U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

FEMP Federal Energy Management Program

Best Practices for ESPC Portfolio Review

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Contact

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Preface

This report is a product of the Federal ESPC Steering Committee (FESC) Working Group. The information provided within this document serves to highlight best practices for review of a portfolio of federal energy savings performance contract (ESPC) projects. The document aims to outline potential elements of a systematic approach to evaluating the performance of an agency's ESPC portfolio as a whole, in addition to the performance of individual projects within the portfolio. Agencies may consider utilizing the approaches outlined within this document in combination with the agency's determined policy for review of ESPC project portfolios.

Definitions

Energy Conservation Measure (ECM): Measures that are (1) applied to a federal building; (2) improve energy efficiency; (3) are life cycle cost effective; and (4) that involve energy conservation, cogeneration facilities, renewable energy sources, improvements in operations and maintenance, or retrofit activities.

Energy Savings Performance Contract (ESPC): A multiyear, firm fixed-price contract between a federal agency and an energy service company (ESCO) solely for the purpose of achieving energy savings and benefits ancillary to that purpose, with a term not to exceed 25 years for the provision of supplies or the performance of services for the design, acquisition, installation, testing, measurement and verification, and, where appropriate, operation, maintenance, repair, and replacement, of an identified energy conservation measure, water conservation measure, or series of energy conservation measures or water conservation measures at one or more locations.

Escalation Rate: The rate of change in price for a particular good or service. Under an ESPC, an escalation rate is used to determine annual contractor payments, which are based on projected annual energy cost savings.

Guaranteed Savings: The value of energy and energy-related cost savings contractually agreed upon to be delivered by the ESCO from the measures implemented under an ESPC project. In federal ESPCs, guaranteed energy and energy-related cost savings are established on an annual basis.

Measurement and Verification (M&V): the process of measuring and verifying energy, water, and related cost savings.

Performance Period: The period after government acceptance of the ESPC project where by the energy service company (ESCO) delivers the savings and equipment performance, as contracted, and conducts the annual measurement and verification (M&V) activities described in the M&V plan. Through witnessing of the ESCO's annual M&V activities and review of the ESCO's annual M&V report, the government ensures that savings guarantees are met. The government also performs the operation and maintenance functions specified in the contract during this period.

Risk, Responsibility, and Performance Matrix (RRPM): A document that assigns the risk, responsibility, and performance of various responsibilities of an ESCO's proposed approach under an ESPC.

Verified Savings: The value of energy and energy-related cost savings delivered by the ESCO from the measures implemented under an ESPC project as determined under the contractually agreed upon Measurement and Verification (M&V) plan. In federal ESPCs, verified energy and energy-related cost savings are determined on an annual basis.

1. Introduction

Energy savings performance contracts (ESPCs) have become an effective tool for financing energy projects in both federal and non-federal facilities. The U.S. Department of Energy's (DOE) Federal Energy Management Program (FEMP) has been providing project support and training to federal agencies since 1996. As federal agencies have implemented projects, their acquisition teams and FEMP have taken note of lessons learned and best practices, which over time have been incorporated into the DOE Indefinite-Delivery, Indefinite-Quantity (IDIQ) ESPCs, FEMP ESPC training, and FEMP project assistance.

This document highlights current best practices that agencies may consider using in combination with an agency's determined policy in reviewing their portfolio of ESPC projects. This best practices document is not all encompassing and does not replace other FEMP services that include evaluation and discussion of best practices, such as services from FEMP Federal Project Executives (FPEs) and Project Facilitators (PFs).

Agencies may use this document in addition to all of FEMP's ESPC resources in awarding and maintaining high-quality and high-value ESPC task orders (TOs). FEMP ESPC guidance, contract document templates and examples, and other informational resources are available at http://www1.eere.energy.gov/femp/financing/espcs_resources.html.

This portfolio review best practices document aims to outline elements of a systematic approach to evaluating the performance of an agency's ESPC portfolio as a whole, in addition to the performance of individual projects within the portfolio, by assessing:

- Achievement of annual guaranteed savings in accordance with contract terms
- Identification of impacts to a project's savings and required corrective actions
- Considerations for contract modification to address site changes affecting ECM performance
- Documentation of agency completion of contract responsibilities and oversight.

