## *BATF-06-33 ~ 35*—**Commercial Financing**

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| **Project number:** *BATF-06-33 ~ 35* | **Date:** *31 August 2006* |
| **Title of project:** Commercial Financing | |
| **Leading member & co-leading member:** United States and Australia | |
| **Participants:** India, Japan (others to be determined) | |
| **Project Overseer:** Name, Title and Organization<br>Cynthia Wilson, Senior Advisor, Policy and International Affairs, U.S. Department of Energy | |
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| **Financial information** | **Total cost of proposal:**<br>To be determined |
| **Type of project:**<br>✓ demonstration/pilot □ national policy, law, regulation □ appliance testing/labeling<br>✓ seminar/symposium ✓ training & technical assistance □ public/consumer information<br>□ database/website ✓ survey, analysis, research □ others *(Please specify)* | |
| **Project start date:** *1 Nov 2006* | **Project end date:** [to be determined] |
| **Project summary:**<br>The project will:<br>• Identify and share successful models of innovative approaches for overcoming barriers to private financing of and contracting for energy efficiency programs; and<br>• Enable Partner countries to voluntarily identify and jointly implement tasks to demonstrate or expand selected approaches to removing barriers to effective financing and contracting. | |
| **Signature of Project Overseer:** Cynthia Wilson<br>**Date:** 25 August 2006 | |
| **Signature of Task Force Chair:** Hakdo Kim<br>**Date:** 31 August 2006 | |
| **Remark:** | |

### *Goals and objectives*

The overall goal is to facilitate increased levels of private investment in building energy efficiency projects in Partner countries. The project will (1) identify and share successful model approaches to remove barriers to private financing of and contracting for energy

efficiency investment; and (2) enable member countries to voluntarily identify and implement joint projects to remove barriers to private energy efficiency investment and demonstrate or expand selected models.

*Near-Term Performance Indicators*

- Completion of inventory of successful approaches to remove barriers to private energy efficiency financing and contracting, including assessments of effectiveness, as described in Section 7.

- Individual country selection of models to apply within their economies or to share with other Partner countries.

- Establishment of evaluation approaches to measure benefits of supported projects.

- Initiation of joint projects by September 2007.

*Longer-Term Performance Indicators*

- Successful completion/documentation of joint projects.

- Incremental change in private companies offering energy efficiency services, measured in number of companies and total sales.

- Incremental change in private investment in energy efficiency in terms of number of investors and volume of equity investment.

- Incremental change in number of private financial institutions lending to energy efficiency projects and volume of lending.

- Reduction in GHG emissions attributed to the incremental change in private financing of building energy efficiency projects.

The private financing and contracting project will systematically identify and respond to the barriers that limit the financing of end-use energy efficiency practices and technologies. It is designed to use cooperative mechanisms to increase the efficiency of buildings throughout each Partner. Such an increase will support sustainable development, increase energy security and reduce environmental impacts by removing financial barriers to cost-effective investment.

***Background***

Private financial markets are generally liquid in Partner countries. However, the volume of private capital made available for energy efficiency investments is far below the level required to fund all cost-effective projects and projects that have lower total costs than energy supply alternatives. A wealth of energy efficiency investment projects remain unimplemented, despite high financial rates of return, and payback periods which are 1–5 years (with many in the 1–2 year range) because of a number of regulatory, institutional

and market barriers. Issues that frequently foreclose financing of building energy efficiency projects include:

- Lack of information on the benefits of energy efficiency investments.
- Uncertainty about the future prices of energy, the economy and policy changes.
- Small, often non replicable, projects, which limit the ability of traditional financing institutions to process loans, especially given the complexity of energy efficiency loan documentation.
- The need to use structured finance (i.e. cash flow based financing), rather than traditional asset-based financing, a practice that is not fully developed in many financial institutions. One reason for this is that markets for risk or "contingent claims" are frequently immature.
- Financially limited businesses, either the customer or the energy service provider, which do not have sufficient credit histories and/or assets to secure financing.

The recent UNEP-World Bank Three Country Energy Efficiency Study supports the concept that financing and contracting mechanisms (also termed "project delivery mechanisms") must address these barriers and be designed in the context of local institutional structures. To that end, the proposed projects are intended to help to overcome barriers by working within the context of local institutions and cannot be fully designed until those institutions are engaged in the Partnership process.

