/run calculations will meet performance contracting needs. In recent years, energy engineers have learned to look at facility and mechanical conditions and determine the ability of the remaining equipment and energy consuming subsystems to accept the recommended measures. An investment grade audit (IGA) goes beyond these engineering skills and requires the art of assessing people; the level of commitment of the management to the project, the extent to which the occupants are informed and supportive as well as the O"&M staff's abilities, manpower depth and attitude.

A key aspect of a quality IGA is a carefully detailed baseyear with the average energy consumed over several years and the current operating conditions, which affect that consumption.

The ESCO that consistently delivers a quality IGA, which in turn accurately predicts potential savings, builds a track record that financiers find very heart warming. A good IGA is at the heart of a bankable project. When the total project plan is wrapped around a quality IGA and delivered by an ESCO, who can back its predictions with a solid history of successful projects, financiers have every reason to smile.

EQUIPMENT SELECTION AND INSTALLATION

Predictive consistency comes from knowing what works. And what doesn't! To support a guarantee, ESCOs must have considerable control over the equipment specifications and the selection of the installation subcontractors. Generally, this control manifests itself in order of preference from the ESCO's point of view in (1) working as a general contractor or construction manager, which supplies all the equipment and installations; (2) having primary responsibility for developing the specs in cooperation with the owner and making the final equipment selection; and (3) preparing specs in cooperation with the owner an identifying

acceptable bidders for the owner's final selection. For the owner these options offer him or her progressively more control and increasingly transparent costing. The more control an owner exerts, however, the more risk the ESCO assumes, the lower the project economic viability becomes, and the project bankability drops accordingly.

A financier's due diligence carefully assesses the ESCO's ability to make good on its guarantee and to control the variables that threaten the savings and the guarantee. As always, money follows risk. Interest rates are directly related to the project risks as perceived by the financier.

For both parties, the predicted benefits must outweigh the expected risks or the project is not bankable. It follows that the control exercised by the owner directly affects the project benefits – inversely. The owner control level translates directly into ESCO risks, project viability and interest rates. Money that goes to pay interest is not available to buy services and equipment, which produce the savings.

SAVINGS VERIFICATION

When money changes hands based on the level of savings achieved, all parties should be comfortable with how the achieved savings are verified and attributed to the work performed by the ESCO. Under the financiers' general guidance, the ESCO and owner should jointly decide on the level of verification and attribution necessary. It is basically a case of cost vs. accuracy, and it is possible to reach the point of diminishing returns rather quickly. With measurement and verification it's easy for the trail to start wagging the dog.... With the verification burden becoming so great that a measure is no longer economically viable.

The financier wants some sense that the project benefits are measurable and they are measured through accepted protocols. Too often verification procedures are basically passive, a negative drain on the cash flow, and investors are not interested in funding a gold plated M&V approach that offers little or no return on investment.

THE BUY-IN; THE BUY-DOWN

As a final cornerstone to this financing business, owners should not overlook the value of taking an equity position in the project. It is a way to get non-energy related projects incorporated, and/or reduce ESCO and financier risks. A little owner equity can be a powerful leveraging force and make a bigger project possible.

Financier's guidance should be available to the ESCO and owner as they develop a project. The financier's due diligence, in the end, is the ESCO's and the owner's best guarantee that they have a doable project. In today;s U.S market, if an energy efficiency project can't get financed, the first step is to rethink the project.

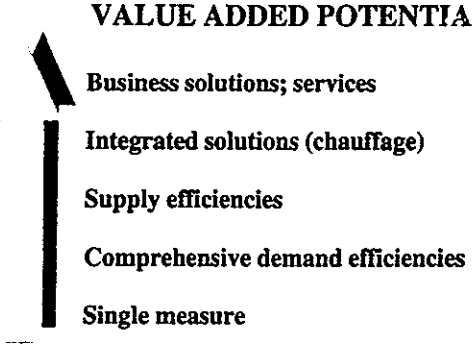
PROJECT FINANCING VS LEASE FINANCING

Financiers in North America have learned from experience that project financing demands more information than the standard lease. On the following page are lists of the information required by ABB Energy Capital for financing a new project and for providing lease financing to an ESCO for the same project.

FINANCING MODELS

Financing performance contracts ranges from manufacturer financing of a piece of equipment on a "paid from savings" approach to an integrated offering, which provides supply and demand benefits. As noted in the figure below, each progressive step, which increases in complexity, also offers greater value to the customer.

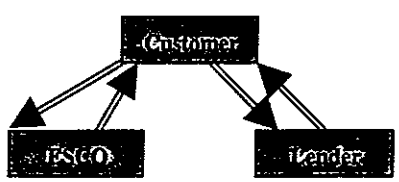
VALUE ADDED POTENTIAL



Comprehensive energy service offerings have evolved into two mechanisms – shared savings and guaranteed savings.

DOMINANT FINANCIAL OPTIONS

CASH FLOW



GUARANTEED SAVINGS

- **Level of ENERGY saved is guaranteed**
- **Value of energy saved is guaranteed to meet debt service obligation down to a floor price**
- **Owner carries credit risk**
- **Tax-exempt institutions can use status for much owner interest rates**

SHARED SAVINGS

- **Shares % of energy COST savings**
- **Usually off balance sheet**
- **Equipment may be leased**
- **ESCO typically carries financing; so ESCO has credit and performance risk**
- **Customer has more payment exposure**

Most ESCOs will offer either financing mechanism at customer's request; however, about 95 percent of the performance contracts in North America use guaranteed savings. Guaranteed savings avoids gambling on the future price of energy and thus avoiding considerable risk. In this approach the owner carries the credit risk and the ESCO carries the performance risk. In countries where creditworthiness of customers is a problem, the shared savings approach is more common.

North American Model	French Model
Requires credit-worthy customer	Can serve customers that do not have credit
ESCO carries only performance risk	ESCO carries both performance and credit risk
Bigh items usually quicker	4-step process slows down savings
ESCO can do more projects	Carriers problems of shared savings

ESCOs in Europe have mostly followed the French model, which is essentially shared savings. In the French model, attributed to Compagnie Generale de Chauff (now part of Vivendi), the ESCO carries the financing through its own resources or third part financing. Financing may also reply on the French "Four Step" self-funding approach: *Step 1* – energy efficient operations and maintenance (O&M); *Step 2* – savings from O&M measures fund quick fix (low investment) items; *Step 3* – savings from O&M and quick fix measures fund mid-range items (moderate capital costs and paybacks); and *Step 4* – savings from first 3 steps fund the "big ticket" items (costlier measures and/or longer paybacks). In the Four Step method, risk management benefits are attractive and the projects generally do not require any outside financing. Under this approach, however, the owner must wait longer for major pieces of equipment and the potential are lost in the interim. (see cost of delay later in this paper).

To the extent that the ESCO carries the debt obligation as in the French model, the ESCO must be very large with deep pockets or it will soon become too highly leveraged to do any more projects. The only way around this problem is to use one or all of the following options:

- Use only very short payback measures (often called "cream skimming")
- Sell the paper; or
- Carry on a parallel business with a strong revenue stream.

An ESCO with somewhat limited resources has a much better opportunity to grow using guaranteed savings.