This document presents factors that agencies may consider and evaluate as part of a performance contracting portfolio review to determine if additional resources and/or project modifications are required based on their agency and/or organizational policies. Agencies should consult with the contracting officer and agency counsel on matters of modifications to ESPC contracts. Users should take into account the performance and net benefits of the entire portfolio when determining if project level actions are warranted to a given performance aspect of an ESPC project.

Section 10 of this document contains an example of a form for documenting a portfolio review summary of findings and the planned action for each topic covered in this best practices document. In addition, Appendix A contains a template for structuring a portfolio report consistent with the review approach outlined in this document.

Agencies are encouraged to reach out to FEMP with any questions pertaining to this guidance.

2. Portfolio Summary

A comprehensive portfolio-level review would consist of gathering the contractual status of all previously awarded ESPC projects, identifying those that are (1) under construction, (2) in the performance period ("M&V Phase"), (3) have completed their contract term, (4) or were terminated or canceled before the end of the contract term. Additionally, collection of current and historical performance of all awarded ESPC projects should include a calculation of the cumulative guaranteed and verified savings, both at the individual project

and portfolio-wide levels. Guaranteed and verified savings are provided in an annual measurement and verification (M&V) report from the Energy Services Company (ESCO) responsible for each ESPC project. Viewing the cumulative savings across the history of ESPC projects and the portfolio will provide an opportunity to assess the broader overall benefits of the agency's performance contracting efforts and aid in identifying trends in the performance or management of projects on a historical basis.

3. Project Performance

At a minimum, portfolio review will require a compilation of the current performance findings for all projects actively in the performance period. This will include collecting the guaranteed and verified savings data from the most recent M&V reports from the ESCOs. Additionally, each project should be assessed for the following:

1. Does the verified savings meet or exceed the guaranteed savings in accordance with the M&V Plan for the project?
2. For cases where the verified savings has not met the guaranteed savings and the ESCO is responsible for the shortfall:
    a. Has the ESCO identified and implemented a corrective action to restore savings?
    b. Was/will the invoice payment to the ESCO adjusted to offset the lost savings?
3. Has the ESCO documented instances where agency action has impacted energy and energy-related cost savings?
    a. Example: Agency removes building with ECMs, or fails to perform agreed upon maintenance, thus impacting energy and energy-related cost savings.
    b. **NOTE:** ESCOs may not capture agency impacts to savings within the "verified savings" value that is reported, as such impacts are typically outside of agreed upon terms within M&V plan and Risk, Responsibility and Performance Matrix (RRPM).
4. For cases where the agency has negatively impacted the energy and energy-related cost savings:
    a. Does the agency have a corrective action to restore the savings?
    b. If savings will not be restored, the agency should consult the project Contracting Officer and agency counsel about taking action to modify or terminate the ESPC.
5. Annual Operation and Maintenance (O&M):
    a. Where provided by the ESCO, is the ESCO performing O&M as set forth under the contract? If not, has this been communicated to the ESCO? Has a corrective action been developed and implemented by the ESCO?
    b. Where provided by the agency, is the agency performing O&M as set forth under the contract? If not, has the agency developed and implemented a corrective action?

4. Life of Contract Management

As part of an effective approach to administration and management of the ESPC portfolio, the agency should evaluate its "life of contract" approach with respect to each project and the personnel supporting the agency's performance contracting efforts. Detailed FEMP guidance on developing a life of contract plan for each project in your ESPC portfolio can be found at: http://energy.gov/eere/femp/downloads/doe-espc-life-contract-plan-template. As part of a portfolio review, elements to be assessed and questions to be considered would include:

1. Is the staff administering contracts (Contracting Officer, Contracting Officer Representative, Site Energy Manager) sufficiently trained in ESPCs? If not, plan for taking FEMP's ESPC contract administration courses.

2. Has the Contracting Officer designated a primary contact that is responsible for maintaining continuity of documentation and awareness of the ESPC project throughout the performance period?

3. Is the project audit-ready? Review a checklist of contract documents on file for each project.

4. Confirm that agency staff are witnessing annual ESCO M&V activities and verifying compliance with the contract's M&V plan.

5. Confirm that agency staff are reviewing annual M&V report and providing notification to the Contracting Office that the report was received, reviewed and approved and noting any ESCO shortfalls to the guarantee that require invoice adjustment.

