

Guaranteed Energy Savings Performance Contracting



State Agency Manual

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DISCLAIMER

The Georgia Environmental Finance Authority (GEFA) prepared this manual as a guide for Georgia state agencies interested in procuring Guaranteed Energy Savings Performance Contract (GESPC) agreements that will reduce energy and utility consumption and facility operational costs.

The Georgia Constitution previously prohibited state agencies from incurring multiyear debt for such projects. Georgia residents overwhelmingly voted to approve a constitutional amendment to allow energy performance contracting in November 2010, and it became effective January 1, 2011. The state's governmental units, state agencies, authorities, boards, bureaus, commissions and departments, including the University System of Georgia, can now use energy performance contracting to implement large capital-improvement energy projects and reap the associated long-term energy and cost saving benefits (O.C.G.A. 50-37-1 *et seq.*).

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PREFACE

Guaranteed Energy Savings Performance Contracts for Georgia Agencies

This manual is intended to be a primary guide to Georgia Agencies and pre-qualified Energy Service Providers (ESPs). This manual is a combination of legislation, rules and suggestions to deliver a superior guaranteed energy savings performance contract.

PART 1: Project Determination

What is Guaranteed Energy Savings Performance Contracting?

Guaranteed Energy Savings Performance Contracts (GESPCs) are offered by Energy Service Providers (ESPs) as a practical way for public sector entities to finance energy and utility saving projects for their facilities. GESPCs can provide the resources to finance needed capital equipment to improve energy efficiency and comfort in public buildings. The majority of states, the federal government, and now Georgia have enacted legislation that authorizes public agencies to use GESPCs for implementing facility improvement projects.

GESPCs are rapidly achieving widespread use by government agencies because it offers a means to overcoming limited capital budgets, aging and inefficient buildings and equipment, and limited maintenance staff resources. In Georgia, one of the most attractive and distinguishing features of GESPCs is that guaranteed cost savings provide the agencies the funding for the associated project costs over the life of the contract.

By allowing the cost savings to cover project and financing costs, a GESPC provides agencies with the ability to purchase comprehensive improvements (e.g., lighting, heating, air conditioning, system controls, water conservation, etc.) and services from qualified ESPs. Georgia state agencies are authorized to use a GESPC as provided for in the Guaranteed Energy Savings Performance Contracting Act (O.C.G.A. 50-37-1 *et seq.*).

For all agencies in Georgia, the length of the contract term for GESPC projects cannot exceed 20 years, although they usually are between 12 and 15 years. Figure 1-1, on the following page, outlines procedural steps for state agencies to follow to develop and implement a GESPC project. Figure 1-2 shows how the procurement process reduces the number of ESPs to fewer and then to one with whom to work.

FIGURE 1-1

GUARANTEED ENERGY SAVINGS PERFORMANCE CONTRACTING PROJECT IDENTIFICATION, PROCUREMENT, AND IMPLEMENTATION

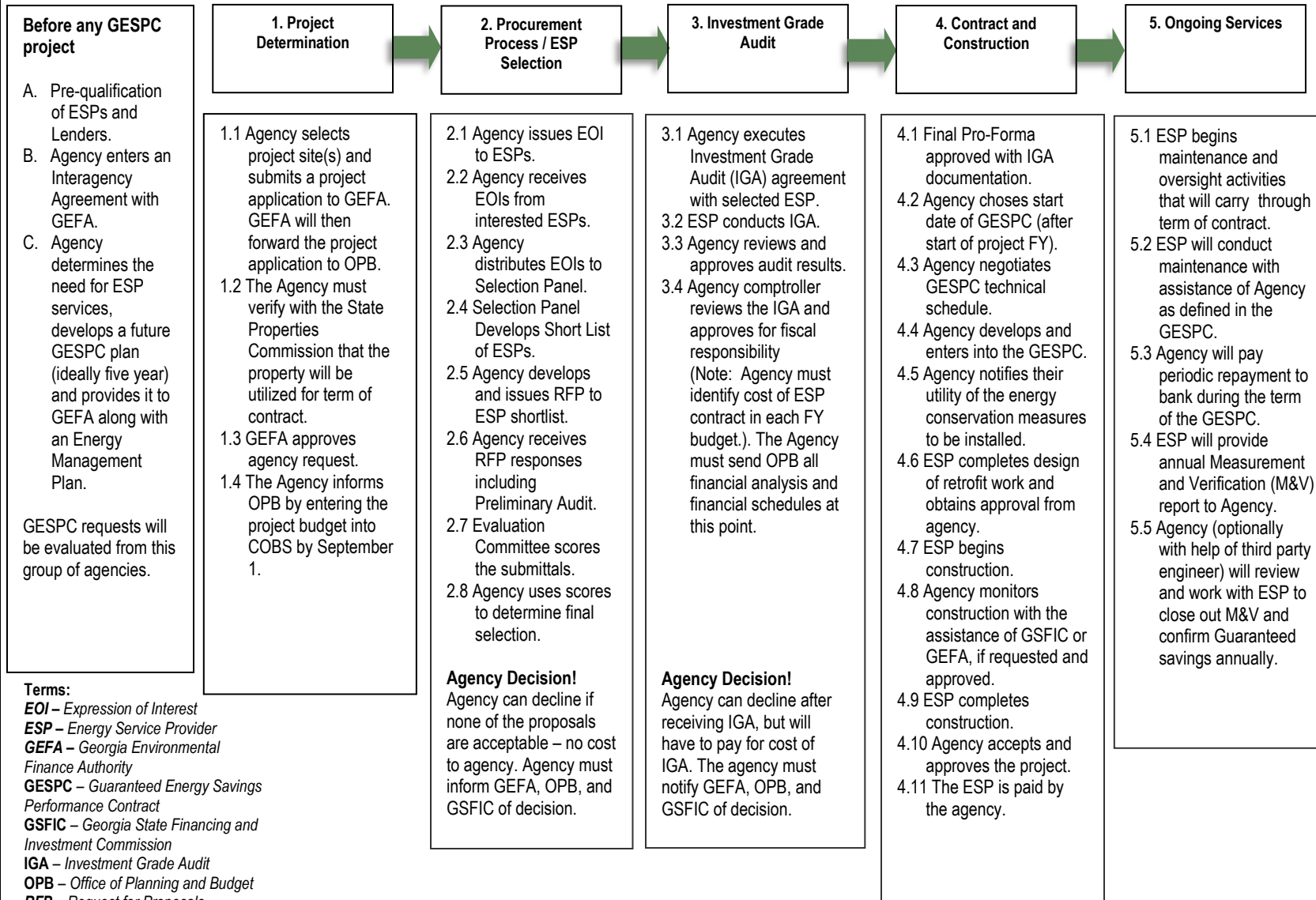
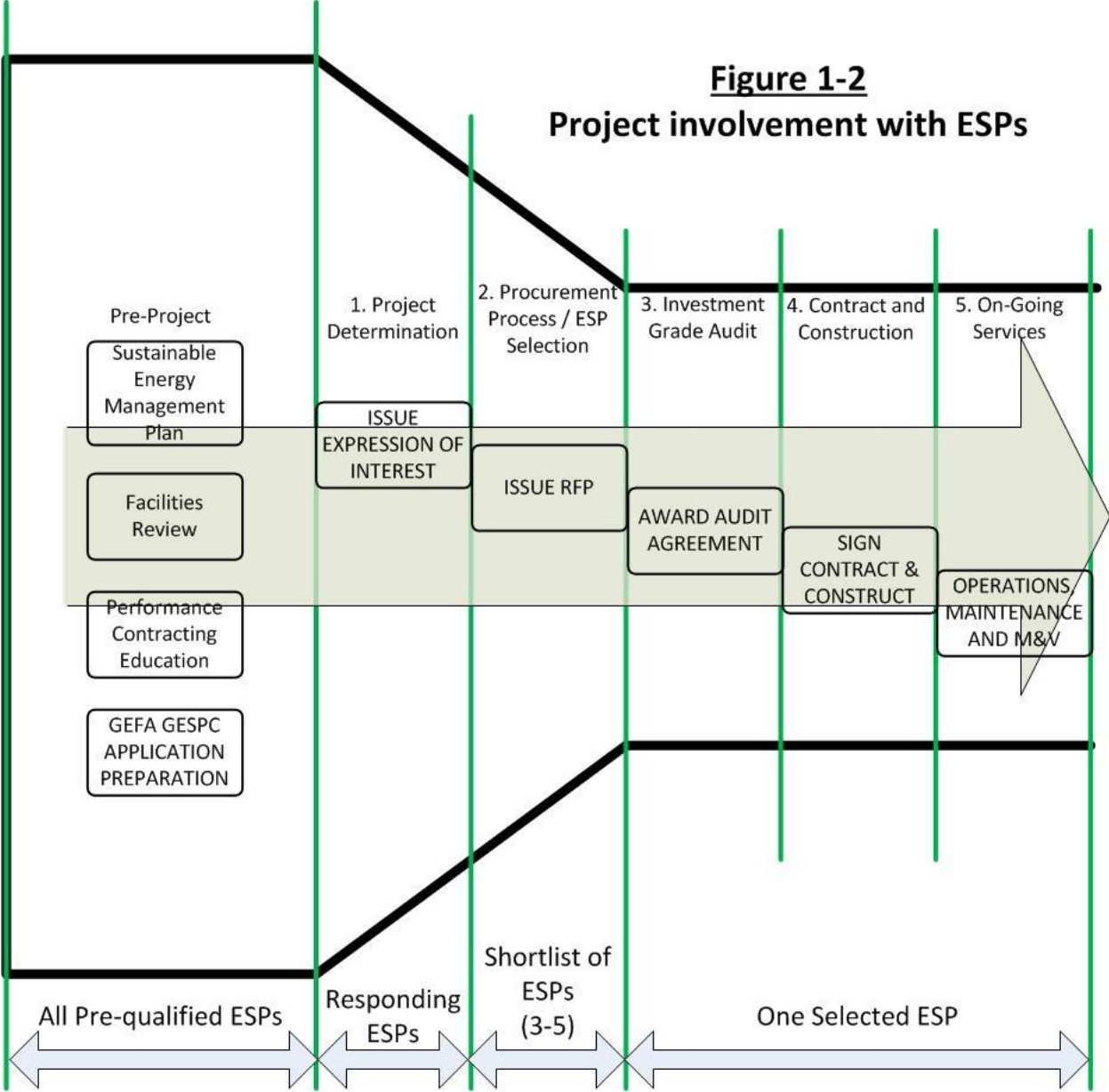