THE MONEY SIDE OF ENERGY

THE MONEY SIDE OF ENERGY

- Cost-effectiveness
- Cost of Delay
- Cost Avoidance

KIONA INTERNATIONAL

Notes

THE MONEY SIDE OF ENERGY

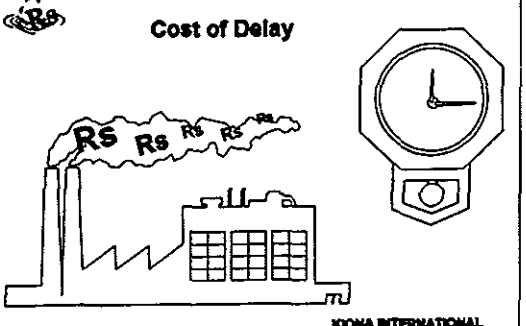
Cost-effectiveness

Simple Payback	$SPP = \frac{ESn}{In} = years$
Simplified Cash Flow	$SCF = (En + O\&Mn)-(In)$
Life Cycle Costing	$LCC = I-(S+M+R+E)$

KIONA INTERNATIONAL

THE MONEY SIDE OF ENERGY

Cost of Delay



KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

THE MONEY SIDE OF ENERGY

Cost of Delay

NCF = (E + O&M savings for year) - O (prorated)
= ($400,000) - ($1,400,000/7)
= $400,000 - $200,000
= + $130,000

CoD = minus (E+O&M for the year)+O (prorated)
CoD = The new lower budget minus the existing budget
($1.2 - $1.6 = - $400,000)
Plus the prorated investment
($1,400,000/5 = $280,000)
= - $400,000 + $280,000
= - $120,000

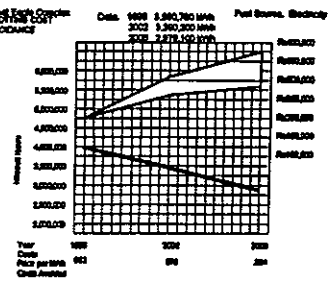
Page 19

KIONA INTERNATIONAL

Notes

THE MONEY SIDE OF ENERGY

Cost Avoidance



KIONA INTERNATIONAL

THE MONEY SIDE OF ENERGY

The Financier's Perspective:

- ESCO risk management
- Audit quality
- Financial aspects of the calculations

Understand the financial implications . . .

KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

THE MONEY SIDE OF ENERGY

In performance contracting, what a proposed modification will cost and save is the bottom line. Return on investment is usually the motivating force for the end-user, the energy service company (ESCO) and the financing source.

The guidelines for weighting cost-effectiveness, calculating cost of delay and computing/graphing cost avoidance are important to the end-user as well as the ESCOs but are key to financier's due diligence.

COST EFFECTIVENESS

Because every business, every organization, uses a significant amount of costly energy, a wide array of energy conservation opportunities are available to them. However, these opportunities must be weighed to determined which measures offer the greatest financial benefit. This requires not only an evaluation of the cost-effectiveness of the measures, individually and in combination, but a broader financial analysis as well.

Cost-effectiveness is one measure of economic feasibility. It is an essential ingredient in performance contracting and critical to the financers' due diligence. It answers the question in energy efficiency: "How soon can we get our money back from this investment?" There are various ways to calculate the time necessary to recoup the cost of the original investment. These range from simple payback and adjusted payback to the more complicated life-cycle costing (LCC).

SIMPLE PAYBACK

Quick, simple and universally understood, simple payback calculations generally provide sufficient data for low to modest investments. It can also provide a good "first cut" on larger investments. Its purpose is to determine when the funds invested in a particular project will be recovered. The simple payback period (SPP) is found by dividing the value of the initial investment by the projected annual energy savings. SPP is usually given in years and/or tenths of a year.

SIMPLE PAYBACK FORMULA

$$\text{SPP (years)} = \frac{I}{\text{ES/Year}}$$

Where,

SPP = Simple payback period

I = Initial investment

ES/Year = Projected annual energy savings at current prices

If,

SPI = $ 2000

ES/Year = $ 450

Then,

$$\text{SPP} = \frac{I}{\text{ES/Year}} = \frac{\$\,2000}{\$\,450} = 4.4 \text{ years}$$

NOTE: In this example and the examples that follow, no attempt has been made to reflect the impact of depreciation, taxes or discount rates.

ADJUSTED PAYBACKS

The simple payback calculations may be modified by any factor management finds critical. The more common adjustments to be factored in are: (1) changes in O&M costs, or (2) projected changes in energy costs.

Changes in O&M costs – the new equipment might require more, or less, O&M work. To the extent the O&M work can be quantified, the Adjusted Payback Period (APP) formula would then read as follows:

$$APP_{O\&M} = \frac{I}{ES_n + M_n}$$

Where,

$APP_{O\&M}$	=	Payback period adjusted for O&M
I	=	Investment
ES_n	=	Energy savings for analysis period
M_n	=	Differential operations and maintenance costs for analysis period
n	=	Period of analysis

Changes in energy costs – since the payback period is a function of energy costs, this approach can more accurately reflect the impact of unstable energy prices. The difficulty comes in predicting future energy costs. Therefore, it is recommended that projections on energy prices be limited to three years and used only for internal discussion.

ADJUSTED PAYBACK FORMULA, ENERGY COST

$$APP_e = \frac{I}{X(E_{n1}+E_{n2}+E_{n3}}$$

Where,

APP_e	=	Payback period adjusted for projected energy costs
I	=	Initial Investment
E_{n1}	=	Projected 1st year energy costs
E_{n2}	=	Projected 2nd year energy costs
E_{n3}	=	Projected 3rd year energy costs

SIMPLIFIED CASH FLOW

Cost-effectiveness is sometimes calculated in terms of Simplified Cash Flow (SCF). In this case, the computation is usually calculated within the parameters of a given fiscal year

(calendar or business year). SCF weighs the difference in the cost of the fuel consumed plus the difference in O&M costs against the investment for a given time period.

$SCF = (E_n + O\&M_n) - (I_n)$

Where,

SCF	=	Simplified cash flow
E_n	=	Energy cost savings for the time period
$O\&M_n$	=	Operations and maintenance savings for the period
I_n	=	Initial investment period
n	=	Period of analysis

If,

I	=	$ 2000 spread over 4 years
E_n	=	$ 450 per year
$O\&M_n$	=	$ 150 per year

Then,

SCF	=	($450 + $ 150) – ($2000/4)
	=	$600-$500 = $ 100/year

LIFE CYCLE COSTING

Incorporating all costs and savings associated with a purchase for the life of the equipment is increasingly being used as a means of judging cost-effectiveness. This approach, Life cycle Costing (LCC) may appear to administrators in government to be the antithesis of the required low bid/first cost procurement procedures. If specifications call for LCC as a means of determining cost-effectiveness then LCC can be compatible with low bid procedures.

LCC's rather rigorous approach can be quite time consuming, however you will find the effort is usually justified for larger purchases and/or for relatively limited capital. Life cycle costing addresses many factors which an adjusted payback analysis may miss – salvage value, equipment life, lost opportunity costs for alternate use of the money, taxes, interest and other factors.

The simplest mode of analysis for LCC is:

LIFE-CYCLE COST FORMULA

$$LCC = I - S + M + R + E$$

Where,

LCC	=	Life-Cycle cost
I	=	Investment costs
S	=	Salvage value
M	=	Maintenance costs
R	=	Replacement costs
E	=	Energy costs

LCC is the net benefit of all major costs and savings for the life of the equipment discounted to present value. A building design or system that lowers the LCC without loss in performance can generally be held to be more cost-effective. Other considerations, such as the calculation of present worth, discounting factors and rates, and LCC in new design, need detailed analysis and are more fully discussed in Life cycle cost manual for the Federal Energy Management Program, prepared by the National Institute of Standards and Technology, Untied States Department of Commerce.

Cost-effectiveness cannot be assigned to measures without consideration of the conditions within which they must operate, including the capabilities of the operations and maintenance staff and the condition of existing energy-related equipment.

COST OF DELAY

Some things can be put off without a loss of revenue. Energy efficiency work cannot. Every tick of the clock, every day that passes, represents dollars an organization may have wasted by consuming needless energy. Every hour of delay forces a customer to give money to the utility that, through energy management, could have been used to educate students, train sales reps, offer patients additional services, launch a media campaign, meet constituent needs, makes a bigger profit, etc. Too often, management tends to treat the utility bill as an inevitable cost. Others find that organizational pressures, which require immediate attention, push energy concern aside.

But, every day an organization fails to act is a day of wasted energy and, what is more important, a day of wasted money. For example, in Florida, a large state agency with more than fifty sites prepared to enter into a performance contract with the support of the State Energy Office. Despite previous performance contracts for State agencies, a well-meaning attorney took issue with the concept that a state agency would be committing itself to make payments to a financial institution, regardless of the status of the ESCO or the performance of the equipment. This one issue delayed the signing of a financial agreement for over eighteen months, at a cost of delay of US$ 106,800 per month in lost energy savings! A loss of at least US$ 1.9 million to the agencies – and to Florida tax payers.

