Maximizing Value in 3rd Party Financed Energy Projects - Avoiding Risks & Pitfalls

U.S. DEPARTMENT OF ENERGY

DOE Sustainability Performance Office

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Energy Savings Performance Contracts

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What is an ESPC?

An Energy savings performance contracts (ESPC) is a partnership between an agency and an energy service company (ESCO).

ESPCs are the most common form of 3rd party project financing. They allow federal agencies to procure energy savings and facility improvements with no up-front capital costs or special appropriations from Congress.

This information and additional training on the ESPC process is available through FEMP at:
https://www.energy.gov/eere/femp/energy-savings-performance-contracts-federal-agencies

How ESPC's Work

Energy savings performance contracts (ESPCs) are a partnership between a federal agency and an energy service company (ESCO). After being selected for a potential award, the ESCO conducts a comprehensive facility energy audit and identifies improvements to save energy. In consultation with the agency, the ESCO designs and constructs a project that meets the agency's needs and arranges financing to pay for the project.

The ESCO guarantees that the improvements will generate sufficient energy cost savings to pay for the project over the term of the contract. After the contract ends, all cost savings accrue to the agency. The agency is responsible for contract administration for the entire term of the contract

This information on ESPCs is available through FEMP at:
https://www.energy.gov/eere/femp/about-federal-energy-savings-performance-contracts

SWOT Analysis for Energy Savings Performance Contracts

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STRENGTHS	WEAKNESSES
• No need for line item or special appropriations from Congress to the agency. • Spreads cost over time for capital acquisition, potentially avoiding delay from line-item processes. • ESCOs are required to guarantee the energy savings annually through measurement and verification.	• Higher total agency costs as result of financing. • Long lead time, often as long or longer than appropriations cycles. • Complex projects require specialized training to understand the downstream implications of contract negotiations. • Contracts may not include equipment maintenance, creating conflict over guarantees. • Minimal life expectancy of equipment post-contract. • High contracting staff turnover when compared to the life of contract.
OPPORTUNITIES	**THREATS**
• Potential access to equipment/system upgrades and replacements. • Access to energy management upgrades. • Include equipment maintenance to maintain performance and avoid squabbles • FEMP provides training, resources, and tools to help minimize risks.	• Due to invalid assumptions (e.g., equipment life, escalation rates, simulations) the agency may achieve energy savings but not cost savings. • Changes in program mission and/or operations during the life of contracts cut savings. • Closure of site or facility during the life of contract. • Potential increase to deferred maintenance if energy price escalation overestimated

2015 GAO Audit

- In 2015, the Government Accountability Office (GAO) published an audit on additional actions needed to improve Federal oversight of Energy Savings Performance Contracts (ESPCs).
- The audit examined the use of ESPCs at seven agencies, including the Department of Energy (DOE) and **found that all seven agencies conducted insufficient oversight and evaluation of their projects.**
- GAO recommended that agencies report more clearly on the savings, improve training, and perform systematic evaluations of portfolios.
- In response to these recommendations, FEMP published an agency portfolio report in 2017 which was replaced by quarterly IDIQ ESPC Life of Contract (LOC) reports beginning in January 2018.

GAO's Energy Savings Performance Contracts report can be found at: https://www.gao.gov/assets/680/670851.pdf

FEMP's IDIQ ESPC Life of Contract (LOC) Reporting Process

- FEMP compiles data submitted by the ESCOs in the measurement and verification (M&V) reports.
- FEMP validates the M&V plan and calculates impacts to savings based on the terms of the contracts—NOT the actual market conditions.
- The LOC report includes the following components:
  - Agency level project performance and oversight
  - Site performance issues
  - Site M&V report survey summaries
  - Project contacts
- For new IDIQ contracts (Version 4), the M&V reports require a table that shows the ESCO's estimates of specific ECM savings impacts to the guaranteed savings.

