THE INTERNATIONAL ENERGY EFFICIENCY FINANCING PROTOCOL (IEEFP)

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GLOBAL ESCO NETWORK
The home of the IPMVP®

A 22-year-old non-profit corporation

Led by volunteers around the world

VISION
Create a world that has confidence in energy efficiency as a reliable and sustainable energy resource.

MISSION
Ensure that the savings and impact of energy efficiency and sustainability projects are determined through appropriate measurement and verification.
International Performance Measurement and Verification Protocol (IPMVP®)

1996

1997
International Performance Measurement and Verification Protocol (IPMVP)

IPMVP 2002
IPMVP 2004
IPMVP 2007
IPMVP 2009
IPMVP 2012
IPMVP 2014
IPMVP 2016
IPMVP 2022
Product portfolio – Status and future work

**IPMVP CORE CONCEPTS 2022 IN ITALIAN AND SPANISH (MEXICO)**

- **M&V FOR PERFORMANCE CONTRACTING**
  - ADVANCED M&V
    - EVALUATION, MEASUREMENT & VERIFICATION
    - UNCERTAINTY ASSESSMENT GUIDE

- **M&V FOR WATER**
  - M&V FOR RENEWABLES
  - M&V AND OPTION D

**Timeline:**
- **2023**
- **2024**
Product portfolio – Complements to the IPMVP

Third-Party Equipment Certification

A COMPLEMENT TO THE INTERNATIONAL PERFORMANCE MEASUREMENT AND VERIFICATION PROTOCOL (IPMVP)

October 2019
EVO 50000-1:2019

International Energy Efficiency Financing Protocol (IEEFP)

STANDARDIZED CONCEPTS

A COMPLEMENT TO THE INTERNATIONAL PERFORMANCE MEASUREMENT AND VERIFICATION PROTOCOL (IPMVP)

February 2020
EVO 40000-1:2020
This document aims to enhance the importance and added value of third-party certification of equipment performance for site-specific M&V Plans and to describe the best practices of existing third-party certification programs.

The document presents:

(1) Rationale for conducting and using third-party equipment-performance certification.
(2) Some evaluation methods, including testing and verification and best practices applicable to specific equipment categories.

The document provides:

- Risk reduction tool
- An understanding of products’ performance expectations
- Guidance for operational verification
- Etc.
International Energy Efficiency Financing Protocol (IEEFP)

- Blueprint that provides concepts and guidelines to facilitate an understanding by loan, risk, and credit officers of the key elements needed to evaluate and provide attractive energy efficiency project loans to facility owners, ESCOs, and other potential developers and implementers of energy efficiency Projects.

- The IEEFP is complemented by specific country annexes covering local regulations affecting energy efficiency project financing.

- Hands-on training on applying specific tools, project-based templates, and materials provided in the program.
Why bother about energy efficiency?
Its overarching goal is to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.”

**PARIS AGREEMENT – 2015**

**COP 26 – 2021 (GLASGOW)**

**GLASGOW HAS KEPT 1.5°C IN REACH BUT FURTHER ACTION NEEDED**

Ahead of Paris, some scientists said that there was a chance that temperatures could ultimately rise by up to 6°C. The pledges made under the Paris Agreement had the world on track to a 2.7-3.7°C rise.

If the pledges made at Glasgow are fully implemented, warming will be kept below 2°C; and with the commitment to further action over the next decade we have kept 1.5°C in reach.

The Glasgow Climate Pact only keeps 1.5°C in sight if countries take concerted and immediate action to deliver on their commitments. This means phasing down coal power, halting and reversing deforestation, speeding up the switch to electric vehicles and reducing methane emissions.
Energy efficiency financing market opportunities

Figure 23: Destination region of climate finance, by public/private (USD billion, 2019/2020 annual average)

2019/2020

$633 bn
Public = $322bn
Private = $311bn

Source: Climate Policy Initiative
Energy efficiency financing market opportunities

Global tracked climate finance flows and the average estimated annual climate investment need through 2050

(USD billion)

$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
0
2011-2020
2021
2030
2040
2050
Actual climate finance
Future climate finance necessary to maintain 1.5°C pathway

Figure 23: Destination region of climate finance, by public/private (USD billion, 2019/2020 annual average)

Source: Climate Policy Initiative

Energy efficiency financing market opportunities

Carbon emissions abatements under the 1.5°C Scenario (%)