6. Are ESCO payments being made in a timely manner?

5. Interest Rates

Since federal performance contracts may have a maximum contract period of 25 years and ESPCs are frequently structured with terms of 17-20 years, market interest rates may vary significantly over the performance period of any contract or task order. When the interest rate on a contract is significantly higher than the current market rates and sufficient time remains on the contract, the Contracting Officer may wish to explore with the ESCO whether debt modification is appropriate and whether the ESCO is willing to explore modifications to the ESPC agreement to benefit both parties. Keep in mind that ESCO and financier costs associated with restructuring the debt would likely be incurred and need to be considered as part of an assessment of potential savings from a restructuring effort.

In considering the impact of debt modifications on ESPCs, it is important to recognize that ESPC financing arrangements are between the ESCO and a third-party financier – the Government is not a contractual party. Responsibility therefore rests with the ESCO to initiate communication with its financier regarding a debt modification. FEMP guidance related to the topic of refinancing, restructuring, or modifying loan agreements entered into by an ESCO under a federal ESPC can be found on the DOE FEMP website at the following link: energy.gov/sites/prod/files/2013/10/f3/1_4_idiqrefinance.pdf.

6. Utility Rates

Federal agencies may rely on estimated energy and water tariffs in determining projected energy savings. To the extent that future energy or water rates are known at the time of contract formation, the calculation of ESPC payments should rely on known values. If future energy or water rates over the term of an ESPC are unknown at the time of contract formation, federal agencies are authorized to rely on estimated values in determining the energy or water tariffs. For additional guidance on ESPC utility rate estimations see Federal ESPC FAQ on Scope of 42 U.S.C. § 8287, *et seq.* (energy.gov/sites/prod/files/2016/12/f34/espc_faq_42_usc.pdf) and FEMP's guidance on utility rate estimations and weather normalization in an ESPC (energy.gov/sites/prod/files/2013/10/f3/espc_utility_rates.pdf).

FEMP's Energy Escalation Rate Calculator (EERC), a cost calculator for estimating escalation rates in performance contracts, was developed under a FEMP contract with the National Institute of Standards and Technology (NIST) to develop life-cycle costing tools for the purposes of federal energy management. EERC

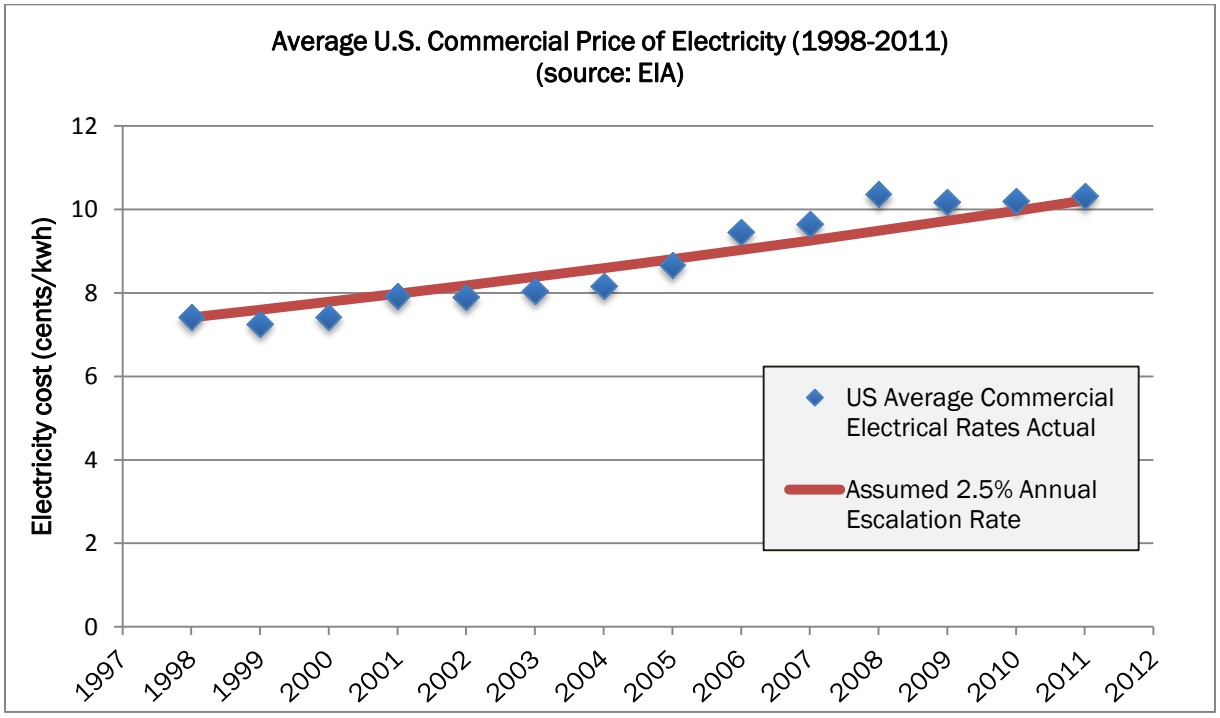
incorporates the projections for changes in future energy costs in various regions of the country based on energy price projections from the Energy Information Administration (EIA). It also incorporates a long-term inflation rate that is annually calculated by NIST. A 2015 study by Lawrence Berkley National Laboratory[1] found that EIA's analysis of its historical predictions show a systematic under prediction of energy prices and thus the EERC tool likely has a tendency to under-predict escalations.