FEMP's IDIQ ESPC Life of Contract (LOC) Reporting

- At DOE, there were 16 active ESPC contracts as reported in the FY2019 3rd Quarter LOC Report
- Nine have encountered issues involving savings such as ECM maintenance or changes in operations.
- According to the stipulated terms of the contracts, DOE has received **$82,845,018** in savings.
- DOE has spent **$79,440,074** in planned contractor payments
- The estimated savings impact (as compared to the contract terms) due to DOE project performance issues is -$2,130,248

Contract and savings values provided by FEMP's 3rd Quarter LOC report for FY2019.

Potential Risks

- Longer contracts allow more opportunities for things to go wrong
- Escalation rates assumed in project exceeding actual market prices can result in unrealized savings—meaning
- DOE responsibility for operations and maintenance opens the door to conflict over the source of unrealized savings
  - Latent design or installation defects
  - Life of contract changes in mission, market rates, etc.
  - Equipment obsolescence
  - Facility modifications which may limit competition
  - Equipment failure post-warranty period
- Lack of familiarity with economic modeling and life-cycle cost analysis
- Termination costs can lock agency into must-pay contracts

Idaho National Laboratory Case Study

Presented by

Chris Ischay/Ernie Fossum

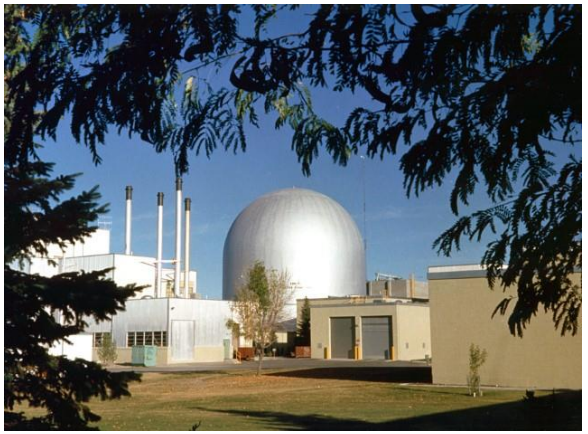
INL ESPC Project #2

Lessons Learned

Chris Ischay, Sustainable INL Program Lead

INL MFC ESPC Project

- INL's 2nd ESPC Project
- Materials and Fuels Complex (MFC)
- Primary Need: Replace a 50-year-old boiler/steam distribution system
  - Capital Cost: *$33,581,000*
  - Total First-year Energy Cost Savings: *$1,722,000*
  - Simple Payback: 9.2 years
  - Contract Length: 16 years
- Five Energy Conservation Measures (ECMs)
  - ECM 01 **Lighting Upgrades** *$1,874k*
  - ECM 02 **HVAC Improvements** *$22,199k*
  - ECM 03 **Compressed Air Optimization** *$1,230k*
  - ECM 04 **Digital EMS Controls** *$7,521k*
  - ECM 05 **Solar Transpired Heating** *$757k*