<table>
<thead>
<tr>
<th>Abatements</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewables (power and direct uses)</td>
<td>25%</td>
</tr>
<tr>
<td>Energy conservation and efficiency*</td>
<td>25%</td>
</tr>
<tr>
<td>Electrification in end use sectors (direct)</td>
<td>20%</td>
</tr>
<tr>
<td>Hydrogen and its derivatives*</td>
<td>10%</td>
</tr>
<tr>
<td>CCS and CCU industry</td>
<td>6%</td>
</tr>
<tr>
<td>BECCS and other carbon removal measures</td>
<td>14%</td>
</tr>
</tbody>
</table>

-36.9 GtCO₂/yr
Tightening of global energy supply

- Concerns about security of supply, price volatility, supply chain disruptions
- Triggers deep concerns about short term energy savings but also for longer term energy efficiency measures and projects

Decarbonization is driving renewed interest for energy efficiency

- Regulatory response with strict obligations to reduce energy consumption and demand
- Financial institutions are joining the efforts with initiatives such as the Partnership for Carbon Accounting Financials (PCAF) – development of GHG accounting methodologies for financed emissions

Increasing interest for measured and demonstrated savings

- Project funders require “hard” evidence that savings are real
- Everyone is looking for risk reduction methodologies
Guidelines for Climate Target Setting for Banks

April 2021

Financial institutions response

One
Banks shall set and publicly disclose long-term and intermediate targets to support meeting the temperature goals of the Paris Agreement.

Two
Banks shall establish an emissions baseline and annually measure and report the emissions profile of their lending portfolios and investment activities.

Three
Banks shall use widely accepted science-based decarbonisation scenarios to set both long-term and intermediate targets that are aligned with the temperature goals of the Paris Agreement.

Four
Banks shall regularly review targets to ensure consistency with current climate science.
Financial institutions response

2022 SAMPLE WEBINARS

Decarbonization through energy efficiency towards the achievement of net-zero targets

by Livia Miethke Morais

- Presentation material
- Recording

Long-standing global energy efficiency barriers

- Lack of capacity among project developers
- Real or perceived high initial investment costs
- Lack of trust in solution performance
- Imperfect information

- Lack of awareness of beneficiaries about efficient technologies
- Hidden costs and perceived higher risks
- Lack of financing options
- Asymmetric information

- Absence of qualified energy efficiency technology and service providers
- Promised returns uncertain or not credible
- Inertia or resistance to change
- Stakeholders unable to interpret the information

- “Energy efficiency is not our core business”
- Lack of capacity to maintain the assets
- Decision-making routine
- Lack of trust in information sources

- Inertia or resistance to change
- Decision-making routine
EE projects are SMALL, COMPLEX, and ‘BORING’

The apathy of facility owners

No ‘attractive’ energy efficiency financing

- The Problem is NOT a lack of available funds!
- Available funds cannot be accessed from the most cost-effective local sources (Banks) on commercially attractive terms
- Caused by ‘DISCONNECT’ in current lending practices of banks versus needs of facility owners, ESCOs, and other developers in their funding EE Projects

- In many companies, EE Projects are viewed as Infrastructure investments (don’t fix unless broken)
- EE Projects cannot compete with internal capital for core business investment hurdle rates (1-2 years)
- Benefits of EE projects too small to get on CEO’s radar screen or justify inherent complexities and perceived potential operating risks
- Available EE financing reduces core business funding capacity
- Little confidence in savings being realized or measured
- Added complexity for commercial building owners where utilities are paid by tenants
Banks provide traditional corporate asset-based lending limited to ~70% of energy efficiency project capital cost, requiring:

✓ 30% equity investment in the energy efficiency projects and

✓ 100% collateral or guarantees on loan amount – **and the only collateral value of EE projects is the savings.**

Banks do not have confidence in savings of energy efficiency projects, thus no increased credit capacity to facility owners.

Limited interest in energy efficiency projects due to small transactions, complexities and inability to evaluate the risks and the benefits.

Typically offer short-term loans from existing line of credit or fully collateralized with additional assets.
Higher provisions requirements for project finance
Regulations for risk categorization of equipment as collateral by the central bank.
Regulatory challenges that CANNOT be addressed at the level of the bank
Challenges that CAN be addressed at the level of the bank

- Limited energy efficiency knowledge and capacity
- Projects are not appealing (small and complex)
- Projects are not “business as usual” (Project-based)
- Insufficient collateral
- No confidence in future cash flow
- Insufficient loan applications and investment grade audits due to lack of energy efficiency project development capacity by local consultants, ESCOs, etc.
The main objective of IEEFP is to create an understanding for local financial institutions of how energy efficiency (EE) projects generate reliable cost reductions (savings) in a facility’s existing operating expenses.

