

Energy Efficiency Retrofits and Energy Cost-Saving
Services for Existing Buildings
RFP #18PSX0104
Connecticut Department of Administrative Services

September 7, 2018



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Energy Efficiency Retrofits and Energy Cost-Saving Services for Existing Buildings

Table of Contents

- 1. Qualifications and Capability 1
- 2. Experience..... 2
- 3. Pricing and Fees..... 8
- 4. Form RFP-16 (Exhibit B) 8



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1. Qualifications and Capability

Sustainable Engineering Solutions, LLC (SES) was founded by professionals who understand the need for hands-on, practical engineering expertise and has diverse experience in recommissioning, retro-commissioning, energy auditing services, energy monitoring services, and staff training. SES is a corporate member of the Building Commissioning Association and the United States Green Building Council.



Listed below are SES's qualifications and capabilities, as requested in the RFP:

Type of Firm: SES specializes in providing recommissioning, retro-commissioning, energy auditing, energy monitoring, and staff training.

Number of Years in the Energy Business: SES has been providing energy services since its inception in 2008. The founders, Ernest Lawas and Walker Greeno, have a combined 35 years of experience providing energy services.

Number and Value of Similar Contracts: SES has provided energy services and retro-commissioning services for more than 70 facilities with a total contract value of over \$800,000. SES is a pre-qualified retro-commissioning firm for Eversource's incentivized Retro-Commissioning program. SES is also under contract with the Town of Berlin and the Town of Glastonbury to provide energy consulting services for various facilities.

Number of Full-Time Personnel: SES employs 6 full-time energy engineers.

Accreditations or Other Pre-Qualifiers:

- VA Hospital System
- Connecticut DAS pre-qualified Building Commissioning and Building Envelope Commissioning Provider
- Certified Energy Managers (CEM)
- Certified Energy Auditors (CEA)
- LEED Accredited Professionals (LEED AP)
- Certified Commissioning Professionals (CCP)
- Certified Commissioning Technical Process Providers (CxTS)
- Building Envelope Commissioning Process Providers (BECxP)

SES staff has provided energy services for clients in the academic, corporate, healthcare, industrial process, research and destination sectors. This experience has been utilized on various projects including laboratories, correctional facilities, hospital/healthcare, public and private educational facilities and office complexes.



With the national awareness of energy conservation driving efforts to make efficient building performance part of standard practice, the need for specialists with experience in evaluating energy consumption, performing energy audits and

coordinating utility company incentives will continue to grow. SES is dedicated to meeting these needs with consistent high-quality service.



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Project Principal:

Ernest Lawas, PE, CCP, CEM, CEA, LEED® AP
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2. Experience

SES intends to offer the following services as outlined in the RFP:

1) Energy Audit and System Monitoring & Reporting Services:

- **Provision of technical energy audits that evaluate current baseline costs and potential savings for all retrofitting or equipment replacement measures.** Having performed energy audit/energy conservation projects on over 5.5 million square feet of space, SES has extensive experience in evaluation, testing and design of major building systems. Our Team has the technical capabilities requisite for energy auditing projects including:

Mechanical

Central Cooling Plants and Distribution
Central Heating Plants and Distribution
HVAC systems
Hydronic Systems
Steam Systems
Plumbing Systems
Laboratory Systems
Fire Protection

Electrical

Emergency and Standby Power Systems
Engine Generator Systems
Lighting: interior, exterior and controls
Low and Medium Voltage Distribution
Fire Alarm Systems
Security Systems
Renewable Power Systems
Tel/Data

Controls

Direct Digital Control Systems
Laboratory Control Systems
Monitoring and Metering Systems
Integrated Building Control Systems

Envelope

Thermal Performance
Moisture Control
Fenestration
Assemblies
Building Leakage
Infrared Thermography

With Professional Engineers, Certified Energy Auditors (CEA) and Certified Energy Managers (CEM) on staff and experience auditing various types of facilities including judicial buildings, schools, public safety buildings, and administrative buildings, we are well qualified to perform energy audits for the state of Connecticut.

- **Provision of monitoring and reporting services that verify energy reduction and document actual savings achieved through retrofit or replacement.** SES has performed monitoring for verification of energy savings, commonly referred to as measurement and verification (M&V), for equipment replacement or system retrofits. SES has performed such M&V using various methodologies predicated on the nature of the systems or equipment being monitored. The methodologies implemented are per the International Performance Measurement and Verification Protocol (IPMVP) and are based on depth and breadth of an altered systems. For example, where system wide modifications have been made, a whole building M&V protocol that uses the facility's main electric meter would be the most effective way to monitor post-retrofit energy consumption and





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savings. On the contrary, where a single or a few discrete systems have been retrofit, temporary, isolated submetering or trend logging of key building automation system (BAS) points would be the most effective method of monitoring for verified energy savings. SES is currently performing M&V services at the Franklin County Correctional Facility in Greenfield, MA for ten different ECMs that range from simple lighting retrofits to a complete chilled water plant optimization package. In this project, we are using various different methods that range from trending of BAS points to submetering. Using both short-term and long-term data, various energy savings calculation are performed based on either an annual hourly runtime method or a bin model method to prove annual energy savings.