Those working in energy management have become accustomed to weighing options by calculating cost-effectiveness as discussed above. The rapidity with which energy savings recover initial investments should be a major factor in weighing energy retrofit vis-a-vis other investments. It is not unusual to find a school system, for example, with a reserve fund earning 7.1 percent interest while energy investments with an ROI of 25 percent or more go begging. Every decision maker in an organization needs to understand fully the "earning potential" in energy efficiency and the lost revenue inherent in delay.

The cost of delay is almost the mirror image of the simplified cash flow formula. The same factors that contribute to energy cost/benefit analysis affect cost of delay calculations, but in a negative sense.

To repeat, the SCF formula is:

$$SCF = (E_n + O + M_n) - (I_n)$$

Where,

SCF	=	Simplified cash flow
E_n	=	Energy cost savings for the period
$O\&M_n$	=	Operations and maintenance savings for time period
I_n	=	Initial investment prorated
n	=	Period of analysis

By totaling the differential costs (the anticipated savings) and subtracting the prorated investments, the positive cash flow for a specific cost-effective energy efficiency measure is determined.

The same formula can be used for Cost of Delay (CoD) where the lost savings potential becomes the differential. The lost savings differential is then reduced by the outlay that would have been needed in a given year to achieve those savings, the prorated investment. This negative cash flow figure represents the cost of postponing energy work.

$$CoD = -(E_n+O+M_n) + (I_n)$$

Where,

CoD	=	Cost of Delay
E_n	=	Energy cost savings for the period
$O\&M_n$	=	Operations and maintenance savings for time period
I_n	=	Initial investment prorated
n	=	Period of analysis

For example, suppose the city government is just starting an energy program and has been advised it can reduce consumption by 25 percent through energy efficient O&M procedures, low-cost retrofits, and the installation of an automated energy management control system. With an annual utility bill of $ 1.6 million, the avoided costs could be $ 400,000 per year, less the cost of work. If a $ 1,400,000 installation prorated over five years (at $ 280,000 per year) could save $ 400,000 per year in energy and operations and maintenance costs, the SCF would be $ 120,000 per year. On the other hand, no action represents a CoD of minus $ 120,000 per year.

Using an annual SCF formula without any adjustment for inflation and with the purchase/installation costs prorated over five years, the calculations would be:

SCF = (E+O&M savings per year) – (I [prorated])
= ($400,000) – ($1,400,000/5)
= $400,000 - $ 280,000
= + $ 120,000

the $400,000 savings would reduce the existing $ 1.6 to $ 1.2 million. In this case, the potentially lower budget is used as a reference point.

CoD = minus (E+O&M for the year) + (I prorated)
CoD = The new lower budget minus the existing budget
($ 1.2 - $ 1.6 = - $400,000)
Plus the prorated investment
($ 1,400,000/5 = $ 280,000)
= - $ 400,000 + $ 280,000
= $ 120,000

In essence, this rather awkward formula look at what could have been saved less the cost of the work required to achieve those savings over a specified period. To put it more simply, the amount of potential savings represents the amount of losses if the organization does nothing.

The formula does not look beyond the years of prorated investment. In the above example, the CoD becomes $ 400,000 (exclusive of any O&M costs, depreciation or net present value) in the sixth year and every year thereafter, for the life of the improvement.

Even when using internal resources, the Cost of Delay should be compared for the various financing options. Using limited resources for other organizational needs may, in the long run, prove to be more costly. If those needs are paramount and the budget is tight, then getting the work done through performance contracting becomes an even more viable option. All parties should compare the cost of doing nothing to the financial benefits of using traditional bonding or performance contracting.

An organization is frequently reluctant to use performance contracting because it prefers to do the work itself and "save the service costs". Reality seldom meets expectations. Frequently, the losses due to delays exceed the benefits of internal funding. When a organization is considering the use of in-house labor and funds to save money, it should carefully weigh the Cost of Delay first. And the delayed period should be based on how long it took to get similar work in place in the past – from conception to acceptance of the installation – and not what someone hopes might be the case this time.

In addition to the cash flow impact, the benefits in improving the customer's capital stock should be recognized. New equipment ultimately enhances the organization's fiscal condition and usually reduces operations and maintenance costs.

Using data supplied through energy audits, the same Cost of Delay calculation procedures can be used to determine what an organization may actually be losing every day, month, or year that your organization fails to act.

After the commitment to secure private sector financing has been made, delays are often incurred because outside support, particularly attorneys, who are not familiar with the performance contracting process. These delays can be reduced if your attorney and engineer are involved early in the process.

To check the reader's understanding of the calculations needed to determine the annualized Cost of Delay, the problem presented below.

COST OF DELAY: SAMPLE PROBLEM

Data:

Annual utility bill	=	$ 1,500,000
O&M on existing equipment	=	600
Projected savings	=	30% energy 30% O&M
Retrofit investment	=	$ 1,750,000
Prorated period	=	5 years

Problem:

If the project is put off for one year, what is the Cost of Delay? First, calculate the projected savings:
$ 1,500,000 X 30% + $ 600 X 30%

Then, determine what it would cost each year to achieve those savings
$ 1,750,000/5 years (the net loss should be - $ 100,180/year)

Now, calculate CoD for 6 years (without considering depreciation, time value of money, or adjustments in O&M)

COST AVOIDANCE

Rising prices can wipe out all the monetary gains an organization has made by reducing energy consumption. But think what an organization would have been paying if it hadn't cut back! In order to communicate energy management benefits to others as costs rise, its important to be able to talk about what would have been – the costs avoided.

The joy of counting the rupees that would have gone to the utility makes cost avoidance very real and very gratifying. In order to calculate cost avoidance, a baseyear must be established. The baseyear consumption multiplied by the current price per unit reveal "what it would have cost". Of course, this discussion does not treat other factors, which must be taken into consideration when weighing avoided costs.

Cost avoidance is what it would have cost minus current costs. Most top management or board members seldom have the time or inclination to wade through a pile of numbers; so it will pay to graph the data when cost avoidance for more than one year is involved.

As an illustration, the following figure depicts a cost avoidance analysis for Great Eagle Complex. The complex had cut electrical consumption by 1,002,660 kWh since 1998, but experienced a rate increase of $ 0.042/kWh over the 1998 to 2006 time period. Even though consumption dropped 25 percent during this time period, costs still increased about $ 73,000. Without energy efficiency measures that cost would have increased to $ 167,000. The top line in the figure depicts what it would have cost if consumption had remained at the 1998 level, the middle line indicates actual costs. The shaded areas between the top and middle line shows the avoided costs. The bottom line shows the decline in consumption.

The same type of graph as shown on the following page could be used for all the fuels used in a building if total Btu is placed on the vertical axis.

Cost-effectiveness, Cost of Delay and Cost Avoidance are critical components of energy decision-making whether the customer plans to do his/her own retrofit work, or ask a performance contractor to provide the service.

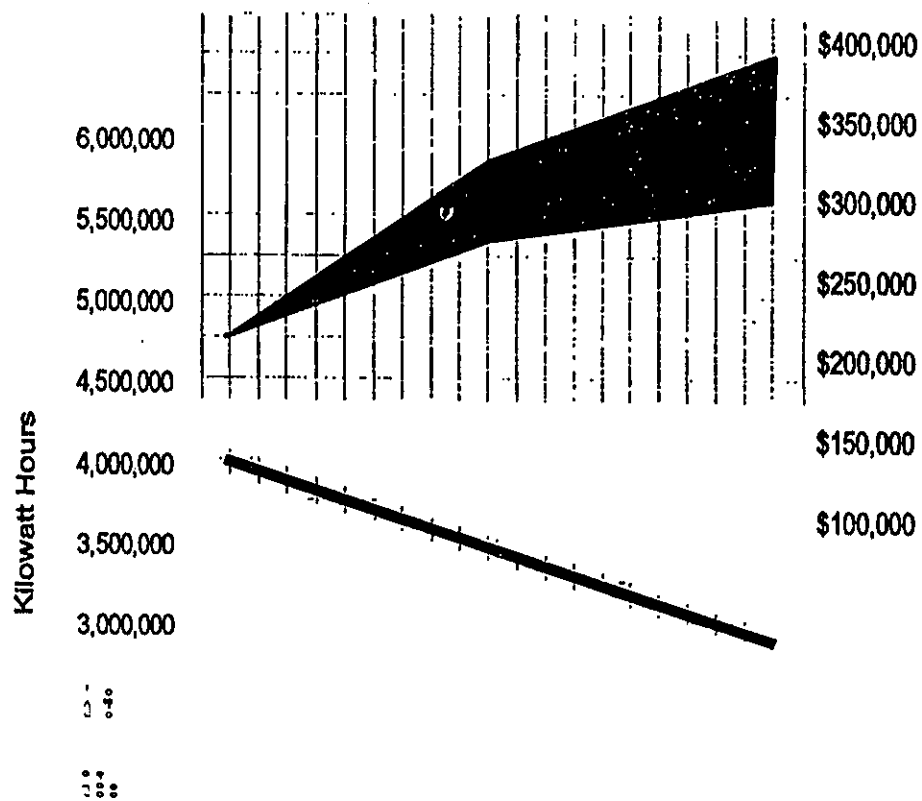
ESCOs need to employ these concepts as part of their marketing technique. Cost of Delay is *particularly effective.*

