

# North Carolina Guide to Energy Performance Contracting

for

K-12 Schools,  
Local Governments &  
Community Colleges

Part One: Reference Guide  
Part Two: Lessons Learned in North Carolina  
Part Three: Appendices & References

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### Disclaimer

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## **How to Use this Guide**

*These guidelines are intended for use by administrators, facility managers, project managers, finance directors, and energy team stakeholders in North Carolina K-12 schools, local governments, and community colleges who wish to pursue energy saving performance contracting. The guide is divided into three parts: Reference Guide, Lessons Learned in NC and Beyond, and Appendices and Resources. The authors have also developed three brief, stand-alone fact sheets on energy performance contracting for decision-makers (see below).*

**Part One**, the Reference guide, is arranged according to the flow chart map shown in Figure 1 on page 2. Each step in the performance contracting process is identified by the flowchart and consists of a single section (Sections I—IX) devoted to the details and processes for completing that step. Each step is to be completed in the order given for inquiry purposes but not a prerequisite requirement for informational development. Multi-tasking is encouraged in the early stages to develop pertinent information quickly so the schedule can be shortened.

**Part Two** of this document is a compilation of Lessons Learned from North Carolina School Systems, City Governments, County Governments, and Community Colleges that have implemented Guaranteed Savings Energy Contracts with ESCOs. The feedback from interviews has been documented to provide insight and seek continual improvement in the performance contracting process.

**Part Three** provides additional references, resources, and glossaries, as well as example documents such as Request for Proposals and Energy Service Agreement, that can be utilized by interested stakeholders.

*All example data in this guide comes from North Carolina public facilities.*

*Three overview fact sheets of the energy saving performance contract process also were created with this document as an abbreviated version for decision makers. These fact sheets, listed below, are available at [www.energync.net](http://www.energync.net).*

- 1. A Decision-Makers Guide to Energy Saving Performance Contracting:  
K-12 School in North Carolina*
- 2. A Decision-Makers Guide to Energy Saving Performance Contracting:  
NC Local Governments*
- 3. A Decision-Makers Guide to Energy Saving Performance Contracting:  
Community Colleges in North Carolina*

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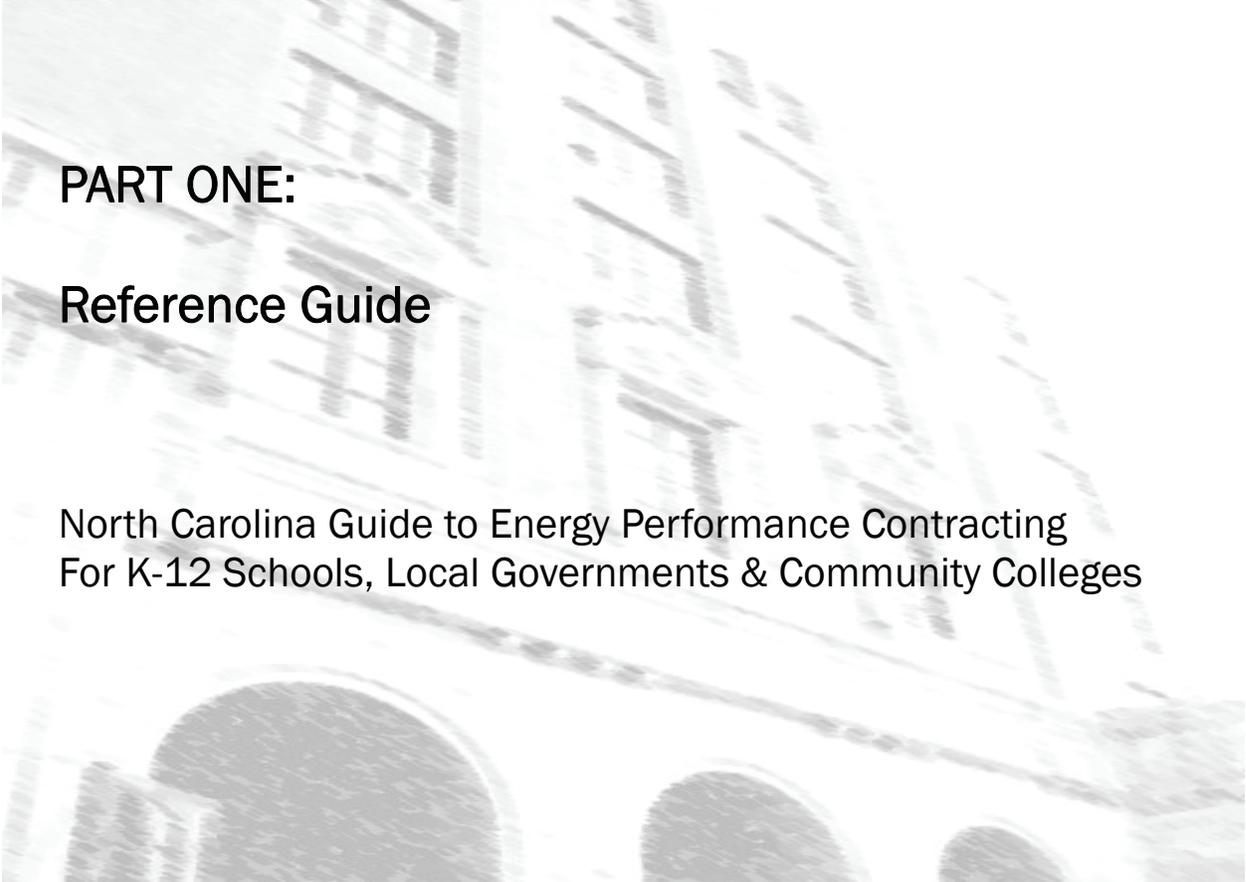
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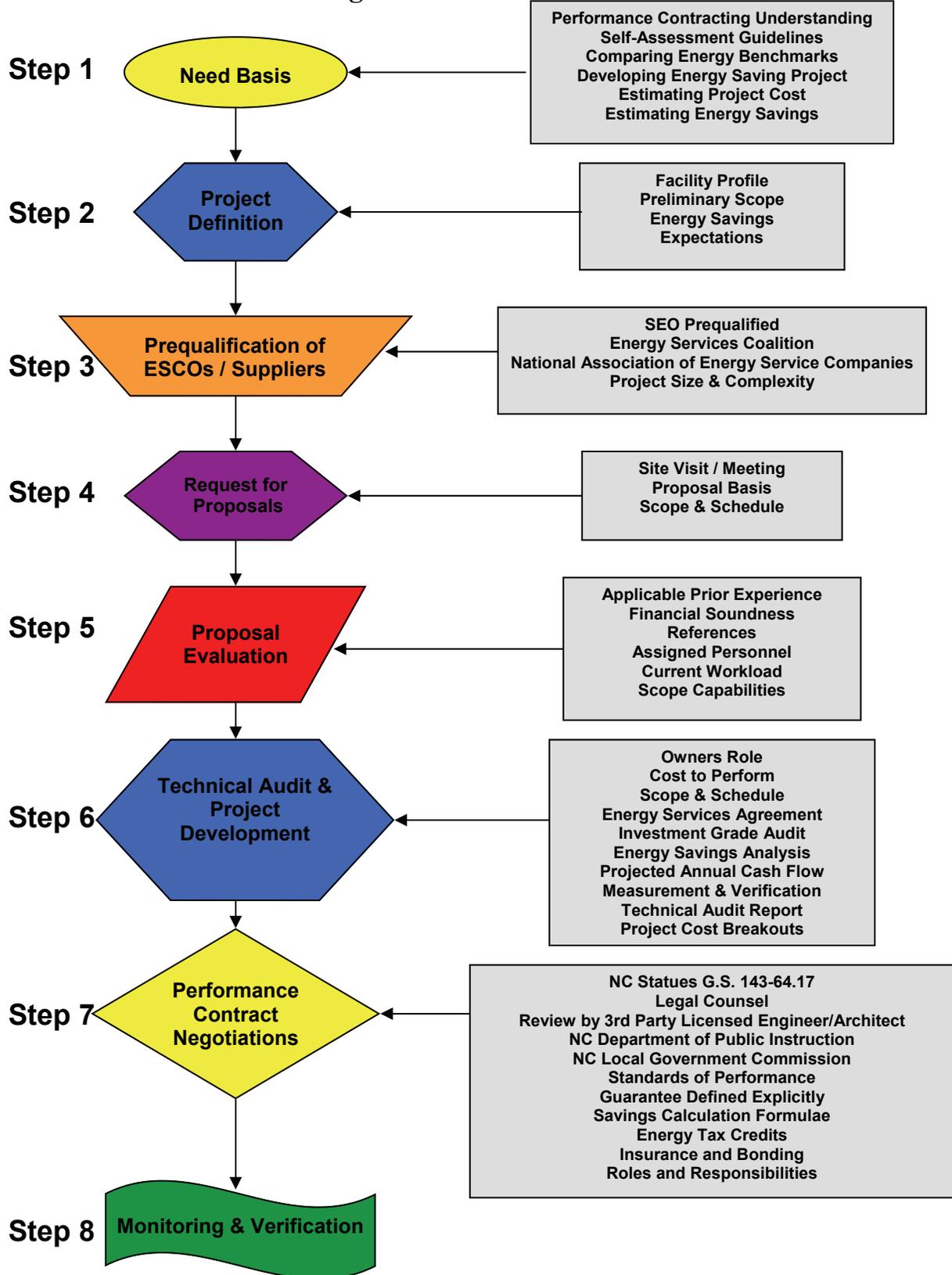


**PART ONE:**

**Reference Guide**

North Carolina Guide to Energy Performance Contracting  
For K-12 Schools, Local Governments & Community Colleges

Figure 1: Performance Contracting Process



## I. Introduction

In 1995, North Carolina approved \$310,000 for the first Guaranteed Energy Saving Contract (GESC) for a small school system in North Carolina. In January, 2006, the North Carolina Department of Administration announced a \$19 million performance contract award to improve the energy efficiency of numerous *state buildings* in Raleigh. Since 1995, \$84 million in 45 projects have been implemented by local and state government units for making improvements to the energy efficiency of their buildings and facilities. How well have we done? What have we learned? How can we use this experience to improve the performance contracting process?

Performance contracting is being encouraged by the NC statutes as a means for reaching the state-wide Utility Savings Initiative goal by updating facilities and making energy saving improvements for daily operations. These Guidelines are intended to review the major steps for performance contracting in North Carolina and to provide a “lessons learned” review of those government units that have made the commitment to understand the details of this funding approach and have implemented energy saving projects by these methods.

### 1.1 About These Guidelines

The North Carolina State Energy Office (SEO), in conjunction with Waste Reduction Partners (WRP) of the Land-of-Sky Regional Council, with funding from the U.S. EPA, has prepared these guidelines to assist local governments, municipalities, K-12 schools, and community colleges in North Carolina with the process of performance contracting for energy saving measures. The basis for the development of these Guidelines includes prior best practices, North Carolina General Statutes, State Energy Office procedures and documents, and NC case reviews and interviews about the performance contracting processes and experiences. It is the intent of these guidelines, by way of examples and detailed explanation, to:

1. Define the basis for knowing if there is need for this contracting approach
2. Organize the need in a project document that can serve as a request for proposals
3. Understand the process used by the SEO to pre-qualify Energy Saving Companies (ESCOs) working in NC
4. Develop and issue a Request for Proposals that meets the objectives of the organization
5. Evaluate proposal responses for capabilities, experience and value content
6. Execute an Investment Grade Audit for defining the final cost and savings of the contract
7. Outline procedures and methods required by the NC Statutes for issuing an award
8. Provide guidance to the monitoring and measurements to verify the contract expectations

These Guidelines are written to reveal prior successful projects and common issues that promote predictable results and identify any unsuccessful prior performance contracting experiences that need to be avoided.

## 1.2 What is Energy Performance Contracting?

A performance contract can be defined as “a *single procurement contract for engineering, construction, installation, start-up, measurement, verification, operation and maintenance that specifies performance energy saving improvements in buildings/facilities that will result in sufficient avoidance energy cost and enhanced recovery from utility systems to pay for the cost of equipment, materials, labor, subcontracts, fees, insurance, bonds, permits, debt service, and all cost associated with the implementation of the contract scope over the life of the contract.*” In simple terms, energy performance contracting is a project approach that utilizes the energy savings and revenue gains to pay for the project cost.

Many local governments and school districts have recognized the need to replace aging equipment and make energy efficiency upgrades in buildings but lacked the funds to make these improvements. Guaranteeing the energy savings to pay for the cost of the improvements provided a means to overcome the lack of funding. In a guaranteed-savings contract, the ESCO guarantees a minimum level of financial savings or energy savings to the local government unit, who is responsible for making debt-service payments to a third party financial institution. If there is a shortfall in savings, the ESCO reimburses the local government unit. If savings exceed the ESCO’s guarantee, the local government unit keeps the excess. Usually, the ESCO is paid up-front for the turn key cost to purchase equipment and execute the project. The guaranteed savings contract between the ESCO and local government unit outlines the conditions of the performance guarantee, as well as the terms, the scope of work, and physical requirements of the improvements planned.

Energy Performance Contracting is a turnkey project delivery method. It works best when some of the following conditions are present:

- Aging buildings or equipment;
- Recurring maintenance problems or high maintenance costs;
- Comfort complaints;
- Low indoor air quality;
- Renewable and Green energy options are important to consider, but need to be packaged for economic feasibility;
- Scarce budget resources (primarily for capital improvements, but also under high maintenance strains);
- Energy management expertise is low or assigned to other priorities;
- Too many demands on maintenance staff;
- No recent upgrades of lighting or controls systems; and
- Energy-using equipment that is ready for replacement.

## 1.3 How is Energy Performance Contracting Different?

**Conventional Contracting** - usually proceeds in three to four phases with the first two phases being a separate contract. Normally, depending on qualifications, a contract is let for project development followed by detail design/engineering. The same firm can perform both

phases, if qualified for the front-end energy assessment, investment grade audit, and detail design. The next phase is for construction and initial commissioning of the new work. The final phase can be operation and maintenance if the offer makes sense for the work installed. Also, it is possible to award a design/build contract, the most popular non-performance based agreement. Under design-build agreements, ESCO's (or contractors) are compensated for designing and installing projects, and are typically responsible for equipment warranties and commissioning to ensure that the installed equipment works as designed. However, once the local government accepts the project, the long-term performance risk lies with the local government, not the ESCO. Design-build contracts are fast-track schedules because construction can begin without waiting for construction proposals. Often the contract is cost-plus until 80% of the engineering is complete, at which time the contract is converted to a lump sum arrangement.