Performance contracting escalation rate assumptions, including those generated by the EERC tool, are typically applied as a consistent year-over-year percentage increase. As seen in the plot of average US commercial electricity rates in the chart below, a project with an assumed electric utility rate escalation of 2.5% annually would appear to have over-estimated electricity rates in 5 of the first 7 years of the contract. Conversely, electricity rates would appear to have been underestimated for 5 out of the last 6 years of the contract. The actual electrical utility rate increased by an average of 2.5% over the 13-year period. This example illustrates the importance of agencies being authorized to estimate future energy prices; otherwise there would be a significant increase in the burden to administer performance contracts with little benefit.

Some ECMs may warrant additional monitoring, such as combined heat and power (CHP) and biomass generation with the capability of fuel switching (i.e. the site already has the ability with existing capacity to choose between fuel types and/or equipment to meet site energy needs). Additional monitoring may be required to determine the most cost effective operation of the equipment based on current fuel prices. Consider the following two examples:

1. Based on current natural gas rates it may be determined that it is more economical to run a boiler on natural gas than the originally intended biomass.

2. Based on current electricity prices it may be determined that it is more economical to purchase grid electricity than to utilize on-site generation via a CHP ECM.



[1] P. Coleman, 2015, Escalation Rates in Energy Savings Performance Contracts, https://buildings.lbl.gov/sites/all/files/lbnl1004319.pdf

7. Contract Modification or Termination due to ECM Performance

ESPCs are commonly structured as long-term task orders, often exceeding 17 years in length and thus may be affected by site changes. Changes to site conditions such as equipment removal, replacements, demolitions or other changes in usage of ECMs installed as part of the performance contract will require assessment by the agency to determine whether a modification, termination, or cancelation of the task order is warranted.

7.1 Underperforming ECMs

For ECMs that (1) produce savings that fall short of guaranteed savings and (2) will not have corrective action implemented to restore savings to levels that eliminate the shortfall, the agency CO may determine that a contracting action is required to modify or terminate the contract with respect to those ECM's responsible for the shortfall in savings.

FEMP's M&V reporting template provides a best practice for reporting impacts to savings (positive and negative) as part of Tables E3 and E4 of the Annual M&V Reporting template (energy.gov/sites/prod/files/2016/01/f28/mv_guide_4_0.pdf - See Appendix E-1).

7.2 Removed or Decommissioned ECMs

In rare circumstances, mission needs may require the demolition or decommissioning of a building or buildings where an ESPC has been implemented or necessitate the removal of ECM equipment by the government. In cases such as these, it is suggested that the agency Contracting Officer promptly initiate a contracting action to modify or terminate the portion of the contract pertaining to such ECMs that are no longer in place or are no longer functional.

In taking action to modify, terminate, or cancel all or part of an ESPC, agencies should consult the project Contracting Officer and agency counsel.

