TECHNICAL SUBMISSION

Photo: Charlene Reinhart

PA SMALL GESA-4 PROJECT FOR DEPARTMENT OF GENERAL SERVICES
AT
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
WESTERN REGION

ESG ENERGY SYSTEMS GROUP

Tony Prelec, Sales Account Executive

Harrisburg, PA | March 10, 2017

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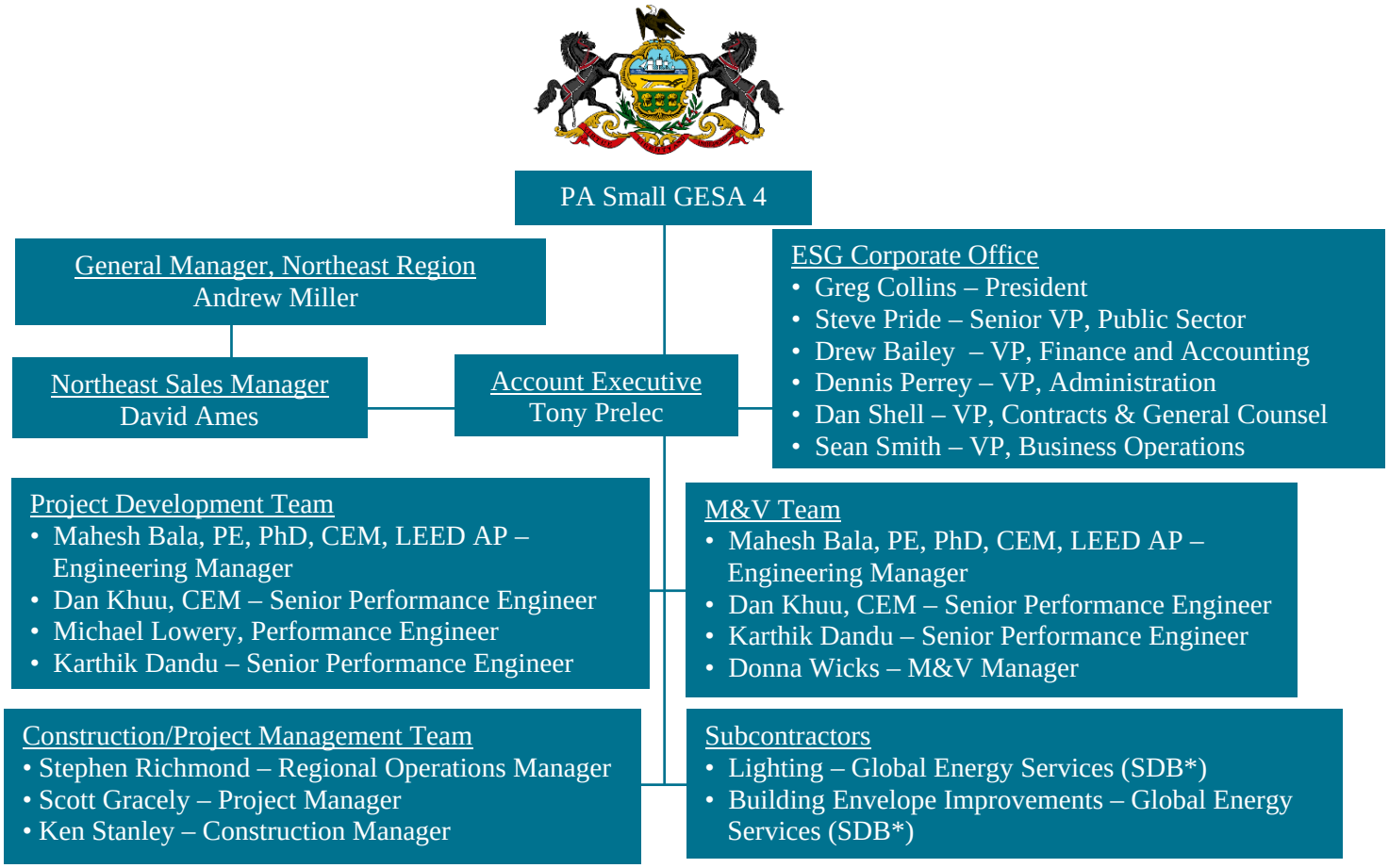
2-2.1 Project Management Team Overview

a. Organization Chart including assignment of tasks, reporting structure, subcontractor selection



**SDB = Small Diverse Business*

b. Demonstration of successful history by core project team members

The ESG core project team members have collaborated on the successful implementation of numerous previous projects. Two of the most recent and noteworthy projects are the Pennsylvania SCI Dallas Large GESA Project and the City of Middletown Project, valued at $20M and $12M respectively. ESG's core project team, as identified on our organizational chart above, has continuously proven that its level of collaboration, knowledge, and creativity support the development and execution of highly successful energy savings projects.

Through the construction period alone, the SCI Dallas project has already generated approximately $5M in energy savings for the Commonwealth of Pennsylvania. Implementation of the SCI Dallas GESA project was overseen by Scott Gracely and Ken Stanley. ESG's Account Executive, Tony Prelec, worked meticulously with ESG's Development Team members and the Pennsylvania Department of Corrections to identify the most beneficial energy conservation measures (ECMs) for the project. The team initially identified 32 ECMs as suitable for

implementation. In an effort to reduce the construction cycle time and realize a faster return on investment, ESG worked with Pennsylvania Department of Corrections and DGS, optimized the project to 6 large scale ECMs (LED lighting conversion, water conservation, boiler replacement, steam traps, kitchen equipment, WWTP upgrades).