**Energy Performance Contracting** - replaces the conventional collection of multiple solicitations and contracts with a single proposal covering all aspects of the project and one contract with the selected proposer. **The process begins with an evaluation of a facility's potential for efficiency improvements conducted by the Facility Owner staff, pre-approved ESCO, or his designated consulting engineering firm.** If the potential seems promising, the Facility Owner prepares a Request for Qualifications (RFQ) (This requirement has already been done by the NC State Energy office.) Typically, the RFQ's purpose is to select at least two qualified (if two are not received then a re-bid is done) ESCOs to prepare proposals for the provision of energy-efficiency equipment and services to the Facility Owner in response to a Request for Proposal (RFP). In NC, facility owners will issue an RFP to acquire two or more bidders. After receipt of a favorable proposal, the Facility Owner directs the winning ESCO to develop a comprehensive Energy Study (also called Investment Grade Audit) of energy efficiency opportunities at the facility. The results of the audit become the basis for the performance contract between the Facility Owner and the ESCO. The contract specifically addresses compensation, liability, the accountability of services, and the ESCO's guaranty of savings at the facility. After receiving the notice to proceed, the contractor furnishes, installs, and commissions the energy saving improvements. Facility Owner staff monitors the ESCO's day-to-day performance during the construction process in the same manner they would monitor a large repair and maintenance project. After construction is completed and accepted, Facility Owner staff monitor ESCO performance concerning equipment maintenance and repair (if contracted to do so), standards of service and comfort, and level of energy savings achieved.

#### **1.4 Benefits of Energy Performance Contracting**

The consolidation of many smaller projects into one larger project, with single responsibility for design, construction, installation, operation, maintenance, and with performance guarantees, merits consideration, especially if there is a lack of local funding and tax support commitment.

Some benefits of this contracting approach include:

- Energy costs are reduced, since the project is financed through the energy savings
- Third party financing, debt burden off balance sheet, no public approval, must self fund
- A performance bond guarantees savings for the entire term of the contract
- Proceed with worthy projects when funding from conventional resources are not available
- Single source accountability - design, procurement, build, install, and sometimes maintain
- Performance risk resides with the ESCO/contractor
- Reduced cost of escalating utilities at contract completion
- New equipment replaces old inefficient equipment, facilities are improved and modernized
- Facility owner retains equipment and all the savings from reduced energy bills after the term of the contract
- Decreased design-build schedule, resulting in early energy savings
- Tracking energy performance makes administration and operations more aware of the causes and influence of changes that influence energy cost.

Not all of these benefits for executing a performance contract have been realized by everyone, but about 80% that have tried this unconventional contracting approach have met or exceeded initial savings returns. However, energy saving opportunities that appear feasible may require a significant amount of details that can prove a burden with facility owner resources.

<b>Planning Timeline Activity</b>	<b>Typical Timeline</b>
Decision-Makers intro to approach	Week 1-7
Review Need—Education on Process	Week 8-12
Develop and Issue RFP	Week 16
Pre-bid Meeting and Site Visit	Week 17
Proposals Due	Week 24
Proposals Reviewed, Evaluated and Ranked	Week 27
Oral Interviews	Week 28
ESCO Selected	Week 30
Technical Audit Work Negotiated	Week 32
Technical Audit Completed	Week 38
Contract Negotiations	Week 42
Approval by Local Govnm't Commission	Week 45
Contract Presented and Signed	Week 48

## 1.5 Avoiding Pitfalls of Energy Performance Contracting

This guide incorporates recommendations for developing the Facility Owner's approach to successful energy saving performance contracting, that, when included, will minimize the Owner's risk inherent in all projects. In the past there have been pitfalls with Energy Performance Contracts. Although the concept and process are proven, in the past some ESCOs have profited by failing to explain or inform Facility Owners of the key technical and financial decisions that need to be made by the Facility Owner. Instead, in such cases, the ESCO made the decision without Facility Owner involvement and crafted the performance contract to favor the ESCO and not the Facility Owner. A summary of some major pitfalls includes:

- Energy Baseline Development

It is crucial that the Facility Owner participate in establishing the energy baseline, as defined in Section 7.3.1, instead of the ESCO establishing the baseline on its own.

- Energy Baseline Adjustment

It is also important that the Facility Owner agree on the definitions and methodology for making any future adjustments to the energy baseline. The Facility Owner can include a provision that requires third party opinions on adjustments.

- Operational Savings

Another potential pitfall is the inclusion of operational savings that are not energy related. They can be labor or material savings that result from the implementation of a particular energy conservation measure. For instance, if a school has new lights installed in all classrooms, no labor or materials will be necessary in these areas for changing out lamps or ballasts for a fairly well defined time period. Any claimed operational savings should be carefully examined and verified by the Facility Owner before agreements are signed. In some cases (such as the case with labor savings), the savings may never actually be realized and will not show up in the budget (i.e., you don't save labor unless a position is eliminated).

- Cost Avoidance

Cost avoidance applies to implementing measures that will allow Facility Owners to avoid future costs, but does not save hard dollars compared to past budgets. For instance, if a school knows that it needs to replace a boiler within the next ten years, it will need to appropriate capital dollars to do so. However, if the school installs a boiler under the performance contract today, it will avoid spending the future capital outlay on the boiler. Facility Owners need to be careful! **When ESCOs propose the inclusion of cost avoidance in calculating savings, Facility Owners are actually spending the money today and must budget for the lease payment each of the next years.** Facility

Owners should not include these so-called savings in their calculations unless they have a stream of future capital dollars that can be earmarked toward the project.

- Excessive Finance Charges

If the ESCO has financing responsibilities, there have been instances where ESCOs inflated the interest rate on the funds borrowed to generate additional profits. Facility Owners should check the rates against local banks or other national institutions to make sure they are competitive. Facility Owners should be able to arrange their own financing at lower rates and also take advantage of tax benefits/savings.

- Lack of Local Facilities Control

There have been unreasonable requirements in the performance contracting business where some ESCOs have required that any after hours building usage changes must be telephoned to offices in far away cities for the ESCO to program. These inconveniences should not be tolerated and Facility Owners should carefully study the terms and conditions of the performance contract with their attorneys' help. Not all ESCOs agree with this position. There are many ESCOs willing to guarantee the savings while providing local control for Facility Owner maintenance staff. The objective of the performance contract should be to increase comfort and control and not manage the facility's schedules.

- Terms of Savings Reconciliation Versus Budget Cycle

Several ESCO performance contracts are written to allow the ESCO to carry over savings that occur in early years to offset losses in later years. No Facility Owner should allow these terms. Once the excess savings occur (excess is everything over the annual guaranteed amount of savings), the Facility Owner should be free to use these savings in the current fiscal year. All savings should be reconciled on an annual basis and should stand alone on that basis. Quarterly updates are encouraged to evaluate annual savings ahead of time.

- Quality Control

Some performance contracts have been poorly defined. When this occurs, the Facility Owner may see fewer or lower quality products. Before entering into any contract, Facility Owners should require the ESCO to provide a detailed definition of both replacements and services being proposed and have both the proposed services and the replacements reviewed by someone knowledgeable from either the Project Team or an engineering consultant.

- Excessive Guarantee Costs

In some cases, the risk of failure to meet savings projections does not warrant or justify

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the cost of the guarantee. For example, if it costs \$10,000 to guarantee a particular energy conservation measure that saves \$20,000, it might be better to put \$10,000 in the bank and hope that the ESCO did not miscalculate the savings by 50%. Most projects do not miss the projected savings by a significant percentage, especially in the later years of the contract.

- Cream Skimming

Sometimes, ESCOs specialize in or promote energy savings projects with fast payback measures. These provide immediate returns to the Facility Owners but “skim the cream” and prevent other opportunities of achieving energy savings from occurring. For example, if a performance contract focuses only on lighting, a measure with a short payback period, this may eliminate the opportunity to achieve savings through combining lighting with longer term payback items. By bundling several types of measures together, the quick payback items are leveraged to pay for longer term payback items. Today, ESCOs may be concerned that Facility Owners have already implemented the quick payback energy saving project before working with ESCOs.

## **1.6 What Kinds of Equipment and Services Can Be Purchased?**

Energy savings performance contracts are used to purchase a wide variety of building equipment and services. Energy-efficient lighting, air conditioning systems, energy management control systems, motor replacements, and variable-speed drives for pumps and fans are commonly implemented improvements. More recently, water meter replacements for local government units have been included. These meters allow for the collection of lost revenues because of wear and lack of accuracy of older meters and the newer technology meters allow for remote reading, thus saving labor as well. Generally, an ESCO will include any improvement expected to recover its own cost (including training, subcontractor fees, mobilization cost, etc.) in the energy savings projections over the term of the agreement. This means that longer payback items, such as adding ceiling insulation or replacing windows, usually do not exhibit stand-alone savings unless they are bundled with fast payback items.

In addition to equipment installation, the ESCO may propose various repair and maintenance services; these should be outside the contract if the justification basis is marginal. Often ESCOs propose repairs to existing systems, such as reinstallation of damaged or missing controls or repair of leaks in chilled water piping. Generally, the ESCO assumes responsibility for preventive maintenance and repairs to all new equipment installed. Also, as noted earlier, the ESCO may offer to take responsibility for maintenance and even operation of existing equipment. For example, the ESCO may offer to provide remote monitoring and adjustment of temperature setpoints with a computerized temperature control system.

Because any installed equipment is ultimately owned by the Facility Owner, the ESCO should always provide documentation for all installed equipment, including as-built drawings and operating manuals. The ESCO should train the on-site Facility Owner’s staff to

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operate and maintain the equipment. In most cases, the ESCO's budget will allow the Facility Owner's personnel to attend training programs provided by equipment manufacturers. These can be on-site or off-site.

## 1.7 Energy Performance Contracting in North Carolina

North Carolina General Statutes (N.C.G.S. 143-64.17) define certain procedures to follow when considering performance contracting for **Guaranteed Energy Saving Contracts** for Local and State Governmental Units. (A copy of the NC Statutes is enclosed in the Appendix.) The first part addresses energy conservation practices in public facilities and the second part deals with those governmental units that are considering Guaranteed Energy Saving Contracts to make improvements for energy conservation. **These statutes are the first step to evaluate what will be required to execute a Guaranteed Energy Saving Contract in North Carolina for a Local and State Governmental Unit.** This understanding is key for further consideration of capital funding of the energy saving projects according to NC Statues. There are key differences in the statutory requirements between "local" and "state" governmental units.

### **Part 2. Guaranteed Energy Saving Contracts for Governmental Units**

**This part applies to all Local and State Governmental Units** with: **Local** defined as "any board or governing body of a political subdivision of the state, including any board of a community college, any school board, or any agency, commission, or authority of a political subdivision of the State." **State** is defined as: "the State or department, an agency, a board, or a commission of the State, including the Board of Governors of the University of North Carolina and its constituent institutions." **(Note: Articles pertaining to "State" Governmental Units have been omitted since guidance is for K-12 public schools, local governments and community colleges; however, the entire Part 2 is included in the Appendix. The State Energy Office of the NC Department of Administration has established rules for Guaranteed Energy Saving Contracts in State Agencies and Universities in 01 NCAC Subchapter 41B.)**

The general provisions of this Part 2 include:

- The explicit definition of: energy conservation measures, energy savings created by the measures, a qualified provider, and the "request for proposals".
- **Request for Proposals shall include:**
  - (1) Published in a local newspaper 15 days prior to the specified opening of the proposal
  - (2) Every effort to have at least two qualified providers for an award to be granted. Rebid if only one bidder responds.
  - (3) **Proposal responses shall have estimates of all costs of installation, modification, or remodeling, including costs of design, engineering, installation, repairs, debt service, and estimates of energy savings.** (This is addressed in detail in Section III - Project Definition)
  - (4) **Local** Government Unit proposals shall be evaluated by a **licensed architect or**

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professional engineer with fee being included in the calculated cost for a guaranteed energy saving contract. Proposals shall be opened in public by a member of the governing body or an employee, with contents announced and recorded in the minutes.

- (5) State omitted
- (6) A qualified provider response to: prices offered, costs of construction, financing, maintenance, training, product/material quality, quantified energy savings, experience and capabilities, conformity to the requirements, specifications, time of the performance contract, all factors that are deemed necessary to be a matter of record.
- A Guaranteed Saving Contract shall be awarded when:
  - (1) The term of the contract is **less than 20 years from the date of installation.**
  - (2) The energy savings from the performance contract will equal or exceed the total cost of the contract.
  - (3) **The energy conservation measures are for an existing building.**
  - (4) Notice of award and purpose is published 15 days prior to the award or meeting.
  - (5) The qualified provider provides security acceptable to the State Treasurer equal to 100% of the total cost of the guaranteed saving contract for performance with any bonds required, in accordance with Article 3 of Chapter 44A of the General Statutes.
  - (6) Maintenance can be by the qualified provider or governmental unit, if qualified resources are available.
  - (7) State Governmental Unit (Omitted)
- Reporting for State Governmental Units (Omitted)
- Reporting for Local Government Units  
Local Government Units entering into a guaranteed energy saving contract must report the contract and the terms and conditions to the **Local Government Commission and the L.G. Commission reports biennially to the Joint Commission on Governmental Operations.** The Local Government Commission with the help of the **Office of State Construction shall evaluate energy savings expected and that which was actually achieved.**
- Guaranteed Energy Contract Funding - Local
  - (1) Local government units may use any funds, whether operating or capital, for the payment of a guaranteed energy savings contract. State appropriations to any local government unit shall not be reduced as a result of energy savings occurring as a result of a guaranteed energy savings contract.
  - (2) Local government units may provide for the acquisition, installation, or maintenance of energy conservation measures by installment or lease purchase contract in accordance with and subject to the provisions of G.S. 160A– 20 and G.S. 160A –19, as applicable.