Figure 1-2
Project involvement with ESPs



Georgia Law

Due to the passage of a constitutional amendment in November 2010, Georgia state agencies may enter into multiyear contracts for governmental energy efficiency or conservation improvement projects in which ESPs guarantee realization of specified savings or revenue gains attributable solely to the improvements. This allows state agencies to use GESPCs to implement capital-investment energy projects and reap the long-term energy-saving, operational and maintenance benefits.

The Guaranteed Energy Savings Performance Contracting Act (O.C.G.A. 50-37-1 *et seq.*) is included in Appendix 1-1 at the end of this manual. Figure 1-3, which can be found on the next page, describes the key provisions of Georgia's energy performance contracting law.

FIGURE 1-3

Key Provisions of Georgia’s Energy Savings Performance Contracting Act

Type of Provision	Description of Provision
Applicability	<ul style="list-style-type: none"> ● Governmental Units ● State Agencies ● State Authorities ● State Boards ● State Bureaus ● State Commissions ● State Departments ● Board of Regents, University System of Georgia
Definitions	<ul style="list-style-type: none"> ● Governmental unit – Any authority, board, bureau, commission, department, agency, or institution of state or local government, including, but not limited to, any state-aided institution, or any county, municipal corporation, consolidated government or school district, which has the authority to contract for the construction, reconstruction, alteration, or repair of any building or other public work. ● Guaranteed Energy Savings Performance Contract (GESPC) – A contract between the governmental unit and a qualified energy service provider for reevaluation, recommendation, and implementation of one or more energy conservation measures, which shall include, at a minimum, the design and installation of equipment and, if applicable, operation and maintenance of any of the measures implemented, and guaranteed annual savings which must meet or exceed the total annual contract payments made by the governmental unit for such contract, including financing charges to be incurred by the governmental unit over the life of the contract. ● Investment grade energy audit – A study by the qualified energy services provider selected for a particular Guaranteed Energy Savings Performance Contract project, which includes detailed descriptions of the improvements recommended for the project, the estimated costs of the improvements, and the utility and operation and maintenance cost savings projected to result from the recommended improvements. The investment grade energy audit shall also include a detailed economic analysis of the project’s performance over the life of the project term. ● Operational cost savings – A measurable decrease in operation and maintenance costs that is a direct result of the implementation of one or more energy conservation measures. Such savings shall be calculated in comparison with an established baseline of operation and maintenance costs. ● Allowable costs – Equipment and project costs that the governmental unit reasonably believes will be incurred during the term of the Guaranteed Energy Savings Performance Contract and are documented by industry engineering standards. ● Industry engineering standards – Life-cycle costing, the R.S. Means-estimated costing method developed by the R.S. Means Company, historical data,

	<p>manufacturer's data, American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standards, International Performance Measurement and Verification Protocol, and other applicable technical performance standards established by nationally-recognized standards authorities.</p> <ul style="list-style-type: none"> ● Qualified energy services provider – A person or business with a record of documented Guaranteed Energy Savings Performance Contract projects that is experienced in the design, implementation, and installation of energy conservation measures, has the technical capabilities to verify that such measures generate guaranteed energy and operation cost savings or enhanced revenues, has the ability to secure or arrange the financing necessary to support energy savings guarantees, and is approved by GEFA for inclusion on the pre-qualifications list.
<p>ECM's (Energy Conservation Measures)</p>	<ul style="list-style-type: none"> ● A program, or facility alteration, or technology upgrade designed to reduce energy, water, wastewater, other consumption or operating costs and may include without limitation: <ul style="list-style-type: none"> ○ Insulation of the building structure or systems within the building. ○ Storm windows or doors, caulking or weather stripping, multi-glazed windows or doors, heat absorbing or heat reflective glazed and coated window or door systems, additional glazing, reductions in glass area, or other window and door system modifications that reduce energy consumption. ○ Automated or computerized energy control systems. ○ Heating, ventilating, or air-conditioning system modifications or replacements. ○ Replacement or modification of lighting fixtures to increase the energy efficiency of the lighting system without increasing the overall illumination of a facility, unless an increase in illumination is necessary to conform to applicable state or local building codes for the lighting system after the proposed modifications are made. ○ Energy recovery ventilation systems. ○ A training program or facility alteration that reduces energy consumption or reduces operating costs, including allowable costs, based on future reductions in costs for contracted services. ○ A facility alteration which includes expenditures that are required to properly implement other energy conservation measures. ○ A program to reduce energy costs through rate adjustments, load shifting to reduce peak demand, or use of alternative suppliers as otherwise provided by law, such as, but not limited to: changes to more favorable rate schedules, negotiation of lower rates, where applicable, and auditing of energy service billing and meters. ○ The installation of energy information and control systems that monitor consumption, redirect systems to optimal energy sources, and manage energy using equipment. ○ Indoor air quality improvements. ○ Daylighting systems. ○ Renewable generation systems owned by the governmental unit, such as solar photovoltaic, solar thermal, wind, and other technologies as identified in the project, provided that all metered distribution and deliveries of electric energy are made by an electric supplier authorized under the 'Georgia Territorial Electric Service Act.' ○ Geothermal HVAC systems. ○ Water and sewer conservation measures, including, without limitations, plumbing fixtures and infrastructure.