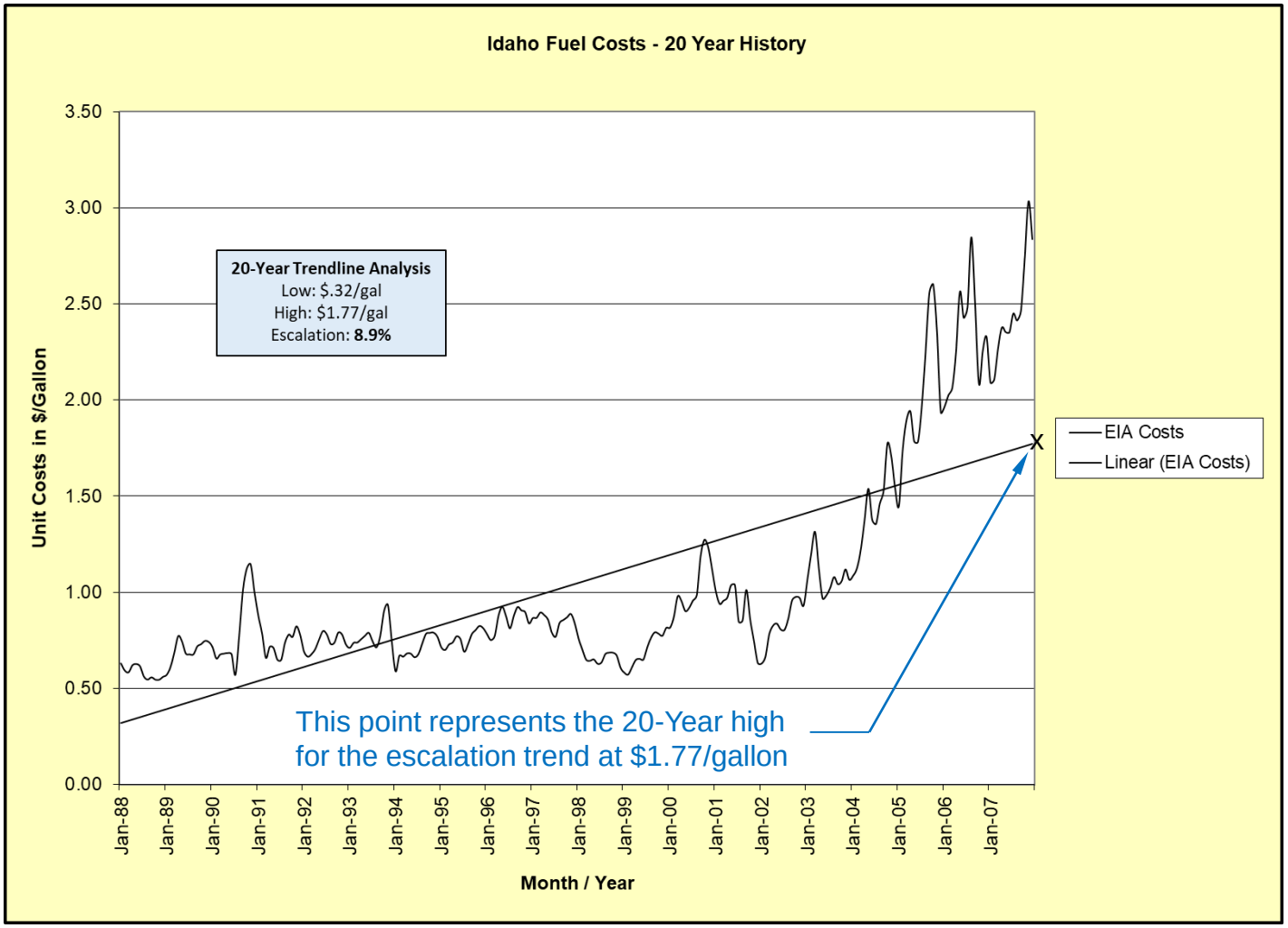
Project Need and Benefits

- Much-needed project to replace an aging steam heating system with new smaller electric boilers and a significantly reduced steam distribution system
- 50-year-old boilers were still operating effectively, but replacement parts were no longer available
- New equipment included boilers, air compressors, HVAC systems and controls, lighting, and solar walls where no funds were available at the time to perform the updates.
- This project was unique as it involved switching fuel from #2 fuel oil to electricity for the largest of the energy conservation measures (ECMs)
- Solid project that has consistently delivered guaranteed energy savings