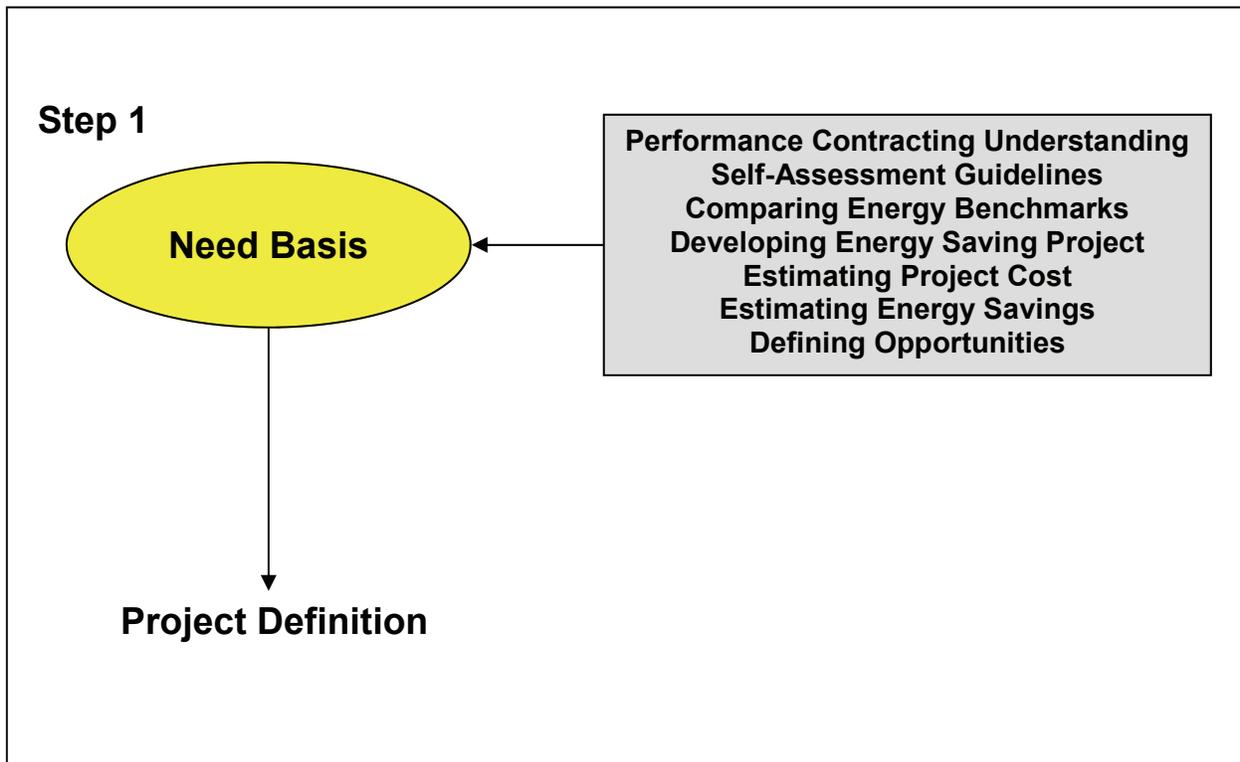
Additionally, on July 19th, 2006, Senate Bill 402 allowed for extension of the term of the contract to 20 years, extended the cap to \$100 million for state projects, and included the conservation of water of the facility and metered water supply as a part of the performance contracting process. Old water meters were a source of lost revenues by governmental

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units and the capture of these revenues allowed for better returns of the performance contracting program.

It is important to understand that local governments and school districts have specific procurement and administrative rules and regulations they must follow. Obviously, the NC Statutes govern specific requirements; however, the State Board of Education, Department of Public Instruction, for instance, publishes an *Engineering Checklists for Public School Facilities - Electrical, HVAC, Plumbing, and Structural* that would serve to guide the ESCO in documentation procedures and design/performance requirements as related to school facilities. The review and incorporation of these design requirements should be provided to the ESCO as a reference since it could very easily involve cost when the performance contract is executed.

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## **II. DEVELOPING THE NEED BASIS**

- 2.1 Objectives of the Need Basis**
- 2.2 Background Resources for Understanding Energy Management**
  - 2.2.1 State Energy Office Resources**
  - 2.2.2 Energy Benchmarks**
  - 2.2.3 Owners Preparation/Organization**
- 2.3 Preliminary Assessment of Performance Contracting Potential**
  - 2.3.1 Estimating Energy Savings**
  - 2.3.2 Walk-Through Assessments**
  - 2.3.3 Estimating Project Costs**
- 2.4 Employing Facilities Representatives or Contract Facilitators**

## 2.1 Objective of the Need Basis

The preliminary energy project analysis will effectively screen projects for potential as a performance contracting project. Any energy project begins with a preliminary feasibility analysis. This effort starts with the collection of utility cost and usage information along with general background information on school facilities. For a potential energy saving performance contract, typically total energy cost will be greater than \$1.50/square foot, total building(s) area greater than 60,000 square feet, potential energy saving will be greater than 15 percent of utility costs, major energy-consuming equipment (such as chillers, boilers, or rooftop HVAC) is greater than 10 years old, and potential total project cost is greater than \$500,000. Sometimes even newer buildings (at least one year old) are often candidates for energy saving projects because proper commissioning or optimum performance was never achieved. Small projects (less than \$300,000) are typically not attractive to an ESCO because the project size does not warrant ESCO's time investment to bid, engineer, and execute the turn key project.

With background awareness and interest, school and local government administrators typically begin this process by assembling a work team and project leader to gather and evaluate this preliminary information. Team members should represent a broad range of skill sets in technical, financial, purchasing, contractual, and project management. In this early stage, school officials should seek input from the Local Government Commission for project financing guidance and from the Department of Public Instruction School Planning staff for design and performance requirements applicable to the project. School administrators may also be approached by ESCOs to evaluate and discuss initial project potential. A clear understanding of the performance contracting process is important to effectively work with an ESCO at this early phase.

## 2.2 Background Resources for Understanding Energy Management

As a first step toward establishing the current facility energy usage and costs, facility owners can make use of energy saving self-assessment guides and resources. The State Energy Office (SEO) of the North Carolina Department of Administration in conjunction with Waste Reduction Partners, Asheville, NC, have published a *Self-Assessment Guide for Energy Savings Opportunities* that lists estimated energy reduction potentials and paybacks for Lighting, HVAC, Building Envelope, Motors, Office Equipment, and Energy Management Systems. This booklet also points out the energy usage categories expected for Local Governments/Municipalities (office buildings) and for K-12 Schools/Community Colleges. Table 2.2 shows the expectations of energy consumption by category as a percentage of total energy consumption. There can be broad ranges to these percentages due to different infrastructures and equipment.

	HVAC	Lighting	Hot Wa-	Food	Misc. Use	Equipment
<b>Local Governments/ Municipalities</b>	30-50	20-40	5-15	1-4	3-6	10-20
<b>K-12 Schools/ Community Colleges</b>	40-60	15-25	15-25	1-4	2-4	1-3

**Charts 2.2.1 and 2.2.2 list the example intensity values for electricity and natural gas for schools and offices.** These guides show, on average, the values of energy being used for providing the functional needs of the building. These Benchmarks are discussed in Section 2.2.2

### 2.2.1 State Energy Office Resources

Defining the documentation and acceptable procedures of a **preliminary energy savings assessment** for performance contracting can be a facility owner's task or this effort can be allocated to a third party consultant/engineer. In either case, good reference materials and assistance with the preliminary assessment document can be obtained through the North Carolina State Energy Office. The State Energy Office Web site, <http://www.energync.net/programs/usi.html#pc>, discusses the Utility Saving Initiative of North Carolina and the promotion of Energy Performance Contracting as a potential means for project funding. A section of this Web page includes specific documents worthy of review, and in particular these State Guideline Templates are interesting:

*Request for Qualifications for ESCOs*

*Performance Contracting Application*

*List of Qualified ESCOs in North Carolina*

*Permanent Rules*

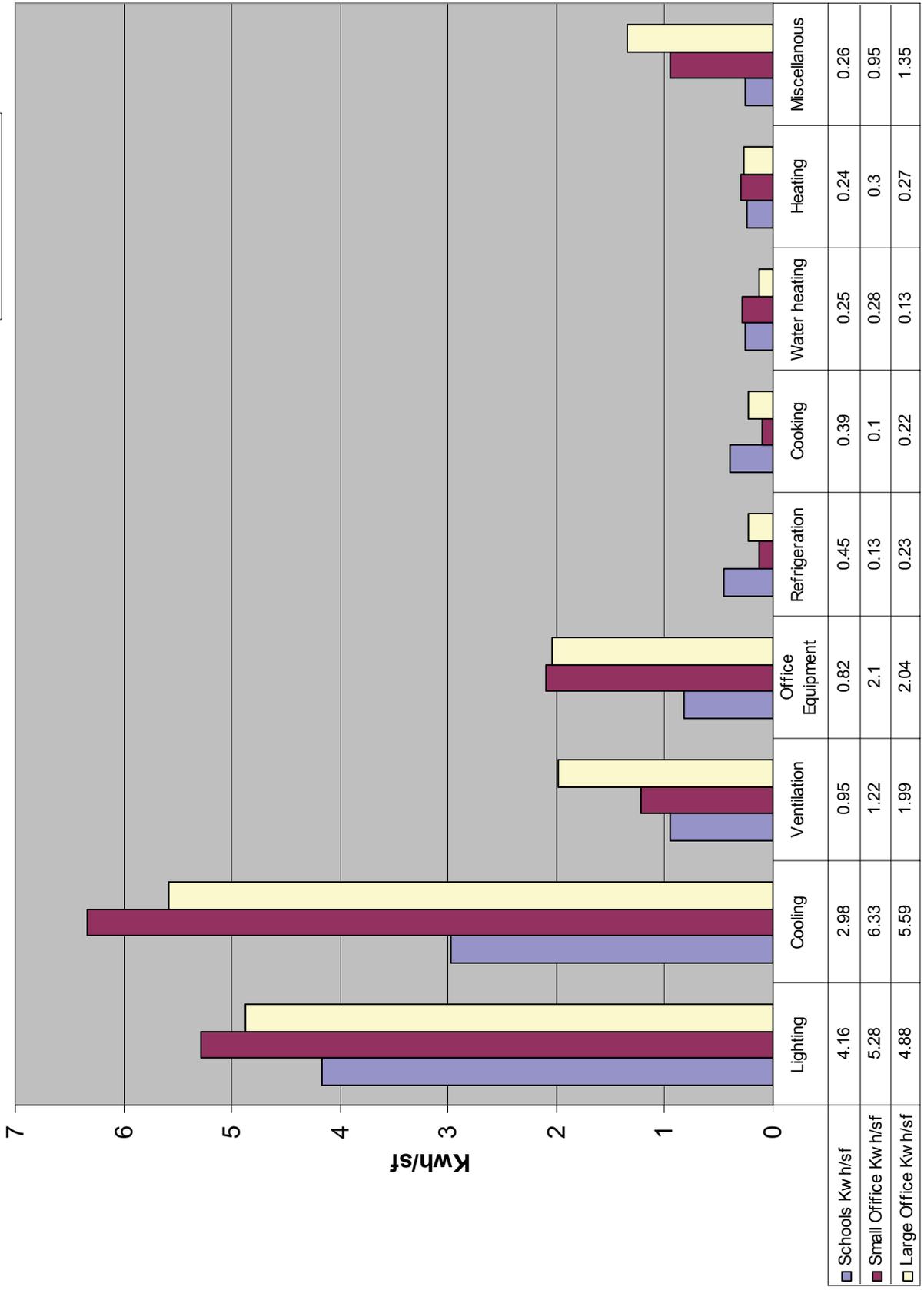
*Performance Contracting North Carolina Statutes*

*Tips for Working with ESCOs*

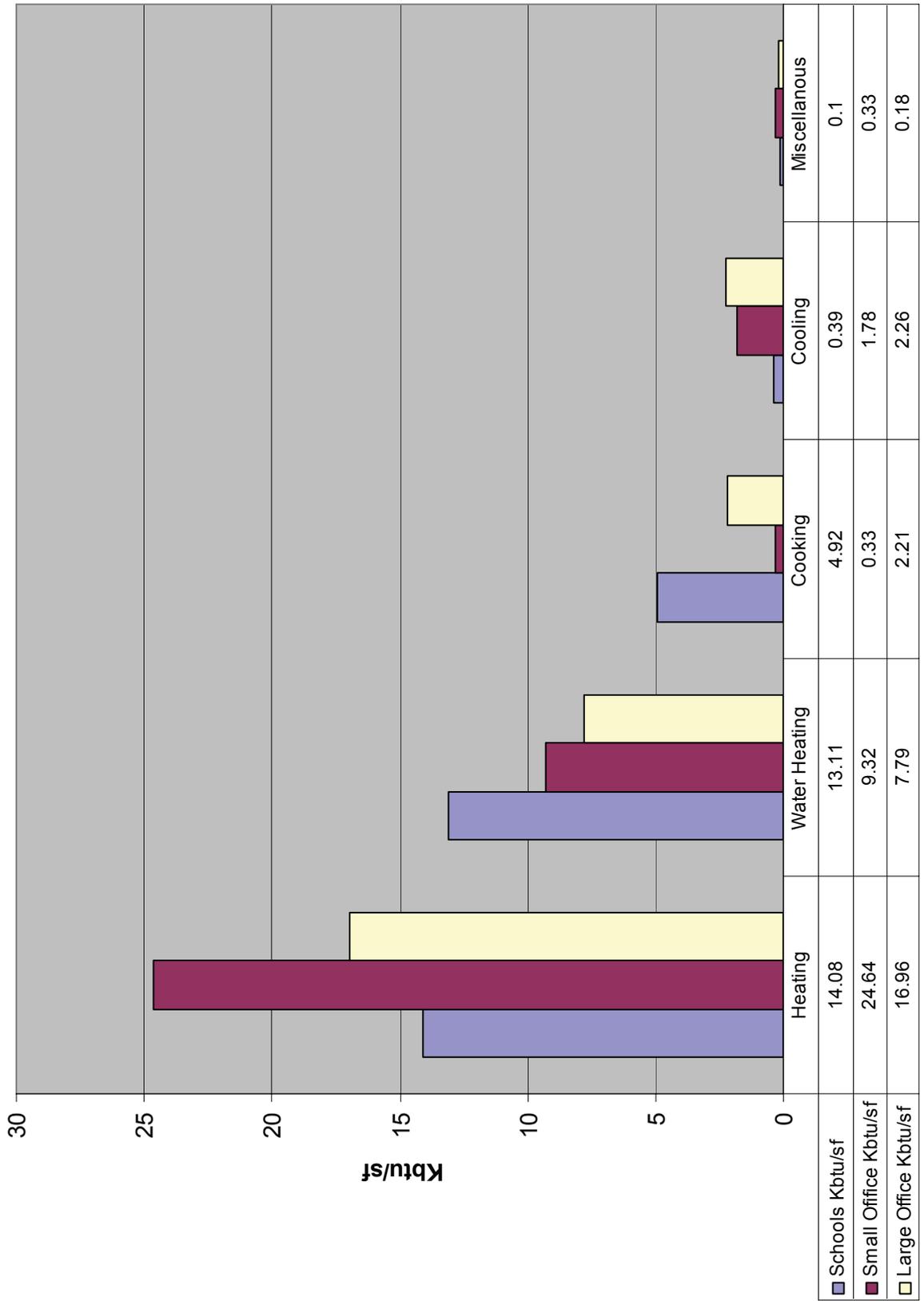
*Energy Management Services - Reporting Savings Projections, Needed Changes*



**Chart 2.2.1**  
**Mean Electricity Intensity By End Use Function**  
**Climate Zone 4 South Central**



**Chart 2.2.2 Mean Natural Gas Intensity By End Use Function (Kbtu/sf)  
Climate Zone 4 South Central**



Local Governments/Municipalities and K-12 Schools/Community Colleges use energy in buildings primarily in 8- to 10-hour schedules and at higher levels of occupancy. The distribution, as was seen in *Table 2.2 Energy Use Categories*, varies slightly between Local Governments and K-12 schools, but specific applications in each use area can have broad ranges due to the differences in quality of materials purchased and the construction approach used to install the equipment. The *Self-Assessment Guide* reveals common energy conservation measures, their saving potential and typical payback periods (see Table 2.2.1).