8. Savings Beyond Contractual Agreements

Net cost savings to the government in federal ESPC projects are generally believed to be small, given that most of the guaranteed energy and energy-related cost savings accruing over the life of the contract are paid to the ESCO. However, this belief is based on the assumption that the guaranteed savings are more or less equal to the actual avoided costs associated with the project. ORNL's report "Beyond Guaranteed Savings: Additional Cost Savings Associated with ESPC Projects" (info.ornl.gov/sites/publications/Files/Pub41816.pdf) outlines four principal sources of cost savings that are not captured in the calculation of the guaranteed savings:

1. The ESCO does not guarantee all of the savings it estimates;

2. The useful life of the equipment extends beyond the performance period of the ESPC;

3. National Institutes for Standards and Technology (NIST)/Energy Information Administration projections for energy price escalation have been very conservative with respect to actual price increases; and

4. The baseline case that forms the basis of the guaranteed savings calculation assumes that the baseline equipment would maintain the same efficiency and require the same level of maintenance for a period of time equal to the performance period of the ESPC.

As part of a comprehensive portfolio review, an agency may wish to consider some of the factors outlined in the ORNL paper when evaluating the full benefit of an agency's ESPC efforts.

9. Future ESPC Opportunities

As part of ongoing ESPC planning, an annual review of the EISA 432 Compliance Tracking System (CTS) data can aid in determining new opportunities for ESPCs. CTS data is available at energy.gov/eere/femp/eisa-federal-covered-facility-management-and-benchmarking-data

Questions and elements to consider in expanding the agency's ESPC portfolio include:

1. Have sites already identified potential cost effective energy/water conservation projects?
2. Review opportunities for bundling multiple sites under a single task order award.
3. Use FEMP's ESCO Selector tool and explore a new ESPC. Available at hyperion.ornl.gov/noo/
4. Consider ESPC ENABLE, which is designed to permit a standardized and streamlined procurement process for small federal projects to install targeted energy conservation measures (ECMs) in six months or less. ESPC ENABLE can also help agencies address buildings within a site that have not been addressed under previous ESPC efforts at the site.

10. Portfolio Review Findings and Plan of Action

The final step of the agency's portfolio review should be to document each of the elements considered across the entire review along with a summary of findings and plan of action for each of the major categories and elements outlined in this best practices document. The following table offers a sample format for documentation.

Portfolio Review Findings and Plan of Action		
Portfolio Performance		
Element Reviewed	Findings	Plan of Action
Cumulative Savings vs. Guaranteed		
Savings Beyond the Contract		
Project Performance		
Element Reviewed	Findings	Plan of Action
a. ESCO Shortfalls	General:	General:
	Site 1:	Site 1:

Portfolio Review Findings and Plan of Action		
	Site 2:	Site 2:
b. Agency Impacts		
c. O&M Issues		
Life of Contract		
Element Reviewed	Findings	Plan of Action
a. Staff Training		
b. Primary Contact Assigned per Project		
c. Project Documentation in Order		
d. M&V Witnessing Occurring		
e. M&V Report Review Occurring		
f. Timely ESCO Payments		
Interest Rates		
Element Reviewed	Findings	Plan of Action
a. Interest Rate Assessment		
Utility Rates		
Element Reviewed	Findings	Plan of Action
a. Utility Rate Assessment		
Contract Mods/Terminations		
Element Reviewed	Findings	Plan of Action
a. Assessment of Needed Contract Modification		

APPENDIX A

The following is a portfolio report template for structuring performance contracting project data in a manner aligned with the review approach outlined in this best practices document.

Performance Contracting Portfolio Report TEMPLATE

Agency:

Report Date:

1. Portfolio Summary

	# of Projects	Investment ($)	Cumulative Guaranteed Cost Savings To Date ($)	Cumulative Reported Energy and Energy-related Cost Savings To Date ($)	Reported Savings as % of Guaranteed Savings	Cumulative Energy Savings To Date (MMBTU)
All Projects						
Active (Pre-Performance Period)			N/A	N/A	N/A	N/A
Active (In Performance Period)						
Completed (ran full contract term)						
Terminated (early buyout)						

2. Active Project Performance Summary

(Utilize latest years M&V report data)

Number of Active Projects in Performance Period (in M&V)	Total Guaranteed Savings from Latest M&V Reports	Total Reported Verified Savings from Latest M&V Reports (per M&V plan)	Total Agency Impacts to Energy and Energy-Related Cost Savings Identified Outside of Reported Verified Savings	Net Surplus or (Deficit) to Guaranteed Savings (Verified- Total Agency $ Impact)

3. Project Contract Summary

Project #	Mod to project #	Project Name/Site	Status	Investment ($)	Award Date	Contract Term (yrs)	Financing Rate (%)
			Example: "In Construction"				
			Example: "In M&V"				
			Example: "Terminated"				