Cost avoidance numbers, preferably graphs, should be a regular feature in the monthly billing process. Without it, customers quickly forget what the utility bill used to be and why they are paying the ESCO. This becomes particularly critical when there has been a change in *administration or top management.*

Cost Avoidance

Great Eagle Complex Data: 1998 3,980,760 kWh
2002 3,390,200 kWh
2006 2,978,100 kWh

Fuel Source: Electricity



Year	1998		
Costs			
Price per kWh	.052		
Costs Avoided			

52

ESCO PROJECT RISKS & FINANCIAL IMPLICANTIONS

Notes

ESCO Project Risks and Financing Implications

Customer pre-qualification

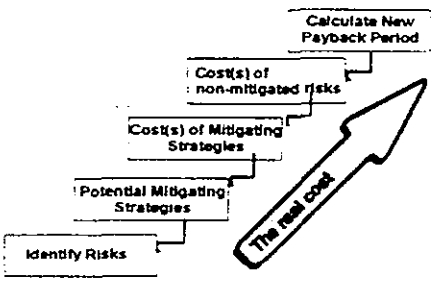
Project Development –
Elapsed time

Technical –
Baseyear/baseline
Quality of audits
Equipment; Commissioning
O&M; M&V

Project Management

KIONA INTERNATIONAL

ESCO Project Risks and Financing Implications



KIONA INTERNATIONAL

ESCO Project Risks and Financing Implications

Major Risk Management "Tools"

Communications

Contract language

Project Management (Quality Assurance)

M&V

Investment Grade Audits

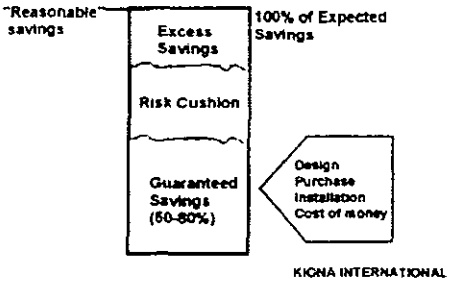
KIONA INTERNATIONAL

Proprietary material of Kiona International. Do not copy without prior permission.

Notes

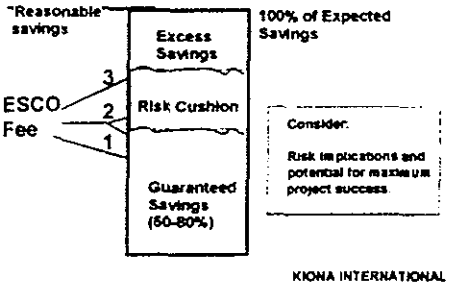
ESCO Project Risks and Financing Implications

Managing Risks Through Financial Structure



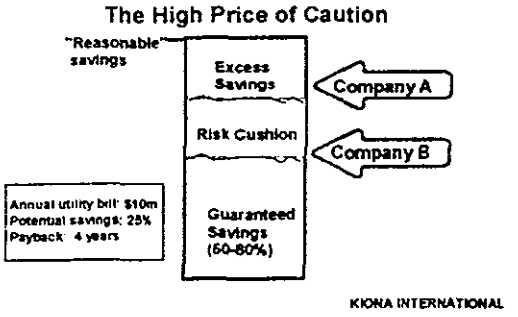
ESCO Project Risks and *Financing Implications*

ESCO Fee Placement



ESCO Project Risks and Financing Implications

The High Price of Caution



Proprietary material of Kiona International. Do not copy without prior permission.

ESCO PROJECT RISKS AND FINANCING IMPLICATIONS

From the ESCO perspective, performance contracting is risk management. In the final analysis, the ability of the ESCO to identify risks, assess their implications and manage them effectively makes a decisive difference in the level of services and savings an ESCO can offer. It also has considerable importance to the risks the financier carries in funding ESCO work.

The greatest points of risk vulnerability for an ESCO have emerged as the ESCO industry has matured. Today, the experienced ESCOs know more precisely which performance contracting aspects need careful scrutiny and management. Associated horror stories have helped to underscore critical risk aspects. How these aspects manifest themselves, their magnitude and mitigating strategies may vary by market or by country culture, but there is an underlying consistency. The major risk factors that must be managed by an effective ESCO have been established; customer pre-qualifications; project development; energy audit quality; equipment selection and installation procedures; commissioning; operations and maintenance practices and training; measurement and savings verification; and project implementation. These factors obviously become critical to the financier's due diligence efforts.

CUSTOMER PRE-QUALIFICATION

For the firm just entering into the ESCO business, the most obvious customer qualification seems to be energy savings potential. But that is far too simplistic.

Since performance contracting is primarily a financial transaction, the financial condition of the customer is equally important. The customer must remain in business for the life of the project if the project is to remain an economically viable endeavor. For the ESCO to stay in business, its fees must be paid. To the extent that the customer incurs debt to purchase the equipment, the organization must be in a position to meet the debt service obligations.

Qualification Criteria

To manage the customer risk effectively, each ESCO needs to determine the criteria a customer must meet to be an attractive candidate for performance contracting. The ESCO must also develop the questions, and perhaps a survey form, to ascertain if the criteria are met. It is hard for the sales and marketing people to turn their backs on a potential customer that just oozes energy savings potential; but if key criteria are not met, the project won't work.

Pre-qualification criteria can usually be divided into three categories: financial/economic factors, facility/technical factors and people factors. These categories can be further refined into specific criteria as follows:

<u>Financial/economic factors:</u>

- Creditworthiness,
- Organization's longevity, stability,

- Organization's business prospects, and
- Supporting documentation.

Specific markets and given customers will prompt additional financial criteria. A financial house should establish conditions, even forms, that ESCO sales people need to consider.

Facility/technical factors:

- Building age and useful life,
- Building function, potential changes,
- Occupancy hours, people,
- Condition of mechanical equipment,
- Existing level of maintenance,
- Annual utility bill, and potential project size, and
- Energy and cost saving potential.

These criteria should be addressed in depth during the investment grade audit, but a preliminary judgment must be made as to whether these criteria are met sufficiently to warrant further project development. The preliminary judgment is usually made with a "walk-through" scooping audit.

People factors:

- Top management commitment,
- Multi-level involvement, team approach,
- Evidence that the concept and benefits are understood,
- Management has needs, wants, wishes that the project will serve, and
- O&M manpower, abilities, training needs, attitudes are supportive.

The level of top management's commitment is very important, but an absolutely critical factor is the attitude of the O&M staff. If the director of facilities or maintenance announces that a performance contracting project will not work, the ESCO can be assured it will not work! The person, who has responsibility for the switches and valves, can defeat the best designed project in the world.

Assessing these criteria is very difficult, as ESCO personnel seldom have the needed analysis skills and portions of this assessment are highly subjective. However, ESCOs should do all they can to quantify people factors. Investors should carefully review the ESCO's abilities in this area.

PROJECT DEVELOPMENT

From the first call through the project development phase, the ESCO is investing money in a potential project. The biggest enemy in the ESCO business in time. The more protected the customer pre-qualification and project development phases are; the more costly. The time that an ESCO typically takes to develop a project is a key factor in the general profitability of the project and should be carefully assessed by investors.

The project development phases, therefore, should be carefully planned and smoothly executed. Each risk associated with this phase should be acknowledged and addressed. A concern is getting the "buy" decision.

