

The Risk, Responsibility, and Performance Matrix (RRPM) – Recognizing and Assigning Risks and Responsibilities



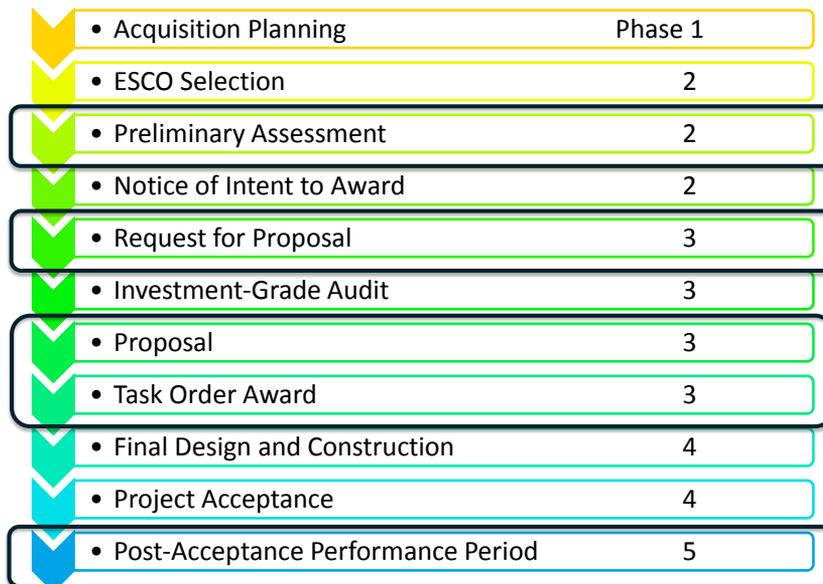
Testing in Oregon, the WET-NZ is an innovative wave energy converter that interacts with all components of the wave to maximize energy capture.

(Photo Courtesy of Justin Klure / Northwest Energy Innovations through NREL Image Gallery.)

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RRPM-1

RRPM topics will surface throughout the project.



RRPM-2

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What is “Risk” in ESPC Context?

- **To ESCO** – chance that guarantee will not be met and shortfall will be identified
 - Will have to pay agency the difference
- **To agency** – chance that savings you are paying for are not fully realized
 - i.e., savings might not exceed payments



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What’s in an ESPC guarantee?

- A specified level of cost savings (one total dollar amount)
- Specified equipment performance (and standards of performance such as temperature and lighting levels)



What *exactly* is guaranteed depends on:

- Who takes risk/responsibility for what in TO
- The M&V plan – how savings will be determined

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The RRPM is a *summary*

of how risks/responsibilities are allocated in the ESPC

To the ESCO — To the agency — Shared

Purpose:

- Education about Risks
 - How contract elements affect costs and savings
 - How to tailor TO to match agency needs
- Structure for decision making
- Documentation of agreements
- Required element of the contract (Attachment J-7)



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Logic and Cost-Effectiveness Drive Responsibility Allocation

- The responsible party plans to cover the costs (ESCO in ESPC price; Agency from savings/budgets).
- Unforeseen costs are paid by the party who caused the costs, or by the party who is responsible for that risk area.
- RRPM risk categories and most most common allocation of risk/responsibility
 - Financial — Usually mixed – Agency and ESCO
 - Operational — Usually Agency
 - Performance — ESCO

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Financial Risks

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

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Construction Costs

- ESPC is a design-build, fixed-price contract, so agency has little risk
- 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



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M&V Confidence



- The agency pays the contractor for M&V services
- Need to balance savings certainty and M&V cost
- Law of diminishing returns applies
- Average annual M&V cost is 3% of annual savings
- Who takes most risk with Option A? The agency.
 - But in many cases this is actually a good business choice for the government

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One-Time Energy-Related Savings

(Implementation-Period Savings/Payments)

- Issues
 - Including one-time cost savings before the money has been appropriated
 - But be careful: an FY appropriation can disappear if project isn't awarded within that FY
 - One-time savings must be based on actual spending reductions
- What to do
 - Clarify sources of non-energy cost savings and how they will be verified

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Delays

- Whoever causes the delay pays for the delay
- ESCO at risk for extra costs if schedule is delayed
- Agency must adhere to review and approval schedules



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Major Changes in Facility

- ESCO can't be held responsible
- Understand that buildings' usage will likely change over two decades
 - Be prepared to modify contract to reflect these changes
 - If a building is demolished, termination for convenience is sensible solution
 - If only one of several buildings in T.O., partial termination may make most sense



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Operational Risks

- Operating Hours
- Loads
- Weather
- User Participation



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Loads and Operating Hours —

Agency Generally Takes These Risks

- Agreeing to operational factors for calculating savings — based on engineering calculations and baseline measurements — is customary
 - Guarantee is met if related requirements are met (performance standards, O&M)
- TOs sometimes specify how baselines may be adjusted, when key changes are anticipated
 - Example: Loads raised by expected occupancy increase

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Example: Operating Hours

- Agency and ESCO value lighting savings based on agreed-to operating hours, measured once in baseline
 - Along with before/after measured sample of fixture wattages
- To minimize risk: Base agreed-to values on measurements, where possible — not assumptions, unverified schedules, or loose observation