4. Project Performance (Project in Performance Period/M&V)

Project #	Project Name/Site	Guaranteed Savings met per M&V plan (Y/N)	Agency Impacts to Energy and Energy-Related Cost Savings (Y/N)	Evidence of Agency M&V Witnessing (Y/N)	Evidence of Annual M&V Report Review (Y/N)	Notes

5. Shortfall/Agency Impact Details

Project #	Project Name/Site	Shortfall/ Impact ($)	Responsibility	Payment reduced to ESCO?	Resolution Path (see key below)	Notes
			Example: "ESCO"		*Example:* "3."	
			Example: "Agency"		*Example:* "4."	

Shortfall Resolution Key

1. ESCO Responsible, permanent shortfall
2. ESCO Responsible, ESCO has plan to restore savings
3. ESCO Responsible, ESCO plan to restore savings unclear
4. Agency Responsible, Taking corrective action to restore savings
5. Agency Responsible, Status of corrective action unknown
6. Agency Responsible, ECM(s) removed, taking action to modify contract
7. Agency Responsible, ECM(s) removed, agency determined that no contract modification will be taken
8. Agency Responsible, ECM(s) removed, agency action unknown

6. Life of Contract Findings

Include text that will highlight any key performance issues or findings from agency programs or efforts to assess annual performance of projects though contact and/or feedback directly with the project site.

7. Project Level Details

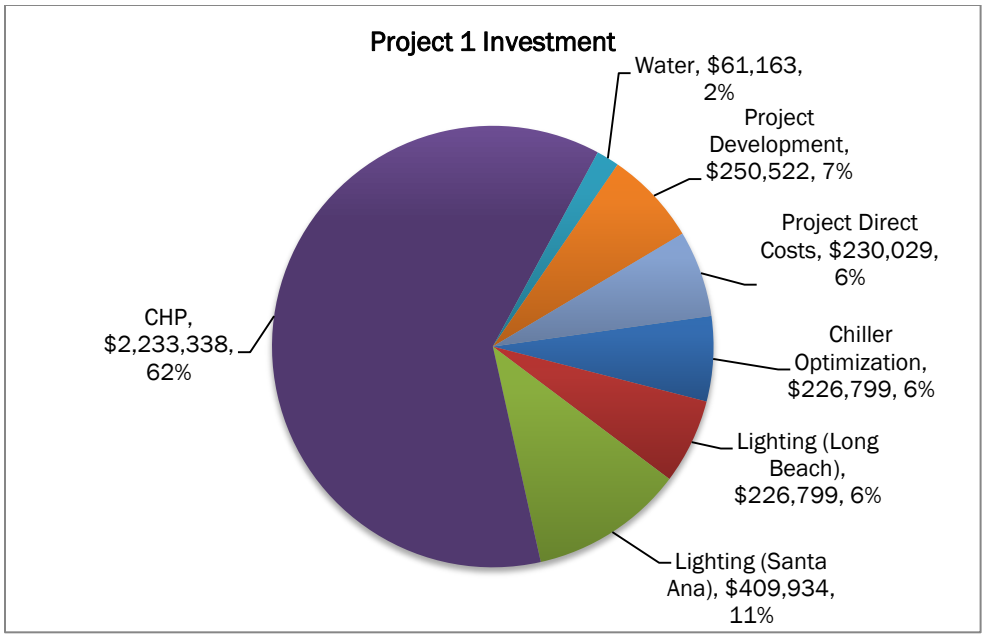
(*For Each Project in Performance Period)*

Project 1:

Date Awarded:	X/X/XX
Investment:	$
Contract Term:	X Years (Performance Period)
Financing Rate:	X%
Current Status:	Year X of 17
ESCO:	

Project Investment by Energy Conservation Measure:

(Example)



Escalation Rates:

Utility	**Escalation Rate**	**Rates Utilized in Latest M&V report**
Electricity		
Natural Gas		
Water/Sewer		
O&M		

Project Performance:

(For each year of performance to date)

Performance Year	Performance Period	Guaranteed Savings ($)	Verified Savings ($)	Variance	Cumulative Variance
Year 1	d/m/y – d/m/y	$	$		
Year 2	d/m/y – d/m/y	$	$		
Year 3	d/m/y – d/m/y	$	$		
Year 4	d/m/y – d/m/y	$	$		

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