From the ESCO perspective, deal stoppers during the project development phase include:

- Finding the project cannot be financed;
- Recognizing the project cannot be paid for out of the projected savings;
- Determining projected savings cannot be measured effectively; or
- Realizing the savings baseline is too dynamic to be managed.

Anticipating these issues and taking steps to resolve them may help an ESCO avoid such problems. Or, at least avoid the money hemorrhaging on a futile effort. Pre-approved project financing, for example, will make it clear early in the process exactly what the financier expects.

INVESTMENT GRADE AUDITS

ESCOs have learned, often through painful experience, that the traditional energy audit is just not good enough. An audit that incorporates all the nameplate data, run times, etc, is only the first step. If an ESCO is going to invest its time and money in developing a project and laying its guarantees on the line, then it must have quality information to justify the investment. Post-retrofit evaluation has shown that traditional audits' savings projections are typically off by more than 20 percent.

The traditional energy audit has been a "snap shot" approach that typically assumes all current conditions will remain static for the projected payback time of the measures. But buildings are seldom – if ever- static. They are typically dynamic places with changing functions.

We have historically skirted the implications of the human element in energy auditing. "Paybacks" have been assigned to certain measures in multiple applications when we knew full well they would not perform in exactly the same manner under differing conditions. As noted in the O&M discussion below, up to 80 percent of the savings in an effective energy management program can be attributed to the energy efficient practices of the O&M personnel. In other words, as little as 20 percent of the savings could be attributed to the actual hardware, but we have continued to make calculations like a piece of hardware was going to always operate in the same fashion under vastly differing conditions.

Today, those who wish to predict savings with any degree of confidence must turn to an investment grade audit (IGA).

An IGA incorporates the nameplate data, run hours, and other information that goes into a traditional audit. Then, a risk assessment component is applied which assesses conditions in a specific building, and more importantly, looks at the human aspect. The challenge is to determine how the proposed measures will really behave over time given the probable future conditions in a given facility.

The human factor must not only be assessed, but paired with potential energy measures to ascertain the impact occupants, management, maintenance and operational behavior will have

on the energy efficiency measures. For example, measures which are practically people impervious, such as insulation, can be looked on more favorably, especially in facilities where the human factor receives a relatively low score. On the other hand, measure such as controls – particularly if overrides are readily accessible – carry a greater risk because of the human factor. All of these factors must be considered while the payback and predicted savings are being forecast.

An IGA is far more demanding requires greater skills, and necessitates some subjective judgment. The audit must weigh many key factors, including:

- Management leadership and its commitment to energy efficiency
- The resultant occupant behavior based largely on management's visible commitment
- The manpower, skill and training needs of operators and maintenance staff
- The level of equipment sophistication the O&M staff can operate effectively
- The condition of energy-related mechanical equipment
- Repairs and replacement budget provisions
- The attitude of O&M personnel towards the energy program.

Once these and other human factors are weighed, an IGA requires that they be converted to risks with price tags. The whole financial structure of an energy project, especially those with savings guarantees, must allow for these risks.

Woven through all the technical/human consideration, is the money component. Life cycle costing, complete with net present value calculations, must be part of an IGA.

General facility upgrades and needed equipment replacement often drive projects. Energy efficiency benefits from these changes are becoming a carefully calculated part of the investment package. The measures must yield the calculated benefits if the package is to be economically viable. Assumption that things will stay the same can spell big problems for the investor.

When all is said and done, a quality energy audit must stand up to the careful scrutiny of bankers and other investors. An IGA is at the heart of a "bankable project". Hence, the term, investment grade audit. Any thing less no longer adequately serves the owner, the contractor or the investor.

THE CRITICAL BASEYEAR

Inadequate baseyear documentation can become a bubbling caldron that only gets hotter through the project years. A quality baseyear, as part of the IGA and the contract, deserves special mention, for it is a key part of effective project management and savings verification.

An auditor cannot accurately predict savings without knowing exactly what the existing conditions are. Too often, however, those conditions are not clearly set forth and signed off by the owner. Then, the squabbles start over how long the lights used to be on....and the problems build from there.

In addition to the energy consumption, all pertinent operating conditions that contributed to that consumption need to be accurately noted. Stressing "accurately" seems rather redundant, but we still find auditors who ask management how long the lights are on....and believe what

they hear! This is one time when a "little black box" really works. Namely, the portable data logger, if used judiciously prior to the audit calculations, can yield valuable data and avoid later misunderstandings. The same care in documenting other operating conditions is needed.

EQUIPMENT SELECTION AND INSTALLATION

Equipment selection should grow out of the audit recommendations, as it would in any energy efficiency project. The latitude given the ESCO by the owner in this selection process significantly reduces the level of risk the ESCO carriers. The greater the customer's say in the matter; the greater the ESCO's risk.

At the very least, the ESCO needs to be fully involved in preparing the equipment specifications. If the owner insists that the equipment be bid to assure competitive prices and/or cost transparency, the ESCO should participate in the final selection process. In this instance, one party may narrow the field of acceptable bidders to two or three, then the other party makes the final selection.

In much the same fashion, the ESCO must have some control over the subcontractors, who will install the equipment, to assure that it is installed correctly and will operate near design.

There is some latitude for the customer and ESCO negotiations regarding equipment and installer selection, but not much. The customer should keep in mind that the more control the organization keeps in this process; the greater the ESCO risks. The greater the ESCO risks are; the less the project benefits the customer. In the final analysis, as long as an ESCO guarantee is involved, the owner will pay to some degree for any measure of control the organization chooses to keep.

COMMISSIONING

Difficulties with existing buildings and increasing concerns about indoor air quality have underscored an owner's need for commissioning. Gradually ESCOs have also recognized that commissioning can help underscore the partnership relationship at the outset, and assure all parties that the design criteria have been met and all installed equipment are operating correctly. Since commissioning is a performance verification procedure, it can also serve as the first key step of the measurement and savings verification process.

The concept of commissioning has been borrowed from the shipping industry. The idea grew from recognition that new boats operate at sea and must operate as designed. Service calls and system downtime are not attractive options when this floating "building" is a long way from port.

OPERATIONS AND MAINTENANCE PRACTICES

United States department of Energy's study of its energy grants program for schools and hospitals found that up to 80 percent of the savings in an effective energy management program could attributed to O&M energy efficiency practices. The fact can be very scary to ESCOs, who are guaranteeing the energy saving performance of the equipment and to can be a major concern to their investors. It is small wonder that most ESCOs prefer to maintain the equipment themselves; or, designate a contractor, who is also under some performance guarantees, to do it for them.

Setting the O&M tasks and schedule by measure is a key management function whether the ESCO's own personnel perform the work, it is assigned to a contractor, or the customer's staff performs the needed tasks. In every case, some policing of the facility or process is essential to assuring the tasks have been performed on schedule. The risks are greater and the policing more imperative when the O&M functions are further removed from the ESCO's control.

MEASUREMENT AND VERIFICATION

A well-planned measurement and verification protocol (M&V) can offer strong risk mitigating opportunities. Whenever money changes hands based on savings, some validation of the savings is necessary. An established international protocol is available on the interest at www.IPMVP.org The International Performance Measurement and Verification Protocol (IPMVP) has been accepted in 26 countries and translated into 8 languages. The IPMVP is a work in progress and is guided by an Executive Committee. Ms Leja Hattiangadi, Chief Commercial Manager for Tata Consulting Engineers in Mumbai, is a member of the IPMVP Executive Committee.

MANAGING RISKS THROUGH THE FINANCIAL STRUCTURE

Through the audit process, the ESCO determines what a reasonable level of potential savings will be. Then a percentage of that "reasonable level" is guaranteed as shown in the figure below. The guarantee covers the normal construction costs, eg design, acquisition, installation and interest on the money. The risk cushion established by the

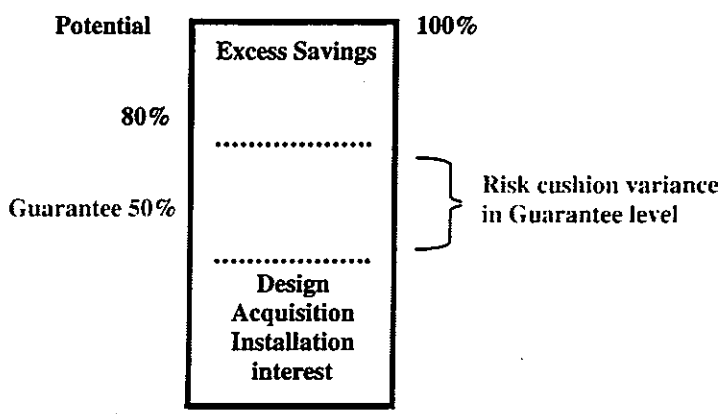


Figure 1: Managing Risk through the Financial Structure

ESCO (perhaps unknown to the customer) will typically vary the guarantee level from 50 to 80 percent of the expected savings.