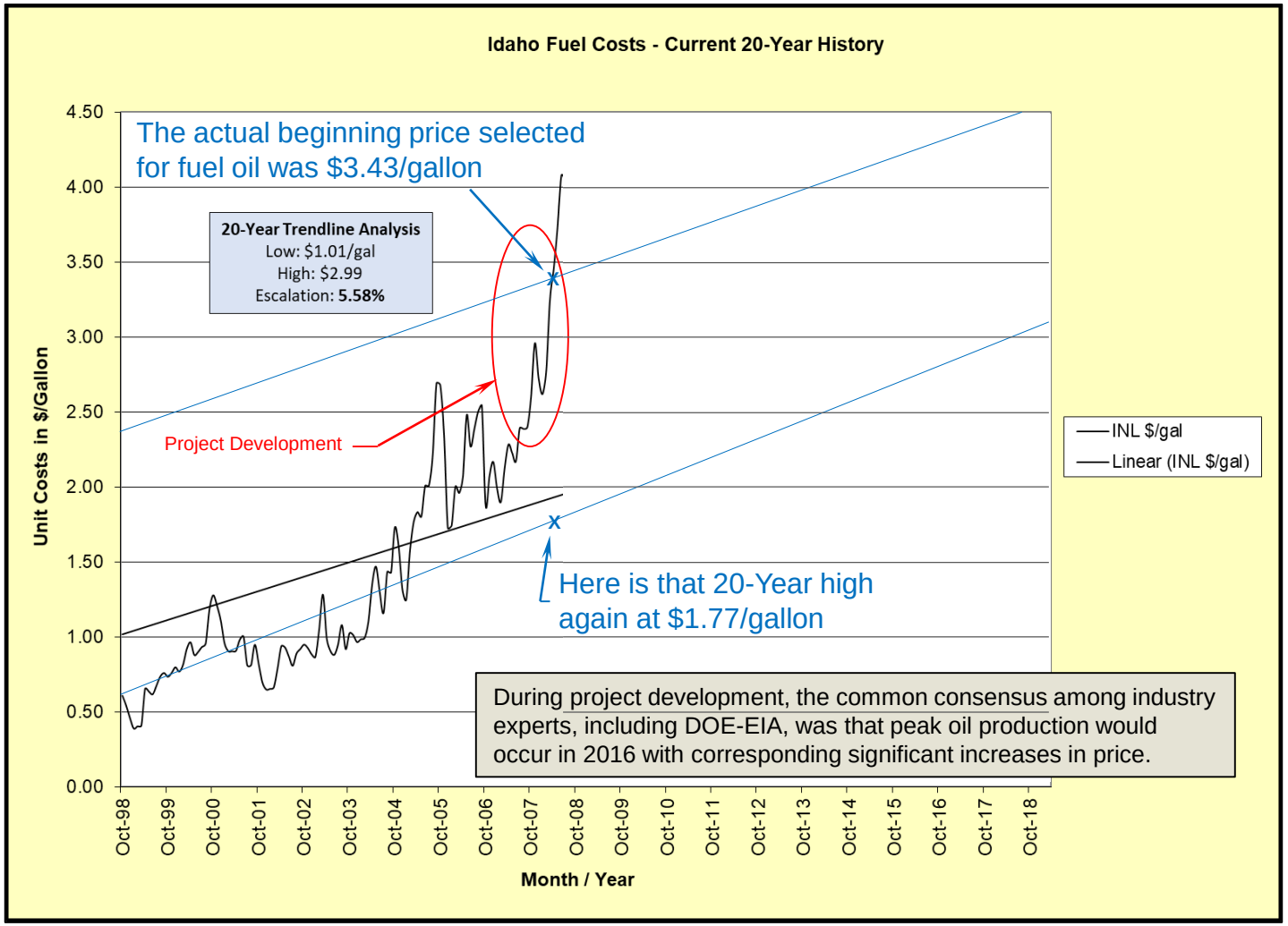
Project Issues

- High utility starting price and escalation rate resulted in calculated energy cost savings too high to be realized, likely through the remainder of the contract term
- Annual payment consistently exceeding energy cost savings
- Energy savings, not cost savings are guaranteed
- Several installation issues and performance issues became INL responsibility due to INL's desire to perform all M&O for the project
- INL incurred an additional $9M in costs for internal project development and on-site support during construction.