*Sub-Project 1: Tools and Technical Capacity for Performance Contracting*

Fundamentally, energy efficiency financing is based on project cash flow, not on the value of physical property deployed in the project. This is a structured financing approach, where the "asset" is the positive cash flow resulting from the energy savings. Creating, measuring and securitizing the energy savings asset is a complex process, requiring (1) an ability to estimate energy savings, i.e., conduct a valid audit; (2) methods to measure whether energy savings have been realized, i.e., monitor and verify the savings; and (3) reliable and enforceable contracts, including performance contracts.

*Systematizing Audits, Monitoring and Verification*. One of the most challenging aspects of energy efficiency financing is the need to (1) conduct a reliable audit to estimate the savings that can be financed and (2) measure and verify the energy savings to assure that the energy savings asset is indeed created. The audit creates the energy savings asset and accurate monitoring and verification determines the cash flow available to repay the financier of the investment. The cash flow is used to secure the loan when the project is funded by outside sources (e.g. banks, development agencies, etc.) or to gain management support for internally financed projects.

This challenge is being addressed by the Efficiency Valuation Organization (EVO).[1] EVO is developing an International Energy Efficiency Financing Protocol (IEEFP). APEC is funding early development of the IEEFP through two APEC countries (Thailand and Mexico), with plans to expand into other APEC economies. The IEEFP is designed to bridge the "disconnect" between traditional asset-based lending and the cash flow-based financing needed for energy efficiency projects. The IEEFP aims for a long-term "grass roots" solution that would ultimately become a blueprint for educating and training local financing institutions and their customers around the world on the special requirements and benefits of financing energy efficiency projects.

*Expediting Performance Contracts*. Performance contracts establish how much energy savings can be expected from an energy efficiency project and therefore provide an indication of how much cash will be saved by implementing the project. Performance contracts are a critical piece of the financing package for externally financed energy efficiency projects. Specialized energy service companies (ESCOs) or energy management companies (EMCOs) and owners and managers of buildings use performance contracts to identify energy-savings measures and technologies, commit to implement the energy-saving program, and assign risks.

The requirement to include a performance contract along with the audit and monitoring and verification protocol cause energy efficiency financing contracts tend to be complex relative to other structured financing contracts. Unfortunately, this complexity is particularly challenging for many building energy efficiency projects because they tend to be small. Small projects often cannot bear the costs of complex contract negotiations and savings verification.

Experience in Partner countries has taught that developing a sound performance contracting system requires extensive experience and appropriate institutions to manage the risks of these complex agreements. Pre-accreditation of ESCOs/EMCOs, development of standard contract documents, guides to contracting procedures, standard protocols for measurement and verification of savings, etc. help to ensure success. Identifying and promoting successful models of performance contracting can facilitate greater penetration of this approach in business and government building. In addition, increased harmonization of procedures, standards, and contract documents among Partner countries can encourage the growth of a robust regional market for energy services and performance contracting.

*Sub-project 2: Fostering Commercial Businesses to Finance and Deliver Energy Efficiency Products and Services*

Developing the businesses that have sufficient technical expertise and financial capability to deliver energy efficiency products and services is a challenge. High processing costs, credit risks (the lack of access to capital for providers or the lack of credit for the

[1] EVO is a respected global group of energy efficiency practitioners who have worked together to create the International Performance Measurement and Verification Protocol (IPMVP), a standardized method for measuring the performance of energy efficiency projects. EVO is now expanding to address additional aspects of energy efficiency, including financing and emissions benefits as well as water efficiency.

borrowers), and performance risks (uncertainty about the effectiveness of a technology or a contracting technique) are major barriers to realizing the benefits of energy efficiency.

In addition, before investors and lenders agree to finance a project, they engage in a complex process to allocate and mitigate risks. Risk management can be cost ineffective and therefore difficult for building energy efficiency projects because they: (1) tend to be small; (2) often involve small and new companies with limited credit and performance histories; (3) propose using new technologies or new applications of technologies that also pose unknown performance risks; and (4) carry the risk that energy prices will decline, wiping out the estimated financial savings and the cash flow needed to service the debt and pay a return to the equity investors.

Numerous techniques have been employed or suggested to over come these barriers, including:

- Government leadership in energy performance contracting to help to create credit worthy energy service providers.
- Revolving funds to overcome credit issues and reduce development risks.
- Incremental financing to reduce credit and performance.
- Manufacturer and vendor financing to mitigate performance risk.
- Insurance and publicly funded risk guarantees to enable lenders and borrowers to reduce credit and performance risks.
- Special purpose entities to reduce processing costs and increase market reach.