ESCOs do not guarantee all the savings they expect to achieve in a building and/or industrial process. The level of guarantee is influenced by the perceived risks. Some ESCOs insist their sales engineers not exceed an 80 percent guarantee mark. A few ESCOs will go above the mark on very secure measures with a highly qualified customer. The difference between the potential guarantee and the actual guarantee is the "risk cushion". The "risk cushion" is

the ESCO's protection against the perceived risks. If a project performs as expected, there will be excess savings above the guarantee. This excess savings is sometimes referred to as the "positive cash flow".
Risk management strategies impact the bottom line – for all parties. The way ESCOs use the financial structure to manage risks, described below, substantiates the assertion that performance contracting is a financial transaction.

The level of the guarantee will vary both by the perceived customer-associated risks and by the ESCO's confidence in its own ability to assess the risks and develop effective mitigating strategies. In other words, as depicted in Figure 2, two companies may the assertion that performance contracting is a financial transaction.

The level of the guarantee will vary both by the perceived customer-associated risks and by the ESCO's confidence in its own ability to assess the risks and develop effective mitigating strategies. In other words, as depicted in Figure 2, two companies may assess the same facility, calculate the same savings potential, but perceive the risks quite differently. The difference between Company A's and Company B's guarantee level, as shown in Figure 2, is their respective risk analysis capabilities.

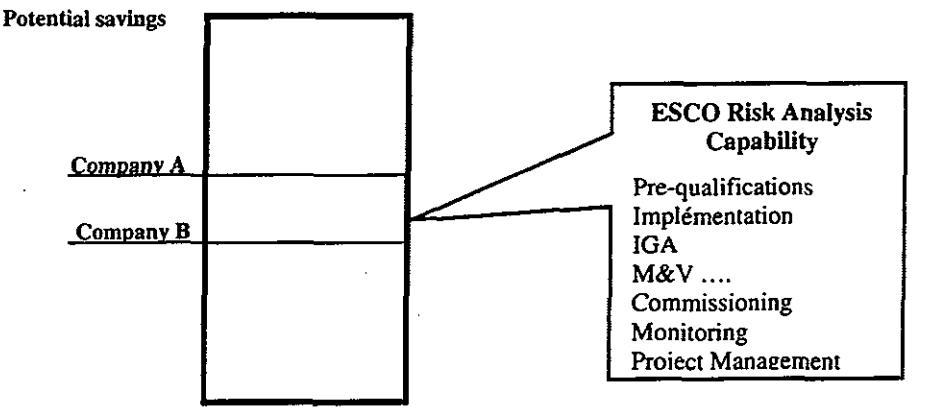


Figure 2: Effective Risk Strategies

Some ESCOs have been known to brag about the 40 to 50 percent achieved above their guarantee. This is nothing to brag about. They are hurting themselves and their customers.

An example will demonstrate the losses that come from cautious ESCOs, who are mistakenly, pleased with their excessive positive cash flows. A customer's energy bill is $ 10 million per year and companies A & B both identify energy efficiency measures to reduce the savings by 25 percent, or $ 2.5 million per year. Company A decides it can place its guarantee level at 75 percent of the expected savings ($2.5 million X 75% = $ 1.875 million) while Company B puts its guarantee at 60 percent ($2.5 X 60% = $ 1.5 million). The level of guarantee per year from the two companies will differ by $ 0.37 million as show in Figure 3. if the payback period is four years, the level of investment in equipment can be $1.5 million greater for Company A and the owner. If Company A is right and the mitigation strategies and greater investment in equipment yields $ 0.37 million more per year, the guaranteed savings over 10 years will be greater than Company B's guarantee by $3.7 million. The total guaranteed benefit to the owner would be $5.2 million greater with Company A. Even if both companies, achieve the same potential level of savings the owner will have gained $1.5

million more in capital investments with Company A. And ESCO "A" will have sold

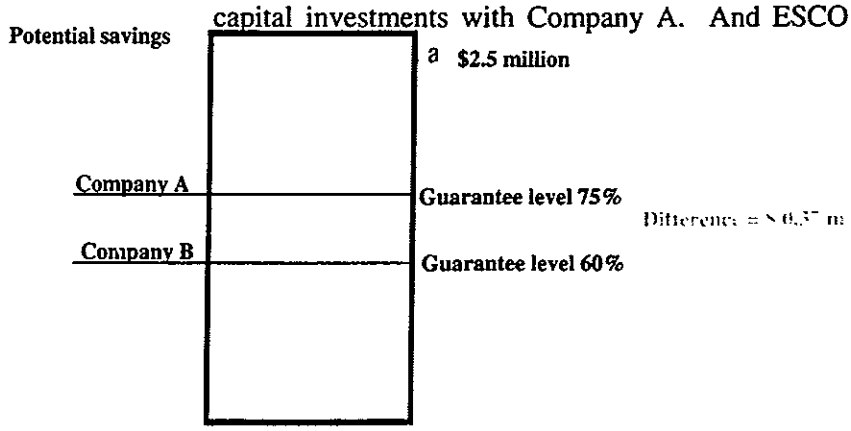


Figure 3: The high price of Caution

The IGA risk analysis goal is to have predicted and achieved savings consistently close. Surprisingly, achieved savings should exceed projections be only a slight amount. ESCOs, who consistently show savings far in excess of the guarantee, are:

- Limited in their risk analysis capability;
- Have basic auditing problems; and
- Are too cautious.

PERFORAMANCE CONTRACT

PERFORMANCE CONTRACTS

- Types of contracts
- Essential components

KIONA INTERNATIONAL

Notes

PERFORMANCE CONTRACTS

TYPES OF CONTRACTS

- Planning Agreement
- Energy Services Agreement (ESA)
- Financing Agreement

KIONA INTERNATIONAL

PERFORMANCE CONTRACTS

Financing Agreement

- Will vary with financing structure
- Must meet financier's needs
- May or may not be amended to ESA

KIONA INTERNATIONAL

PERFORMANCE CONTRACTS

Energy Services Agreement

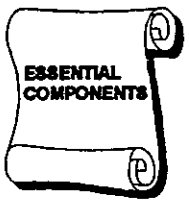
Typically, an agreement to agree on general terms and conditions

In large projects, specific recommendations and related terms are handled in addendum

KIONA INTERNATIONAL

PERFORMANCE CONTRACTS

- Equipment considerations
- Work environment; comfort
- Services
- Formula, adjustments, M&V
- Default & remedies
- Termination value; buyout
- Indemnification
- Assignment
- Contract management terms
- Schedules



KIONA INTERNATIONAL

PERFORMANCE CONTRACTS SCHEDULES

A. Inventory
B. Measures to be implemented
C. Baseyear, variable, adjustment
D. Savings calculations, formulas
E. Measurement and verification procedures
F. Compensations and guarantees
G. Comfort, work environment standards
H. O&M responsibilities
I. Termination, default value, buyout options

KIONA INTERNATIONAL

Notes

Understandably, an energy service provider and the financier have to have some assurance that they can protect their investments and that the savings can be reasonably guaranteed.

Attorneys, who are not comfortable with the performance contracting concept, can be a major impediment to achieving an agreement. For them, a piece of the puzzle may be missing. If the attorney for the financial house does not normally provide counsel in contract law, it is prudent to seek additional or outside counsel. Since a performance contract may be without precedent in the attorney's experience, it will expedite the process if he or she is provided references of attorneys of record on successfully implemented performance contracts.

