

Recognizing and Assigning ESPC Risks and Responsibilities Using the *Risk, Responsibility, and Performance Matrix (RRPM)*

The guarantees required in federal ESPCs are:

- A specified level of savings (one dollar amount for the whole project), and
- Specified equipment performance and standards of service, such as temperature and lighting levels.

The government is not obligated to pay for an unmet guarantee, but what *exactly* is being guaranteed? That depends on the terms of the task order as negotiated by the agency and ESCO. Who is responsible for factors that affect performance and savings? And who pays for what? A full awareness of the options and costs associated with these risks and responsibilities allows the agency to negotiate a task order that best suits its own needs, priorities, and resources.

The *Risk, Responsibility, and Performance Matrix (RRPM)* is the ESPC contract document that focuses on 14 areas of risks and responsibilities. The RRPM summarizes and documents the ESCO and agency’s agreements about allocating risks and responsibilities – to the ESCO, to the agency, or shared. The RRPM is Attachment J-6 to the DOE IDIQ ESPC, and is a required part of the preliminary assessment and task order.

The purpose of the RRPM is to help agencies:

- understand how key contract elements affect costs and savings,
- understand how to tailor the contract to match their own needs and priorities,
- give some structure to the decision making and negotiations, and
- document the decisions in these areas.

The RRPM is a *summary only*. The details of these agreements are in the M&V Plan, request for proposal, and the ESCO’s management approach. The RRPM in the final task order summarizes the agreements.

The following is a discussion of the 14 areas of risk and responsibility in the RRPM, as listed below, and some of the implications of choosing some options over others. For reference, the RRPM is shown on pages 6 and 7.

Financial

- Interest rates
- Construction costs
- M&V confidence
- Energy-related (one-time) savings
- Delays
- Major changes in facility

Operational

- Operating hours
- Loads
- Weather
- User Participation

Performance

- Equipment Performance
- Operations
- Preventive Maintenance
- Equipment repair and replacement

What is Risk?

In the context of the RRPM, “risk” refers to financial consequences:

- To the ESCO, the risk is that the guarantee will not be met and the ESCO will be obligated to pay the agency for savings not delivered.
- To the agency, the risk is that savings it pays for will not be delivered, which violates the federal ESPC statute and regulation.

FINANCIAL RISKS & RESPONSIBILITIES

Interest Rates. Neither the ESCO, the agency, nor the financier controls interest rates. However, financing transaction costs can be affected by the agency's choices. Understanding the structuring, costs, and logic of private-sector financing for federal ESPCs will help agency acquisition teams expedite the negotiation and approval of task orders and keep financing costs low. Paying off the financed amount as early as possible is one of the best ways to decrease interest costs. This can be done through implementation-period savings/payments (see below).

Construction Costs. ESPC is a design-build, fixed-price contract, so agency has little risk in this area. The ESCO can control construction costs, typically taking bids and locking in subcontractor prices before submitting the final proposal. Design standards and review processes in the contract ensure that agency gets what is specified in the award. Agency-initiated changes in scope, design standard, or schedule have to be negotiated as modifications to the contract.

M&V Confidence. In considering M&V, the key questions are:

- How much do I want to spend?
- What degree of accuracy do I need?
- What are the tradeoffs?

The agency pays the ESCO for M&V services, and agencies need to balance savings certainty and M&V cost. Note that with M&V, the law of diminishing returns applies: spending more money does not necessarily produce a proportional benefit. Most agencies opt to spend modestly on M&V and put as much as possible into facility improvements.

Average annual M&V cost in DOE-FEMP ESPCs is 3% of annual savings.

Energy-Related (One-Time) Savings (Implementation-Period Savings/Payments). One-time payments are commonly based on one-time savings from expenditures avoided because a planned project won't necessary, but will be included in the ESPC instead. Committing to a one-time payment before the money has been appropriated may involve some risk to the agency because of the chance that the appropriation will not materialize. Also note that an FY appropriation can disappear if project isn't awarded within that FY. The RRPMP should clarify the sources of non-energy cost savings and how they will be verified.

Delays. Whoever causes a delay that incurs costs should expect to pay for that delay. Note that the agency must adhere to review and approval schedules. The construction schedule should be detailed in the task order, including the timing of agency reviews and approvals of submittals such as designs, equipment specifications, and the commissioning report.