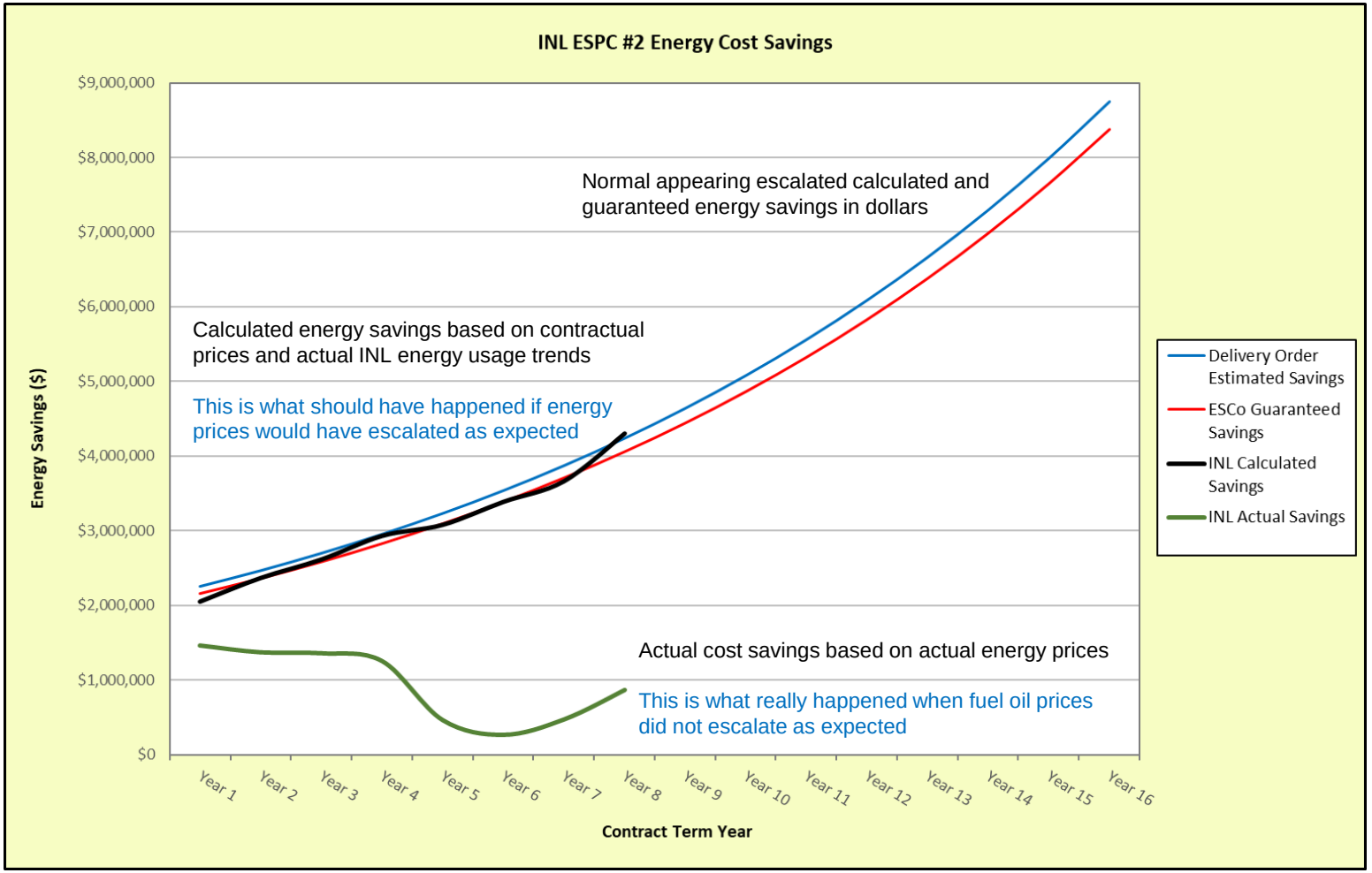
Fuel Oil Price 20-Year History



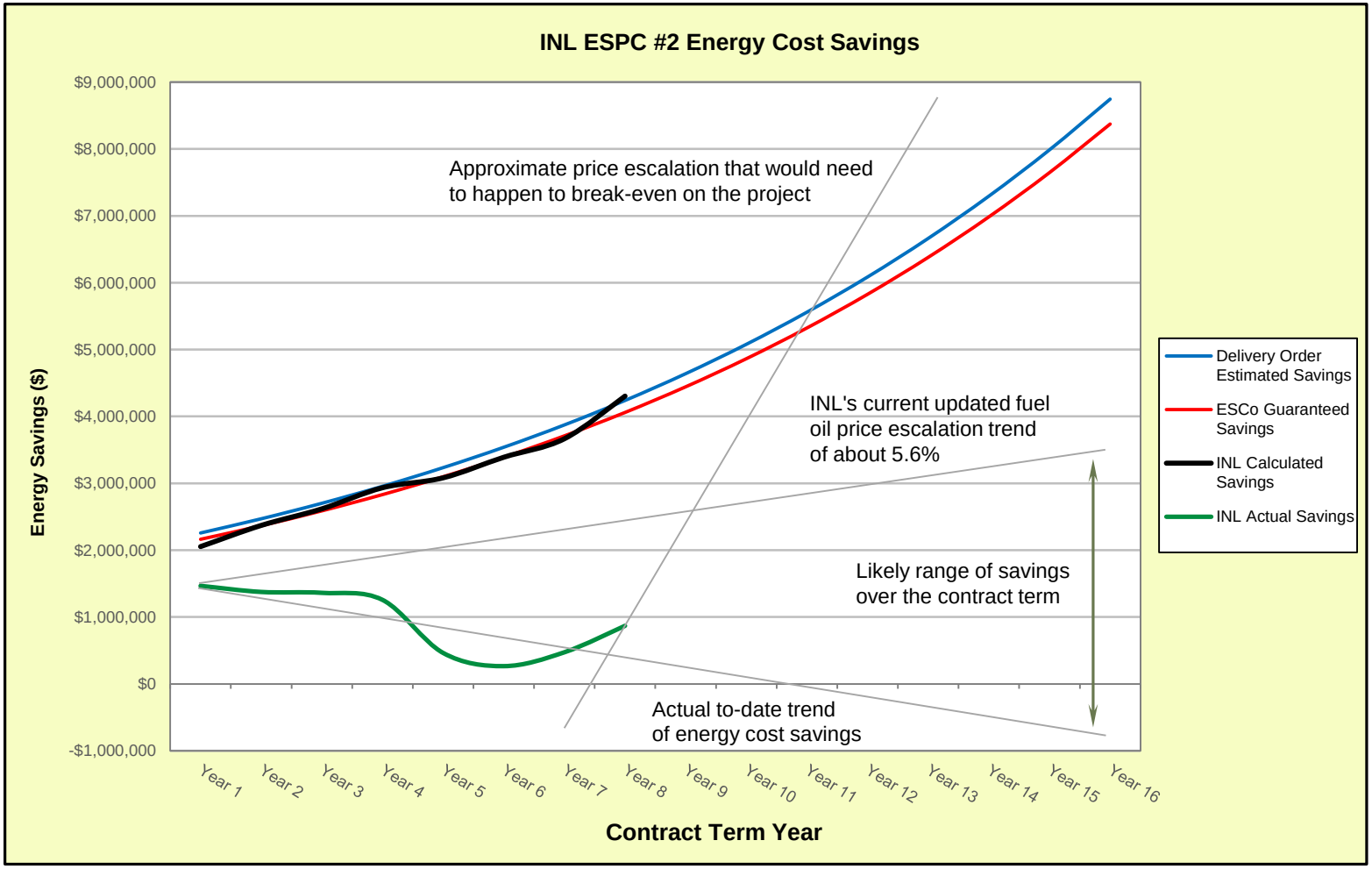
Updated Fuel Oil Price 20-Year History



Energy Cost Savings (Estimated vs Realized)



Energy Cost Savings (Forecast)



INL ESPC Project #2 Lessons Learned

The largest factors determining both savings for the project and income for the ESCo are the **beginning price** and the amount it is **escalated**

- Select a conservative beginning price for whatever energy source you plan to escalate over the life of the project
- Use a trended or average price rather than the highest possible price – Resist the push for higher beginning energy prices and escalation rates
- History does not guarantee future results, even if the historical data is extensive and shows consistent trends
- Remember that the ESCo guarantees energy use savings, not cost savings

  If energy prices are contractually stipulated, there is no guarantee that the project will ever pay for itself.