To accomplish this, IEEFP is designed to enhance the credit officer’s knowledge of the following:

- How EE Project savings can be relied upon for loan repayment & increased the facility owner credit capacity;
- How to evaluate and mitigate risks of EE projects delivering estimated savings (ignoring any attempt to educate them on how to evaluate borrower credit risk since they should already possess this core competency);
- How to structure a project-based loan that minimizes risk and provides an attractive internal rate of return (IRR);
- How the measurement and verification (M&V) of energy savings can be reliably performed is critical to documenting and ensuring sustainable EE savings.
Chapter 3 – Energy Efficiency Technologies

- This chapter provides insights regarding key aspects and savings risks of the major proven EE technologies typically implemented in retrofit EEPs within buildings and industrial facilities.

- The major technologies discussed here are:
  - High-efficiency lighting systems
  - Heating, ventilation, and air conditioning (HVAC) systems
  - Building automation systems (BAS)
  - Building shell and fenestration
  - Chillers
  - Boilers
  - Variable speed drives (VSD)
  - Heat recovery systems
  - Motors

<table>
<thead>
<tr>
<th>Technology</th>
<th>Key Aspects</th>
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<tbody>
<tr>
<td>High-efficiency Lighting</td>
<td>- Typically represents the most cost-effective EE improvement in buildings.</td>
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<tr>
<td></td>
<td>- LED lamp technology provides better quality lighting for significantly less electricity and can eliminate 2-3 lifetime lamp replacements.</td>
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<td>- LEDs provide a significant savings opportunity for municipal street lighting.</td>
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<tr>
<td></td>
<td>- Natural daylighting and controls can also reduce electricity consumption and improve visual comfort.</td>
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<tr>
<td>Useful Life</td>
<td>50,000 to 100,000 hours (10-15 years)</td>
</tr>
<tr>
<td>Simple Payback</td>
<td>2-3 years</td>
</tr>
<tr>
<td>M&amp;V Factor</td>
<td>Easy to isolate and measure the savings impact.</td>
</tr>
<tr>
<td>Savings Risks</td>
<td>Low</td>
</tr>
</tbody>
</table>
Chapter 4 – Energy Efficiency Project Development and Finance Process

- Chapter four proposes a brief overview of the typical process followed by facility owners (as prospective hosts), ESCOs, and project developers in their development and financing of an energy efficiency project.
- The processes most critical to the successful development of any EEP are a properly-prepared IGA and an IPMVP-adherent M&V plan.
Chapter 5 – Investment Grade Audit

- Chapter 5 discusses the requirement for a properly prepared investment-grade audit (IGA) as a critical step for an energy efficiency project to be successfully implemented.
- It briefly describes the content of a typical IGA with a focus on describing the recommended energy efficiency measures, the baseline of the energy use, the implementation schedule, and the financial analysis.
- It gives additional insights into industrial process facilities.
- It also outlines some significant shortcomings commonly found in an IGA.

Chapter 6 – Measurement and Verification (M&V)

- Chapter 6 explains how M&V is the meter of an energy efficiency project and thus is critical to documenting the achieved savings and the resulting internal rate or return of an energy efficiency project investment.
- It explains the four IPMVP options and provides insights on selecting an option.
- It discusses the role and importance of developing a clear and transparent project-specific M&V Plan that describes various measurements and data to be gathered, analysis methods employed, and verification activities conducted to evaluate the performance of an energy efficiency measure.
Chapter 7 – Key Stakeholders

- Chapter 7 emphasizes the role of various stakeholders involved in implementing an energy efficiency project.
- In a detailed table format, it provides details on the types of stakeholders in each category, their role in a project, the benefits they get or provide in a project, and the concerns that each of the stakeholders faces in a project.
Chapter 8 – Energy Efficiency Project Financing Options

- Chapter 8 reviews the primary financing options available to facility owners to finance their projects:
  - Host equity
  - Loans
  - Leases
  - Installment purchase contingent payment contract
  - Infrastructure as a service
  - Energy services contracts (ESCO)