The ESCO is at risk for extra costs if the schedule is delayed. The ESCO is highly motivated to complete the project on time so that agency payments, and ESCO payments for the financing of the project, can begin on schedule. Failing to do so entails significant financial consequences for the ESCO.

Major Changes in Facilities. The ESCO can't be held responsible for facility changes controlled by the government. Agencies who are certain that major changes are planned for some of their facilities should not pursue ESPC projects in those buildings, and buildings of questionable longevity should obviously not be included in improvement projects.

Even then, buildings' usage will likely change over two decades, and agencies need to be prepared to modify the contract to reflect these changes. If a building is demolished, termination for convenience is a sensible solution. Partial terminations occur when only part of the installed ECMs are involved.

Even if a facility were closed during the ESPC term, the government's financial obligations would be only the usual ones associated with closing facilities. To keep financiers comfortable (and interest rates as low as possible), the contract should include pre-negotiated terms for retirement of debt upon termination for convenience.

Energy Prices and Escalation Rates

Energy prices are not addressed by the RRPM, but are discussed here because the energy prices and escalation rates in the task order determine the dollar value of the energy-cost savings guaranteed by the ESCO. Escalating utility rates is customary in ESPC .

Since neither party has any control over energy prices, agencies and ESCOs generally opt for simple and practical ways to arrive at prices to use in savings calculations. A common and recommended practice is to use current energy prices for the first year of the contract and use the FEMP/NIST *Energy Escalation Rate Calculator* (EERC) to determine energy rates for succeeding years. The calculator incorporates the energy forecasts of DOE's Energy Information Administration.

Using EERC to estimate future energy prices helps avoid the pitfalls of both over- and under-estimating future prices: Over-estimates lead to payments exceeding savings, but under-estimates reduce project scope and lengthen the project term (which also increases interest costs). A "conservative" escalation rate is one that's accurate – not one that's artificially low.

The chances that this approach will have serious financial consequences for the agency are very small. If prices turn out to be lower than expected, "savings" may be smaller on paper than projected, but the agency benefits from the lower prices and will be able to pay its bills. If energy prices are higher than projected, savings will exceed expectations, and the problem of higher prices will be easier to manage because the agency will be buying less energy than before the ESPC project.

OPERATIONAL RISKS & RESPONSIBILITIES

Operating hours, plug load, weather, and user participation (or occupancy effects) can all affect energy usage and cost.

In ESPC task orders, savings are calculated in relation to a baseline for each ECM. The baselines represent the energy and related costs that would have occurred if the status quo had been maintained and no new ECMs had been installed. The agency and the ESCO agree on the baselines for the ECMs, how they will be determined, and how savings will be calculated and compared to the guarantee for verification.

The guarantee and the method for verifying savings must be documented in the contract in a way that accounts for potential impacts of operational factors.

Over the term of the contract, if (for example) building occupants acquire no new electrical equipment that increases plug load, if the weather is not extreme, and if operating hours remain the same, the ESCO's estimates of energy savings will likely prove accurate and the guarantee will be met.

However, if extreme weather occurs, if occupants increase the number of computers in use, or if a plant adds a second shift, energy usage will increase and savings may appear smaller than expected. Who is responsible for this increase in energy use under the contract? The agency, as the party with the greatest ability to cost-effectively control operational factors, generally takes financial responsibility.

Even when the project doesn't totally eliminate potential cost increases from operational factors, it does minimize cost increases and make them more manageable than before the energy improvements were made.

The agency generally assumes financial responsibility for operating hours and load in one of two ways:

1. Baseline adjustments. The contract can allow specified baseline adjustments for changes in operational factors so that savings calculated in relation to the higher baseline will better reflect the savings attributable to the new ECMs. Baseline adjustments must be supported by measurements.
2. Both parties can agree to hold certain operational factors constant for the purpose of calculating savings, and agree to accept estimated savings based on engineering calculations and measurements as a fair representation of savings (not based on rule-of-thumb estimates or anecdotal information). If related requirements are met (i.e., satisfactory commissioning results and maintenance tasks performed), the guarantee is considered to be met.

Operating hours and plug loads are often specified and held constant in this way. With well-proven, predictable technologies, this is often the most practical choice.

To minimize the risk of accepting stipulated values related to operating hours or load, stipulated values should be based on measured values rather than unverified assumptions, unverified schedules, or loose observation.