- **Provision of training where needed for facility managers and staff.**
Along with an efficiently functioning building, a necessity to any successful project is a trained operating staff that is knowledgeable in the operation of those building systems. SES can provide training of the facility staff on the specific energy efficient features and long term successful operations of retrofit equipment. Training would include persistence strategies to prevent degradation for long term efficient operation. SES can also review any training schedules, plans and materials provided by the Contractors. In addition, SES can provide videography of training if desired.

2) Retrofit Supply, Installation and Building Re-commissioning

- **Proven experience and expertise in building re-commissioning.**
As technology changes and system performance declines, it is important to re-commission a facility's systems. Re-commissioning identifies energy saving opportunities that can help restore the efficiency of systems that have been previously commissioned. As a result of "drift" of building systems, a previously commissioned building may experience performance degradation and an increase in energy costs. Our process will include the testing of building systems based on the original design parameters to identify and correct issues to reestablish the original higher level of performance for those degraded systems.

Project References

Smith College Retro-Commissioning of Six Campus Buildings Northampton, MA



Owner Contact:
Gary Hartwell
Smith College
126 West Street
Northampton, MA 01063
(413) 585-2441

Project Size:
492,000 SF

Project Status:
Completed 2015

SES provided retro-commissioning services for 6 campus buildings that included science buildings, performance spaces, social centers and other academic buildings on the main campus. The focus of this effort was to review the operation of the existing systems and equipment and to identify measures for system optimization and improvement of overall energy efficiency. The project concluded numerous implemented opportunities that ranged from simple scheduling and space temperature setpoint optimization to improving the performance of laboratory exhaust energy recovery systems. The resulting cost savings were approximately \$194,000 per year.



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Durham VA Medical Center Lab Building RCx Durham, NC



Owner Contact:
Michael Cotten
ConEdison Solutions
3405 West MLK Jr. Blvd
Tampa, FL 33607
(813) 375-3383

Project Size:
46,500 SF

Project Status:
Completed 2018

SES was retained by ConEdison Solutions on behalf of the Durham VA to execute a retro-commissioning investigation in Laboratory Building 15 on the Durham VA Medical Center Campus. SES investigated the operation of the HVAC system serving the laboratory spaces and how these pressure controlled zones are affected by the staff egress practices and the operation of the base building systems that serve the labs. The goal of this effort was to examine the current operation of the HVAC systems and equipment and to identify potential measures for system optimization and improvement of overall energy efficiency. The functional testing focused on identifying existing sequences of operations, temperature control sensor calibration and device verification and identify modifications and optimization strategies to enhance the systems operation. SES identified numerous modifications and optimization strategies that will significantly reduce the energy consumption by the building while maintaining the critical operating environment needed.

New Britain Judicial Courthouse Retro Commissioning New Britain, CT



Owner Contact:
Michael Rice, Program Manager I
Judicial Branch Facilities Unit
Administrative Division
90 Washington St.
Hartford, CT 06106
(860) 706-5262
Michael.Rice@jud.ct.gov

Project Size:
192,000 SF

Project Status:
Completed 2016

SES provided retro commissioning services for the Connecticut Judicial Branch Courthouse that leveraged the Eversource utility incentivized retro commissioning program. The retro commissioning services included performing a preliminary survey in which numerous performance and energy savings opportunities were identified and evaluated for further pursuit. Viable opportunities were further analyzed and evaluated during the full investigation phase of the project where SES developed bidding documents for final pricing and implementation. The project concluded with 7 fully implemented opportunities that ranged from simple rebalancing of HVAC systems and equipment schedule modifications to full conversion of constant flow hydronic pumping systems to variable flow and occupancy controlled HVAC zoning. Actual energy savings greatly exceed the conservative calculated savings of \$19,000 per year.



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Stamford Judicial Courthouse Retro Commissioning

Stamford, CT



Owner Contact:

Michael Rice, Program Manager I
Judicial Branch Facilities Unit
Administrative Division
90 Washington St.
Hartford, CT 06106
(860) 706-5262
Michael.Rice@jud.ct.gov

Project Size:

251,000 SF

Project Status:

Completed 2016

SES provided retro commissioning services for the Connecticut Judicial Branch Courthouse that leveraged the Eversource utility incentivized retro-commissioning program. The retro-commissioning services included performing a preliminary survey in which numerous performance and energy savings opportunities were identified and evaluated for further pursuit. Viable opportunities were further analyzed and evaluated during the full investigation phase of the project where SES developed bidding documents for final pricing and implementation. The project concluded with multiple opportunities that ranged from adding optimal start routines for HVAC systems and equipment schedule modifications to full conversion of constant flow hydronic pumping systems to variable flow. Calculated energy savings were approximately \$56,000 per year.