	<ul style="list-style-type: none"> ○ Equipment upgrades that improve accuracy of billable revenue generating systems. ○ Automated, electronic, or remotely controlled systems or measures that reduce direct and other operating costs. ○ Other measures as approved by GEFA, including measures that are non-causally related to energy savings measures, subject to a limitation of 15 percent of the total GESPC value and either 1) The improvement is necessary to conform to a law, a rule, or an ordinance; or 2) An analysis within the Guaranteed Energy Savings Performance Contract demonstrates that there is an economic advantage to the governmental unit implementing an improvement as part of the Guaranteed Energy Savings Performance Contract, and the savings justification for the improvement is documented by industry engineering standards.
Procurement	<ul style="list-style-type: none"> ● State agencies in Georgia will first issue a request for Expressions of Interest (EOI) to the list of ESPs on the prequalified list. A selection committee will use the EOI to develop a short list of no less than three and no more than five ESPs to receive the RFP. By statute, the state agency must issue a Request for Proposal (RFP) to at least three qualified ESPs.
Selection of ESP	<ul style="list-style-type: none"> ● A governmental unit may award the Guaranteed Energy Savings Performance Contract to the qualified ESP that best meets the needs of the governmental unit, which need not be the lowest cost provided. Factors to be included in selecting the most qualified energy services provider for award of the Guaranteed Energy Savings Performance Contract shall include, but not be limited to, the experience of the provider, quality of the project approach, type of technology employed by the provider, overall benefits to the governmental unit, and other factors determined by the governmental unit to be relevant to the implementation of the project.
Contract Value and Term	<ul style="list-style-type: none"> ● Up to 20 years. ● The Georgia State Financing and Investment Commission (GSFIC) may establish a multiyear contract value based on revenue estimates and other information. GSFIC will take into consideration known and anticipated obligations of agencies proposing to enter into multiyear Guaranteed Energy Savings Performance Contracts. ● No contracts shall be entered into until GSFIC has established the total multiyear contract value authorized for the current and future fiscal years.
Savings Guarantee	<ul style="list-style-type: none"> ● Guaranteed by ESP. ● Must be contained in the contract.
Financing	<ul style="list-style-type: none"> ● A governmental unit may use funds from operating, utilities, or capital expenditures for any contract, including purchases on an installment payment basis. ● During the life of the contract, grants, subsidies, or other payments from the state to a governmental unit shall not be reduced by energy savings obtained as a result of a Guaranteed Energy Savings Performance Contract. ● At the beginning of each fiscal year, a governmental unit's appropriations shall be encumbered for the estimated payments for multiyear Guaranteed Energy Savings Performance Contract work to be performed in the appropriate fiscal year. ● Payment of contracts shall be subject to appropriations. ● State agencies have the right to terminate without further obligation in any contract

	provided the cancellation is subject to the termination agreements in the contract.
Required Approval (intent to issue RFP and contract)	<ul style="list-style-type: none"> ● Must submit a project application to GEFA and have it approved. ● Must sign the interagency agreement with GEFA. ● Final contract to be approved by GEFA. ● Any contracts containing provisions regarding improvements not causally related to ECMs or regarding facility alterations required to properly implement other ECMs must also be approved by GEFA subject to program and legislation limitations.
Other Requirements and Provisions	<ul style="list-style-type: none"> ● GEFA shall promulgate the rules and regulations to carry out code sections for state agencies and distribute copies to state government. ● GEFA shall develop model documents and contracts and provide technical assistance to state agencies engaging in contracts. ● GEFA shall make publicly available a list of all Guaranteed Energy Savings Performance Contracts signed each calendar year. ● GEFA may fix and collect fees in order to administer program.

Energy Service Providers (ESP) Standard Services

ESPs provide comprehensive technical services as a part of a GESPC project. In addition to analyzing facility energy use and designing multidisciplinary projects, they provide ongoing equipment maintenance, project monitoring, and savings measurement and verification services that ensure persistent and reliable project performance. In essence, the ESP becomes a partner with the agency to improve, efficiently manage, and maintain a facility's energy and utility consumption throughout the term of the contract.

ESPs use state-of-the-art technologies. They also provide training for facility operations personnel. The financed cost of ESP services will be repaid over the contract term from the energy, utility and maintenance cost savings. In the event that the actual savings fall short of the guaranteed savings, the ESP is contractually liable to reimburse the agency for the shortfall.

Standard services offered by ESPs under a Guaranteed Energy Savings Performance Contract include (but may not be limited to):

- An investment-grade technical energy audit that analyzes current building conditions, establishes base-year energy consumption, recommends energy conservation measures (ECMs), and calculates associated energy and utility cost savings.
- A sound technical project, which includes capital equipment, rates review and ongoing energy services.
- Project engineering and design.
- Construction bonding to comply with statutory and agency requirements.
- Equipment acquisition.
- Complete project installation and construction management.
- Guaranteed savings for the life of the contract.
- Project commissioning.
- Savings measurement and verification.
- Project monitoring services.
- On-going equipment service and maintenance (as needed).
- Training for building operators and facility personnel.

Project Site Selection

There are a number of technical factors to consider when selecting a suitable project site for a GESPC project. In general, the facility should have high annual energy use and high energy intensity (use per square foot), coupled with sufficient energy saving opportunities to generate the necessary cash flow to amortize project costs over the contract term and attract ESPs interest. Some ESPs are willing to implement projects for smaller facilities, but they make those decisions on a case-by-case basis.

A project with one or more facilities that makes a good candidate for a GESPC will possess most of the following characteristics:

- Annual utility costs in excess of \$500,000.
- Potential annual energy savings from \$75,000 to \$125,000 or more (15 percent to 25 percent of the overall utilities cost).
- Stable facility use and occupancy for the foreseeable future. Future occupancy should be verified with the State Properties Commission (SPC).
- Consistent energy-use patterns over several years.
- Access to several years of utility records.
- A structurally-sound facility with no extensive building renovations planned, nor recently completed.
- No planned facility shutdowns, closures or sales.
- The agency should already be participating in the [Georgia Energy Challenge](#) and have a GEFA-approved Energy Management Plan.

It makes economic sense to combine several facilities into a single project offering. Multiple-building or location projects with excessive energy costs are usually very attractive to ESPs, and allow the agency to finance and obtain a greater number of energy improvements through a single procurement.

A rule of thumb to consider when selecting candidate project sites:

The larger the annual energy costs and potential for savings, the greater the opportunity for both parties to benefit from energy performance contracting.

Features of Energy Savings Guarantees

Because future energy savings cannot be directly measured, energy savings are determined between baseline (pre-construction) energy use and post-construction energy use through standard measurement and verification protocols. The guaranteed savings from a GESPC are translated into dollars using contractually agreed upon utility rates. Energy use is impacted by many factors including weather, facility use patterns, and operation and maintenance of systems. It is critical that both parties agree to and thoroughly understand the terms of the guarantee and how it will be applied throughout the contract term.

Benefits of Energy Performance Contracts

In addition to the savings guarantee, there are a number of other benefits for public agencies using GESPCs to implement capital energy projects:

- Preserves limited budget dollars for other services and activities.
- Allows agencies to implement comprehensive capital energy projects.
- Finances capital energy improvements from guaranteed energy cost avoidance.
- Reduces frequency of repairs and maintenance costs for inadequate, aging or obsolete equipment.
- Provides operating personnel with technical training.
- Improves indoor air quality (IAQ).
- Creates a more comfortable work environment and increases employee productivity.
- Enhances the local economy with the ESPs' use of local subcontractors.
- Creates an incentive for ESPs to develop efficient projects, since compensation is linked to project savings.
- Improves the environment and conserves energy resources.

Completing GESPC Applications

Agencies requesting to be part of the GESPC program must complete an application and submit it to GEFA by June 30. The applications can be found on the GEFA website at [GEFA GESPC Application](#). A sample application is provided in Appendix 1-2.