Questions and Thank You…

Sustainable INL

Chris Ischay – Sustainable INL Program Manager
(208) 526-4382 christopher.ischay@inl.gov

Maryl Fisher – Senior Energy Strategist
(208) 526-8340 maryl.fisher@inl.gov

Ernest Fossum – INL Energy Manager
(208) 526-2513 ernest.fossum@inl.gov

Veteran Affair's Lessons Learned presented by

Nathan Pennington

Veteran Affairs Perspective

- Intro – Nathan Pennington, Chief Contracting Officer for ESPC/UESCs for the VA.
- 30 plus ESPC/UESCs awarded in the last 5 years for over $1B in savings under contract.
- VA ESPC IDIQ to be awarded in FY19 for SDVOSBs with a $750M Ordering Ceiling
- PF IDIQ awarded in FY18

Veteran Affairs Perspective

- VA ESPC/UESC Best Practices
  - Central Contracting office and Program Office for ESPC/UESCs
  - Customer Service Agreement – High level approval and includes various questions to make sure a project is wise.
  - Investment Grade Audit (IGA)/FS Checklist – Standardization and a way to capture lessons learned
  - Negotiations Checklist
  - Alternate CORs and Technical Monitors
  - Reserve accounts for asbestos abatement and interconnection agreement studies – Prevents delays
  - Competitive selection of ESCOs on UESCs
  - Overhead & profit negotiation before IGA
  - Post Acceptance Inspection and Engagement – Focus on Savings and Knowing your obligations and the ESCOs

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#1 Strategy to Mitigate Risk: SHORTER CONTRACTS!

- Virtually all the risks above have a greater probability of occurring or greater loss the longer the contract
  - Murphy has more chances to show up and insist that his law be honored
  - Escalation is like compound interest; the longer it goes on, the faster it rises
  - Changes in mission are more likely over time
  - More opportunity for dispute over O&M or liability to the agency
  - More opportunity for equipment obsolescence

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#2 Strategy to Mitigate Risk: Test Assumptions

- Use sensitivity analysis to explore "What if…"
  - …energy prices change?
  - …Congress cuts the mission budget?
    - these contracts are "must pay," meaning that across-the-board cuts will not apply to them
  - …Congress appropriates a windfall in the infrastructure budget?
    - Termination or buydown provisions should be considered a real possibility, especially if mission change occurs
  - …technology lifetime or competing technology assumptions are incorrect?

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#3 Strategy to Mitigate Risk…

…to you!

Brief Management Thoroughly on all Risks

- All contracts contain risks, but financed projects contain risks that may not be familiar to management
- Benefits of financing (lower upfront cost) should be explained and weighed against risks and cost of financing
- Each risk—its consequences as shown with sensitivity analysis, and its probability—should be covered with management

Mapping of Risks to Mitigation Strategies

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Mitigation Strategies \ Risks	High Escalation Rates	Ownership of O&M Costs	High Termination Costs	Equipment Obsol-escence	Latent Design/ Installation Defects	Changes in mission, facility usage, etc.
Minimize the length of the contract	✓	✓		✓		✓
Test scenarios	✓	✓	✓	✓	✓	✓
Ensure stakeholders understand risks and responsibilities	✓	✓	✓	✓	✓	✓
Use conditional acceptance clauses		✓			✓	✓
Set up reserve fund		✓	✓			✓
Economic modeling and life-cycle cost training	✓		✓	✓		✓
Utilize checklists at key process steps	✓	✓	✓	✓	✓	
Document issues for audit and repayment		✓		✓	✓	

Breakdown of Risks & Mitigations

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RISK: High Escalation Rates

Estimates of future prices invariably go up, but in reality, energy prices are notoriously volatile. While including escalation is tempting because it allows the purchase of more assets, the fundamental risk is that the government is taking a commodity bet on volatile future energy prices.