Backus Hospital Scott Avenue

Norwich, CT



Owner Contact:

Rick Olmstead
Backus Hospital
326 Washington Street
Norwich, CT 06360

Project Size:

40,000 SF

Project Status:

Completed 2016

SES performed an HVAC and control system condition assessment and energy evaluation of the building's HVAC system. SES identified key improvement opportunities to enhance the building's environmental comfort, building system performance and reduce energy consumption and cost.



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Tunxis Community College Farmington, CT



Owner Contact:
Christopher M. Dupuis, P.E.
Connecticut State Colleges and
Universities (CSCU)
61 Woodland Street
Hartford, CT 06105
(860) 723-0315
DupuisC@ct.edu

Project Size:
250,000 SF

Project Status:
Active

SES performed an initial survey and in-depth retro-commissioning investigation of the 250,000-square-foot academic and faculty buildings, identifying energy saving opportunities that could result in an estimated \$70,000 annual savings. This project is currently in the implementation phase. Once the selected energy conservation measures have been implemented, the simple payback is estimated to be 3.3 years.

Norwalk Community College Norwalk, CT



Owner Contact:
Christopher M. Dupuis, P.E.
Connecticut State Colleges and
Universities (CSCU)
61 Woodland Street
Hartford, CT 06105
(860) 723-0315
DupuisC@ct.edu

Project Size:
214,000 SF

Project Status:
Active

SES performed an initial survey and in-depth retro-commissioning investigation of the 214,000-square-foot college, identifying energy saving opportunities that could result in an estimated \$65,000 annual savings. This project is currently in the implementation phase. Once the selected energy conservation measures have been implemented, the simple payback is estimated to be 3.1 years.





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Franklin County Jail

Greenfield, MA



Owner Contact:

John Mazzali
Millennium Builders, Inc.
50 Inwood Rd.
Rocky Hill, CT 06067
(860) 571-0555
jmazzali@mbict.com

Project Size:

105,000 SF

Project Status:

Active

The Franklin County Jail facility was originally constructed in 1886, and through a design-build construction process had numerous energy conservation measures implemented. The various measures included a PV canopy array, a chiller plant optimization, new condensing boilers, energy recovery ventilators, LED lighting, new domestic hot water heaters and retro-commissioning. Through Millennium Builders Inc., SES was hired to act as the commissioning authority for all energy conservation measures and provided valuable insight throughout the design and construction process. SES functionally tested each measure to ensure the installation matched the design intent and provided owners training oversight as well.

As a qualified M&V Provider, SES was in charge of executing the measurement and verification (M&V) process at Franklin County Jail for the various energy conservation measures. Using IPMVP protocols and field measured data values, the actual energy savings for each measure were calculated and verified against the initial projected savings.

SES also executed a retro-commissioning investigation on the building's HVAC systems. The goal of this effort was to examine the current operation of the HVAC systems and equipment and to identify measures for system optimization and improvement of overall energy efficiency. The functional testing focused on identifying opportunities within existing sequences of operations, temperature control sensor calibration and device function. SES identified numerous modifications and optimization strategies, which lead to a rebalancing of the VAV systems and a new refrigerant monitoring system being installed.



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3. Pricing and Fees

- **Proposed the pricing structure for the type of retrofit projects/services.**
 - **Specify costs that are fixed/variable.** The fees for the requested services we intend to provide, as listed in Section 2 of this proposal, would be variable based on the size and type of facility and the density of equipment and systems within it.
 - **Specify if there is an initial capital cost outlay; if not, is that option available?** Due to the nature of the proposed services, an initial capital cost outlay would not be feasible. The cost of individual projects will be dependent on factors such as the size and type of facility and the density of equipment and systems within it, as mentioned above.
- **Describe all cost markups and how they me be applied.** If specialty subconsultants or subcontractors such as a building automation system contractor or balancing contractor would be needed, a markup of 10% would be applied in addition to their cost of services. Should we require such specialty services, SES would request approval from DAS prior to subcontracting.
- **Describe all other costs such as maintenance and monitoring and how they are applied.** As we would not be providing any equipment install or providing energy service contracts with any guaranteed savings, there would be no such costs associated with maintenance. Predicated on the nature of any retrofit or replacement, there are a variety of monitoring options that include leveraging an existing BMS, using standalone data loggers or applying building analytic software for automatic data acquisition. The costs would depend on the option chosen for the unique benefits they provide.
- **Describe any potential rebates and incentives that can be made available to the users of this contract.** Utility company rebates and incentives exist for various types of projects that would include retro-commissioning, replacement or upgrades of HVAC, refrigeration, water heating and lighting equipment to high efficiency systems and equipment. The type and amount of incentives or rebates are predicated on several factors including overall energy savings and would be reviewed and approved by the utility company on a project-by-project basis.

4. Form RFP-16 (Exhibit B)

See attached Form RFP-16.