Weather

Weather can be a major factor in energy usage. A sensible approach is to normalize calculations of the baseline and yearly energy savings to a typical weather year (Typical Meteorological Year data, based on 30-year averages). In mild weather years, savings will seem small, but the energy bill will also be smaller than normal and the ESPC payment manageable, with funds to spare. In years of extreme weather, savings will exceed expectations, but despite higher utility bills it will be easier for the agency to manage and pay those bills than it would have without the project.

Normalizing weather factors evens out lower savings from mild weather years with excess savings in extreme years. This approach mitigates the risk of anomalous weather for the ESCO while keeping the ESCO on the hook for performance.

User Participation

Some measures require users to interact with equipment (or at least not override it) for proper operation, and many task orders specify set points or other requirements. Where user participation is required to generate savings, responsibilities can be assigned in one of several ways:

- the agency may accept the responsibility of training its own personnel to participate appropriately,
- the ESCO may agree to train agency staff to carry out assigned responsibilities, or
- the ESCO may agree to perform the required functions as part of the ESPC or a separate service agreement.

PERFORMANCE RISKS & RESPONSIBILITIES

Equipment Performance

Performance of the ECMs is the foundation of the guarantee and the value of the project. The ESCO is ultimately responsible for selection, application design, installation, and performance of the equipment, and must maintain specified standards of service (temperature, humidity, lighting levels, etc.). To be negotiated and spelled out in the contract are:

- (1) how performance and standards of service will be verified; and
- (2) what the consequences for unacceptable performance and standards of service will be.

Operations and Maintenance (O&M) and Repair and Replacement (R&R)

O&M and R&R are major factors in performance risk. The ESCO has ultimate responsibility for O&M and for assuring guaranteed performance of ECMs. However, day-to-day conduct of O&M and R&R are negotiable.

Responsibilities for O&M and equipment repair and replacement (R&R) are negotiable and may be assumed by the ESCO, by agency staff, by subcontractors, or shared. If the ESCO does the work, it assumes all the risk (and gets paid for it). If the agency does the work, it assumes that expense and possibly some of the performance risk. Agency failure to carry out its O&M/R&R responsibilities as assigned in the task order can compromise the guarantee.

It is critical to spell out how proper performance of these functions will be ensured. Typically the agency operates the equipment with ESCO oversight. Maintenance can go either way, but the ESCO is always responsible for defining the maintenance program, providing training, and verifying execution.

Often the ESCO is responsible for R&R. However, the agency should negotiate whatever arrangement best addresses their needs. Some choose to keep all of these functions in-house to minimize the cost of the project; others lack the in-house capability or prefer to pay more for the “insurance” of having one responsible party for all these functions.

Factors for the agency to consider regarding taking on O&M or R&R tasks:

- The agency taking on O&M/R&R permits more investment.
- Existing O&M contracts may be an issue.
- It is often best for the ESCO to do R&R for unfamiliar ECMs (e.g., renewables).
- If ESCO is responsible for R&R, it will likely also ensure that O&M is done right.

RRPM LESSONS LEARNED

- The RRPM ensures that important risks are addressed and responsibilities assigned.
- Dialog through the RRPM fosters mutual understanding of the deal.
- The RRPM is a valuable guide for proposal review — details in M&V plan and other parts should not conflict with RRPM.
- Careful consideration should ensure that the agency does not take on O&M/R&R tasks that the organization can’t handle well.

ATTACHMENT J-7
ESPC RISK, RESPONSIBILITY AND PERFORMANCE MATRIX (RRPM)

[Note: Agreed-upon approaches are entered in a (wider) right-hand column.]