ENERGY SERVICES AGREEMENT

A properly prepared and executed contract assures that a project moves forward with minimum misunderstanding between the ESCO and the customer; and protects the financial investor. If the language is clear and well understood by all parties and if the terms are fair to both sides, the foundation exists for a cooperative effort that will benefit both the ESCO and the customer. A poor contract invites controversy and bad feelings, often leading to project failure and losses for the investor.

The following discussion offers a general overview of what an Energy Service Agreement (ESA) covers.

Topics generally addressed in energy service agreements are:

- Financial terms and conditions;
- Equipment/building modifications and services;
- User and ESCO responsibilities; and
- The construction contract provisions.

These items may all be covered in one comprehensive document; or separate schedules pertaining to work in specific buildings, or clusters of buildings, may be added to the contract as work progresses. Generally, an energy service contract is divided into two parts. In the first part, the ESA, the two parties agree that the firm will supply service to the customer and, in broad terms, outlines the services. This is the basic contract and is the agreement to agree. Attached to the ESA are "schedules" or attachments which, when agreed to, spell out exactly what is to be done, how savings are calculated and other details. The schedules become a part of the contract. With a large campus or installation, these schedules may be repeated for each phase of the project. For example, 40 buildings may be involved in the total project but the plan is to do it in phases of five buildings each. A set of schedules will then be developed for each set of five buildings. These schedules are signed by both parties for each phase.

Third party financing with the debt obligation carried by the owner is attractive to the ESCO industry; as the ESCO carries only the performance risk – and not the credit risk. Another project financing model, created by ABBN Energy Capital, is emerging where the lender and/or ESCO create a Single Purpose Entity (SPE), which carries the credit and to some extent keeps the credit off the ESCO's book. In all cases, a parallel agreement with the ESCO can then be entered into to audit the facilities, install and maintain the equipment, provide other services and guarantee that savings will cover required payments.

The term, performance contracting, rests on the stipulation in most contracts that the energy service company must perform to a certain standard (level of savings) as a condition of payment. These performance considerations are integral to the contract components and are implied throughout most contract provisions.

TPYPICAL ENERGY SERVICE/FINANCING CONTRACT COMPONENTS

1. Recitals (traditional but not essential)

2. Equipment considerations
   - Ownership
   - Useful life
   - Installation
   - Access
   - Service and maintenance
   - Standards of service
   - Malfunctions and emergencies
   - Upgrading or altering equipment
   - Actions by end-user
   - Damage to or destruction of equipment

3. Other rights related to ownership

4. Commencement date and term renewal provisions

5. Compensation and billing procedures

6. Baseyear conditions/calculations, baseline adjustment provisions and a re-open clause

7. Measurement and verification procedures

8. Late payment provisions

9. Energy usage records and data

10. Purchase options; buyout conditions

11. Insurance

12. Taxes, licensing costs

13. Provisions for early termination
    - By organization
    - By firm
    - Events and remedies
    - Non-appropriations language (for government entities)
    - Severability

14. Conditions beyond the control of either party (force majeure)

15. Default
    - By organization
    - By ESCO

16. Events and remedies
    - By organization
    - By ESCO

17. Indemnification
    - For both parties

18. Arbitration

19. Representations and warranties

20. Compliance with laws and standards of practice

21. Assignment

22. Additional contract management terms
    - Applicable law
    - Complete agreement
    - No waiver
    - Severability

23. Schedules (by designated group of buildings or project phases)
    - Description of premises; inventory of equipment
    - Energy conservation measures to be performed
    - Baseyear conditions and calculations, variables and baseline adjustment provisions
    - Savings calculations, formulas
    - Measurement and savings verification procedures
    - Comfort standards
    - Contractor O&M responsibilities
    - O&M responsibilities of organization
    - Termination, default value, buyout option
    - Existing service agreements
    - Calculation of other savings eg existing service/maintenance contracts
    - Contractor training provisions
    - Construction schedule
    - Approved vendors/equipment

A contract offered by an ESCO is designed to ensure that its interests are protected. As in all contract negotiations, it is up to the financier to make sure its interests are protected as well. Prior to negotiating a contract, the ESCO and customer need to consider the implications of the various key components and the latitudes within which an item can be negotiated. In addition to protecting the investors' interests, the financier must look at the contract to

determine if the project is doable for both parties and all legal necessities for a successful project have been addressed.

KEY CONTRACT CONSIDERATIONS

Equipment Ownership

The financing scheme used, and the point at which the organization takes ownership, can affect the organization's net financial benefit and may affect depreciation benefits.

The useful life of the proposed equipment is a key factor in post-contract benefits.

ESCOs and/or their financiers usually insist on a first security interest in the installed equipment or collateral of equivalent value.

In the case of buy-out provisions, termination and default values, procedures for establishing capitalized equipment cost may be set forth in the original contract. Terms, such as fair market value, need to be carefully defined. The buy-out provisions will typically be greater than the value of the equipment, as the ESCO's fees for services risks and potential savings benefits need to factored in.

Malfunction

Provisions for immediate and back up, service in the case of malfunctions need to be spelled out. This is especially important if the contractor is not a local firm. Local distributors for the selected equipment frequently serve this function with further back up provided by the ESCO.

Maximum downtime needs to be considered. The allowable emergency response time will vary with the equipment installed and how essential it is to the operation.

ESCOs need to establish an understanding with the distributor or designated emergency service provider as to the timing and extent to emergency service will be provided before they are committed in the performance contract.

Firm Actions, Damage

Contracts proffered by ESCOs will discuss actions the customer might take that could have a negative effect on savings. The customer's management needs to determine if these conditions are reasonable and determine to what extent the organization should have the same protections.

Consideration should also be given to the impact the ESCO's redress may have on the organization.

Equipment Selection and Installation

The customer should reserve approval rights on selected equipment provided approval is not "unreasonably" withheld. ESCOs must retain some rights if they are to guarantee the savings.

As discussed earlier, the energy service company may take on the role of a general contractor; writing specs, monitoring bid procedures, and overseeing installation. Again these may be services a given organization needs, but they also serve to protect the ESCO's position on guarantees. In any case, with guarantees involved an ESCO must retain sufficient control of the specs as well as equipment and installer selection to assure guarantees will be met.

Contractual conditions used in any construction project ie., liability, clean up, performance bonds etc should apply.

Provisions for early termination

From the customer's point of view, contract language regarding termination should include equipment removal provisions, including length of time required, and a provision for restoration of the facility.

ESCOs incur major exposure early in the contract, for they incur the major expenses at this time and must depend on eventual savings to cover these costs. Buy-out provisions must provide for ESCO recovery of costs incurred and a proportionate profit. Buy outs may not be offered as an option until a specified period, as long as two years, has elapsed.

For further protection, ESCOs or their financiers frequently specify that a tax exempt organization using non-appropriation language must agree to not replace the equipment with equivalent equipment within a specified time frame.

Conditions beyond the control of the parties

Usual contract language absolves the ESCO of certain contract responsibilities under force majeure, or acts of God. These conditions should be examined and the merits of similar provisions for the organization should also be weighed. Increasingly, the language is written to absolve both parties equally.

Default language

Language frequently limits the conditions of default for the ESCO, but may leave it wide open for the customers. When the financial burden is carried by the ESCO, this is not necessarily inappropriate. Similar language for the organization should be considered, especially if the organization holds the debt service contract on the equipment.

Indemnification

Both the ESCO and the customer should be indemnified. Some ESCOs attempt to secure indemnification from indirect and contingency damages. These are frequently too broad and should be analyzed carefully by the organization's attorney.

Assignment

The customer should insist on prior approval for any assignment, changes of service responsibility, or key personnel. Prior approval of subcontractors may also be desirable.

Savings calculations formulas

The reduction in units of fuel and electricity multiplied by the current cost of energy by unit is the standard procedure for calculating cost of saved energy. Attribution of demand charge savings also needs to be negotiated and included. This procedure is frequently made far more complex than it needs to be. Weather or occupancy changes, added computers, etc can affect savings; however, extensive contract language trying to anticipate every contingency only benefits the legal profession. The simplest way is to have a broad-based baseline and then agree to re-open or negotiate, changes of greater than ± "X" percent.