Chapter 9 – Energy Efficiency Project Contracts

- Chapter 9 reviews the most common contracts facility owners use to develop, finance, implement, and operate an energy efficiency project.
  - Consulting fee-based agreements with consultants
  - Construction and maintenance fee-based agreements
  - Financing agreements
  - Energy savings performance contracts (ESPC) with ESCOs for savings-based structures
  - Agreements when energy efficiency projects are financed / owned by special purpose entities (SPEs).
Chapter 10 – Energy Efficiency Financing Market Needs

- Chapter 10 explains how energy efficiency project financing need to be provided on a project versus corporate basis to be attractive to facility owners, ESCOs, and other project developers.
- It puts the emphasis on six key features of such financing:
  1. no additional collateral is required beyond the EEP assets installed and future cash flow from EEPs;
  2. provided in local currency and as additional financing with no impact on existing credit capacity;
  3. include the financing of construction CAPEX and interest during construction;
  4. repayment term significantly longer than EEP's simple payback period;
  5. interest and financing costs equal to or below best available market rates; and,
  6. readily available to Hosts, ESCOs, and other project developers.

- The protocol provides a sample energy efficiency project loan structure and proposes two examples of cash flows based of different levels of debt financing (70 % and 100%)
Chapter 11 – Energy Efficiency Project Financing Risks and Mitigation Strategies

- Chapter 11 presents a detailed discussion of projects’ performance risks and mitigation strategies at different levels:
  - Development
  - Implementation
  - Operation
  - Contractual

- The document then provides an extended discussion on performance-based ESCO models. In the perspective of educating loan officers, it explains the mechanics of shared savings, the payment structure, the scope of work, the typical terms and conditions, and each party’s responsibilities.

Chapter 12 – Guarantee Mechanisms for Financial Institutions

- Chapter 12 focuses on credit risks (in opposition to performance risks) and discusses two types of products:
  - Partial Credit Guarantee (PCG)
  - Energy Savings Insurance (ESI)
Chapter 13 – Energy Efficiency Project Finance Evaluation Tools

- Chapter 13 presents a series of checklists that can be used by credit and loan officers.
  - Risk Mitigation Checklist
  - IGA Checklist
  - Loan Application Guidelines and Checklist
The IEEFP provides concepts and guidelines to facilitate an understanding by loan, risk, and credit officers of the key elements needed to evaluate and deliver attractive EE Project loans to facility owners, ESCOs, and other potential developers and implementers of EE Projects.

It is not intended to be a training manual or a comprehensive document explaining all aspects of energy efficiency, EE Projects, or related financing.

However, learning how to apply the concepts and guidelines in the IEEFP can be acquired by attending EVO’s IEEFP Training Program, which provides hands-on training on using specific tools, project-based templates, and materials provided as part of the program.

- 12 training modules over two days
- Advanced cash flow analysis course over two days, including a certification exam
- Introduction to financial terms
- Introduction to EE technologies
- Practical loan application group exercises
Market transformation

- M&V Awareness Webinars
- Introduction to M&V IEEFP Workshops
- PMVA / IEEFP
- Advanced M&V / thematic / ISO & IPMVP
- M&V practitioners
- M&V experts
- Mentors

- Stakeholders and interest groups, financial institutions, governments, utilities, policymakers, and program designers, etc.
- Project designers, building owners, banks, programs designers, utilities, banks, etc.
Why financial institutions should know about the IEEFP

THERE ARE MANY REASONS WHY FINANCIAL INSTITUTIONS NEED TO KNOW THIS PROTOCOL:

1. The pressure to finance sustainable projects will increase for banks (Glasgow COP26, for example),
2. Energy efficiency is one of the primary vehicles for mitigation and decarbonization
3. Banks don’t need to understand technical details but need to understand the rationale behind energy efficiency and its different ways to achieve it
4. Banks need to use a standard “technical-financial” language to promote, identify and analyze projects
5. Within the categorization of sustainable projects, energy efficiency is the most evident
6. Energy efficiency projects have credit quality if accompanied and justified with M&V – Performance M&V is itself a way to mitigate risk
7. Energy efficiency projects have a solid financial and productivity component for the benefit of those who execute them
8. Banks should take an active role in promoting energy efficiency accompanied by M&V
9. The only way to demonstrate efficiency and low risk is through M&V
10. M&V forces technology providers to become professional
Thank you!

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