**Table 2.2.1 Estimating Energy Saving Potential**

Lighting	Payback Years*	Energy Reduction (%) per measure	HVAC	Payback Years	Energy Reduction (%)
Using Energy Saving Fluorescent Lamps	1.8 — 2.4	15	Overall HVAC Saving Potential	Variable	30
Upgrading T-12 Fluorescent to T-8 Fluorescents, electronic ballast	2.7 — 5.0	30 — 35	Cooling Upgrades: Central Chiller	Variable	15 — 35
Replacing Incandescent Lamps with Compact Fluorescents	0.5 — 3.2	66 — 75	Unitary A/C	Variable	20 — 35
Upgrading 400-watt Metal Halide Suspended fixtures	0.6 — 1.25	10 — 28	Heating Upgrades: Boiler	Variable	10 — 30
Replacing Incandescent Exit signs with LED Lights	< 2.0	87	Furnace	Variable	5 — 25
Replacing Mercury Vapor with high pressure sodium	3.0	16	Preventative Maintenance Program	< 0.25	5 — 10
Using Occupancy Sensors In: Office	2.3 — 4.6	25 — 50	Nighttime Temperature Setback	< 0.5	10 — 33
Restroom	1.0 — 2.6	30 — 75	Reducing Heating Temperature	Instant	12 — 13
Meeting Room	0.5 — 1.3	22 — 65	Fan and Pump Optimization with Variable Speed Drives	2.1	50 — 85
<b>Building Envelope</b>	<b>Payback Years</b>	<b>Energy Reduction (%)</b>	<b>Energy Management System</b>	<b>Payback Years</b>	<b>Energy Reduction (%)</b>
Reduce Air Infiltration in Large Office Building.	Variable	1 — 5	Centralized Digital Control	Variable	10 — 20
<b>Energy Star® Office Equipment</b>	<b>Payback Years</b>	<b>Energy Reduction (%)</b>	<b>Motors</b>	<b>Payback Years</b>	<b>Energy Reduction (%)</b>
Copiers	Instant	25	Premium Efficiency Typical 20 Hp.	2.0	3.3 — 6.9
Computers	Instant	30 — 70	Using Cog-belts instead of v-belts	< 2.0	2 — 8.4
Monitors	Instant	25 — 60			
TV & VCRs	Instant	25			

Source: SEO/WRP *Self-Assessment Guide for Energy Savings Opportunities*, Land of Sky Regional Council, 339 New Leicester Hwy, Suite 140, Asheville, NC 28806

\*Payback estimates are based on one-shift operations using NC average commercial rate of 6.4 cents per kilowatt-hour. Internal labor usage of the government unit is assumed. Most paybacks noted are typical for office settings. Payback periods can vary widely based on individual

applications.

In summary: 1) Detailed information of prior Performance Contracting (PC) experience both nationally and in North Carolina is gathered. 2) The available energy saving resources of the State Energy Office have been researched. 3) Final alignment with NC statutory requirements has been investigated and denoted. Now is the time to develop a preliminary assessment of the potential energy savings that will support investment cost over a long-term PC contract. Will ESCOs be interested in our projects? How do we know that our needs will be attractive to multiple ESCO proposals? Who are the North Carolina pre-approved ESCOs that specialize in our project areas?

### 2.2.2 Energy Benchmarks Which Trigger ESCO Interest

ESCOs prefer to propose on larger capital projects to spread indirect costs, financial risks, and to assist with mobilization expenses. The larger project size will also generate more proposal interest and reduce the cost percentage for measurement and verification of energy savings. The inclusion of several energy saving projects for multiple buildings might be required to generate enough ESCO interest for proposals. **To gauge the savings potential, it is necessary to evaluate how far above or below certain energy benchmarks the facility is operated.** Some of these benchmarks are as follows:

#### *Building Energy Benchmarks that will generate ESCO proposal interest*

- Building - total annual energy cost is more than \$1.50/square foot (sf)
- Building area greater than 70,000 sf
- Ratio of occupancy building hours to non-occupancy hours less than 0.6
- Total building annual electricity energy consumption more than 50 kwh/sf
- Total building annual NG/LP energy consumption is more than 75 kbtu/sf
- Potential savings (over contract term) to total estimated cost ratios greater than 1.8
- Potential measured savings to non-measured savings greater than 2.0
- Buildings older than 10 years that have not had improvements made
- T-12 fluorescents with magnetic ballasts and incandescent bulbs
- Buildings that have high energy lighting density, greater than 3 watts/sf
- Ventilation rates that exceed ASHRAE 62-2001 by 30%
- Multiple unit single space heating/cooling equipment
- Collective building energy cost that exceeds \$750,000 annually
- Faucets that exceed 1 gal/min rate, toilets that exceed 1.6 gal/flush
- High KW demand charges, power factor less than 0.8, load factor < 0.4
- Large southern exposure window areas with lack of shading
- Poor wall insulation(< than R-19 equivalent), roof insulation (< than R-38 equivalent)

#### *Equipment Energy Benchmarks that will generate ESCO proposal interest*

- Air-cooled chillers that operate above of 1.40 kw/ton (IPLV)
- Water-cooled chillers that operate above 0.8 kw/ton (IPLV)

- NG- & oil-fired furnaces and boilers that have efficiencies less than 80% AFUE
- Equipment that has been in continuous service more than 10 years.
- HVAC systems that do not have automation capabilities for:
  - night setback for unoccupied times of the building
  - chiller efficiency optimization for partial loading
  - “free cooling” with enthalpy control of fresh air ventilation
  - remote access to energy data management
  - furnace and boiler firing optimization controls
  - control of variable speed drives on fans, chiller compressors, and pump motors
  - regulating minimum standard ventilation rates
  - remote access programming for zone/thermostat setpoint changes
  - programmable thermostats not in use for self-contained HVAC, multiple rooms
- Low-efficiency motors, lack of variable speed drives, lack of 3-phase power protection
- Total HVAC fan horsepower (hp) exceeds 1000
- Equipment maintenance that has been neglected and savings easily captured

Making a preliminary self-assessment of the energy cost saving of current operations requires technical expertise for some areas while others can be performed without technical assistance.

#### **Can your staff generate these energy benchmarks in the next 2 to 3 months?**

It will require some dedicated attention to equipment performance, building physicals, energy cost accounting, engineering factors and calculations, and searching records for pertinent information. If current staff is too busy, expertise is limited, or most documentation requires field measurements, then it might be prudent to seek a consulting engineer to perform a preliminary energy assessment or to contact the North Carolina State Energy Office for suggestions. The eventual performance contractor/ESCO winner will perform a detailed investment grade audit at a later date prior to final contract award. The preliminary energy saving assessment is used to document the need, develop a preliminary project scope, and evaluate the energy saving potential. It will also be a part of the Facility Profile to request ESCOs for a proposal.

***It may be determined after this evaluation that there is not enough energy saving potential to warrant performance contracting and that conventional contracting will best fit the need for the work to be performed.***

### **2.2.3 The Starting Point: Owner’s Preparation and Project Team Organization**

The decision to go forward from this point needs leadership from within the owner’s organization for making timely decisions and the potential communication interface with an energy consultant. The leadership role is critical to the success of the project and should be represented by a fairly experienced and long-term employee of the organization. It will be a full-time responsibility to keep people informed of progress and to document decisions that define direction. The selected leader should have organizational support from various departments that currently have responsibility for

the cost of energy use (facility managers, financial officers) and those that maintain the facilities. If the organization has technical staff support, such as engineering personnel, those persons should certainly have a role in the evaluation process or leadership if so experienced and capable. The individual selected to lead should be advised that the assignment is of least a two- to three-year duration and that there are incentives for being selected.

The project team will need diverse kinds of expertise, including:

- Technical expertise to evaluate energy efficiency potential, establish maintenance requirements, develop a scope of work, evaluate contractor proposals, and energy studies;
- Facilities operation and maintenance staff that have the best knowledge of equipment, HVAC systems, reliability problems, and different operating conditions;
- Procurement expertise to ensure that the process follows applicable procurement rules during the Request for Proposals and contract award;
- Knowledge of budget and finance procedures to establish a method to budget and make payments for the duration of the contract; and
- Legal expertise to review all contract terms and assist in negotiations after a contractor has been selected.

To organize a project team, first identify a project manager who will have overall responsibility for coordinating the team members and overseeing the work performed by the contractor. Most agencies choose from their Administrative Services Department (i.e., facility manager, finance manager, public works or utility director, county manager, engineering chief) to be the project manager. The project manager should recruit people expert in each of the areas listed above early in the development of the project. If there is not technical expertise available within the organization, the project manager may consider involving a third party engineer or architect with performance contracting experience early in the project. Contract Facilitators can be hired to bring in the needed expertise on the performance contracting process. These facilitators have a broad range of performance contracting experience and can keep the process moving. The project manager can also take advantage of the resources of technical assistance providers such as the State Energy Office, Waste Reduction Partners, universities, or trade associations. The team may want to identify area experts, such as a resident architect in an adjacent county school system, who may lend input at key decision-making points.

During the early stages of the project, it may be appropriate to simply provide team members with general information about energy performance contracting and the project status. Holding an introductory briefing and providing copies of this Guide and accompanying fact sheets to all team members makes a good beginning. The purpose of this introductory meeting is to:

- Explain the concept of energy performance contracting to all project team members
- Build support for the project by describing facility needs that energy performance contracting will meet and the benefits expected to result from the project
- Describe the process and the intended schedule for each step so that the team members know what to expect.

The project team members should also serve on the evaluation committee, when the project reaches the point of contractor selection, and throughout the project as an oversight group.

### **2.3 Preliminary Assessment of Performance Contracting Potential**

Before involving more than one ESCO in the process of preparing comprehensive proposals, which requires a lot of time and expense, it is wise to make a self-assessment of the energy saving potential prior to soliciting proposals. This involves estimating energy savings and the cost to generate the energy savings. Obviously, the quality of the estimate will not be investment grade without a lot of time and expense being spent; however, the selected ESCO will make the final investment grade audit to define the basis of the performance contract.

The key objectives of the preliminary assessment are to

1. evaluate the potential for seeking ESCO proposals,
2. identify and obtain data to estimate the value of Energy Conservation Measures (ECMs) and facility operating improvements,
3. obtain data required to provide preliminary energy modeling of the building,
4. identify major building problems, and
5. if the potential is proven, utilize the preliminary assessment basis in the Facility Profile to define the scope of work and format for a fair and objective evaluation of ESCO proposals.

#### **2.3.1 Estimating Energy Savings**

A starting point for this effort is to generate the facility benchmarks for the buildings and equipment for comparison with the reference benchmarks provided earlier. The order of the investigation would be according to energy use categories given previously in Table 2.2 . Start with the highest energy consumption category for each government unit and proceed from high to low with each benchmark. This progression will bring forth the higher energy saving projects first and potentially greatest capital need for financing. The greater the spread between the reference benchmark, above or below, will determine the opportunity for an ESCO proposal and performance contracting. For example, larger projects that pay for themselves in less than 10 years:

- Heating - replace aging boilers, steam traps, and pumps

- Cooling - Replace chillers, cooling towers, chilled water, condenser pumps
- Ventilation and Distribution - Install variable speed fans, hydronic VS pumps
- Automation/Controls - Install an energy management system and proven operational control strategies for reducing energy consumption
- Lighting - Replace older high energy lamps and ballasts with latest technology

One of the easier benchmark computations to be made is to determine the annual cost of energy consumption of each building in the total campus. Accounting and maintenance can provide the information in most cases or should have access to the resources that have the information. For example:

Building Benchmark - total annual energy cost is greater than \$1.50/sf

- 1) You will need 12 months of energy cost for electricity, fuel oil, propane, natural gas (whatever heating energy is used), that is used inclusively for the building's gross heated and cooled area (square feet). This energy cost would exclude separate metered exterior lighting or the fixed pole charge lighting cost of parking areas. It would include dedicated chillers and cooling units that serve the building and any well pump that provides potable water if so arranged. Historical utility cost and usage data may be available through your utility supplier's Web site or through your account representative.
- 2) The gross conditioned space area represents the footprint of the building exterior walls less the perimeter wall's area expressed in square feet of building area.
- 3) Dividing the total annual energy cost by the gross conditioned building area provides the preliminary benchmark. **Expected range: \$0.75/sf to \$4.00/sf**
- 4) Were there any unusual operational circumstances that would affect the energy cost during the 12 months of data profile? If so, identify these areas and the impact of each circumstance, if non-repeatable from year to year.