Upon approval of the GESPC Application, the agency is required to submit its known and anticipated obligations, including but not limited to, its existing and future debt, capital lease data, Guaranteed Energy Savings Performance Contracts previously entered into, the estimated value of the GESPC project it desires to undertake, and any other information required by GSFIC. GEFA will submit that information to GSFIC for review based upon GSFIC's assessment of the agency's debt obligations and the available funds in the Overall Contract Value established by GSFIC for each fiscal year. The Interagency Agreement (IGA) confirms agency leadership is aware of the multiyear obligations associated with a GESPC. The agency must also prove they have the budget for the IGA (in case the agency chose to not proceed further with the project after the IGA is completed) and that they will hire external staff to do the owner's maintenance (if required). It is expected and budgeted that the ESP will provide for their own contingency, M&V and training costs. The agency must have their funds for other associated costs, such as construction contingency, additional project management, annual measurement and verification (M&V) and training, etc. (which are costs that fall outside of the GESPC). A copy of the Interagency Agreement is included in Appendix 1-3.

Project Financing

Third Party Financing

The GESPC program utilized General Obligation bonds to fund the first GESPC in 2013. Going forward the program intends to utilize third party financing to fund the work. The Georgia Financing and Investment Commission (GSFIC) will assist in pre-qualifying a group of lenders who will be issued an RFP when a GESPC is ready for execution. The financing RFP will be awarded to the lender with the best response to the RFP which will include a low cost of financing evaluation component. A simultaneous closing will be conducted for the technical and financial contracts to support the project.

PART 2: PROCUREMENT PROCESS - Energy Service Provider (ESP) Selection

Overview

Georgia's agencies are required to use a *Request for Proposal* (RFP) when procuring GESPCs. An RFP is used to solicit and invite written preliminary technical and cost proposals from ESPs that have been prequalified by GEFA as capable of implementing GESPC projects in Georgia. When issuing an RFP, the agency must issue proposals to a minimum of three of the prequalified ESPs.

GEFA will publish rules and regulations for energy performance contracting projects in accordance with the Guaranteed Energy Savings Performance Contracting Act (O.C.G.A. 50-37-1), which will require that an agency notify GEFA in writing that it intends to issue an RFP to develop an energy performance contracting project. A copy of *the Resolution of the Georgia State Financing and Investment Commission Authorizing Adoption of a Policy Regarding Fiscal Requirements for Energy Performance Contracts* will be included in Appendix 2-1. The agency may request GEFA to review its RFP, as well as provide technical assistance throughout the process. The agency must submit any proposed Energy Savings Performance Contract to GEFA for final review and approval.

Contract Value

Georgia law requires that any GESPC entered into by an agency comply with the multiyear contract value authority set by GSFIC. To ensure compliance, an agency is required to provide GEFA with project cost information. The first step is to provide GEFA with a project application cost estimation to provide a basis for its contract value request to the GSFIC Board. Next, an agency will provide GEFA with its current multiyear financial obligations, e.g., capital and operating leases as well as 10 year projections for each. GEFA will request GSFIC Board approval for all of the anticipated projects from participating agencies. Among other things, GSFIC Board approval will be contingent upon other multiyear obligations of the state along with revenue estimates. Typically, GSFIC approval will be made in May or June, after some projects have gone through the application, EOI, RFP, and IGA stages.

Pre-Qualification of ESPs

Prior to the preparation of any GESPC RFPs, GEFA will issue a Request for Qualifications (RFQ) procurement document to assemble and maintain a list of prequalified ESPs. The ESPs will be selected using rigorous criteria assessing their capabilities and qualifications. These criteria include the areas of design, engineering, installation, maintenance, and repairs associated with a GESPC; post-installation project monitoring, data collection, and verification of and reporting of savings; overall project experience and qualifications; management capability; ability to access long-term sources of project financing; experience with projects of similar size and scope; and financial integrity for supporting guarantees. Other relevant factors that relate to the ability to perform under GESPCs will also be considered. The pre-qualification term of the established list of qualified ESPs is three years. At the beginning of each pre-qualification term, GEFA will again assemble a list of prequalified ESPs. A qualified ESP may be removed from the list should GEFA determine that said provider fails to meet the criteria as a prequalified energy services provider. The executive director of GEFA may also add a qualified ESP to the list at any time. The list of pre-qualified ESPs, whose pre-qualification term runs through March 15, 2015, can be found on the GEFA website at <http://gefa.georgia.gov/prequalification-list>. An open call for qualifications (RFQ) can be found on the Georgia Procurement Registry for companies interested in applying to join the pre-qualified group of ESPs.

Preparing the EOI

Next, the agency will issue an *Expression of Interest* (EOI) to all qualified ESPs, in order to narrow the field of competing firms to at least three ESPs. The EOI will contain a brief technical description of the facilities that will be included in the RFP. The agency should expect to host multiple site visits for ESPs. All ESPs interested in receiving the agency's RFP will submit their EOI responses to the agency. The agency will review and rank the EOI responses and select at least three (and no more than five) ESPs to receive the agency's RFP based upon the EOI rankings. A sample Request for Expression of Interest and a sample Expression of Interest Evaluation Form can be found in Appendix 2-2 and 2-3, respectively. A spreadsheet version of the sample Expression of Interest Evaluation Form can be found in Appendix 2-4.

Preparing the RFP

An RFP should clearly define the project scope of services desired, delineate the steps in the procurement process, provide the projected project schedule, establish the evaluation criteria, detail the key contract terms and conditions, and establish the corporate and technical information to be submitted by the ESPs in their responses. The

RFP should also clearly state that achieved energy and utility cost savings must be more than sufficient to cover all project costs for the duration of the contract term. This requirement establishes the economic bottom-line and financial performance requirements of the GESPC project, gives the scope of the project and creates the ground rules by which competing ESPs must comply.

The type of information that should be requested from ESPs in response to the RFP can be found on the following page in Figure 2-1.

An agency shall issue an RFP in substantial form and compliance with the language in the model Request for Proposal (RFP) for Energy Performance Contracting Services located in Appendix 2-5. This model document has been designed for flexibility and can be easily customized to accommodate specific project needs and agency requirements. Project-specific procedures and information on the following topics -- site visits, project schedule and evaluation criteria -- must be included in the final RFP.

Site Visits and Pre-bid Meeting

All ESPs must tour the facility(s) and interview facility staff prior to submitting any written responses. The site visits should be scheduled after the RFP is issued, but before responses are due. Ideally the site visits would be conducted before the deadline for written questions. The facilities should be available for individually-scheduled tours during a specified period of time. It is recommended that each responding ESP schedule a site(s) tour separately. Additionally, the agency will host a mandatory pre-bid meeting with all ESPs shortly after the RFP is released. During this timeframe, the agency also must assist the ESPs with collecting necessary facility technical information, including utility data, as needed for the preliminary technical audit, RFP and IGA.

Contact Information

An agency representative or project manager must provide contact information in order to expedite communications with ESPs, other state government entities, financiers, etc.

FIGURE 2-1

Key Information to Request

- Experience implementing performance contracting arrangements at facilities like those found in the agency project.
- Understanding of and experience with energy measures likely to be installed.
- Financial stability and experience with project financing.
- Background and GESPC experience of all project personnel assigned to the project.
- Performance record of past GESPC projects managed by the project team that will be assigned to the agency's project.
- Calculation methods used to compute base-year utility use and project savings.
- Savings measurement and verification and project monitoring methods.
- Proposed approach to ongoing maintenance and other services.
- Proposed structure for the savings guarantee and ESP fee payments.
- Technical energy audit costs.
- Training services for facility staff (video recorded).
- Sample investment-grade technical energy audit, project commissioning plan, maintenance plan and customer savings report.

Project Schedule

A project schedule should be developed that identifies specific procurement dates and activities. RFP Appendix H-1 contains a sample project schedule.

Evaluation Criteria

The agency should clearly delineate the criteria that will be used in evaluating and ranking ESP proposals. The criteria should include but not be limited to the factors identified under Detailed Review (below) in Part 2 of this Manual. These criteria are grouped into four major categories:

1. Project Management
2. Technical Approach
3. Financial Approach
4. Other

These categories are useful in aggregating evaluation data for the presentation of evaluation rankings.