The City of Middletown project highlights another successful project currently being implemented by the same core project team members. This $12M project consists of numerous complex ECMs ranging from LED lighting conversions, street light upgrades and transfer of street light ownership, to the complete replacement of all water meters throughout the community. The community has over seven thousand residences and will now incorporate a state-of-the-art water meter data collection system. In addition to the technical applications, the team identified several state funded incentive programs for the City of Middletown project. In total, over $280,000 in additional state-provided funding was captured to support the project. It is estimated that this project will generate $1.05M in energy and operational savings for the City of Middletown annually over the duration of the project.

c. Description of specific and meaningful roles fulfilled by core team

The meaningful roles fulfilled by the core project team supporting the Pennsylvania Small GESA 4 DCNR project are as follows:

Account Executive – Tony Prelec is responsible for monitoring the entire project and maintains accountability throughout all phases of the project. He manages the technical personnel and contract specialists to develop an accurate conception of the customer's requirements and concerns. In order to translate the customer's requests into a feasible, successfully installed solution, his primary role is to communicate with representatives of the Construction/Project Management and Project Development Teams: Performance Engineer, Mechanical Engineer, Electrical Engineer, Operations Manager, and Project Manager. Additionally, Tony has a wide knowledge base ranging from specialized energy reducing technologies to the business operations of GESA.

Northeast General Manager – Andrew Miller maintains direct interaction with the sales development and delivery teams from initiation to full implementation of ESG projects in the Northeast Region. His oversight reinforces our accountability to deliver the project according to the contractual agreement with a customer. Andrew works closely with the Teams to provide a compliant and responsive delivery. Finally, Andrew closely monitors project stability before, during and after project delivery.

Northeast Sales Manager – David Ames supports all phases of the sales process, leading the Sales Team throughout project development, implementation, and measurement/verification phases. David works closely with the Account Executive to discover and understand the customer's requirements, and works closely with the Project Development Team and other internal resources to translate those into feasible, installable solutions.

Northeast Engineering Manager – Mahesh Bala serves as a dedicated technical lead to the Project Development teams by coordinating engineering resources. Mahesh reviews the technical solution to ensure that it adequately addresses the mechanical- and energy-related challenges within the customer's facility. As required, Mahesh may also serve as a technical consultant for ESG's in-house staff on initiatives that include ECM innovation and investigations, equipment selection, savings calculations, and energy guarantee protocol development. He is engaged with every customer and their project from initial involvement with the operations team in the assessment, design, installation, and post-implementation.

Regional Operations Manager – Stephen Richmond is the team coordinator for the project and is ultimately responsible for the delivery of the project. He also oversees all negotiations and contracts with subcontractors and vendors. Stephen works closely with the Account Executive to deliver a timely and logistically sound project. The Project Delivery Manager oversees and coordinates all project delivery. In the delivery of a project, Stephen oversees the Project Managers as an additional level of assurance that ESG and its subcontractors provide quality installations. Every effort is made to exceed customer expectations and promptly solve construction-related concerns in a timely, proactive manner.

Performance Engineers – Dan Khuu, Michael Lowery, and Karthik Dandu are responsible for identifying and focusing on the mechanical and energy-related improvements within a customer's facility. These performance engineers conduct site evaluations and collect information to develop comprehensive, cost-effective technical solutions that increase the operational efficiency of the site. The Performance Engineers are also responsible for providing ongoing technical support to the customer on the current and future energy and operating efficiencies. Their technical support includes appropriate equipment selection, proper installation, implementation of the ECMs as designed, and troubleshooting construction problems. Performance Engineers are customer facing. They are engaged from the outset with the Construction/Project Management Team in the design phase, the installation phase, and ongoing services. Finally, the Performance Engineers oversee the transition of the scopes for each ECM to the Project Development Team. Regular, detailed communication between the Performance Engineers and Account Executive guarantees a technically correct solution is delivered to the customer.

Project Manager Scott Gracely and Construction Manager (CM) Ken Stanley work closely with the Performance Engineer to advise and assist in estimating aspects of the project during the proposal development stage. Scott and Ken are in direct contact with the Electrical and Mechanical subcontractors, and the ESG Performance Engineers to obtain technical information and advice. The Project Manager is kept abreast of resource needs and, as their expertise relates to those resources, our management, finance, and accounting support departments are consulted.

Once the Small GESA 4 is under contract, Scott and Ken will work closely with the Department of Conservation and Natural Resources Parks & Forest in Western Pennsylvania to initiate the projects at each of its facilities in the scope of the project. Detailed coordination with each DCNR Park Manager will be critical to the success of the Project.

Measurement and Verification (M&V) Manager - Donna Wicks has the responsibility of monitoring the guarantee and reporting results to the funding agency, the Department of Conservation and Natural Resources, in a format that is clear and concise. With over 19 years of experience implementing M&V programs, Donna has the expertise to identify what factors affect energy savings and to calculate savings within varying parameters: some customers may prefer modified baselines showing monthly deviations, while others may prefer to see only savings based on initial verifications and measured equipment operation. Maintaining and tracking guaranteed energy savings over the length of the contract term is the final step of a Performance Contract.

d. Established history of working relationship between proposer, retained professional and subcontractors on GESA

As one of the larger energy services companies (ESCOs) within the United States, ESG employs highly skilled and technically trained professionals. We do not retain independent professionals on a short-term contract basis. Key personnel[1] are all permanent employees with a vested interest in the success of ESG and its projects. The Retained Professionals, as referenced in the RFP, are the full time employees of ESG working in multiple and specialized capacities.

ESG employees work with numerous subcontractors, both union and nonunion, to fulfill our obligations to the customer. ESG utilizes Small Diverse Business qualified local subcontractors as much as possible and relies on existing subcontractor relationships, where they have proven cost-effective and reliable. Some of these relationships are key partnerships in specific geographic areas or with respect to specific trades. ESG has a rigorous subcontractor pre-qualification process that not only verifies the subcontractor's financial strength, but also their overall safety record and ability to efficiently deliver on the overall energy project.

The primary lighting, building envelope, and mechanical subcontractor we have selected for the Pennsylvania Small GESA-4 DCNR project is Global Energy Services (GES). GES has an excellent track record of providing multiple services for previous ESG Pennsylvania GESA projects, including the aforementioned SCI Dallas Large GESA Project. GES is also a certified Small Diverse Business (SDB) in the Commonwealth of Pennsylvania. ESG has implemented well over 30 energy projects within the past five years in partnership with GES. Each project has been completed on time and each one is yielding better-than-expected energy savings.