Other benchmarks would be evaluated by developing the pertinent data of the facilities, operating equipment, and operating schedules to arrive at the energy saving potential as compared to the reference benchmarks. If this proves to be too formidable a task, governmental technical assistance groups such as Waste Reduction Partners in Asheville, North Carolina, and SEO - Raleigh, North Carolina, can provide a preliminary Energy Assessment such as that required for this initial energy savings evaluation.

Another benchmark example might be for a major equipment item, such as a chiller for central cooling a building:

- 1) What is the chiller manufacturer's nameplate data; year installed, size, COP, kw/ton, and operating cost compared to a new highly efficient unit? Expected range: 1.3 kw/ton to 0.5 kw/ton(new). For example, a 15-year-old 60-ton unit would show significant potential for replacement if it is in poor condition and has limited service life remaining.
- 2) Evaluation of current operation as compared to manufacturer's nameplate data

would require measurements of the chiller system's motor operational kilowatts, condenser water flow and temperatures, thus needing the assistance of outside help if maintenance could not verify particular measurements.

- 3) What are best operating efficiencies of the current size chiller operations as compared to today's manufacturing standards and what costs are required to achieve this performance?

Calculating benchmarks for both buildings and major equipment are necessary homework to define the calculated magnitudes of energy savings to support the capital investment in the shortest payback period.

### **2.3.2 Walk-Through Assessments**

A key component of the preliminary assessment process is a Walk-through Assessment or Survey. This is an important step in determining potential energy saving projects and verifying and understanding benchmarking information. The walk-through assessment can be conducted by internal technical staff or by engaging technical resource providers, consultants, or representatives from Energy Saving Companies. The walk-through assessment helps identify low cost and no-cost energy saving measures and will develop a list of potential capital improvements that merit further analysis. These capital improvement projects and needs will become the basis for the scope of work of the performance contracting process. The walk-through assessment should be conducted after energy and utility cost accounting has been determined. Table 2.3 provides an example of information to be collected during the preliminary assessment. Details of the information collected during the walk-through assessment is discussed further in section 3.3 - Preparing a Facilities Profile.

**Table 2.3 Example Preliminary Building Survey and Analysis**

<u>Task</u>	<u>Responsible Party</u>	<u>Date Complete</u>
<b>A. Collect Background Information</b>		
Obtain General Information Including:		
• name and addresses of candidate facilities		
• contacts and phone numbers		
• times to access facility		
• facility department goals – briefly		
Obtain Building Information Including:		
• square footage		
• small scale maps – 8-1/2” x 11”		
• age of buildings + renovation dates		
• building operating schedules		
Obtain Information on Past Energy Conservation Efforts		
• past energy audit information		
• past energy conservation projects		
• energy saving products installed		
• T-8 lamps and electronic ballasts installed		
• lower wattage fluorescent lamps installed		
• service contracts on HVAC, controls, etc		
• building automation system installed		
Identify/Determine Facility Policies on:		
• indoor Air Quality awareness, ASHRAE 62,		
• CFC Issues awareness		
• code compliance Issue awareness		
• quantify any perceived risk (fines, loss of reimbursement		
Access Two-year (min) of utility and other operating bills:		
• Electric, gas, fuel-oil, water/wastewater		
• Solid waste services, pickups and expenses		
• Maintenance and repair records of HVAC or other		
• Copies of any existing maintenance contracts		
<b>B. Building Initial Survey</b>		
Take photographs and note		
• potential ECMs		
• energy inefficient situations (open windows, lights on, etc.)		
• maintenance needs (leaking pump seals, broken belts)		
• IAQ issues (mold, puddles, dirty filters, OA dampers shut)		

**Table 2.3 Example Preliminary Building Survey and Analysis (continued)**

<u>Task</u>	<u>Responsible Party</u>	<u>Date Complete</u>
<b>B. Building Initial Survey (continued)</b>		
Survey building and observe		
<ul style="list-style-type: none"> <li>• General condition</li> </ul>		
<ul style="list-style-type: none"> <li>• Doors and windows blocked open</li> </ul>		
<ul style="list-style-type: none"> <li>• Use of portable fans or electric heaters</li> </ul>		
Survey lighting and observe		
<ul style="list-style-type: none"> <li>• operation</li> </ul>		
<ul style="list-style-type: none"> <li>• T-12 lamp fixture count</li> </ul>		
<ul style="list-style-type: none"> <li>• Incandescent lamp count</li> </ul>		
<ul style="list-style-type: none"> <li>• Light level appropriateness, reduction potential</li> </ul>		
<ul style="list-style-type: none"> <li>• Condition of lamps and fixtures</li> </ul>		
<ul style="list-style-type: none"> <li>• Quantify annual cost of lamps, ballasts and replacement labor</li> </ul>		
Survey HVAC and note		
<ul style="list-style-type: none"> <li>• Type of heating systems</li> </ul>		
<ul style="list-style-type: none"> <li>• Primary fuels, interruptable gas, etc</li> </ul>		
<ul style="list-style-type: none"> <li>• Type of hot water, steam systems, etc</li> </ul>		
<ul style="list-style-type: none"> <li>• Approximate boiler(s) sizes</li> </ul>		
<ul style="list-style-type: none"> <li>• Type of distribution-radiators, etc</li> </ul>		
<ul style="list-style-type: none"> <li>• Type of a/c and ventilation systems</li> </ul>		
<ul style="list-style-type: none"> <li>• Refrigeration types and sizes</li> </ul>		
<ul style="list-style-type: none"> <li>• Ventilation system types and sizes</li> </ul>		
Survey Equipment Condition/Maintenance and review		
<ul style="list-style-type: none"> <li>• Scope of preventative maintenance program <ul style="list-style-type: none"> <li>• Quantify in-house labor and materials</li> <li>• Quantify outsourced labor and materials</li> </ul> </li> </ul>		
<ul style="list-style-type: none"> <li>• Equipment system operation (access downtime risk)</li> </ul>		
<ul style="list-style-type: none"> <li>• Repair/retrofit oppourtunities</li> </ul>		
<ul style="list-style-type: none"> <li>• Perceived problems (quantify labor and materials)</li> </ul>		
<ul style="list-style-type: none"> <li>• Age of equipment (quantify any replacement budgets)</li> </ul>		

### 2.3.3 Estimating Project Costs - The Capital Investment

Estimating costs of building modifications, equipment replacements, lighting replacements, and HVAC control system retrofits involve quantities, labor rates, installation materials cost, contractor indirects and all manner of specialty knowledge and experience for a tight investment grade cost estimate. **Most engineering firms/contractor companies will not consider a fixed price proposal until at least 80% of the design is complete!** Those that offer a fixed price usually carry a large contingency (not allowed by statutes) in the offering or have just completed a scope of work that nearly matches the proposal work. In order to request proposals for performing the work, **after benchmarks prove the potential need**, it is necessary to review the NC Statutes again to establish the quality of the cost estimates being provided by the proposer.

The North Carolina Statutes *143-64.17A (b)* state: *The governmental unit shall evaluate a sealed proposal from any qualified provider. Proposals shall contain estimates of all costs of installation, modification, or remodeling, including costs of design, engineering, installation, maintenance, repairs, debt service, and estimates of energy. 143-64.17B (f).*

Obviously, two or more ESCOs/proposal providers are not going to be interested in preparing fixed price proposals of investment grade quality when their chances at best are one in two of winning. This especially would be true if the total project cost was not very substantial (less than \$1 million). In order to minimize the proposer cost and to attract adequate number of proposers, it is incumbent upon the facility owner to be thorough in the preliminary assessment of where the energy saving opportunities are to be found. This involves quantities. How many light fixtures are to be replaced and with what type? In how many buildings? Is the manufacturer's nameplate data correct for all major equipment items that need replacing?

#### Facility Owners Preliminary Energy Assessment and Cost for Defining Need

It is possible to develop a good initial scope of work and use this information in a proposal request for evaluating ESCO cost, experience, and capabilities. Then issue an Engineering Service Agreement for performing the Investment Grade Audit to the winning ESCO proposer. This is the recommended approach. Define as many quantities of materials, replacement equipment items, and upgrade cost items that will support the preliminary energy saving benchmark result. **At this stage, it is highly possible that a third party consulting engineer who specializes in energy assessments would be worthy of consideration.** This firm could develop a preliminary **order of magnitude cost estimate between  $\pm 15\%$  to  $\pm 25\%$ .** A qualified engineering firm will develop a listing of major equipment replacements and use this cost **for factoring** the direct cost for labor, installation materials subcontracts, indirect cost for services - insurance, training, and owners cost - from the tabulated equipment list. These specialty consulting firms<sup>7</sup> have historical cost-estimating

databases that are organized for similar scopes of work and can obtain an order of magnitude cost fairly quickly. This information, along with the estimated energy savings, can now be used to determine if the savings will justify the investment cost.

**If the results indicate the ratio of savings to cost exceed about 1.5 then there is the likelihood that an ESCO would have interest in the project.** The higher the ratio the greater the potential for several ESCO proposals.

Those SEO pre-qualified ESCOs would now: 1) Propose only on the Facility Owner's order of magnitude scope provided (no deviations!) and 2) Propose on alternatives or options that will enhance Facility Owners scope based upon experience, a one-time site visit, and any justifiable energy cost-saving and technology improvements. This two-part proposal approach will allow the **evaluation of ESCO value based upon a common proposal scope and the innovation based upon an ESCO's capability and experience.** It also allows ESCOs to have a fairly good estimation of the work to be performed without spending a lot of money up front in the pre-proposal stage. **It is important that the Facility Owner know the energy saving potential and approximate cost of the project prior to involving ESCOs. This knowledge is key in the balance of the owner's return and ESCOs profit. Utilizing a specialty firm that has experience and knowledge in this energy estimating work can provide the need basis for performance contracting.** The engineer/consultant/ESCO cost will vary with scope requirements and schedule but an estimate of these costs often follows the percentages given as Table 2.3.1:

**Table 2.3.1 Consultant/ESCO Cost vs. Design Completion**

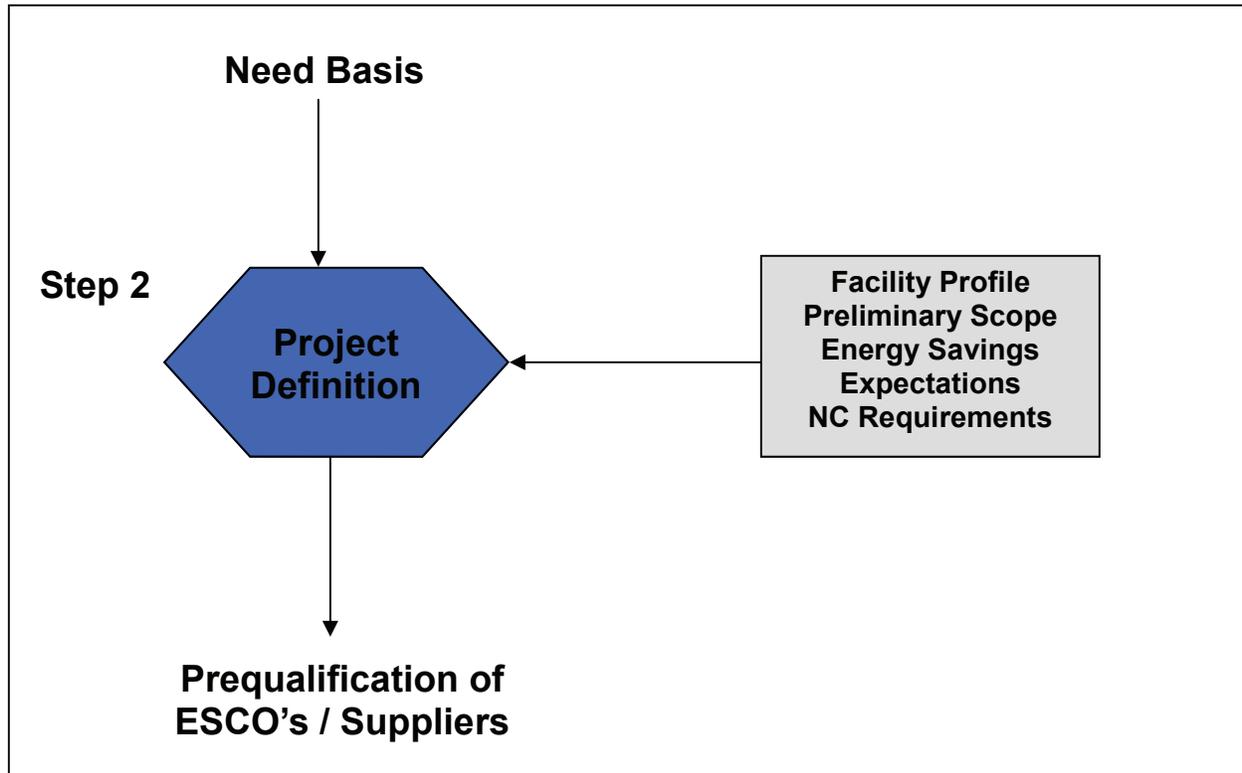
<b>Design Cost Estimate (Accuracy ±%)</b>	<b><u>Conceptual Consultant</u> (± 40%)</b>	<b><u>Preliminary Consultant</u> (± 25%)</b>	<b><u>Investment ESCO</u> (± 10%)</b>	<b><u>Final ESCO</u> (+/- 0%)</b>
<b>Percent of Total Design Complete</b>	1% to 5%	5% to 10%	65% to 85%	100%
<b>Percent of Total <u>Project Cost</u></b>	Negotiated Fee	½ % to 2%	4% to 6%	2% to 4%
<b><u>Project Size</u> \$500,000 to \$1,000,000</b>	Negotiate \$5,000 to \$10,000	\$5,000 to \$20,000	\$20,000 to \$60,000	\$10,000 to \$40,000
<b><u>Project Size</u> \$1,000,000 to \$5,000,000</b>	Negotiate \$10,000 to \$25,000	\$20,000 to \$100,000	\$40,000 to \$300,000	\$20,000 to \$200,000
<b><u>Project Size</u> &gt; \$5,000,000</b>	Negotiate >\$25,000	>\$100,000	>\$300,000	>\$200,000

Note, going from each stage of cost estimating to a higher level of design and scoping accuracy presumes that additional cost will be required in the next phase at the range of amounts shown. ESCO cost includes detail specifications for quantity and quality of components and equipment, with installation materials quantity take-offs from the drawings and accounting for direct and indirect cost. A conceptual grade estimate would take about 2 to 4 weeks, a preliminary estimate about 4 to 6 weeks, and an investment grade estimate takes about 10 to 30 weeks to complete with supporting documentation. Each energy saving project will have unique requirements for scope and schedule where project design costs should be based upon experience and qualifications of the individuals and firms involved. In some instances, a highly experienced staff with an ESCO executive commitment would dictate a premium consideration. These figures are only given as guidelines. The complexity of the retrofit and the breadth of the Scope of Work will dictate costs that are relevant to the performance contract and the details for engineering and construction. An example for these numbers would estimate that a \$1,000,000 installed cost might range from \$90,000 to \$130,000 in ESCO cost for Design, Training, Measurement and Verification, and Documentation. Each project will be site specific with its own unique cost requirements.