Project Terms and Conditions

The *Project Terms and Conditions*, contained in RFP Attachment B, describes the minimum terms and conditions that will be accepted by the agency for the GESPC project, and covers the key technical and contractual elements that should be included in an energy performance contract. These terms and conditions can be customized to incorporate all the project-specific technical and legal requirements and any agency policies with which the ESP will have to comply.

Technical Facility Profile

A technical description of the project facility(s) with a brief description of the premises and all major energy-using equipment should be provided to help assess the opportunity and potential success of the project, and must accompany the EOI when it's issued. Several years of past utility consumption data, preferably by fuel unit and cost, also should be included. The Technical Facility Profile should be in substantial form and compliance with the language in the model Technical Facility Profile included in the *Request for Proposal (RFP) for Energy Performance Contracting Services* located in Appendix 2-5

RFP EVALUATION PROCESS

Evaluation Team Identification

It's important to identify evaluation team members early in the procurement process in order to receive their input during the development of the RFP scope and to keep them informed of the project progress. An agency should provide evaluation team members with the a timetable so they can schedule sufficient time to review written submissions, check client references, and participate in oral interviews. An evaluation team can involve any number of agency personnel, including but not limited to:

- Facility/Operating Engineers
- Maintenance Staff
- Purchasing Agent
- Energy Manager/Designated Project Manager
- Administrative/Financial Manager
- Legal Counsel
- Technical Advisors/Consultants

However the team is assembled, it's important to include individuals involved with daily facility operations during the entire procurement and evaluation process. It's also recommended that a liaison to staff (i.e., faculty member, medical staff, etc.) be included to keep other staff members apprised of the project status. If requested, the procurement office of GSFIC-Construction is available to help assemble and manage evaluation teams.

The role of the evaluation team will be to review and evaluate the submissions of competing ESPs in order to select the most qualified company to implement the GESPC project. Selecting a diverse technical, financial, and legal team allows the members of the evaluation team to share evaluation tasks (e.g., client reference checking, reviews of sample energy audits and financial statements, etc.), and offers the opportunity to address a wider variety of concerns and issues. It is recommended that specific evaluation criteria be assigned to individuals with matching expertise and that a minimum of two evaluators rank each criterion.

Evaluation Project Schedule

Evaluating the ESPs' written submissions, client references, and oral interviews can take up to three months. The process includes obtaining all the necessary agency approval for the selection of the best and most qualified ESP. The length of time needed depends on:

- The technical complexity of the project
- The number of ESP responses received
- The agency's required approval processes

It's very important that the RFP include a project schedule that outlines the anticipated amount of time spent on each phase of the evaluation process. When establishing the evaluation schedule, also consider the time required for compiling evaluation data and generating ESP rankings (Please see Figure 2-3 *Sample Evaluation Schedule*).

General Evaluation Information

The objective of the evaluation process is to select an ESP and identify a proposal that represents the best value to the owner based on a combination of technical and cost factors. All timely proposals will be evaluated in accordance with this RFP. Proposals will be evaluated based on whether they are complete with quality information provided in conformance with this RFP, including all attachments, and in response to any request for additional information. Failure to provide any requested information, and failure to provide information in accordance with the instructions of this RFP, may result in disqualification.

Information provided by ESPs in response to the RFQ issued by the Authority, including but not limited to SOQs, will be made available for review and consideration by owner in selecting an ESP.

Administrative/Preliminary Review

As the first step in the evaluation process, the proposals will be reviewed by the issuing officer to ensure proposals comply with these requirements:

- (A) the Proposal was submitted by the deadline set forth in Section 4.7 of the RFP, and
- (B) the Proposal is complete and contains all required documents.

Detailed Review

Initial Factors

If a proposal passes the Administrative/Preliminary Review of Section 4.2 of the RFP, the proposal will be submitted to owner for evaluation. The owner will select the ESP whose proposal best meets the needs of the owner in accordance with the following factors which the owner will prioritize based on their preference:

ESP Project Management, including but not limited to the firm's proposed comprehensive Project Management Plan for the listed scope of services, reasonableness of proposed project work plan and milestones, firm's in-depth experience information, qualifications of individuals assigned to the project, clarity of assignment of responsibilities, quality of project specific maintenance plan, and recent experience in using such techniques and methodologies in carrying out similar comprehensive scopes in facilities of similar size and scope and public facilities of similar size and complexity, quality of communication skills of ESP's at oral interviews, if any.

ESP Technical Approach, including but not limited to the comprehensiveness of the proposal, the quality of the proposed techniques and methodologies for carrying out the scope of services, relevance and comprehensiveness of technical analysis and understanding of Agency building systems and conditions, quality of proposed training for Agency staff, reasonableness of proposed audit work plan, quality of baseline energy calculations, commissioning plan, project-specific measurement and verification plan, accuracy and creativity of technical proposal, and consistency of the approach with industry trends with regard to best practices.

ESP Financial Approach for this project, including but not limited to the firm's proposed Preliminary Cost Proposal to ensure success of the project, reasonableness of the preliminary cost proposal and preliminary cash flow analysis, value of projected energy savings and operational cost savings, and reasonableness of proposed audit fee.

Additional Factors

In addition, the following factor will be considered in the evaluation of Proposals.

ESP Overall Proposal Suitability for this project, including the technical proposal's apparent fit to the project type and/or best interest needs of the Owner, comprehensiveness of the proposed cost-saving measures, reasonableness of the proposed overall basis for savings, any special or unique methodologies and plans for the project, and relevance to the to the facilities, systems and staff of the Agency, and special or enhanced capabilities of the proposing ESP with regard to providing services in complex public assembly facilities.

A sample RFP Evaluation Form can be found in Appendix 2-6. A sample Letter of Invitation to Oral Interviews can be found in Appendix 2-7.

Figure 2-2

Tips for a Successful Evaluation

These tips will assist agencies in conducting successful ESP evaluations:

- Assemble a diverse evaluation team who will bring a broad-base of technical, financial, and legal expertise to the process.
- Weigh each criterion in accordance with its importance to the project (e.g., a weighted value of three for the most important criteria and a weighted value of two for less important criteria).
- Briefly review all written submissions before ranking any submissions.
- Conduct a side-by-side comparison of written submissions.
- Check the “Unable to Rank” category (if specific criteria or criteria categories are not assigned to individual evaluation team members) if there is any uncertainty in evaluating any of the criteria.
- Check the “Unacceptable” category if the ESP does not provide sufficient information or the information is of poor quality.
- Require participation in oral interviews.
- Prepare two sets of interview questions in advance of the oral interviews (general and the ESP’s proposed approach to the specific project).
- Designate one evaluation team member to facilitate questioning.
- Limit formal ESP presentations at the oral interviews to no more than 20 to 30 minutes.
- Gain consensus of the evaluation team in the final ESP selection.

FIGURE 2-3

Sample Evaluation Schedule

<u>Activity</u>	<u>Timeframe</u>
Receive Written Responses to RFP (Preliminary Technical Proposals)	Week 1
Evaluate Preliminary Technical Proposals (Phase 1)	Weeks 2-4
Evaluate Preliminary Cost Proposal (Phase 2)	Weeks 2-4
Tabulate Phases 1 and 2 Rankings	Week 5
Conduct and Evaluate Oral Interviews (Phase 3)	Weeks 6-7
Tabulate Phase 3 Rankings and Add to Rankings from Phases 1 and 2	Weeks 7-8
Select Highest Ranked ESP to Proceed with Project	Week 8

PART 3: INVESTMENT GRADE AUDIT

Audit Process

After the agency has approved and selected an ESP, the parties shall enter into an Investment Grade Energy Audit Agreement (Audit Agreement or IGA), which authorizes the ESP to conduct an audit and produce an IGA report. If the agency decides to enter into a GESPC with the ESP, the negotiated cost of the audit may be rolled into the project financing and repaid from the project savings. If the agency decides not to proceed with the project after the audit is completed, the agency is obligated to pay for the audit. The agency must have funds for the audit already approved in its budget. As a rule of thumb, audits cost approximately 8 to 15 cents per square foot of project size. A sample Audit Agreement can be found in Appendix 3-1.