Our overarching goal is to select subcontractors that allow us to continually bring our projects to close on time or ahead of schedule, and within the projected energy savings commitment. ESG takes our selection process for subcontractors very seriously. Our subcontractors are an extension of our own workforce and share our commitment to exceed our customer's expectations.

[1] General Manager, Sales Manager, Engineering Manager, Operation Manager, Account Executives, Project Managers, Construction Managers, Energy Engineers, Mechanical Engineers, Electrical Engineers, Controls Engineers, Safety Managers, Commissioning Agents and Measurement & Verification Managers.

2.2-2 Work Plan for This Project

Sites Visited

The ESG Team has toured **all** the DCNR sites listed within the RFP (see table below), as well as two additional DCNR sites within the region that are not listed in the RFP. The DCNR Region 2 Headquarters Office at Moraine State Park and the Regional Forestry Office Clarion were both included in our site visits and our proposal.

	Facility	Location
1.	Region 2 Regional Forestry Office	Clarion, PA
2.	Forest District #4	Laughlintown, PA
3.	Forest District #6 (2 maint. Garages only)	Ebensburg, PA
4.	Forest District #8	Sigel, PA
5.	Forest District #14	Warren, PA
6.	DCNR Region 2 Regional Office	Prospect, PA
7.	Clear Creek State Park	Sigel, PA
8.	Cooks Forest PA	Leeper, PA
9.	Jennings Environmental Education Center	Prospect, PA
10.	Keystone State Park	Derry, PA
11.	Kooser State Park	Somerset, PA
12.	Laurel Hill State Park	Somerset, PA
13.	Laurel Ridge State Park	Rockwood, PA
14.	Linn Run State Park	Rector, PA
15.	Maurice K. Goddard State Park	Sandy Lake, PA
16.	McConnells Mill State Park	Portersville, PA
17.	Moraine State Park	Prospect, PA
18.	Ohiopyle State Park	Ohiopyle, PA
19.	Oil Creek State Park	Oil Creek, PA
20.	Point State Park	Pittsburgh, PA
21.	Presque Isle State Park	Erie, PA
22.	Pymatuning State Park	Jamestown, PA
23.	Raccoon Creek State Park	Hookstown, PA
24.	Ryerson Station State Park	Graysville, PA
25.	Yellow Creek State Park	Penn Run, PA

a. Proposal contains detailed description of how ESG will coordinate with DGS and Funding Agency

ESG understands the importance of good communication within and between all parties involved in this project. ESG will prepare design documents for agreed-upon energy conservation measures requiring design and engineering. Upon receiving the notice to proceed (NTP), ESG will present 30% submittals to DGS and DCNR for their review and acceptance, if required.. Once the 30% submittals are approved and accepted by DCNR and DGS, ESG will create the 100% final design documents for another review by all stakeholders, if required. All fixtures, materials, and equipment will be ordered following the approval by DGS and DCNR. ESG will also prepare weekly meeting minutes to document, communicate, and coordinate with main points of contact at DGS, DCNR and the assigned ESG project team. ESG will utilize our look ahead schedule process, which defines forecasted work and documents important milestone dates for all selected energy conservation measures (ECMs). ESG will not only be coordinating with DGS and DCNR management contacts, but will also collaborate with all DCNR site managers at remote locations throughout Western Pennsylvania. During our preliminary assessments, Park Managers requested that we keep them apprised of all project requirements, should ESG be selected as the ESCO of choice. Their interest and willingness to work in tandem with us is encouraging and certainly welcome.

b. Proposal demonstrates a thorough understanding of the design process and how ESG will coordinate with retained professional

ESG has assembled a seasoned team of engineering professionals on its staff. Thus, we do not need to hire retained professionals for this project. ESG is particularly familiar with the DGS GESA design process, most recently demonstrated in our delivery of the large GESA project at SCI Dallas. In addition to recent GESA experience, our engineers and project managers hold technical and engineering degrees from accredited engineering colleges, CEM, LEED AP, and PMP certifications, and most are licensed professional engineers. ESG's technical and engineering professionals, with the assistance of the management team, will work to provide the appropriate design and engineering services in accordance with DGS design manual guidelines.

c. Proposal demonstrates thorough understanding of design process on small GESA design projects using DGS Procedure Manual

ESG has read the requirements of the small GESA design process and recognize them as very similar to the large GESA design process we previously implemented. The notable difference is that DGS and DCNR will not have a state contracted energy engineering consultant as part of the small GESA and all design approvals will go directly to DGS and DCNR for their approval.

d. Proposal identifies design issues and describes how ESG will manage and execute the project

ESG is proposing the implementation of field-tested and proven ECMs for the Small GESA-4 DCNR project that will recover valuable financial resources by reducing overall energy costs. In accordance with the 10-year simple payback requirement under the Small GESA program, we anticipate providing LED lighting conversions, particularly building envelope upgrades, and hot water system upgrades. The design aspects of these particular ECMs are not complex and ESG has vast experience implementing these measures. ESG recognizes that successful design consists of proven engineering practices coupled with a comprehensive onsite audit of existing building components, review maintenance concerns or problems and operating conditions. ESG will provide solutions (i.e. ECMs) that are most suitable to the building type and the operational environment to maximize energy savings return. ESG's commitment with providing appropriate resources and expertise ensures that the proposed ECMs are developed and implemented to achieve and yield the savings denoted within the Comprehensive Energy Audit (CEA).

A project with this many individual locations requires a customized approach in order to implement the project successfully. ESG's approach will be to have multiple crews responsible for lighting, building envelope, and mechanical upgrades. The roving crews will start at the northernmost DCNR site (Presque Isle State Park) and proceed southward, completing work at one DCNR location before moving on to the next closest location, until all DCNR Region 2 facilities have been upgraded with the ECMs identified in our contract. ESG has made arrangements with our material suppliers to have direct-drop delivery points throughout Region 2. This eliminates the costly expense of transporting materials from one central location to all other locations within the region.

e. Proposal thoroughly describes construction challenges and proposed solutions.