Calculation of baseyear and adjusted baseline

Provisions for calculating a baseyear should be clearly presented. In all cases, existing conditions that have a major effect on consumption should be clearly identified along with major anticipated variables for adjusting the baseline. Baseyear consideration should include; (1) mild or severe weather in recent years, (2) recent changes in the structure, building function, occupancy, etc; (3) recent O&M work to reduce consumption; and (4) nay recent renovation which could affect energy consumption. Reopen language should provide for some adjustment beyond the agreed upon variations; so either party pays for unexpected contingencies, such as window closures or added computer labs.

The share of the savings will vary with the length of payback, the services delivered, the financing scheme selected, the risks assigned to the ESCO, the length of contract, and the like. The interrelationship of these factors needs to be considered in negotiating the organization's share of the savings.

Measurement and Verification

Procedures for measurement and verification (M&V) will vary with the energy efficiency measure installed, the size of the project and a number of other factors. In the ESA, the contract language typically states that the M&V procedures will be decided jointly following the IGA and according to the International Performance Measurement and Verification Protocol.

Energy prices

Price volatility needs to be given careful thought. How the burden of falling prices or the benefit of rising prices is to be shared should be clearly addressed in the contract. ESCOs need to protect themselves against falling prices by establishing a floor price.

Comfort standards

The greatest fear employees' associate with energy efficiency, and more particularly performance contracting, is the loss of control of the work environment, particularly comfort factors. The frequently voiced supposition that an energy service company will control the building operation is simply not warranted – unless management abrogates its responsibility and gives the control away.

The owner can, and should, establish contractually acceptable comfort parameters for temperature, lighting levels and air exchange as well as the degree of building level control

needed (and override required) to assure a quality environment. The owner's latitude of control can reduce savings. In such instances, the ESCO's risk becomes greater; so the customer's share of the savings will be less.

These comfort and indoor environment standards will become more critical when chauggage becomes more common place.

Project compensation and guarantees

The most attractive part of performance contracting is the idea that there is an entity out there who will make sure the organization has new capital equipment that works, and can assure the customer that it will work near design for the life of the contract. And all this is achieved without any initial capital cost to the organization.

The manner in which the energy savings are guaranteed to cover debt service payments is a key component of a contract and deserves careful consideration. Since the quality of maintenance on energy consuming equipment affects savings, most ESCOs require specified maintenance provisions and related maintenance contracts. They may, however, not guarantee that energy savings will cover the require maintenance fee.

A major reason for a contract is to identify and assign risks and provide appropriate recompense. The "guarantees" are the bottom line in making sure a contract works in the organization's favour. However, the greater the guarantees or the risks shed, the lower the savings benefits will be to the customer. As with any contract, attorneys should review the ESA. Through all the negotiations, frustrations and delays, it's well to remember that a good contract is essential to a successful project.

SECTION BY SECTION

Model contracts are frequently requested, but can prove dangerous if not carefully modified to meet the unique conditions of state laws, local ordinances and customer conditions. To help avoid this oversight, the following section by section analysis is provided with the understanding that local attorneys can then develop a contract that specifically meets local needs.

INTRODUCTION (RECITALS) The opening section states that both organization are in business and that they desire to enter into a contract to do certain things to improve the customer's energy efficiency.

SECTION 1 Energy conservation program: this section describes in broad terms what will be done on the customer's property and usually lists the schedules that will be attached which detail the actual work, savings formulas and other matters that are measure specific.

SECTION 2 Customer's energy usage records and data: This section states that the customer will make available the necessary information about energy use and other data needed to calculate potential savings and measure actual savings.

SECTION 3 Commencement date and time: The calendar dates when the contract begins and ends are in this section.

SECTION 4 Payments to ESCO and customer: Language here provides for the customer to pay for the services that will be spelled out in detail in the attached schedules. The schedules will contain the formulas by which savings are calculated and the way savings may be divided between the ESCO and the customer.

SECTION 5 Coordination: This section simply states that the ESCO will not cause unwarranted interference with the business of the customer during the installation of the project and that the customer will cooperate during the installation phase.

SECTION 6 Ownership: This establishes the ownership of installed equipment and spells out the ownership rights. It also includes any title provisions should the contract may be terminated.

SECTION 7 & 8 Upgrading, altering, removal or damage of installed equipment or system is covered in this section. Because the ESCO depends upon the correct operation of the installed equipment to produce savings, this section limits what the customer can do to change or modify that equipment and what happens when the system is damaged. In addition, this section states that the ESCO may upgrade or improve installed systems if savings will be enhanced with the prior approval of the owner.

SECTION 9 & 10 Material change: These sections address what happens if the organization makes substantial changes to its facilities (or closes a facility) during the life of the contract, any of which may later the energy situation. An added section generally treats notification procedures in the event of material changes.

SECTION 11 Insurance: requirements for insurance are similar to that required for any construction project.

SECTION 12 & 13 Conditions beyond control of the parties: These force majeure sections address matters beyond the control of the parties, such as acts of God, which may disrupt the project.

SECTION 14 & 15 Defaults and Remedies: These sections discuss what happens if either party fails to live up to the terms of the agreement. The first section specifies what constitutes a default by either party. The second section identifies the remedies available.

SECTION 16 Termination: this section establishes the means by which the ESCO or the customer may terminate a contract. It also makes reference to the attached schedules, which sets forth term values and also establishes the terms under which a customer may "buy out" a contract before the ending date.

SECTION 17 & 18 Indemnification and Arbitration: the first of these is a standard "hold harmless" clause in which each party will be equally protected. The second section suggest how disputes between the parties should be handled through arbitration.

Several "housekeeping" and contract management sections generally follow assuring that the parties have the authority to sign contracts that what they have said in the contract is true and that the contract complies with local laws and standard practices.

Barriers to raising finances for energy efficiency project
Promoter, ESCO and FI perspective

BY

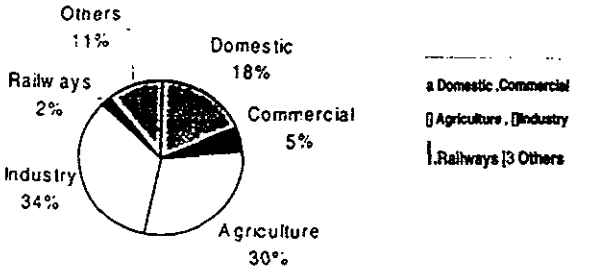
ENERGY ECONOMY AND ENVIRONMENTAL CONSULTANTS

November 2000

R. Govinda Rao
PGNarsimhan

75

ELECTRICITY CONSUMPTION IN INDIA



Source: Planning Commission, 1999. Annual Report on the Working of State Electricity Boards Departments p. 71, New Delhi: Power and Energy Division, Planning Commission, GOI

SA VINGS POTENTIAL FOR AGRICUL TURE

Sector	Current Co	Min Cons.	Savings	Inv. in Cror	Approx. Payback Period
Domestic	57, 553	25,000	22,553	20.31	3
Commercia	15, 182	10,000			
Agriculture	93, 687	50,000	43,687	13.1	1
Industry	105, 207				

Source: Planning Commission, 1999. Annual Report on the Working of State Electricity Boards Departments p.71 , New Delhi: Power and Energy Division, Planning Commission, GOI

KEY ISSUES

The Industry

Opportunities

- Huge Potential For Savings
- Investment Capital Available
- Reduction in Cost of Production
- Increased Competitiveness and Market Share

Constraints

- Unaware of Energy Efficiency
- Engineers Unaware of Finance
- Financiers Unaware of Engineering

KEY ISSUES

The Financial Institutions and Banks

Opportunities

- Large Capital Available
- Search for Safe and Profitable Investment
- Search for Performance Guarantee

Constraints

- Lack of Sound Projects from Industry
- Lack of Assurance of Guarantees from ESCO
- Risk Averse

KEY ISSUES

ESCO/Consultants

Opportunities

- Knowledge of Technologies
- Awareness of Energy Efficient Projects
- Financial Attractiveness

Constraints

- Lack of Capital for Investment
- Lack of Balance Sheets
- Lack of Capacity of Guarantee

POSSIBLE ALTERNATE M ECHANISMS

- Development of - a) Guarantee Mechanism
  b) Insurance Premium
  c) Risk Fund with Higher Cost
  d) Rating ESCOs to Access Risk
- Partnership between Financial Institutions and ESCOs
- Consortium of Financial Institution; ESCO and the Manufacturer
- Manufacturer and ESCO Partnership