*Government Leadership in Energy Performance Contracting.* In several Partner countries, much of the success of the ESCO (energy service company) model is attributable to the role that central, state, and local governments played in creating an initial market for the industry. In the early years, banks agreed to finance energy management projects in government buildings because of the government's credit quality, not because of the ESCO's credit capacity. In fact, newly formed ESCOs often had little or no credit when the programs began. Over time, as the ESCOs completed increasing numbers of projects, two important changes strengthened their ability to obtain credit to carry out further projects. First, the companies gained experience that permitted banks and customers to evaluate their performance. Second, the ESCOs accumulated capital that enabled them to finance (or at least participate in the financing of) new energy management projects.

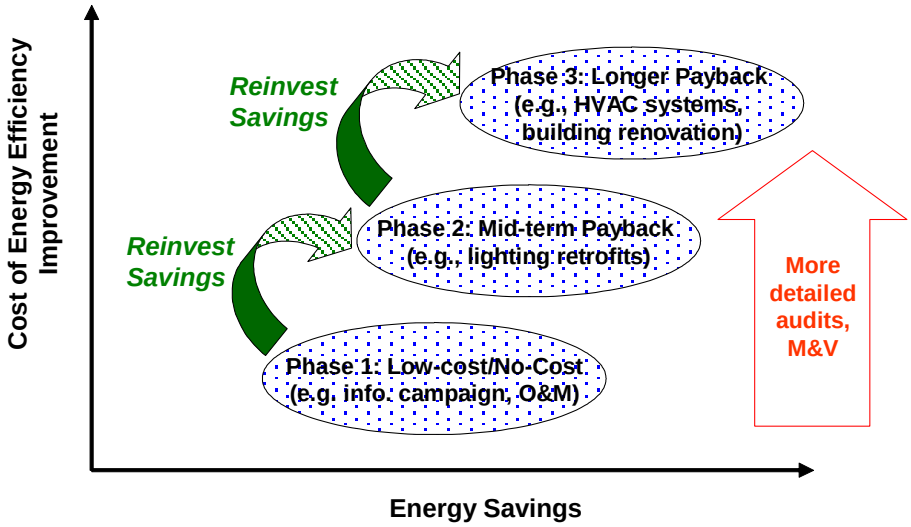
*Alternative Business Models*. In some situations, the ESCO/EMPC has proven to be a weak business model, with applicability only in highly repetitive circumstances (e.g., water pumping or lighting). Partners are encouraged to share alternative models that may provide greater success in increasing energy efficiency in Partner countries.

*Revolving Fund.* One of the first risks energy efficiency project developers face is the risk of expending capital on projects that may never be financed and built. Revolving funds that underwrite project development costs reduce these risks. They have been successful in Partners and also in APEC countries like Thailand. The BATF will seek sponsors and candidate projects for a buildings energy efficiency revolving fund to be demonstrated in one or more Partner countries.

*Incremental Financing.* In the initial stages of market development, private investment may be limited by the perceived risks of performance contracting, including investors' and lenders' concerns about the effectiveness of energy-saving technology, the accuracy of energy audits and provisions for monitoring and verifying savings. Therefore, the BATF will test models that rely on incremental financing and incremental increases in the sophistication of energy audits, monitoring and verification, as illustrated in Figure 1.

Using this model, simple audits and monitoring and verification could be used to establish the Phase 1 program. Documented savings from the Phase 1 program would be used for equity in the financing of Phase 2. A similar approach in Phase 2 (audit, program, monitor, and verify) would create savings that could be used as equity in Phase 3. As projects become larger and more complex, the technical sophistication and complexity of energy audits and monitoring and verification methods would increase to reflect the increased uncertainties and risk, and thus the increased value of more accurate—but more costly—information.

## Fig. 1. Incremental Financing




*Manufacturer and Vendor Financing.* One of the key strategies of the Partnership process is to engage private businesses to help expedite the transfer of energy-efficient technology. Participating manufacturers can increase their sales by helping to mitigate risks and expedite financing. Manufacturers and vendors can directly offer performance guarantees, warrantees, and/or financing or help the customer arrange financing with

lenders. The BATF will work with manufacturers and vendors to assess opportunities to offer or arrange such financing. In addition, BATF participants will engage export credit agencies to expand the capacity to finance technology transfer.