The challenge, while working with multiple DCNR locations spread over a vast area, will be the coordination of installation teams and logistics concerning material drops, material laydown areas, local accommodations and timing. To overcome this challenge, ESG has an experienced team who implemented other projects with the same requirements. We also have preferred suppliers positioned throughout Pennsylvania who can provide multiple material drop locations matching our team's needs and schedule. Our team has also spoken to various DCNR personnel during our initial site visits and has determined ideal material laydown areas at a majority of the DCNR facilities.

There are additional challenges that will require ESG to work very closely with the DCNR representative at each site: seasonal weather, remote locations, occupancy of specific buildings, site security, and light levels for security during afterhours. Our solution is to work closely with the main point of contact at each facility and review the proposed ECM scopes of work prior to implementation. ESG will work with DCNR's representatives to understand the operational procedures of each facility and develop an accurate schedule to fully abide to these requirements. A pre-construction meeting or conference call will be scheduled to determine the particulars of the timeline for the initial site coordination, date of the kick off and safety audit meetings, and the start and completion dates. The conference call will also determine dates of inspection and a forecast of the final acceptance timeline. ESG will maintain and distribute weekly schedule updates for tracking implementation progress and confirming future timelines and/or durations with proposed phases of each ECM at each DCNR site. We propose to manage the project by working with one primary subcontractor and performing weekly monitoring inspections during the duration of the project. Weekly implementation reports will be distributed and ESG will also provide a monthly Executive Project Report with each payment application submission.

f. Proposal thoroughly describes a construction plan, including site operations, logistics, lay down areas and a detailed discussion about how to execute a project in a downtown area

For this project, there are only two DCNR facilities located in downtown areas, Point State Park and the Regional Forestry Office. We do not foresee any issues working in these downtown environments.

ESG will conduct weekly progress meetings with the DCNR representatives at each site to review logistics and parameters with scheduling and performing installation phases of work. ESG will also review and define the scopes of work to be executed each week and confirm coordination issues or concerns with scheduled and/or completed work. ESG will then prepare meeting minutes and forecasted look ahead schedules for each weekly progress meeting. These documents will be distributed to DCNR and all representatives assigned to the project. ESG will also administrate required inspections and provide monthly documentation in accordance with administration procedures as directed by the Commonwealth of PA and DCNR.

ESG shall utilize offsite staging areas located throughout Region 2 to store the direct drop materials required for this project. Materials and equipment will be transported each working day and shall be stored within a defined and agreed upon location within a given building.

While touring Point State Park our team discussed with Park Manager, Jake Weiland, and Maintenance Supervisor Andy Pelesky, where we could park vehicles and potentially lay down materials. We also discussed security and safety concerns and came to a mutual agreement as to what would be expected when we perform work at that particular park. The Regional Forestry Office in Clarion has ample room for contractor parking and space for a lay down area and minimal vehicle traffic.

g. Proposal demonstrates thorough understanding of scheduling and construction practices using DGS general conditions and administrative procedures

The ESG management and delivery teams have read and understand the Small GESA general conditions in Appendix H of the RFP and has paid very close attention to Article 5, Article 6, and Article 7. Our team, including our key subcontractors have also read over the administrative procedures and understand them as well. Our primary subcontractor, Global Energy Services (GES) has also worked on several PA GESA projects and is very familiar with the GESA procedures. GES provides a second layer of experience in this regard.

h. Proposal describes project safety plan and monitoring

Safety is the most important aspect of our business!

ESG's safety management program is supported by corporate management, administered by the company's project management team, and monitored by ESG's Corporate Safety Department. ESG will provide a safe work environment for our employees, subcontractors, and our customer's employees and visitors by incorporating safety into the planning, construction, and maintenance of the project site and equipment, and complying with applicable rules and regulations relating to federal, state, customer policies and ESG requirements.

Our Corporate Safety Department is authorized to provide training in 29 CFR 1926 OSHA construction industry regulations and 29 CFR 1910 OSHA general industry regulations to ESG employees. Project Delivery Team members are required to obtain at least a 10-hour OSHA outreach training course every 3-5 years, and participate in applicable job related safety training. The Corporate Safety Department oversees the Corporate Safety Program and policies. It also disseminates pertinent safety information to the project management team to keep a focus on safety. The department visits project sites periodically to provide guidance to project teams and subcontractors relative to potential hazards, education and training, and compliance with the applicable 29 CFR OSHA industry regulation.

Prior to a project starting, the Corporate Safety Department reviews subcontractor safety information and communicates the findings to the project team. The information reviewed includes, but is not limited to, Subcontractor Worker's Compensation Experience Modification Rate (EMR), OSHA Recordable Incident Rate, OSHA activity history, On-site Safety Meetings, and their Safety Program.

ESG Safety Record

Year	2016	2015	2014	2013
EMR Rate	0.66	0.66	0.67	0.71
Incident(s)	0	1	1	4
Lost Time Incident(s)	0	0	0	0
RIR Rate	0	0.37	0.42	1.83

Experience Modification Rating compares worker's compensation claims experience to other companies similar in size who operate in the same industry. Most employers who have annual premiums in excess of $3,000 receive an Experience Modification Rate. Companies at the industry average have an EMR of 1.0. For companies better than industry average it is below 1.0.