Since the audit results contain most of the information that will be incorporated into the final contract, the agency should conduct a rigorous technical review of the audit information before negotiating the final contract.

If the results of the audit report are not within 10 percent of both the guaranteed savings contained in the proposal and the total proposal cost, either the owner or the ESP may terminate the project without incurring any additional obligation to the other party. However, if the owner terminates the project after the audit is conducted and the results of the audit report are within 10 percent of both the guaranteed savings contained in the proposal and the total proposal amount, the owner shall reimburse the ESP the fee indicated for the completed audit report as set forth in the audit agreement. The audit report shall then become the property of the owner. Upon approval and acceptance of the audit report, the owner shall not be liable for the payment of any amounts to the selected ESP until a GESPC is executed.

What are Investment Grade Audits?

An investment grade audit (IGA) is the technical and economic foundation of a successful GESPC project. The IGA must provide sufficient technical detail to ensure a technically-competent reviewer can effectively assess the ESP's proposed project. The audit results must also establish and define a representative annual consumption

baseline for all utilities and fuel types (e.g., gas, water, electric, etc.) to allow a realistic analysis of potential energy and cost savings. The IGA report shall include estimates of all costs of installation, maintenance, repairs, and debt service and estimates of the amounts by which energy or operating costs will be reduced.

At a minimum, an investment grade audit report should include:

- For each proposed measure: cost, annual cost savings, annual maintenance cost impacts, simple payback, expected life and environmental impacts.
- A full analysis and definition of baseline consumption for each fuel and utility type.
- A full description of the analysis methods, calculations, data inputs, and all technical and economic assumptions.

It is important that the ESP conduct a thorough and comprehensive technical and economic facility analysis since this analysis serves as the basis for the project design and performance.

The time required to complete an investment grade audit varies by the facility size and complexity and data availability. Typically, the time to conduct an audit ranges from two to six months.

Challenges of IGAs

There are a number of challenges to completing an IGA:

- Missing or inaccurate utility consumption or cost data.
- Inaccurate building operation and equipment load data.
- Inaccurate estimates of utility savings.
- Incomplete cost estimates for implementing the proposed measures.
- Undocumented estimates of operation and maintenance savings.
- Inaccurate accounting for interactive effects between energy saving measures.
- Inadequate analysis of all feasible energy saving measures.
- Limited field measurement to verify equipment operating parameters.

When the IGA is complete it must be submitted to the agency's comptroller for review and approval for fiscal responsibility.

PART 4: Contract and Construction

Final Energy Performance Contract Overview

The final GESPC serves as the blueprint for how the project will operate over the contract term, up to 20 years. This contract should clearly define each party's roles and responsibilities and should explicitly state how the project is expected and guaranteed to perform. The relationship between the agency and the ESP - including who will do what, when, at what cost, and under what conditions - requires careful review. Due to the long-term nature of this relationship, the contract should be specific yet flexible enough to accommodate both current and future facility needs.

The main body of the contract frames the basic legal provisions and protections to which each party will conform. It specifies governing laws, contingent liabilities, conditions of default and remedies, regulatory requirements (e.g., insurance, labor and wage rates, code compliance, etc.), and indemnification provisions. The contract can be customized to accommodate additional terms and conditions as necessary.

The GESPC that is required to be used by state agencies is included as Appendix 4-1. This contract addresses the usual legal provisions and protections covered in an energy performance contract and can be customized to reflect the policies and requirements of other local jurisdictions in the state of Georgia. Since individual projects and circumstances vary, local government agencies and school districts should consult appropriate legal counsel about individual Energy Performance Contract projects and work closely with them to incorporate any special contract terms and conditions into the GESPC.

The Agency is required to submit the final GESPC between the Agency and ESP to GEFA for review and approval.

Contract Schedules

Contract contains specific details of the project negotiated between the agency and an ESP. The schedules listed below are offered as examples of the types of contract schedules that could be negotiated into the final contract.

- **Schedule A: Energy Conservation Measures**

This schedule should specify newly-installed equipment, including manufacturer name, equipment type and size, equipment quantity and location. The schedule also should describe, if applicable, any existing equipment modifications. New equipment warranties often are kept in a separate warranty schedule.

- **Schedule B: Guaranteed Savings**

This schedule describes all provisions and conditions of the savings guarantee provided by the ESP. The guarantee should define the units of energy and dollars to be saved for the contract duration. Reference to the annual reconciliation of achieved versus guaranteed savings should be included (Please see specific language in Article 5 of the *Guaranteed Energy Savings Performance Contract* regarding annual reconciliation, Appendix E).

- **Schedule C-1: ECM Installation Payments**

This schedule details the schedule of payments to be made to the ESP during the construction phase based on appropriate milestones.

- **Schedule C-2: ECM Continuing Services Payments**

This schedule should cover the amount and frequency of payments that will be made to the ESP for maintenance, monitoring, or other services negotiated as part of the contract. Schedule C-2 also should contain information about how the compensation is calculated and if an annual inflation index will be used to escalate fees over the duration of the contract term. An hourly fee structure should be included to cover ESP costs for any services provided beyond the scope agreed to at the time of contract execution.

- **Schedule D: Premises**

This schedule contains basic information about the condition of the premises at the time of contract execution. Such information would include facility square footage, construction type, use, occupancy, hours of operation, and any special conditions that may exist.

- **Schedule E: Calculation of Baseline/Benchmarks**

Project savings are measured by the baseline utility consumption. The methodology and all supporting documentation used to calculate the baseline, including unit consumption and current utility rates for each fuel type, should be located in this schedule. There may be cases where multiple utility rates for electricity (or other sources) apply. If so, this schedule should be explicit about what rates are used and how. This schedule also may include baseline documentation regarding other cost savings such as commodity savings (e.g., bulbs, ballasts, filters, chemicals, etc.), and cost savings associated with the elimination of outside maintenance contracts.

- **Schedule F: ESP Maintenance Responsibilities**

A complete description of the ESP's specific operation and maintenance responsibilities, along with a timeline for these activities, should be included in this schedule.

- **Schedule G: Owner Maintenance Responsibilities**

This schedule describes the agency's operation and maintenance responsibilities of which both parties have agreed. In some instances, the schedule will contain no more than a description of routine operation and maintenance currently being performed on facility equipment. In other cases, facility staff may provide routine maintenance on newly-installed equipment, with the ESP providing some specialized services on the same equipment. GEFA requires that a maintenance agreement be provided on all GESPC projects.

- **Schedule H: Operating Parameters for ECMs/Standards of Comfort and Service**

Schedule H contains standards of comfort and levels of service for heating, cooling, lighting levels, hot water temperatures, humidity levels, and any special conditions for occupied and unoccupied areas of the facility. In addition, operating schedules for installed equipment should be specified in this schedule.

- **Schedule I: ESP Training Responsibilities**

A description of the ESP's facility staff training program should be contained in this schedule. The schedule also should include the duration and frequency of the training sessions, plus provisions for on-going training, commitments to train newly-hired facility personnel, and future training for equipment or software upgrades. Any fees associated with the agency's training requests beyond the contractual specifications should be provided in this schedule.

- **Schedule J: Project Installation Schedule**

Timetables and milestones for project installation should be contained in this schedule. If so desired, documentation of required insurance and subcontractor lists could be included in this schedule or broken out into a separate schedule.

- **Schedule K: Current and Known Future Capital Projects at the Premises**

Information about the implementation of current or planned facility capital projects not included under this agreement should be contained in this schedule.

- **Schedule L: Pre-Installation Equipment Inventory**

A pre-installation equipment inventory helps to identify which equipment was in place and how it was configured at the time of contract execution. This schedule accurately establishes the energy baseline and savings measurement.

- **Schedule M: Methods of Savings Measurement and Verification**

This schedule contains a description of the savings measurement, monitoring, and calculation and modeling procedures used to verify and compute the savings performance of the installed equipment. The calculation formula will include a method to compare the energy that would have been consumed if the GESPC project had not been implemented (referred to as the "baseline"), with the amount of energy actually used over a specified time (monthly, quarterly, etc.). All methods of measuring savings, including engineering calculations, metering, equipment run times, pre- and post-installation measurements, etc., should be explicitly described for all equipment installed. The technical review and approval process for baseline adjustments also should be fully described in this schedule. Periodically, the baseline may be adjusted to account for changes in conditions that impact savings (e.g., weather, billing days, occupancy, etc.) using the methodologies specified in this schedule and agreed to by both parties.