RESPONSIBILITY/DESCRIPTION	CONTRACTOR PROPOSED APPROACH
1. Financial	
a. Interest rates: Neither the contractor nor the agency has significant control over prevailing interest rates. Higher interest rates will increase project cost, financing/project term, or both. The timing of the TO signing may impact the available interest rate and project cost.	
b. Construction costs: The contractor is responsible for determining construction costs and defining a budget. In a fixed-price design/build contract, the agency assumes little responsibility for cost overruns. However, if construction estimates are significantly greater than originally assumed, the contractor may find that the project or measure is no longer viable and drop it before TO award. In any design/build contract, the agency loses some design control. Clarify design standards and the design approval process (including changes) and how costs will be reviewed.	
c. M&V confidence: The agency assumes the responsibility to determine the confidence that it desires to have in the M&V program and energy savings determinations. The desired confidence will be reflected in the resources required for the M&V program, and the ESCO must consider the requirement prior to submittal of the proposal. Clarify how project savings are being verified (e.g., equipment performance, operational factors, energy use) and the impact on M&V costs.	
d. Energy Related Cost Savings: The agency and the contractor may agree that the project will include savings from <i>recurring</i> and/or <i>one-time</i> costs. This may include one-time savings from avoided expenditures for projects that were appropriated but will no longer be necessary. Including one-time cost savings before the money has been appropriated may involve some risk to the agency. Recurring savings generally result from reduced O&M expenses or reduced water consumption. These O&M and water savings must be based on actual spending reductions. Clarify sources of nonenergy cost savings and how they will be verified.	
e. Delays: Both the contractor and the agency can cause delays. Failure to implement a viable project in a timely manner costs the agency in the form of lost savings, and can add cost to the project (e.g., construction interest, re-mobilization). Clarify schedule and how delays will be handled.	
f. Major changes in facility: The agency (or Congress) controls major changes in facility use, including closure. Clarify responsibilities in the event of a premature facility closure, loss of funding, or other major change.	
2. Operational	
a. Operating hours: The agency generally has control over operating hours. Increases and decreases in operating hours can show up as increases or decreases in “savings” depending on the M&V method (e.g., operating hours multiplied by improved efficiency of equipment vs. whole-building/utility bill analysis). Clarify whether operating hours are to be measured or stipulated and what the impact will be if they change. If the operating hours are stipulated, the baseline should be carefully documented and agreed to by both parties.	

<p>b. Load: Equipment loads can change over time. The agency generally has control over hours of operation, conditioned floor area, intensity of use (e.g., changes in occupancy or level of automation). Changes in load can show up as increases or decreases in “savings” depending on the M&V method. Clarify whether equipment loads are to be measured or stipulated and what the impact will be if they change. If the equipment loads are stipulated, the baseline should be carefully documented and agreed to by both parties.</p>	
<p>c. Weather: A number of energy efficiency measures are affected by weather. Neither the contractor nor the agency has control over the weather. Should the agency agree to accept risk for weather fluctuations, it shall be contingent upon aggregate payments not exceeding aggregate savings. Clearly specify how weather corrections will be performed.</p>	
<p>d. User participation: Many energy conservation measures require user participation to generate savings (e.g., control settings). The savings can be variable and the contractor may be unwilling to invest in these measures. Clarify what degree of user participation is needed and utilize monitoring and training to mitigate risk. If performance is stipulated, document and review assumptions carefully and consider M&V to confirm the capacity to save (e.g., confirm that the controls are functioning properly).</p>	
<p>3. Performance</p>	
<p>a. Equipment performance: The contractor has control over the selection of equipment and is responsible for its proper installation, commissioning, and performance. The contractor has responsibility to demonstrate that the new improvements meet expected performance levels including specified equipment capacity, standards of service, and efficiency. Clarify who is responsible for initial and long-term performance, how it will be verified, and what will be done if performance does not meet expectations.</p>	
<p>b. Operations: Performance of the day-to-day operations activities is negotiable and can impact performance. However, the contractor bears the ultimate risk regardless of which party performs the activity. Clarify which party will perform equipment operations, the implications of equipment control, how changes in operating procedures will be handled, and how proper operations will be assured.</p>	
<p>c. Preventive Maintenance: Performance of day-to-day maintenance activities is negotiable and can impact performance. However, the contractor bears the ultimate risk regardless of which party performs the activity. Clarify how long-term preventive maintenance will be assured, especially if the party responsible for long-term performance is not responsible for maintenance (e.g., contractor provides maintenance checklist and reporting frequency). Clarify who is responsible for performing long-term preventive maintenance to maintain operational performance throughout the contract term. Clarify what will be done if inadequate preventive maintenance impacts performance.</p>	
<p>d. Equipment Repair and Replacement: Performance of day-to-day repair and replacement of contractor-installed equipment is negotiable, however it is often tied to project performance. The contractor bears the ultimate risk regardless of which party performs the activity. Clarify who is responsible for performing replacement of failed components or equipment replacement throughout the term of the contract. Specifically address potential impacts on performance due to equipment failure. Specify expected equipment life and warranties for all installed equipment. Discuss replacement responsibility when equipment life is shorter than the term of the contract.</p>	