ESG dedicates substantial effort to promoting safety awareness and accident prevention. Our safety program is characterized by sound management decisions, and the cooperation and support from all of our employees, subcontractors, and customers.

i. Proposal describes an effective quality control plan

The ESG Project Manager will have the following responsibilities with respect to quality control (QC):

- Ensure work is performed in compliance with savings plan, contract requirements, code requirements, and construction industry standards.
- Ensure that work is performed in accordance with facility, DGS, and ESG standards.
- Manage and coordinate QC activities, submittals, tests, samples, as-builts, and results.
- Ensure that periodic (weekly or bi-weekly) project briefings are held to discuss safety, security, quality, progress, and performance.
- Ensure that drawings are kept up to date with the proper revisions, and provided to the contractor.
- Inspect equipment to be installed and reject equipment if determined to be non-compliant with specifications or damaged during transportation or storage.
- Coordinate commissioning activities among ESG engineering team, DGS, DCNR, and Global Energy Services (GES).
- Investigate and resolve warranty problems and indicate the action taken on warranty reports.

j. Proposal clearly describes Proposer's methodology for commissioning this project

For the proposed scope of work, the major objectives for implementing a commissioning process will be to:

- Ensure total system operation and functionality
- Optimize energy use in line with the ECM intent
- Lower operation and maintenance costs
- Extend life of assets
- Reduce asset life-cycle costs
- Improve indoor comfort

Commissioning takes place in five (5) phases: ECM development, design, construction, acceptance, and post acceptance. Due to the page limitations of this RFP response, we are providing a brief overview of the commissioning process. A detailed, system-specific commission plan will be included in the Comprehensive Energy Audit (CEA) and the design phase. ESG's commissioning steps throughout all five phases include Operational Acceptance Testing (OAT) and Functional Acceptance Testing (FAT). The primary goal of OAT and FAT is to optimize equipment operations and maximize the benefits.

The benefits of commissioning for this project include:

- ✓ *Strict adherence to owner design intent;*
- ✓ *Improved energy efficiency;*
- ✓ *Functional and reliable equipment operation;*
- ✓ *Reduced operation and maintenance costs;*
- ✓ *Improved indoor environmental quality and occupant comfort;*
- ✓ *Comprehensive training for operations and maintenance personnel;*
- ✓ *Integration of complex building systems; and,*
- ✓ *Consistency through design, construction and turnover.*

k. Proposal describes training of Funding Agency personnel, manuals, occupancy permits, commissioning and final close-out approach

ESG proposes training and monitoring as an integral part of this GESA project. An investment in continued technical training of the existing staff with respect to the utilization of the proposed systems in combination with continued systems monitoring will contribute to the proficiency of the staff and provide the required level of efficiencies designed in our solutions.

Technical support and flexibility are key ingredients for ESG's support services plan. Based on our assessment of the facilities, ESG's energy engineers and trainers will provide maintenance and operational training for the proposed building systems, LED lighting, Hot Water Systems, HVAC equipment, and other identified equipment. ESG will design and perform training programs (customized and based upon the expertise level of the DCNR staff) required to ensure proper maintenance of the installed equipment.

The training program will include skills development and knowledge transfer. The training curriculum will reflect skills required to perform the required maintenance and operations functions, and what specialized tools and/or instrumentation will be necessary.

Providing updated and comprehensive operations and maintenance (O&M) manuals is an important element of the project's success. The O&M manuals will be used during staff training sessions to address any questions and to reinforce their importance. ESG will provide copies of applicable operations and maintenance material for equipment in each building. Existing O&M material will then be combined with information for all new systems to create a master O&M manual. For the proposed scope of work, this will contain a summary of all equipment and systems within the facility, and will reference where to find additional information (if required) from the drawings and technical manuals.

The master O & M manual will be used to help the on-site staff maintain equipment operations at a level that will ensure optimal energy efficiency.

Occupancy permits will be reviewed and issued in accordance with PA State guidelines.

l. Proposal clearly describes Proposer's methodology for creating the appropriate Measurement and Verification Plan

Measurement and Verification (M&V) is a vital component of any energy performance contract. ESG's M&V personnel will be involved with the project from conception to commissioning, and in every year of the contract term. M&V personnel are critical during the development phase to establish the most appropriate and cost effective M&V protocol. They play a crucial role in establishing corresponding plans and ensuring that post installation measurements are performed according to the chosen M&V protocol. Additionally, they ensure proper documentation and analysis of the measurements are performed. The Lead Engineer will serve as the contact point for M&V information and will utilize ESG's M&V resources to provide documentation that the installed systems are performing at or above the guaranteed levels. ESG's M&V team members have many years of M&V experience with applicable International Performance Measurement and Verification Protocol (IPMVP) standards.

ESG's core competencies and focus are on providing our customers with "Building Upgrades That Pay for Themselves." A key activity of our partnership with our customers is the measurement and verification of savings results. Our customers have always received timely, accurate, and easy to understand documentation of the savings results.

2010 IPMVP M&V Options

M&V OPTION	PERFORMANCE AND OPERATIONAL FACTORS	SAVINGS CALCULATIONS
Option A **Stipulated and measured factors**	Based on a combination of measured and stipulated factors. Measurements are spot or short term taken at the component or system level. The stipulated factor is supported by historical or manufacturer's data.	Engineering calculations, component or system models.
Option B **Measured factors**	Based on spot or short-term measurements taken at the component or system level when variations in factors are not expected. Based on continuous measurements taken at the component or system level when variations are expected.	Engineering calculations, component or system models.
Option C **Utility billing data analysis**	Based on long-term, whole-building utility meter, facility level, or sub-meter data.	Based on regression analysis of utility billing meter data.
Option D **Calibrated computer simulation**	Computer simulation inputs may be based on several of the following: engineering estimates; spot, short-, or long-term measurements of system components; and, long-term, whole-building utility meter data.	Based on computer simulation model calibrated with whole-building and end-use data.

COMPLIANCE WITH CUSTOMER REQUIREMENTS

ESG will work with DCNR to define a customized approach for M&V that best reflects the goals of the project, is accurate, is fair to both parties, and is helpful in maximizing savings results for the term of this performance contract.

ADJUSTMENT FOR SHORTFALLS AND WINDFALLS

All savings above the project guarantee amount are entirely DCNRs to keep. Each year's annual savings must meet/exceed DCNRs debt service payments for that year. ESG will compensate and refund the full amount of any shortfall in the savings guaranteed, based on results of the annual energy audit, should savings not meet or exceed the guarantee.