#### **2.4 Employing Owner’s Representatives or Contract Facilitators**

Facility owners that have large numbers or very complex facilities (i.e. large campuses) to be included in the project scope of work may consider employing a Owner’s “Rep” or Contract Facilitator who will help manage many of the steps of the energy saving performance contract. Owner’s Reps can help an organization develop and issue a request for proposals, conduct pre-bid meetings and walk-throughs, facilitate the ESCO selection process, and provide input on the Technical audit and final contract (termed the Energy Services Agreement). Owner’s Reps are often contracted to independently review Measurement and Verification reconciliation of energy savings the year after the construction phase is complete. Depending on the technical expertise and contract management skills of an organization, these contract facilitators can be employed to help an organization navigate the energy performance contracting process. Contract facilitators fees are typically built into the full project financing. Owners should consider utilizing a contract facilitator that also is qualified to be a “third party professional engineer” who must review the selected ESCO proposals per NC general statute requirements. If facilities owners are considering the use of a contact facilitator, they should make sure that the firm has a clear understanding of NC energy performance contracting requirements for local government and school sectors. The scope of services should be based on individual organization needs, due to lack of technical expertise, staffing availability, project management, or contract management skills.

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### III. PROJECT DEFINITION

- 3.1 Facility Owner Preparation and Organizations
- 3.2 Convert the Need Basis to Proposal Inquiry Format
- 3.3 Facilities Profile
  - 3.3.1 Occupancy and Building Schedule
  - 3.3.2 Building Envelope
  - 3.3.3 Lighting
  - 3.3.4 HVAC
  - 3.3.5 Water Conservation
  - 3.3.6 Operation and Maintenance
  - 3.3.7 Energy Management Systems
  - 3.3.8 Load Shedding
  - 3.3.9 New Technologies
  - 3.3.10 Renewables
- 3.4 Financial Considerations

### 3.1 Facility Owner Preparation and Organization

At this step in the performance contracting process, the preliminary energy assessment has been completed and energy savings are confirmed to be significant enough to support the estimated capital cost ( $\pm 25\%$  cost estimate) to implement the cost-saving projects. After the presentation of these findings to administration/management for approval with authorization granted to proceed, it is necessary to **convert the Need Basis into a Project Definition** format suitable for proposal inquiry.

The Facility Owner Project Definition is the best representation of a preliminary ESCO/ Contractor scope of work. It requires prior information to be organized in a manner that allows evaluation, comparison, and confirmation of the best firms for long-term contracting. Tabulation of quantities and quality types used to generate the savings, building construction details, occupancy times and schedules, efficiencies and performance conditions, if available, can be used to compare ESCO's cost and initial proposal with the Facility Owner's energy assessments. Some examples of what might be included in a preliminary Facility Owner generated scope of work for RFP consideration follows.

### 3.2 Convert the Need Basis to Proposal Inquiry Format

There are certain requirements that are pertinent to the full understanding of what the ESCO will be doing to propose the work. Listed below are some that are common to most inquiries for performance contracting.

#### 3.3 Prepare a Facilities Profile (Example of Facility Profile)

A facility profile will need to be developed and will become part of the RFP - Project Definition supplied to the ESCOs for proposing a performance contract. Pertinent information needs to be shared. Example below:

##### 3.3.1 Occupancy and Building Schedule (Include discussion of these topic areas)

Regular school hours are Monday through Friday 7 A.M. through 4 P.M. The school is closed for holidays or Special School Holidays, Thanksgiving, Christmas Eve, Christmas through New Year. The school calendar is attached for specific holidays and special teacher work days. Peak daily occupancy is approximately 380 students and 26 staff personnel. [Occupied hours and operating, setback and setup temperatures are included in a "standards of comfort" schedule of the ESA].

##### 3.3.2 Building Envelope (Include discussion of these topic areas)

1. Building size (SF), age, orientation relative to southern sun
2. Wall, roof, and floor construction details and insulation quality: walls R-19, roof R-38, sheathing interior
3. Window area, daylighting, construction detail, solar gain prevention, double

EXAMPLE:

- pane, needs - screening, replacement, curtains, caulking, sealing
4. Door Schedule - airlocks, entrance spot heating, automatic closure
  5. HVAC distribution system - duct layout, accessibility, type system hot/cold duct, Variable Air Volume (VAV), two pipe/four pipe hydronic, central chiller, furnace?
  7. Single Electric Meter? or Multiple Meters? Need total consumption/demand for each building.
  8. Minimum 12 months electric profiles, kwh and kw, surcharges for power factor correction, 36 months data would be expected by the ESCO later
  9. Problem areas - condensation, ventilation, thermal comfort, acoustics, lighting,
  10. Indoor Air Quality - any problem areas -mold, ventilation at 15 cfm/person?
  11. Kitchens, energy use, exhaust hoods, hot water systems

### 3.3.3 Lighting (Preliminary scope of work details)

The technology for improving lighting efficiency has been dramatic, such as, LED, T-5 and T-8 fluorescents, and electronic and dimmable ballasts. Lighting improvements are the easiest area to show and verify cost saving in electric power consumption. Lighting projects require detailed quantity inventory of current lighting fixtures, lamp types, wattage of lamps, and occupancy times of use. A typical scope definition might include a layout such as the following:

**Table 3.3.3 Example Lighting Schedule for Replacement Consideration**

Room Description	Quantity	Existing Fixture Description	Proposed Quantity RFP Requirement	Proposed Fixture Description
Mech. Room (6)	44	Industrial 2-4' Fluorescent T-12 lamps	By Owner	By Proposer
Offices (48)	196	Incandescent 150 watt	By Owner	By Proposer
Lobby (1)	12	1' x 4' troffer, 4-4' T-12 lamps	By Owner	By Proposer
Restrooms (4)	38	Incandescent 100 watt	By Owner	By Proposer

**Occupancy Schedules (This Is an Example for a College Union Bldg.)** – Normal Building Hours M-F: 7 AM til 11 PM, Sat: 8 AM until 11 PM, Sun. 12 Noon until 11PM, Computer Lab open 24 hours Sunday thru Thursday, Week of Spring Break Bldg Open: 8 AM til 5 PM, student staff locks down at 11 PM, custodians work two shifts 7 til 3 and 3 til 11. The normal occupancy time for one year is:

**Yearly Occupancy Hours** = 16 hrs/day x 5 days/wk x 50 wks/yr + 15 hrs/day x 1 day/wk x 50 wks/yr + 11 hrs/day x 1 day/wk x 50 wks/yr + 9 hrs/day x 14 days/wk x 2 wks/yr = 4,552 annual hours

**Yearly Unoccupied Hours** = 24 hours/day x 365 days/yr = 8,760 – Yearly Occupancy Hours = 8,760 – 4,552 = 4,208 hours is the potential basis for energy saving mode for parts of the building. Occupancy/Non-occupancy = 0.48 benchmark

This preliminary lighting assessment can be used to evaluate proposer's cost and knowledge of replacement components to justify the energy savings for lighting. The total collective lighting scope of work should be treated as a separate evaluation for simple payback and energy savings.

### 3.3.4 Heating, Ventilation, and Air Conditioning (HVAC)

**The greatest potential for justifying a performance contract based upon guaranteed savings will be evident in older HVAC systems.** Inefficient equipment, frequent maintenance service, and operational inflexibility for time and temperature changes make this a prime candidate for upgrading. HVAC energy costs account for about 50% of energy use in K-12 Schools/Community Colleges and about 40% in Local Governments/Municipalities. Also, it is the most complex in equipment configurations, alternative design options, and control system applications. **It requires expertise to understand the relationships of current operations and newer technology options for justifying replacement at minimum cost.** Providing a preliminary order of magnitude assessment for the purpose of defining a scope of work suitable for ESCO proposals will be the most difficult for HVAC. The preliminary assessment begins with five informational needs:

- Annual Energy Use - utility contracts in place, 36-month historical consumption/demand and cost profiles for electricity, fuel oil, natural gas, propane quantities
- Major Equipment Listing - manufacturer's name plate data, age, size, annual runtime, efficiency rating for: boilers, chillers, motors, pumps, fans, prime movers
- Occupancy and Unoccupied Building Times - annual hours, schedule deviations
- Present Control Capabilities/Strategies - free cooling, night setbacks, optimization
- Maintenance Quality and Equipment Life-cycle Status

If this information is readily available, then the task of defining benchmarks and replacement costs will not be time consuming; however, often as not, it will require some digging to get the quality of information needed to define adequately the scope of an upgrade that is justified by future operational performance. It is expected that an energy consultant that specializes in HVAC systems will be required to lead this assessment for scoping purposes.

### 3.3.5 Water Conservation Measures

Conserving water usage leads to energy and utility cost savings. A good scope of work includes inventory of existing service areas and definition of the degree of quality for replacement. This effort can be performed by the facility owner or his representative for compiling a good basis for the ESCO to initially propose.

For example:

#### Faucets:

Lavatory Sinks: The aerators on these faucets will be replaced with vandal-proof flow-control devices. This reduces the water from an average 2.5 gpm to either 0.5 gpm or 1.5 gpm, depending on location.

The flow control device we are using is the Vendor vandal-resistant made by brand name Laboratories. These devices are a specialized faucet attachment with a rotating sleeve that prevents tampering with the faucet. They also provide greater flow on very low line pressures.

Food Prep/Cafeteria Areas: Automatic sensor faucets will be installed on the hand-washing sinks to allow kitchen personnel to operate the sink hands free for sanitary purposes. These faucets come on when someone places their hands in front of the sensor eye and will automatically turn off when the user walks away from the faucet. A foot pedal attachment will also be added to one of the sanitary sinks. This device will operate once the pedal is depressed. This allows for hands-free use while conserving water.

#### Water Closets:

Restroom Vendor Flush Valve Water Closets: Replacement of outdated/rusted Water Closet flush valves with new Vendor 1.6 Low Flow Water Closet Flush Valves. The new bowls will include new bolts, wax rings, toilet seats, and grouting of each fixture. In the situation where an ADA (American Disabilities Act) handicapped fixture is being changed, the new fixture will be an ADA-compliant fixture.

The replacement flush valve is the Vendor Name Brand. These flush valves are user-friendly and require low-force to flush. They are also ADA-compliant for the physically challenged, providing access for everyone. The handle incorporates the unique double seal protection for longer life of the fixture. The valves include a vandal-resistant chrome stop cover for the integral setscrew, providing greater security.

The replacement bowl is the Brand Standard flush valve water closet. These are made from vitreous china and are low consumption. They use a direct-fed siphon jet and have an elongated bowl.

EXAMPLE:

Urinals:

Urinal Flush Valves: Replacement of these older urinal flush valves with new ultra-low flow Urinal Flush Valves.

#### Example Water Fixtures Upgrade List

<u>Before Upgrades</u>	<u>After Water Upgrades</u>	<u>Quantity</u>
Wall Mounted China	Wall Mounted China	59
Vendor Flush Valves	1.6-gpf Retrofit Kit	13
Vendor Flush Valves	New 1.6-gpf Flush Valve	46
Sloan Flush Valve for Urinal	Urinal Flush Valve Retrofit Kit	4
Vendor Valves	Urinal Flush Valve Replacement	15
Kitchen Sinks Faucets	Foot Pedal Attachments	1
Misc Faucet	1.5-Gpm Aerator	15
Misc Faucet	0.5-Gpm Aerator	42
High Flow Dish Sprayer	1.6-Gpm Hand Held Sprayer	1
Existing 4 & 8" Faucets	Sensor Faucets	24
Additional Improvements	24" Flush Valve Tubes	46

A good quantity basis exists for making a comparison of two or more ESCOs and their ability to define cost for installation of water-saving measures without having to inventory the facilities. The +/- 0% accuracy estimate will be performed by the winning ESCO as a part of the Investment Grade Audit at a later time.

### 3.3.6 Operations and Maintenance

The Project Definition should be revealing to maintenance responsibility for the energy saving measures after installation. The facility owner may elect to retain this service requirement if learning skills, personnel availability, and work loads will allow. If current staff is available to be trained to perform the preventive maintenance and testing procedures, then it would be expected that this non-measured cost of a performance contract would improve the justification basis of the energy saving measures. However, if the ESCO is being considered for responsibility of maintenance, the capabilities of the ESCO to perform this function needs to be defined in the Project Definition for inclusion in the RFP. Maintenance issues include:

- Facility Owner and/or ESCO Maintenance Responsibility Separation Listing
- Standards of Comfort settings for maintaining daily operations
- Who purchases post-retrofit energy saving consumables?
- Preventive maintenance schedule with defined inspections and frequency
- Maintenance procedures to be performed on each piece of equipment

- Monitoring, repairs, alterations, and adjustments
  - Operational changes and malfunctions
  - ESCO's training responsibilities
  - Price, payment schedule, term, conditions, performance, exclusions, warranties
- Some ESCOs contend that performance guarantees require their direct involvement with maintenance over the term of the contract. This is a negotiated item for consideration prior to the award of the Energy Services Agreement. A convincing argument may be weighed by the Facility Owner's capability to perform adequate service.