*Insurance and Partial Risk Guarantees Can Provide Targeted Risk Mitigation.* Insurance and partial risk guarantees can play an important role in getting projects financed and implemented, by helping to manage the sources of technical, market, and financial risk, answering questions such as:

- Will the technology work as expected, to produce the expected energy savings?
- Will future energy prices, and thus avoided costs, be at or above projected levels?
- And will the customer be able to repay the debt from those cost savings?

Public agencies can share some of the project risk by offering insurance or guarantees to encourage energy efficiency projects, particularly projects in publicly owned or leased facilities. Private insurance companies, vendors, or manufacturers can also help solve the risk dilemma by either offering insurance products or offering warranties or guarantees on their equipment. BATF efforts can look at where insurance type products are needed, and how they can be developed and implemented by public or private sector organizations.

*Special purpose entities*. One of the most successful models of energy efficiency financing is the creation of special purpose entities (SPEs) to expedite the processing of transactions. An SPE is a special financial vehicle, with dedicated funds and staff, to process loans. It is often a local or specialized entity, with the ability to reach out to new energy efficiency customers. Many Partner countries have applied this model to energy efficiency financing, but more can be done to extend its reach. Partner countries can share experiences and synthesize new models to increase penetration of energy efficiency.

***Methodology***

This project will (1) identify successful commercial models for financing of and contracting for energy efficiency; and (2) apply these models as appropriate in interested Partner countries. The project recognizes the importance of implementing practical, on-the-ground activities to support the mission of the overall Partnership, as well as to take advantage of opportunities to build on existing and planned activities. All projects must be based on sound analysis and comprehensive consideration of options and experience.

*Project Strategy*

- Promote sustainable changes in financing and contracting practices and leverage financing resources by working closely with governments, companies, and financial institutions (commercial, multilateral, and bilateral).
- Pursue solutions that lead to sustainable energy efficiency markets by limiting subsidies to those areas where subsidies are likely to be productive, such as to reduce high start-up transaction costs, buy down risks of entering new markets, or

pilot new projects. For longer-term commitments, participating governments may want to consider projects where societal benefits and government policy justify these commitments.

*Approach*

- Compile information on and evaluate successful contracts, business models, and financing approaches from member countries and other international efforts (e.g. APEC) and share key findings and lessons learned among Partner countries.

- Implement joint projects to remove barriers and apply successful models for energy efficiency financing and contracting in those Partner countries that choose to participate.

- Document the outcomes of each task using qualitative and quantitative measures described in Section 7.

- Participate in annual reviews of project progress; share results with the expert group and other task teams, and incorporate input from all interested Partner countries into future plans for the tasks.

The candidate tasks will be drawn from successful models for financing and contracting from any of the following sources: utilities, commercial lenders, and public institutions. Two tasks are proposed. Additional tasks will be developed, based on this initial experience and on the identified needs and interests of Partner countries. The initial proposed tasks are:

- Task 1: Simplifying and systematizing documentation of energy savings to for financing (U.S. lead); and

- Task 2: Fostering businesses to deliver energy efficiency products and services.

*Task 1: Simplifying and Systematizing Documentation of Energy Savings for Financing*

BATF activities in this area will compile experiences and results to identify effective approaches to audits, monitoring and verification. The sub-tasks will include:

1) Survey ongoing and recent cooperation on audits, monitoring and verification, and performance contracting and determine the needs for tools and technical assistance in participating countries. For example, USAID, USEPA and the Renewable Energy and Energy Efficiency Partnership (REEEP) with partners in India support ongoing work on standardized audit methods and reporting formats for buildings in India.

This activity can also draw on examples, documents, and tools available from other international efforts outside of the Partnership, such as the Efficiency Valuation Organization (EVO), with their existing International Performance Measurement and Verification Protocol (IPMVP), and work in progress on an International Energy Efficiency Financing Protocol (IEEFP). Partners could consider how to build on these initiatives to encourage further technical development and timely uptake across the

region. Technical refinements of IPMVP and IEEFP could include multiple levels of detail and complexity (see the "incremental financing" model in Figure 1, above), as well as harmonization of these and other tools to support a Partnership regional market for energy efficiency financing.

2) Develop, implement, or enhance joint activities to improve information, technical capacity, and tools for effective performance contracting in selected Partner countries. The first priority for these activities will be on refinement and standardization of tools, procedures, and institutional capacity within the individual countries. Areas of focus will include:

- Standardized energy audit procedures and formats.
- Common templates to help reduce transaction costs for contracting, performance guarantees, and guides to contracting procedures.
- Standard protocols for measurement and verification of savings.
- Standard definitions of the types of risk in performance contracts and standard "templates" for allocating risk.