Savings results for ESG customers have an average positive deviation of more than 10%, which clearly demonstrates our ability to accurately project and achieve the guaranteed savings.

REGULAR INTERVAL POST-INSTALLATION VERIFICATION

At regular intervals, ESG will verify that the installed equipment or systems have been properly maintained and are operating correctly. Although annual reports are required for establishing savings guarantees, reports will be prepared no less than semi-annually to ensure systems are working properly, allowing for fine-tuning of measures throughout the year based on operational feedback, depending upon customer preference for frequency.

BASELINE DEVELOPMENT

The core of all M&V is the appropriate development of the baseline. For this response, we have used the baseline data provided to us. However, upon selection, ESG will first begin a detailed review of utility bill data for the most recent three to four years of data.

MEASUREMENT AND VERIFICATION OPTIONS

M&V guidelines are grouped into four categories: Options A, B, C and D, as shown in the table on the preceding page. Having four options provides a range of approaches to determine energy savings with varying levels of uncertainty, costs, and methodology. A particular M&V option is chosen based on the complexity of the ECM while minimizing the risk of savings being achieved and keeping in mind the potential for operational changes between the baseline and the performance periods.

After the ECM or system is installed, energy savings are determined at a single occurrence, continuously or at regular intervals, as outlined in the contract. The savings calculation approach is generally dependent on the M&V option and method selected for the ECM. In some instances, a combined M&V option approach is best suited for the ECM. For example, for a building with multiple ECMs, a combination of Option A and Option B may be used for different ECMs.

Numerous factors can affect energy savings during the term of a contract. These factors include weather, occupancy, operating hours, equipment schedules, equipment maintenance, and equipment loads. How adjustments are made to the baseline if post-installation conditions are different than baseline conditions are dependent upon the M&V method option being implemented.

ESG Suggests Multiple M&V Options

Relative to the PA Small GESA 4 for DCNR, since the majority of energy conservation measures (ECMs) recommended for DCNR are proven technology and simplistic in nature, ESG proposes that **Option A** be utilized as the M&V plan for this project. Option C would be too costly for the ongoing M&V because there are multiple DCNR sites spread across hundreds of miles in Western Pennsylvania and numerous utility accounts to track the

savings. **Option A will cost much less to implement, while still providing accurate savings projections and may also allow for more energy work to be included in the project.**

CONTINUOUS IMPROVEMENT

As part of this scope of services, ESG will constantly seek out the best ideas to further add value and effectiveness to our services and establish new levels of efficiency in the customer's facilities. ESG will work with DCNR to customize an M&V program that is the most economical while providing the best results to validate actual energy savings.

ENSURING LONG-TERM SAVINGS RESULTS

A proper operations and maintenance (O&M) plan is very important to sustaining long-term energy savings. ESG is exceeding our guaranteed savings results at each of our projects due in part to the job that our customer's in-house facilities personnel are doing to maintain and operate key energy-consuming systems. ESG is capable of providing consultative advice, as a minimum, or assuming total responsibility for HVAC operations and maintenance, or anything in between. ESG will work closely with DCNR to evaluate and determine the appropriate maintenance plan as needed.

GUARANTEE/ EFFICIENCY ANALYSIS SERVICES

In order to maintain and increase the savings results throughout the term, ESG provides the technical expertise to keep energy consumption to its absolute minimum. This requires ongoing monitoring and fine-tuning of all equipment, analysis of monthly energy costs, analysis of preventive maintenance strategies/implementation and the ability to identify opportunities for additional energy savings. ESG, with its staff of Certified Energy Managers and Analysts, will work together with the customer's facilities staff to reduce the utility cost from the mechanical and electrical equipment in each building.

FORMAL REPORTS TO CUSTOMER

We typically provide an annual guarantee reconciliation report, and we can customize the frequency as needed by DGS and DCNR.

2.2-3 Critical Path Schedule

a. Narrative clearly identifies and discusses critical aspects of schedule, associated risks and process to ensure achievement of critical milestone dates.

The ESG project delivery team's approach and methodology is to control the project within the schedule by focusing on communication and teamwork within our projects. Our approach to constructions projects is not the typical "ground-up" approach. ESG is largely dependent on outdoor weather conditions and existing site location, and our process relies on our ability to gain access to buildings and equipment with minimal impact placed on the DCNR facilities. Some seasonal requirements will affect this project since the project involves occupancy in the spaces, and the installation of heating and cooling equipment. We are cognizant that DCNR must be able to operate their buildings and conduct business with minimal disruptions throughout the entire construction phase. Effective communication between ESG, DGS, and DCNR is critical and is the basis of seamless implementation.

As with any construction schedule, two of the most common risks are (1) failure to receive materials in a timely fashion, and (2) tasks that run over on time allocations. ESG can overcome these by (1) managing the project correctly by ensuring that materials are ordered well ahead of time, and (2) the time allotted to perform certain tasks is reasonable. A third risk is that unexpected circumstances that preclude our efforts to remain on schedule. No one can easily prepare for unexpected circumstances or acts of nature, however our ability to get back on track in similar circumstances has been stellar on previous projects.

ESG also has an excellent track record of creating and maintaining project schedules for various types of facilities. We focus on both understanding how we are impacting the client's working environment, and completing tasks within the timeframe of the construction period. ESG prides itself on being flexible and innovative to mitigate issues that could potentially impact project completion. Proper schedule management is the practice of our highly capable Project Manager who is focused on the following aspects during the development phase of the project:

- Clear and well-documented communication with the client and their goals and objectives.
- Partnering with the client to resolve issues expeditiously to maintain progress on the project.
- Careful planning—Since we are impacting the environment of employees and the public, ESG will aid in notifying all affected persons and will be eager to evaluate feedback and make any adjustments necessary to minimize disruptions. Some tasks on the proposed schedule can accommodate specific timelines in an effort to minimize occupant disturbances (nights, weekdays, off-peak hours).
- Flexibility in the schedule—We are prepared to encounter unexpected issues that may arise, for example, a client request that changes the scope, change of building use, change in future plans for the building. In every case, ESG has been able to work with the client to understand the issues and resolve them while proactively managing the schedule.