### **3.3.7 Energy Management Systems (EMS)**

The continuous measurement of how energy is being consumed within a building complex is a powerful tool for conservation. Energy management involves the measurement of consumption, time-based demand, and critical energy variables of the building processes to make decisions for change. Corrective control actions, based upon the understanding of organized energy data, allows for optimizing savings when driven by external temperature change or internal efficiency deviations. It is often difficult to measure the true benefit of the applications when EMS is used just for data acquisition; however, when energy management is in "direct control" of the conservation measure, proven cost returns become evident, some of which include:

1. Night setback controls of building HVAC equipment when unoccupied and for holidays
2. "Free" air cooling with enthalpy control of fresh air make-up/return air
3. Boiler/furnace optimization of fuel/air ratio for combustion efficiency
4. On-peak/off-peak electric demand scheduling/limiting
5. Thermal energy storage system applications
6. Multiple chiller programming for efficiency and size selection based upon building load
7. Analytical instruments for recording CO<sub>2</sub>, and relative humidity for air quality
8. Customized lighting control based upon schedules and occupancy
9. Adaptive control algorithms for making corrections based upon prior results
9. Daily scheduling, holiday programming, yearly scheduling for activity-based buildings
10. Duty cycling of equipment for even wear service
11. Chiller water and condenser water reset based on cooling load
12. Data logging for trouble-shooting and making efficiency corrections
13. Alarm monitoring and energy conservation recording and reporting

The application of these control systems and energy management features may require more capital cost than justifiable. The confirmation of cost and benefits requires a special detailed study for consideration to upgrade an existing facility. The inclusion of any major equipment (boilers, chillers) in an energy saving upgrade

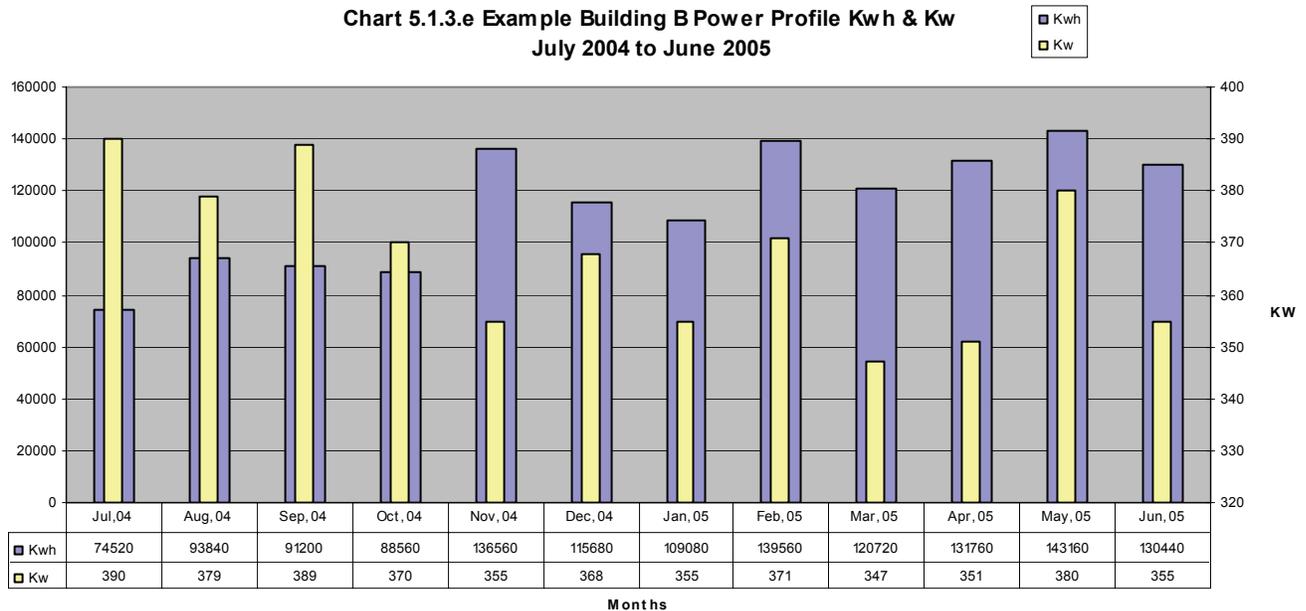
should always look at control system application improvements as well. The ESCO RFP should include at least a reference to automation and control strategies for optimizing the energy saving measures through energy management and direct control.

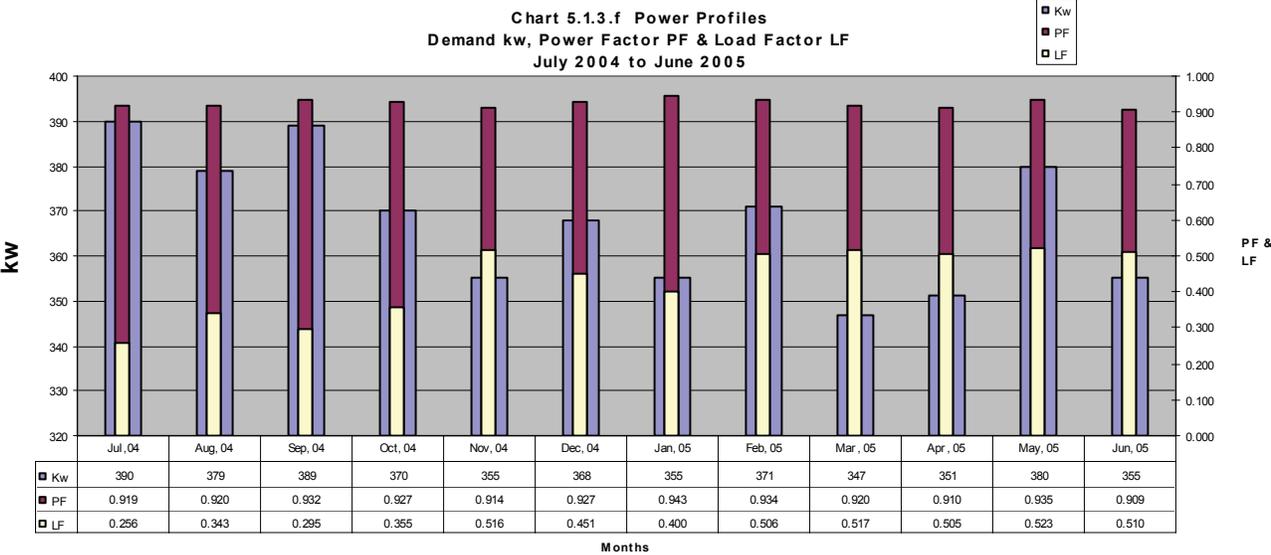
### 3.3.8 Load Shedding

Another area of energy savings concern that the ESCO will be probing for in the investment grade audit is the relationship between electricity consumption (kilowatt-hours) and demand (kilowatts). See Chart 5.1.3.e, below. The load factors that contribute to these transitional maximums and minimums should be examined and any utility cost penalties for poor power factor performance. This can be presented in a manner that shows these relationships and further depicts the importance in load demand shedding and the potential for considering other more favorable utility contract arrangements.

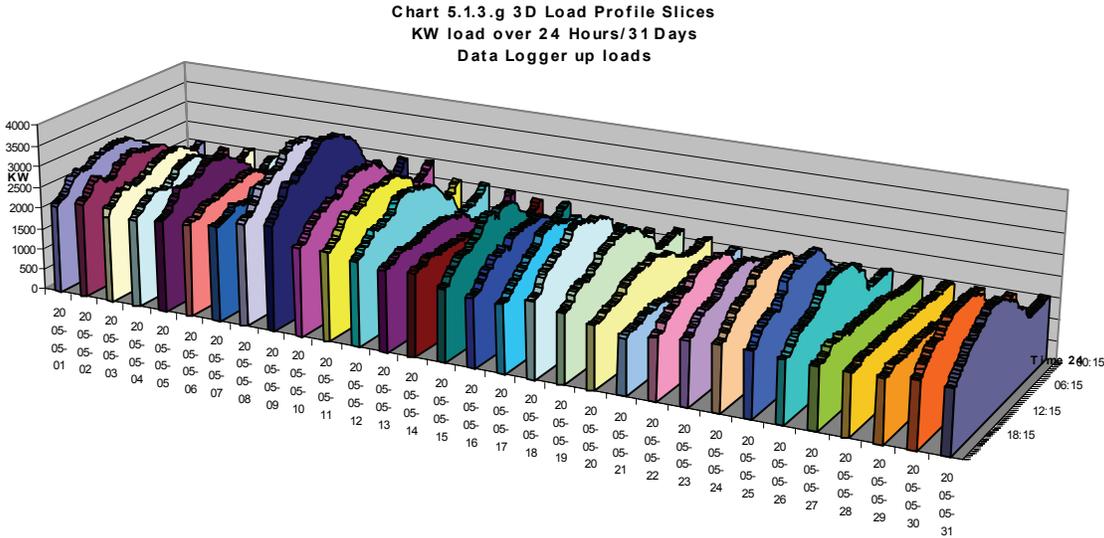
It is also important that the ESCO be aware of the potential for energy savings that can come from other measures. The distribution of electrical loads during the day and over the seasons provides opportunities to make energy saving gains through better control of demand peaks via load allocation and the de-synchronization of load demands. This potential can be represented by two charts: Chart 5.1.3.f shows the demand variation of the building and HVAC equipment seasonally. Chart 5.1.3.g is an revealing example of what is happening in the collective network of building energy consumers on a daily basis and reflects the collection of energy data every 15 minutes through a data logger that is tied to the main building’s electric meter. This information, when compared on a daily basis, reveals consumption and demand that can be used to improve energy performance.

**Chart 5.1.3.e Example Building B Power Profile Kwh & Kw  
July 2004 to June 2005**





Each power profile slice can be enlarged and looked at in detail on 15-minute intervals and compared to other profiles to see how electric power is varying over the 24-hour period. The data logger can take readings every 15 minutes for 31 days if desired. This is one of the better ways to evaluate the building kwh and kw usage at different times of day to determine how well everything is functioning under seasonal variations in weather and different control strategies. Chiller loading is another good application to evaluate performance/efficiency at full and partial loadings at different times of the year and when control strategies can be changed for additional savings. The owner should request such information later, if not available during the RFP stage.



### 3.3.9 New Technologies

The rapidly escalating cost of energy is promoting research for development and application of new technologies. One such technology, Combined Heat and Power (CHP), is the production of electricity and heat in one single process for dual output energy streams. The heat produced can be delivered as hot water for space heating or hot air as well. Micro-turbines use natural gas, propane, or other gases such as landfill methane, to drive a small turbine coupled to an electric generator with exhaust gases used to heat water for distribution to the buildings. Several commercial applications are currently being evaluated for reliability and risks. Cost savings depend on both the cost of the primary energy fuel and the price of electricity that the scheme avoids. However, the success of a CHP project generally results from its cheap electricity and **full application of recovered heat**. As a rough guide, CHP is likely to be suitable where there is fairly constant demand for heat energy for at least 4,500 hours in the year. High electricity consumption and demand cost are also a factor in the analysis for application. As this technology develops, performance contracting with tax incentives for application will be a part of an ESCO's market.

### 3.3.10 Renewables

Renewable energy systems are those that produce energy from natural environment resources, such as the sun, wind, geothermal, and water flow or movement of the ocean currents/tides. Tax incentives exist for commercial applications of renewables. One significant attribute of renewables is they are non-polluting. There is no release of dioxides of nitrogen, sulfur, and carbon, as in the combustion of fossil fuels for electricity generation. In the U.S. Department of Energy *Best Practices Manual*, there are extensive informational resources, cost-effective applications, benefits and cost savings, design tools, and commissioning practices for renewable energy systems. Passive Heating and Cooling, Solar Thermal Hot Water Systems, Wind Generated Electricity, Geothermal Heat Pumps, and Solar Generated Electricity (Photovoltaics) are a few of the systems discussed in some detail. Performance Contracting is presently considering, and is expanding the use of, these applications as a part of the total energy program for cost savings as emerging technologies develop and the cost of application diminishes.

## 3.4 Financial Considerations

A request for a proposal involving two or more ESCOs should have a section that initially defines the financing arrangement of the energy saving projects. This could involve the ESCO's reputation and strength in financing the projects or the local/state governments capability to arrange financing. In either case, the lending institution will expect credible evidence of viable returns that have to be substantiated by the ESCO. North Carolina statutes also define the requirements for performance contract financing:

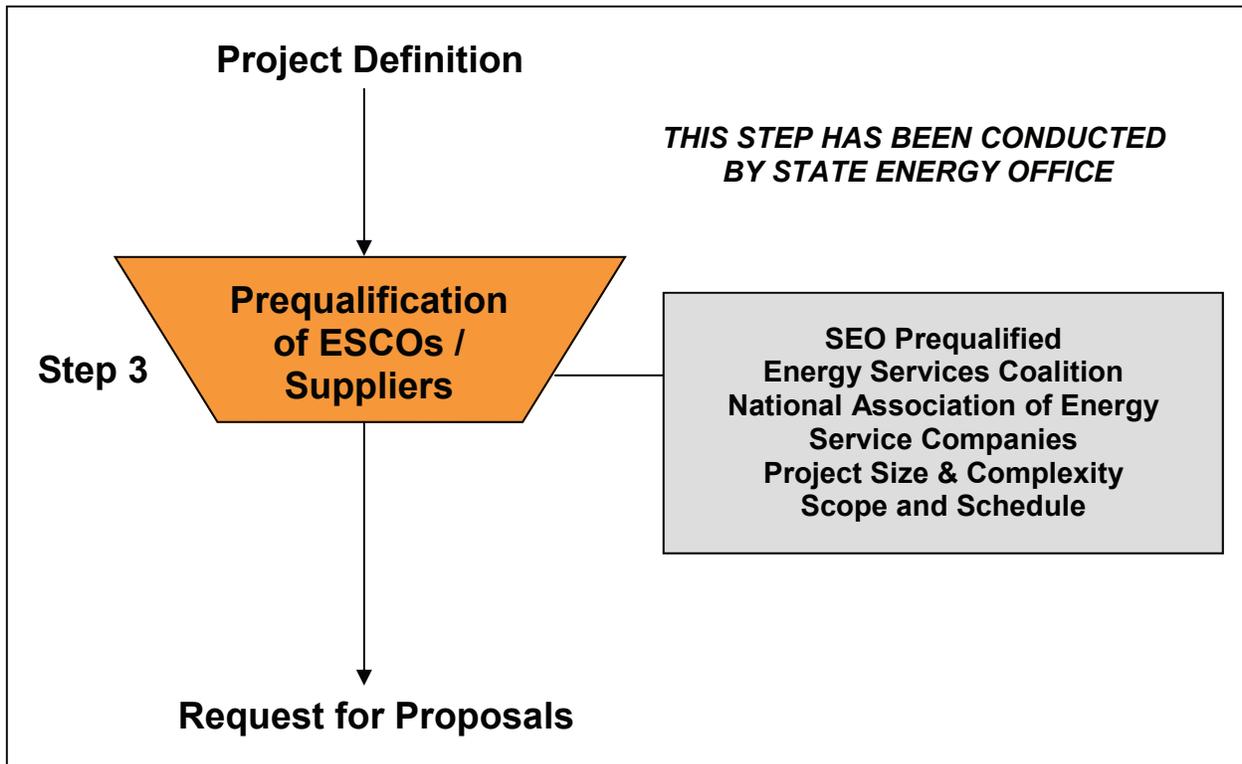
“ A local government unit may provide for the acquisition, installation, or maintenance of energy conservation measures acquired pursuant to this Part by installment or lease purchase contracts in accordance with subject to the provisions of G.S. 160A-20 and G.S. 160A-19, as applicable”. (2002-161,s.8.)