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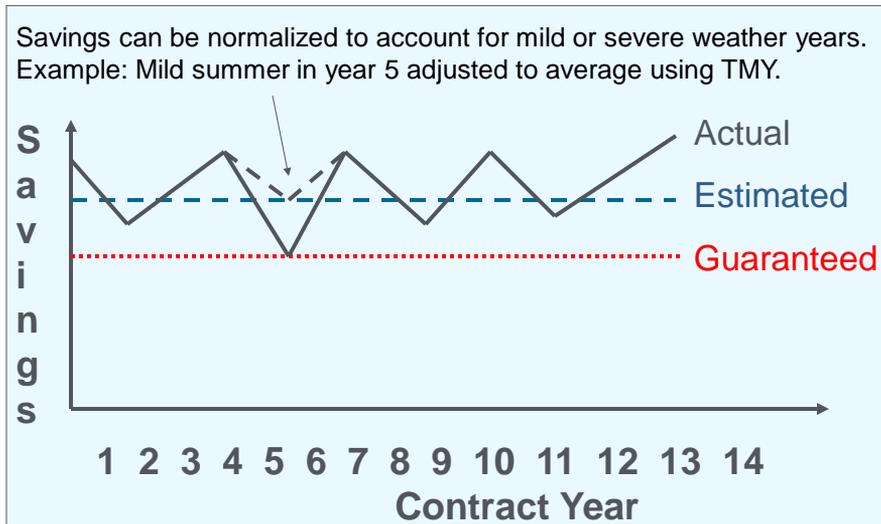
Weather

- Weather dramatically affects loads
- Weather is typically stipulated and normalized based on Typical Meteorological Year (TMY) data
 - Based on 30-year averages
 - Evens out savings shortfalls in mild weather years with excess savings of harsh ones
 - Keeps ESCO on hook for performance but off hook for anomalous weather



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Weather



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User Participation

- Some measures require users to interact with equipment (or at least not override it) for proper operation
- Many task orders specify set points or other requirements
- If a measure does not work because the users do not use something as intended, is the contractor responsible?



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Performance Risk Factors

- Equipment performance
 - Operations
 - Maintenance
 - Equipment repair & replacement
- **By contract, ESCO is responsible for performance**
 - Assurances:
 - Design and performance standards
 - Post-installation M&V
 - Commissioning
 - Defined consequences for substandard performance

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O&M and Repair and Replacement (R&R) are major factors in performance risk

- ESCO has ultimate responsibility for O&M — and assuring guaranteed performance of ECMs
- But day-to-day conduct of O&M and R&R are negotiable
- If ESCO does the work, it assumes all risk (and gets paid for it)
- If agency does the work, it assumes expense and possibly some of the performance risk
 - Non-compliance with O&M and R&R plans and schedules can compromise the guarantee

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Factors to Consider

- Agency may opt to do O&M and R&R
 - Permits more investment
 - Consideration: existing O&M contracts
 - Best for ESCO to do R&R for unfamiliar ECMs (e.g., renewables)
 - If ESCO is responsible for R&R, it will likely assure O&M is done right



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Future Energy Prices — Setting Escalation Rates

- It is customary for agency to accept energy price risk in ESPC
 - Future energy prices are normal agency risk anyway
- There are down sides to both over- and under-estimating future energy prices
 - Over-estimates lead to payments exceeding savings
 - Under-estimates reduce scope and increase interest costs (due to longer project term)
 - Reduced scope leaves site more exposed to higher total energy rates

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Setting Escalation Rates (cont.)

- “Conservative” escalation rate is one that’s accurate – NOT one that’s artificially low
- Solution: FEMP/NIST Energy Escalation Rate Calculator (EERC)



- Calculates avg. escalations given state and term
- Standard for setting escalation rates for federal ESPC and highly recommended by FEMP
- Downloadable from “Resources” section of FEMP’s Web site

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Lessons Learned on RRPM

- RRPM ensures that important risks are addressed and responsibilities assigned
- Dialog fosters mutual understanding of the deal
- Use the RRPM to guide proposal review — details in M&V plan and other parts should not conflict with RRPM
- Don’t take a responsibility that your organization can’t handle well!



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Review

- Q1: What are the two key elements of the ESPC guarantee?
- A: A specified level of cost savings (one total dollar amount) and specified equipment performance (and standards of performance)
- Q2: Who generally takes the risks of loads and operating hours changing?
- A: Agency
- Q3: Name two topics in the financial risk category.
- A: Construction costs, M&V confidence, energy-related (one-time) savings, delays, major changes in facility, interest rates.

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Review

- Q4: Who has ultimate responsibility for ensuring that O&M is done properly?
- A: The ESCO
- Q5: What is the down side of underestimating energy price escalation rates?
- A: Leaving money on the table: Underestimates lead to smaller project scope than could be accomplished and increased interest costs (due to longer project term)
- Q6: How is weather risk usually handled?
- A: Normalized: Weather is typically stipulated based on Typical Meteorological Year (TMY) data. "Normalized" weather is based on 30-year averages and evens out savings shortfalls in mild weather years with excess savings of harsh ones.

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Mississippi River flooding, eastern Iowa, July 2011

See example RRPM in Workshop Handbook.

Next: Phase 3 – Project Development ►

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