ESG's look ahead schedules are developed and administrated to assure specified milestone dates reflected in the CPM are either achieved or sustained with completing phases of work as required by DGS and DCNR. The CPM schedule will be updated at the end of each month and distributed to the project team.

Sections b. and c. are included in the Schedule-Critical Path Map (CPM)

2.2-4 Qualifications, Experience and Past Performance

a. Proposal clearly explains the qualifications and experience of all core members, including project specific roles and not generalized work performed on projects.

QUALIFICATIONS AND EXPERIENCE BY TEAM MEMBER

Tony Prelec *Role-Account Executive*	Education: Parkway Technical College, Darden School of Business. Project Development: 25 years. Energy Savings Projects Development: 12 years. Total value of projects: $104M.
Andrew Miller *Role-General Manager*	Education: Towson State University School of Business. Project Experience: 33 years. Energy Savings Projects Development: 17 years. Total value of projects: $300M+.
David Ames *Role-Sales Manager*	Education: Virginia Military Institute and University of Richmond. Energy Savings Projects Development: 30+ years. Total value of projects: $116M+.
Mahesh Bala *Role-Engineering Manager*	Education: Virginia Tech, Ph.D. in Mechanical Engineering. Engineering experience: 30 years. Energy Savings Projects Development: 20 years. Total value of projects: $300M+.
Stephen Richmond *Role-Regional Operations Manager*	Education: Kean University, BS in Industrial Technology and specialization in Mechanical Contracting. Energy/mechanical/electrical construction: 30 years. Energy Savings Projects implemented: 100+.
Michael Lowery *Role- Lead Performance Engineer*	Education: Virginia Tech. Energy Savings Projects Development: 8 years. Total value of projects: $50M.
Dan Khuu *Role- Secondary Performance Engineer*	Education: Rochester Institute of Technology, Mechanical/Energy Engineering. Energy Performance Contracting: 25 years, Total value of projects: $200M.
Karthik Dandu *Role-Performance Engineer*	Education: West Virginia University, MA Mechanical Engineering. Engineering consulting and performance contracting: 5 years. Total value of projects: $40M.
Scott Gracely *Role-Project Manager*	Education: California University of Pennsylvania. Construction management experience: 33 years. Energy Savings Projects Development: 9 years. Total value of projects: $250M.

Ken Stanley *Construction Manager*	Education: Community College of the U. S. Air Force towards Associates in Applied Science in Aerospace Ground Equipment Technology. Energy related experience: 35 years.
Donna Wicks *Measurement & Verification Manager*	Education: University of Southern Indiana and Indiana University. Measurement & Verification of Energy Savings Projects: 19 years.

PA SMALL GESA 4 DCNR-PROJECT SPECIFIC ROLES OF EACH TEAM MEMBER AND DESCRIPTION OF THEIR INVOLVEMENT

Tony Prelec *Role-Account Executive*	Client liaison, procurement, IGA work reviewer and post construction support.
Andrew Miller *Role-General Manager*	Procurement, financing, contracting.
David Ames *Role-Sales Manager*	Procurement, financing, contracting.
Mahesh Bala *Role-Engineering Manager*	Engineering work assignment and management during IGA and other project phases, and procurement.
Stephen Richmond *Role-Regional Operations Manager*	Overall project management responsibilities, construction management, commissioning and project turnover.
Michael Lowery, Karthik Dandu, Dan Khuu *Role-Performance Engineers*	IGA work, commissioning and diagnostic testing, design and review, Measurement & Verification and warranty services.
Scott Gracely *Role-Project Manager*	IGA work, procurement, construction management, training, post-construction support and warranty services.
Ken Stanley *Role-Construction Manager*	Procurement, construction management, training, post-construction support and warranty services.
Donna Wicks *Role-Measurement & Verification Manager*	Responsible for final development of Measurement & Verification plan and complete implementation of the plan for the duration of the project.

b. Proposal provides a detailed explanation of qualifications and experience for core team members on LED conversions and HVAC controls.

ESG CONSTRUCTION TEAM MEMBERS LED CONVERSIONS AND HVAC CONTROLS QUALIFICATIONS AND EXPERIENCE

Stephen Richmond *Regional Operations Manager*	Over 30 years of HVAC experience. Worked through college as a sheetmetal / HVAC mechanic. Ten years of estimating and project management experience in the mechanical contracting industry. Over 20 years ESCO industry mechanical systems with extensive building automation (controls) expertise. Every project installed for the last 5 years has been LED.
Scott Gracely *Project Manager*	Over the 9 years, developed and implemented over $100M in a variety of Lighting Upgrade (LED) and HVAC Improvement (controls) projects. Worked within the Mid-Atlantic region and has experience with Federal, State and Local Governments, Healthcare, K12 and University energy savings projects.
Ken Stanley *Construction Manager*	Over 11 years LED conversion experience for $60M in energy related projects and 30 years HVAC Controls experience spread over $100M in construction projects.
Michael Lowery *Performance Engineer*	Developed over $15M in Energy Projects where LED lighting technologies were implemented. Spent 8 years designing and implementing building automation (controls) systems for various HVAC systems as well as developed over $60M in Energy Projects where HVAC systems were modified to more efficient standards.
Karthik Dandu *Performance Engineer*	In the past 4+ years, developed over $10M in Energy Projects where LED lighting technologies were implemented. Spent 5 years designing and upgrading HVAC systems (controls) in various K-12, Federal and State projects across the Country.
Dan Khuu *Sr. Performance Engineer*	Developed over $200M in Energy Projects in the last 25 years. $120M of those projects included LED lighting design, HVAC Controls and Energy Management System (EMS) control design. This experience, combined with multiple professional certifications, ensures a successful installation for DGS and DCNR projects relative to LED and HVAC controls applications.