MITIGATION:

- Consider no or little escalation in energy price assumptions. Underestimation increases savings that accrue to the agency rather than the ESCO.
- Consider negotiating flat payments throughout the term.
- Re-compete new work or re-baseline to ensure that savings reflect market trends
- Select starting prices for escalated energy prices that are historical averages, not historical highs.
- Economic modeling and life-cycle cost training for engineering, management and contracting staff; require sensitivity analysis early in the business case analysis
- Utilize checklists at key process steps

Breakdown of Risks & Mitigations

RISK: DOE Ownership of O&M Costs

While newer equipment will sometimes require less maintenance, it is a rare case where there is a reduction in workforce or termination of a maintenance contract as a result of new equipment being installed. Oftentimes the agency will incur additional and unforeseen costs, further minimizing observed savings.

MITIGATION:

- Consider putting all operations and service into the contract to avoid disputes.
- If the agency is responsible for O&M of ESPC-installed equipment, ensure that equipment is of high quality.
- Understand warranty periods for key components and procedures for claims
- Have key parties sign service agreements to ensure that they understand their responsibilities with respect to the project.
- Set up reserve fund at the outset
- Use conditional acceptance clauses
- Utilize checklists at key process steps

Breakdown of Risks & Mitigations

RISK: High Termination for Convenience Costs

Termination for convenience clauses are written in ways that obscure the risk to the government and make it extremely cost prohibitive to end the contract before the term expires.

MITIGATION:

- Use scenario planning to test DOE getting a decrease in appropriations from Congress and different exit strategies
- Consider setting up a contingency fund
- Economic modeling and life-cycle cost training for management and contracting staff
- Utilize checklists at key process steps

Breakdown of Risks & Mitigations

RISK: Changes in mission, facility usage, etc.

During life of the contract it is possible that the program or agency can choose to (or be forced to) change its mission due to circumstances that were unforeseen. If the use or operations (hours, occupancy, set points) of the facility changes, the savings may not be realized, yet the government is contractually obligated to continue payment.

MITIGATION:

- Use scenario planning in design phase to check assumptions
- Do not include facilities with a high probability of closure, transfer or mission change.
- Incorporate re-assessment of ECMs prior to transfer of facility ownership.
- Set up reserve fund at the outset
- Use conditional acceptance clauses
- Utilize checklists at key process steps

Breakdown of Risks & Mitigations

RISK: Equipment Obsolescence

Equipment installed may not last the length of the contract, or may itself be ready for replacement at the end of the contract term. This leaves little room for the agency to receive the full benefits and savings of the implemented ECM.

MITIGATION:

- Include O&M by ESCO in the contract
- Benchmark anticipated life of capital assets as well as prices
- Include equipment “refresh” as necessary
- Understand warranties and claim processes at commissioning

Breakdown of Risks & Mitigations

RISK: Latent Design or Installation Defects

There are often unforeseeable flaws to equipment, design, or planning which may affect the potential energy and/or cost savings observed by the agency. These shortcomings may be caused by poor planning in conjunction with site operations or poor equipment quality, and the responsibility may fall on the agency, the ESCO, or both.

MITIGATION:

- Use What if…?" scenarios in design phase to identify risks or possible "out of specification" uses.
- Use conditional acceptance clauses
- Consider an internal contingency fund
- Document issues with contractor performance for possible repayment
- Utilize checklists at key process steps

Other Best Practices to Avoid Pitfalls

1. Do not consider the sunk costs to develop a project as the primary motivation to continue with project development and acceptance of a project that is not in the best interests of the Agency.
2. Require that ESCO's compete on mark-up percentages.
3. Design and use available checklists for Investment Grade Audits, Project Acceptance, etc.
4. During the life of contract, document changes in mission, facility usage, etc. to prepare for audits and lessons learned.
5. Establish a centralized team of contracting officers that handle alternate financing projects.

Summary

In summary, 3rd party financing can be beneficial if done correctly. Having full knowledge of the potential risks will assist in ensuring a smooth and fair contract to both the agency and the ESCO.

Main Takeaways

#1 Strategy to Mitigate Risk:
SHORTER CONTRACTS!

#2 Strategy to Mitigate Risk:
Test Assumptions

#3 Strategy to Mitigate Risk…

…to you!

Brief Management Thoroughly on all Risks

Contact Us!

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Thank you for your time!

Please feel free to provide SPO with any additional feedback at sustainability@hq.doe.gov or give us a call at (202)-586-8645.