- **Schedule N: Systems Startup and Commissioning of ECMs**

This schedule specifies the performance testing procedures used to start up and commission the installed equipment and total system. It also should provide for agency notification before all commissioning procedures. Schedule N should contain a provision for documenting the agency's commissioning attendance and for approval signatures that the commissioning tests followed the procedures specified and met or exceeded the expected results. Detailed specifications for these commissioning procedures should be developed during the project design phase.

- **Schedule O: Insurance and Bonds / Savings Guarantee Security**

This schedule details each type of insurance policy and bond required by the agency to be obtained by the ESP during all project phases.

- **Schedule P: Warranties**

This schedule contains all of the manufacturers' equipment warranties, specifications, and procedures for invoking warranty provisions.

- **Schedule Q: Proposed Project Cost Form; Form of Implementation Cost by ECM**

Form of First Year Estimated Annual Cost Savings by ECM

This schedule contains a spreadsheet depiction of the expected financial performance of the project throughout the entire contract term. The documentation identifies all financial components of the project, including interest rates, current fuel prices, any escalation rates, guaranteed savings figures, ESP compensation figures, cash-flow projections, and projected *Net Present Value* of any cumulative positive cash flow benefits to the agency. Savings projections should be delineated by utility/fuel type and should identify ongoing annual service fees provided over the contract term. Project cost breakdowns should identify both hard costs (labor costs, subcontractor costs, cost of materials and equipment), and miscellaneous costs (like permits, bonds taxes, insurance, mark-ups, overhead and profit, etc.). The presentation format for this information can be found in the *Sample Investment Grade Energy Audit Contract*.

- **Schedule R: GEFA Annual Reporting Requirements**

Optional Contract Schedules

These schedules can be included as either separate schedules or combined with the above schedules:

- **Pre-Existing Service Contracts**

Information regarding the scope and cost of pre-existing equipment service contracts is located in this schedule. This gives both the agency and the ESP information about how and when existing equipment service should occur. If the ESP is credited with maintenance savings or if the ESP is taking over existing service contracts, the scope and cost of these contracts will be useful for tracking the ESP's performance.

- **Facility Maintenance Checklist**

This checklist assists the ESP in tracking the agency's compliance with maintenance procedures performed by facility staff. The checklist specifies a simple list of tasks and a corresponding schedule for performing prescribed procedures. When facility staff completes the checklist, they forward it to the ESP on a pre-established schedule (monthly, quarterly, etc.). This checklist also helps verify that the required maintenance activities are being performed at the scheduled intervals.

- **Facility Changes Checklist**

A facility changes checklist may be provided by the ESP to assist the agency in notifying it when energy use changes occur (e.g., occupancy, new equipment acquisition, hours of use, etc.). This checklist is generally submitted to the ESP on a monthly or quarterly basis.

Tips for Successful GESPC Management

Energy performance contracting projects require a cooperative effort between the agency and ESP to achieve energy and cost saving goals, effective equipment maintenance and building comfort. Maintaining high-quality performance results over long-term contract requires effective communication, a mutual understanding, and the fulfillment of contract responsibilities by both the agency and the ESP.

To ensure a successful relationship:

- **Document and Explain Adjustments Made to the Baseline Projections**

Mutual duties should be explicitly defined in the contract. Any contractual conditions that affect the savings guarantee must be realistic and technically sound. It is important to document and explain any adjustments made to the baseline projections. If unsound technical data are used for project analysis and planning, there will be problems with the project performance. Methods for baseline adjustments are described in Schedule M.

- **Document Equipment Technical Performance Requirements**

Adequate staff training and accurate documentation of equipment technical performance requirements ensure a successful project. Continuous monitoring and regular performance reviews provide important feedback to keep the project on track. Also, coordination of energy performance contracts with other construction projects helps to minimize conflicts between project goals.

- **Put All Project Changes IN WRITING**

It is important to keep thorough and precise written records of approvals for all changes to the project. Resolving problems promptly and effectively by both the agency and the ESP is essential to avoiding disputes. Sound technical solutions, transparent to both parties, should satisfy the legitimate interests of both the agency and the ESP. It is advisable to have a process in place to confirm, by mutual sign-off, that performance problems are solved.

- **Create Explicit Definitions of Technical and Economic Data and Performance Measurement Methods**

Provide clear definitions of technical and economic data and methods of performance measurement. Definitions and contract standards should be fair, economically viable, technically sound, transparent and mutually approved. All technical calculations should be checked for data input and math errors and fully documented to explain any baseline adjustments.

- **Encourage Open and Timely Communication**

Regular, open, and timely communication between the ESP and the agency staff charged with performance responsibilities is crucial to a project success, especially during project commissioning. Provide detailed project performance concerns and objectively evaluate the merits of available options in order to fairly and efficiently resolve performance problems.

Construction and Construction Management

The Agency should carefully evaluate their internal capability to oversee and monitor the construction activities of the GESPC project. Additional assistance is available from GSFIC-Construction Division. The ability to manage the ESP as general contractor on-site is required. A sharp eye looking at how the scheduling and project completion will impact the Agency facilities is critical. While the ESP has the responsibility to install and guarantee the performance of the system, the Agency should monitor how the work and final performance will impact all aspects of the facilities operation.

PART 5: On-going Services

On-going Services

This section addresses items that occur after construction and continuing for the term of the GESPC.

Project Commissioning - Overview

Project commissioning is a systematic performance testing and quality control process designed to verify that newly installed equipment and systems operate according to the intended design and the agency's needs. Commissioning typically begins during the project design phase and continues for at least one year after construction is complete. It requires thorough documentation of system design, construction quality, functional performance tests, and operation and maintenance requirements.

The training of facility operators and staff is a key component of building commissioning since staff will be responsible for some equipment maintenance. If the ESP has sufficient commissioning expertise, it's recommended to have the ESP perform project commissioning since it is the most familiar with the technical details of the project. Continuous commissioning is the best way to determine whether controls and equipment function properly.

Why Do Commissioning?

Field studies show that building energy-systems rarely function to their full potential. Poorly-designed systems, improper equipment selection, inferior equipment installation, insufficient maintenance, and improper system operation all reduce energy cost savings.

Typical problems in non-commissioned energy projects include:

- Serious air flow problems.
- Poor documentation of project installation and operational requirements.
- Underutilized energy management systems for optimum comfort and efficiency.

- Incorrect lighting and equipment schedules.
- Incorrect cooling and heating sequences.
- Improperly installed or missing equipment.
- Incorrect calibration of controls and sensors.
- Lack of building operator training.
- Short cycling of HVAC equipment.
- Malfunctioning economizers.

The value of commissioning has become more important in recent years because:

- There is more diversity in the number of building specialized systems that must be integrated.
- Building systems, especially building controls, are much more complex.
- HVAC systems are designed with less excess capacity.
- Building and safety codes are more stringent.
- There is wider recognition of the economic value of health and productivity benefits from properly operating buildings.
- Rising building operation costs make efficient operation more valuable.

State Requirements

The state of Georgia requires by law that commissioning be performed on state construction projects. The Energy Efficiency and Sustainable Construction Act of 2008 (codified in O.C.G.A. § 50-8-18), promotes effective energy and environmental standards for construction, rehabilitation, and maintenance of state-funded facilities. It provides a set of instructions for state agencies, design professionals, contractors, and building operators. Energy performance contract work may or may not be covered under the Act, depending on the nature of the contract and the specific construction work to be completed. The Act became effective on July 1, 2010, and applies to design agreements for major facilities projects entered into on this date or after.