Matt Saboy *GES Vice President*	Over 13 years experience in auditing, designing and implementing over $80M in lighting for Guaranteed Energy Performance projects that included all types of lighting technologies. For the past 6 years, main focus has been on LED's lighting designs (Conversions from fluorescent systems). Graduate of several LED manufacturers design courses including Sylvania, GE, Cooper, and Acuity. Experience in re-designing existing lighting to LED lighting in multiple facility types ranging from state/federal/local prisons and municipalities, universities, hospitals, schools, private and government offices, manufacturing, and secure military and federal complexes.

c. Proposal clearly identifies the Retained Professional's individual core personnel and clearly establishes the Retained Professional's energy projects involving LED conversion.

ESG will self-perform the work of the retained professional and this work will be specifically managed by the team listed in detail in the two previous sections. Since ESG directly hires our professionals, rather than temporarily hiring retained professionals, we have fulfilled the obligation in previous sections explaining our professionals experience with energy projects containing LED conversions.

d. Proposal demonstrates the Retained Professional's readiness and commitment of personnel.

ESG directly hires professional engineers, project managers, construction managers and account managers. Therefore, we seldom have a need to temporarily hire retained professionals. ESG fully intends to utilize its fulltime and directly-employed professionals to implement this PA Small GESA project. ESG has the staff on hand to begin the Investment Grade Audit (IGA) and ultimately the construction as soon as the Notice to Proceed is issued.

e. Proposal clearly established Subcontractor's ability to complete Small GESA projects since 2010 with the team identified in the proposal.

Global Energy Services (GES) is a seasoned industry leader. Since 2009, it has been serving customers throughout North America, including Fortune 500, government, healthcare and educational institutions. GES has designed and installed over 1 million fixtures to date, including LED technology. The foundation of GES is based on 100% customer satisfaction and end to end project management accountability. They are fully licensed, bonded, and insured, as well as permitted in all 50 states. Certifications include: SDB Pennsylvania Certification #348437-2013-01-SB-WBE, MBE/DBE Maryland, SWaM Virginia, OMWBE Delaware, MBE/WBE New Jersey, and they are registered in the Central Contractor Registration (CCR) System. As you will see in the next section, GES has completed several Guaranteed Energy Savings Agreement (GESA) projects in Pennsylvania listed under their qualification.

f. Subcontractor's Qualification demonstrates readiness and commitment of personnel.

Global Energy Services Statement of Readiness

GES is completely ready to commit to the services required for this unique project. GES has over 80 employees including installers, engineers, and project managers. We have the capacity and ability to complete the IGA, design, and installation process needed to deliver this project efficiently from start to finish on the following ECM's: Lighting, Building Envelope and Water Conservation. GES plans to implement small teams of installers with vans to drive with materials needed from the various park locations. Since the project consists of a number of small buildings that are vastly located throughout the parks, the mobility of smaller teams will allow us the ability to maximize efficiency throughout the project.

Global Energy Services Qualifications

Global Energy Services is a national full service turn-key energy savings company that specializes in lighting retrofits, controls & design, water conservation and building envelope. Global Energy Services is a seasoned industry leader with over 100 years combined experience and expertise within our auditing and engineering staff and over 60 installers working in the field. We are currently serving customers throughout North America. We have experience dealing with Fortune 500 companies, Federal & Local Government Agencies, Healthcare facilities, schools, Universities, Municipalities and Correctional Institutions.

(GES Qualifications continued next page.)

(GES Qualifications continued.)

The following is a list of projects that Global Energy Services has implemented for PA GESA and other Performance Contracts:

Project Name	Owner/Performance Contract/Yrs	Owner Contact	State	GES Scope Totals
SCI Dallas	**GESA / 2015-2016**	**Mike Truchon –Facility Director**	**PA**	**$1,100,000**
Description of Work: This project is a Pennsylvania State Correctional Institute – This was a complete LED lighting retrofit and/or new fixture replacement throughout the prisons interior and exterior lighting. Special attention was made to the lighting levels due to security risk. Special photometric layouts completed for the exterior complex. This Project complete success, reducing the lighting consumption by 50%.				
City of Ocean City, MD	**Energy Systems Group / 2016**	**Terry McGean – City Engineer**	**MD**	**$1,684,994**
Description of Work: 18 buildings plus street lighting: This project is a performance contract – This was a complete LED lighting retrofit and/or new fixture replacement in conjunction with the Building Envelope improvements throughout 18 different building's (interior and exterior lighting). This project also included all city owned parking, street lighting and boardwalk lighting. Special attention was made to the lighting levels on the streets and boardwalks as well as properly directing the light so not to disturb marine life on the beach.				
HDC – Strawberry Square	**Siemens - 2015**		**PA**	**$3,128,179**
Description of Work: 3 buildings: This project is a performance contract – This was a complete custom design LED lighting retrofit and/or new fixture replacement & occupancy controls throughout 3 large office buildings and shopping mall (interior and exterior lighting). A large percentage of tenant space is occupied by Pennsylvania state agencies. Project was complete in 2015.				
PA State Police HQ	**JCI - 2017**		**PA**	**$202,502**
Description of Work: This project is a performance contract – The project consists of lighting controls, and some LED lighting retrofit interior and exterior lighting in selected locations. The water conservation portion of the project included 1.28GPF toilets, .126 GPF urinals, .5GPM aerators and 1.5 GPM shower heads throughout the facility.				
Delaware Army Natl Guard	**Siemens – 2017**		**DE**	**$569,726**
Description of Work: This project is a performance contract – The project consists of lighting controls, and LED lighting retrofit and new fixtures for the interior spaces.				
VA State Police	**Trane – 2016**		**DE**	**$819,424**
Description of Work: This project is a performance contract – The project consists of lighting controls, and LED lighting retrofit and new fixtures for the interior and exterior lighting for multiple locations across the state.				