It is important to adapt tools and procedures to local conditions, needs, and capacities to encourage practical implementation steps. Where appropriate, cooperation among Partner countries could look for opportunities to harmonize these performance contracting methods and tools across Partner countries, and to aim toward the highest international standards of practice. This will facilitate the international business of energy service contracting and help to increase the pool of technical experts and the effectiveness of performance contracting in all Partner countries.

3) Report annually on results of compiling, refining, and adapting program models and tools, as well as the results of joint activities implemented by the participating Partner countries.

*Task 2: Fostering Businesses to Deliver Energy Efficiency Products and Services*

BATF activities in this area will compile experiences and results to identify effective means to foster businesses to deliver energy efficiency products and services. This task will build on the findings of the recent UNEP-World Bank Three Country Energy Efficiency Study, which found that developing appropriate financing mechanisms for energy efficiency projects is primarily an institutional issue. Partnership projects can also build on the experience of APEC and other international projects such as those sponsored by the Global Environment Facility (GEF). Project implementation will also be coordinated where appropriate with international finance institutions that can bring significant resources to development of commercial markets for energy efficiency financing. For example, the Asian Development Bank recently launched an Energy Efficiency Initiative (EEI) committed to expanding ADB's investments in energy efficiency in member countries to $1 Billion/year. Voluntary participation will assure that each Partner can match their part of the overall project to local conditions.

1) Survey the considerable experience among Partner countries on how to structure and promote ESCO programs, including development of:

- Assessments of where ESCO/EMPC programs have been effective and where other business models may be more appropriate.

- Accreditation programs for energy auditors and ESCOs.

APEC is currently developing standard loan templates with input from local commercial lending institutions, as the long-term objective is to sell "seasoned" loans to commercial banks. These models can be deployed and refined in Partner countries' markets. Discussions and workshops with bankers, developers, owners, and ESCOs can provide examples of how risk can be allocated in the financing of energy-saving projects.

2) Meet with equipment suppliers to identify capacity to finance projects and conditions for expanding their financing activities.

3) Work with bilateral and multilateral funding institutions to identify where their programs might fund programs and projects to support private investment in building energy efficiency.

4) Identify Partner countries to test models that rely on incremental financing and incremental increases in the sophistication of energy audits, monitoring and verification, as discussed above and illustrated in Figure 1.

5) Report annually on results of compiling, refining, and adapting program models and tools, as well as the results of joint activities implemented by the participating Partner countries.

6) Identify interest in and sources of revolving funds, partial risk guarantees, and insurance programs to overcome the risks associated with lack of information and experience in markets that are just developing. The BATF will seek sponsors and candidate projects for a buildings energy efficiency fund to be demonstrated in one or more Partner countries.

7) Sponsor a workshop on the experiences with SPEs and the potential to modify and expand the models.

***Milestones***

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| 2006–07 | Begin initial activities, including identification of successful models, information that can be shared, and joint demonstration activities. Prepare reports for dissemination on successful models and lessons learned. Contact vendors and financiers to identify how they might expand their activities. |
| 2007-08 | Implement jointly approved projects. |

2009 Continue projects; review implementation of joint projects.

### *Dissemination of Project Results*

Project results will be summarized in reports to be distributed to stakeholders within countries and posted on appropriate websites, as available.

### *Assessment of Project*

The project results will be measured in terms of:

- Incremental change in private companies offering energy efficiency services, measured in number of companies and total sales.
- Incremental change in private investment in energy efficiency in terms of number of investors and volume of equity investment.
- Incremental change in number of private financial institutions lending to energy efficiency projects and volume of lending.
- Reduction in GHG emissions attributed to the incremental change in private financing of building energy efficiency projects.

Data collection requirements and resources will be included in each task that is jointly implemented.

### *Participation and Management*

*Management*

The United States is the leader for this project. Partners who elect to participate in this project will manage their in-country efforts and may elect to manage Partnership tasks.

*Participation*

Participation in this project will be tailored to each Partner's situation; therefore, Partner participation in its tasks will be voluntary. Participating Partner countries will determine funding, based on the tasks selected and will seek funding from commercial lenders, vendors and manufacturers, bilateral financing agencies, and multilateral development banks and agencies.

### *Estimated Budget and Funding Sources*

To be determined, pending discussions of interest with Partner countries, interested companies, multilateral and bilateral funding institutions.

To be determined.