The Act contains Sustainable Construction Standards for state buildings and a green building rating system to encourage additional sustainability achievements. The rating system is known as the Georgia Peach Green Building Rating System. Additional information about the Act and these standards can be found at: <http://gefa.georgia.gov/energy-efficiency-and-sustainable-construction-act>. The provisions of these standards apply to the construction, rehabilitation and maintenance of state funded facilities that meet any one of these criteria:

1. New construction building projects exceeding 10,000 square feet;
2. A renovation project that is more than 50 percent of the replacement value of the facility; (as determined by the Department of Administrative Services Risk Management Division)
3. A change in occupancy;
4. Any roof replacement project exceeding 10,000 square feet; or
5. A commercial interior tenant fit-out project exceeding 10,000 square feet of leasable area where the state is intended to be the lessor of such property.

Exception: Any building, regardless of size, that does not have conditioned space as defined by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), or a state-owned building that is on the historical registry or any local, county or municipal building.

A professional engineer, design professional, or commissioning agent shall certify that the building project's systems for heating, ventilating, air conditioning, energy conservation, and water conservation are installed and working properly to ensure that each building project performs according to the building's overall environmental design intent and operational objectives. The project manager or using agency shall engage a member of the design team (owner-led), a member of the design firm (designer-led), or an independent third-party (independent consultant-led) commissioning agent. Commissioning activities should be completed for the mechanical systems (heating, ventilating, air conditioning, and refrigeration equipment and controls, heat recovery and renewable energy systems, laboratory systems, test and balance verification), electrical systems (lighting and day lighting controls and renewable energy systems), and plumbing systems (domestic hot water systems).

In recognition of the value of Commissioning, GSFIC developed a Commissioning Guide, which can be found in Appendix 5-1 or through a website link, [Commissioning Guide](#).

Figure 5-1

Keys to Commissioning Success

- Establish a commissioning schedule early in the project design process.
- Use an ESP-qualified or an outside commissioning expert to do commissioning.
- Develop a clear and detailed scope of work.
- Incorporate commissioning requirements into the subcontract specifications, if applicable.
- Require an initial planning meeting.
- Require regular progress reports.
- Make the commissioning process a high priority.

Savings Measurement & Verification Overview

This section of the manual is intended to provide a general overview of savings measurement and verification (M&V). For a more comprehensive guide on how M&V should be applied to various situations, refer to the Georgia GESPC Measurement and Verification Planning Guide, which is included as Appendix 5-2 and which is also available through GEFA. The guide provides tools and methods to help the owner act as an informed consumer of the M&V plans and methods recommended by the ESP. Since the savings guarantee hinges on the M&V, it is critical that the owner understand what is (and is not) being measured and why, how the measurements, estimates and assumptions translate into savings, how much the planned level of accuracy costs, and what are the risks. GESPC M&V Reporting Template and GESPC Project Schedule Template can be found in Appendix 5-3 and 5-4, respectively.

Note to ESPs and GESPC Community: Since M&V is a lynchpin to the savings guarantee, ESPs and their contractors are encouraged to develop and present M&V plans and savings reports that clearly lay out the methods used, the risks involved, and how those risks are accounted for and mitigated.

Since energy and operating savings are calculated by comparing consumption and costs both before and after the installation of energy efficiency equipment, it is critical to accurately estimate the building and systems energy use prior to execution of a GESPC. This estimate can include the baseline utility consumption and costs for the facility or a specific energy-using system (e.g., lighting system, HVAC).

The baseline provides the foundation for the technical and economic analysis of savings from the new energy equipment and is used to measure the value of future energy savings. Due diligence by both the agency and the ESP is required to develop an accurate baseline and to understand how it was developed.

The defined baseline can be affected by a variety of factors and each should be carefully verified. These factors include:

- Changes in building equipment, schedule, occupancy, or controls.
- Changes in operation or maintenance procedures.
- Unusually mild or severe weather.
- Changes in utility costs.
- Existing service levels for lighting, ventilation, temperature, and humidity.
- Equipment sizes, loads, and operating conditions.

Significant changes could occur in the building or energy-using systems after project installation and may require a baseline adjustment to correct for the impact on savings performance. In such instances, a mutually agreed to and properly corrected baseline should be used for calculating project savings.

Some challenges to calculating accurate baseline estimates include:

- Failure to account in the data analysis for periods during which equipment was broken or malfunctioning.
- Number of burned out lights.
- Baseline consumption data reflect atypical schedule or operating conditions.
- Inaccurate or missing consumption data due to utility metering, billing, or data entry errors.
- Run hours of equipment \neq operating hours of building.
- Run hours of equipment \neq facility staff estimates.
- Thermal loads may not be simply proportional to weather due to occupant load.
- Actual annual equipment loads \neq full load rating nameplate (e.g., average motor operates at 60 percent of full load rating).
- Actual equipment loads are unknown.
- Inaccurate data provided to the ESP by facility staff.
- Lack of utility metering at building level.

Why Measure and Verify Savings?

In large buildings, equipment monitoring provides better control of energy consumption. Regular equipment monitoring maximizes the persistence of cost savings over the contract term by improving equipment reliability and optimizing system performance. Monitoring consumption also provides data to correct baseline calculations and can provide useful load profiling for negotiating with energy suppliers.

Periodic savings reports provide valuable data for cost accounting and budget forecasting. Verification of the value of achieved savings provides project performance accountability for the savings guarantee.

Benefits of M&V

When properly applied, measurement and verification can:

- Accurately estimate energy savings for a project.

- Verify that the savings guarantee has been met.
- Allocate performance risks to the appropriate parties.
- Reduce project performance uncertainties to reasonable levels.
- Document emissions reductions from energy savings.
- Quantify improvements in indoor environmental quality.
- Identify additional savings over the term of the contract.
- Document the value of the investment to the agency.
- Give the ESP a feedback mechanism on the quality of engineering.
- Maximize persistence of utility consumption and cost savings.
- Reduce operations and maintenance costs (e.g., automatic dial-up alarms).
- Reduce utility and equipment performance data collection and analysis costs (e.g., utility rate analysis and load profiling) through the use of energy management systems which may be installed or enhanced through the project.
- Provide benchmarking data for cost reductions in similar buildings.
- Improve equipment reliability and optimize system performance (e.g., load management).
- Provide valuable management information for building cost accounting and budget forecasting.
- Provide timely project performance feedback and accountability.
- Provide the data required for savings or baseline adjustments.

ADDITIONAL LINKS AND RESOURCES

State

Georgia Environmental Finance Authority (GEFA) – [Energy Resources Division](#)

[Georgia State Financing and Investment Commission](#) (GSFIC)

[Board of Regents, University System of Georgia](#)

Federal

[U.S. Department of Energy](#) (DOE)

[DOE Energy Efficiency and Renewable Energy](#)

[DOE Federal Energy Management Program](#) (FEMP)

[U.S. Environmental Protection Agency: ENERGY STAR Program](#)

Associations and Organizations

[Alliance to Save Energy](#) (ASE)

[American Council for an Energy Efficient Economy](#) (ACEEE)

[American Society of Heating, Refrigerating, and Air-Conditioning Engineers](#) (ASHRAE)

[Association of Energy Engineers](#) (AEE)

[Efficiency Valuation Organization](#) (EVO)

[International Performance Measurement Verification Protocol](#) (IPMVP)

[Energy Services Coalition](#) (ESC)

[Energy Services Coalition – Georgia Chapter](#)

[National Association of State Energy Officials](#) (NASEO)

[National Association of Energy Service Companies \(NAESCO\)](#)

[U.S. Green Building Council](#)

Energy Service Providers (ESPs)

- [ABM](#) (formerly Linc Mechanical)
- [AECOM](#)
- [Ameresco](#)
- [Chevron Energy Solutions](#)
- [ConEdison Solutions](#)
- [Constellation Energy](#)
- [Eaton Corporation](#)
- [Energy Systems Group](#)
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Utilities

Electric

<http://www.georgiapower.com/>

[Altamaha EMC](#)

[Amicalola EMC](#)

[Blue Ridge Mountain EMC](#)

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[www.kratosgpc.com](#)
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APPENDICES