An example of a statement included in the RFP might be:

“Proposed Project Financing - describe the proposed method to finance the project. Identify the proposed project financing source. Describe how you propose to guarantee the timely availability of sufficient funds to complete all capital improvements anticipated for this project. The project financing source should be identified and a letter of commitment to proposer, stating interest rate, terms, and providing a sample financing document, should be provided. The local government unit reserves the right to consider other financing arrangements to compare with ESCO’s proposal. North Carolina’s statutes for local/state governmental units are applicable to the financing arrangements proposed.”

Roughly 95 % of performance contracting in the United States is currently structured for guaranteed savings **with the owner typically accepting the debt through third party financing.**\* This is especially attractive if the owner qualifies for tax-exempt financing. The Internal Revenue Code, 103a, uses the words “tax exempt,” not “if you don’t pay sales tax” A government unit is tax exempt if it can levy taxes, raise a police force, and/or condemn property. **A school district is not tax exempt;** however, it may be possible for a district to ride on a county’s tax exempt status. Financing under a tax-exempt basis can mean savings of thousands of dollars if suitable arrangements are made to qualify.

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#### IV. ESCO PREQUALIFICATIONS

- 4.1 North Carolina Pre-qualified ESCOs
- 4.2 Energy Services Coalition (ESC)
- 4.3 National Association of Energy Service Companies (NAESCO)
- 4.4 ESCO Categories of Accreditation

#### 4.1 North Carolina Pre-qualified ESCOs

The North Carolina State Energy Office has developed “pre-qualification” documents that have been sent to numerous ESCOs that have offered their services in the state. The purpose of this effort was to have a listing of several qualified ESCOs readily available for consideration to propose on energy saving projects to meet the North Carolina Energy Savings Initiative Program. The Acceptance List (<http://www.energync.net/programs/usi.html#pc>) includes:

Ameresco, Inc.	Charlotte, NC
Chevron Energy Solutions Company	Apollo Beach, FL
ConEdison Solutions	Durham, NC
Custom Energy Services, LLC	Overland Park, Kansas
Energy Systems Group, LLC	Raleigh, NC
Florida Power and Light	West Melbourne, FL
Honeywell International, Inc.	Raleigh, NC
Johnson Controls, Inc.	Raleigh, NC
NORESCO	Cary, NC
Pepco Energy Services, Inc.	Raleigh, NC
Siemens Buildings Technologies, Inc.	Morrisville, NC
TAC Americas	Morrisville, NC
Trane Comfort Solutions, Inc.	Morrisville, NC

This listing also includes: contact representatives, company addresses, phone numbers, and e-mail addresses of representatives. Some companies have representatives in North Carolina, even though headquarters may be located in another state.

In addition to the state informational resources, two national organizations represent individual interests and ESCOs - 1) Individual Interests - Energy Services Coalition (<http://www.energyservicescoalition.org/>) and 2) ESCOs - National Association of Energy Services Companies (<http://www.naesco.org/>) Both these resources, described below, offer a better understanding of documentation, contracting procedures and company profiles from different perspectives.

#### 4.2 Energy Services Coalition (ESC)

ESC is a national nonprofit organization composed of a network of experts from a wide range of organizations working together at the state and local level to increase energy efficiency and building upgrades through energy saving performance contracting. The specific purposes for which this Energy Service Coalition is organized are to provide (1) education and (2) develop and disseminate information to increase the delivery of energy efficiency for the benefit of the general public. Educational activities will include the

development and dissemination of information about energy efficiency and how increased energy efficiency can be provided, encouraged and acquired. Activities of this corporation include bringing together all the interested parties for cooperative work on:

- **identification of barriers** to the use of performance contracting as an option for building owners and occupants to acquire building upgrades, energy efficiency, water conservation, renewable energy resources; and combined heat and power;
- **development of solutions** that *remove these barriers* such as developing and disseminating new information and materials where needed;
- **exchange of information**, cooperative work by the affected parties;
- **education** on the benefits of increased energy efficiency and renewable energy and how increased energy efficiency, water conservation, and renewable energy can be implemented; and
- **remove the barriers** for building owners and occupants to use performance contracting and other means for acquiring and financing building upgrades, energy efficiency, and renewable energy resources.

ESC Vision Statement: Through the collaborative efforts and diverse knowledge of its public and private members, the Energy Services Coalition aims to make energy performance contracting one of the primary means of increasing energy efficiency, reducing energy consumption, and improving air quality in all types of facilities in every market segment.

### 4.3 National Association of Energy Service Companies (NAESCO)

The National Association of Energy Service Companies is a trade association that promotes the benefits of the widespread use of energy efficiency. It helps open new markets for energy services by directly promoting the value of demand reduction to customers through seminars, workshops, training programs, publication of case studies and guidebooks, and the compilation and dissemination of aggregate industry data.

NAESCO sponsors an accreditation program for ESCOs, Energy Service Providers and Energy Efficiency Contractors to recognize capabilities and experience. The Association places a high priority on making the Association a home for the broadest spectrum of market participants, including generation and distribution companies and distributed generation project developers.

ESCO's applying for NAESCO accreditation are asked to indicate the measures installed in each project based on a list of over 100 specific measures organized by end use. These reported measures provide the potential customer an indication of work areas that the ESCO's will have pertinent experience and staff capabilities.

#### **NAESCO Accredited Companies**

The following companies elected to participate in the NAESCO Accreditation Program and,

following a rigorous review process by an independent selection Committee, were accredited:

**Accredited Energy Service Providers (ESP)**

- [AMERESCO](#)
- [Chevron Energy Solutions](#)
- [Constellation Energy Projects & Services Group](#)
- [Custom Energy Services, L.L.C.](#)
- [Energy Systems Group](#)
- [Johnson Controls Inc](#)
- [NORESKO](#)
- [Pepco Energy Services, Inc.](#)
- [Select Energy Services, Inc.](#)
- [Sempra Energy Services Company](#)
- [Siemens Building Technologies](#)

**Accredited Energy Service Companies (ESCO)**

- [DMJM Harris](#)
- [BCS](#)
- [Honeywell International Inc.](#)
- [TAC/Tour Andover Controls Energy Solutions](#)
- [Trane, a Division of American Standard, Inc.](#)
- [Water & Energy Savings Corporation](#)

**Accredited Energy Efficiency Contractors (EEC)**

- [Retro-Tech Systems, Inc.](#)

**Interesting Facts About ESCOs**

**Market** - Representing about 2,000 projects with a \$20 billion capital investment over the last 10 years, ESCO's/ESP's/EEC's delivered \$15 billion in energy savings and have grown at the rate of 20% to 25% annually during this 10-year period. Energy cost escalation will extend this growth further.

**Players:**

- Equipment/Controls Manufacturers ..... 27% (big project players)
- Utility Subsidiaries ..... 39% (much less in recent years)
- Energy Companies ..... 24% (Enron gave a bad rap)
- Independents..... 10% (contractor interest growing)

**Contract Types:**

- Shared Savings..... 3%
- Owner Financed, ESCO Guaranteed Savings.....76%
- Design/Build (non-performance).....10%
- Other Performance Contracts.....11%

- Savings more than expected..... 72%**
- Savings less than expected .....19%
- Savings as initially stipulated.....9%

Source: *Public and Institutional Markets for ESCO Services: Comparing Programs, Practices and Performance*, March 2005, Berkeley National Laboratory

#### **4.4 ESCO Categories of Accreditation**

Selecting a single firm to execute a performance contract for energy savings requires the identification of the project characteristics that best fits the experience and capabilities of the proposer. The facility owner should recognize from the developed project definition where the major work will be implemented and match the requirements with the energy service provider's experience and capabilities.

NAESCO offers three categories of Accreditation for companies in the energy service business: Energy Service Company (ESCO), Energy Service Provider (ESP) and Energy Efficiency Contractor (EEC).

##### **Energy Service Company (ESCO)**

ESCOs develop and implement turn key, comprehensive energy efficiency projects. ESCOs offer performance-based contracts (i.e., contracts that tie the compensation of the ESCO to the energy savings generated by the project) as a significant part of their business. To gain accreditation, ESCOs must demonstrate the technical and managerial competence to design and implement projects involving multiple technologies, including:

- Lighting
- Motors and Drives
- HVAC Systems
- Control Systems
- Building Envelope Improvements

ESCOs must also demonstrate the ability to provide the full range of services required for a comprehensive energy efficiency project, including:

- Energy Audits
- Design Engineering
- Providing or Arranging Project Financing
- Construction Management
- Commissioning
- Operations and Maintenance of Energy Efficiency Technologies
- Verifying Energy Savings

##### **Energy Service Provider (ESP)**

ESPs in most instances will offer all the services offered by ESCOs (see above), and, additionally, offer energy supply options. These options can include:

- Development and implementation of build/own/operate distributed generation, cogeneration or combined heat and power (CHP) projects; and
- Arrangement of firm contracting of energy supply.

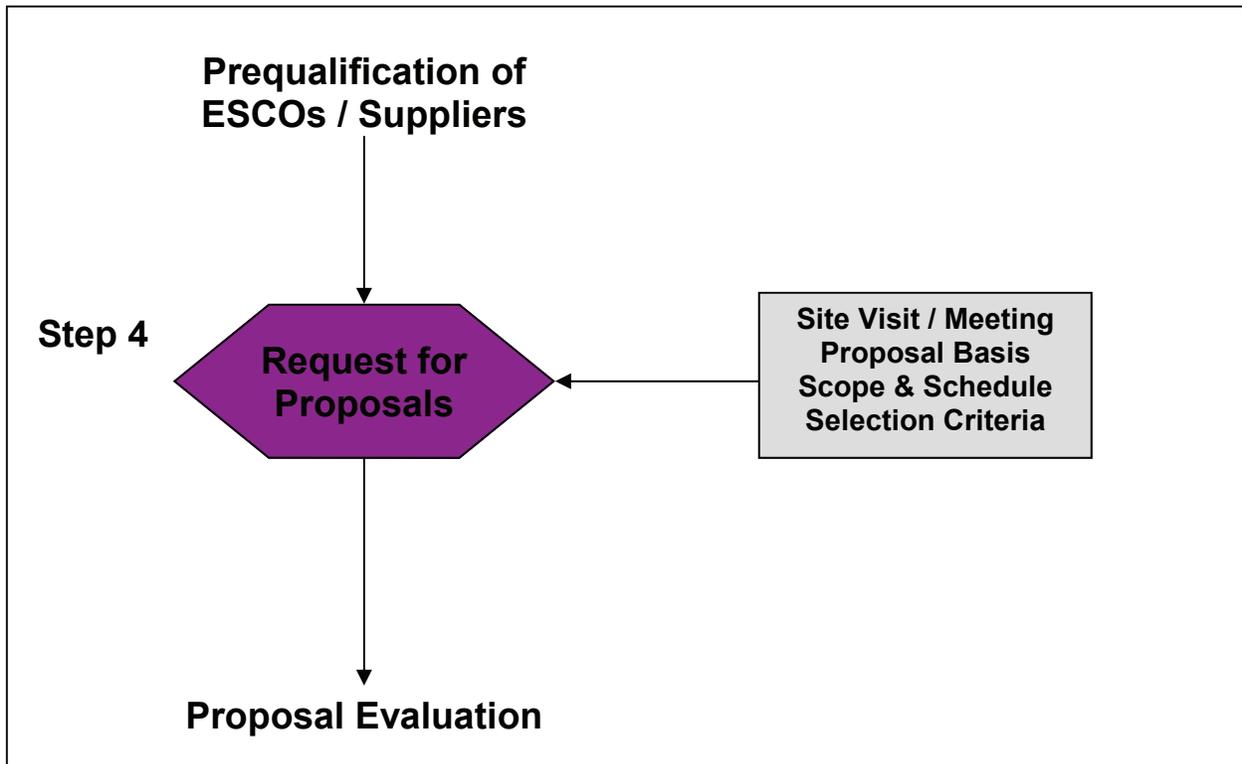
##### **Energy Efficiency Contractor (EEC)**

EECs offer some, but not all, of the services of an ESCO. EECs typically concentrate on one energy efficiency measure (e.g., lighting) or one type of service (e.g., engineering or project management), but can offer multiple measures or services. EECs typically work as subcontractors to ESCOs or ESPs.

Locating Energy Service Providers that will match well with the Owner's scope of work and meet North Carolina's prequalification requirements, and also show strong interest in the work to be performed, will be a challenge in many instances if the:

- Scope is not well defined and it is difficult to justify energy savings
- The project size is small (< \$1 million)
- There are many more than three proposers
- The prequalification and proposal requirements are costly to execute
- There are stringent requirements and rules to be followed beyond normal processes
- A history of one contractor being at the site (incumbent contractors are hard to dislodge)
- Regional politics are evident from prior proposal participation

A well-designed proposal request that overcomes these deficiencies will provide the energy service companies with confidence that the facility owner has prepared a project definition that warrants attention.



## V. REQUEST FOR PROPOSALS

### 5.1 Proposal Basis and Procedures

5.1.1 Review ESCO Prequalification Document

5.1.2 Formal Communications of Intent

5.1.3 RFP Document

5.1.3a Owner's Preliminary Scope of Work and Project Definition

5.1.3b Communicating NC Requirements and Expectations in the RFP

5.1.3c Sharing Energy Service Agreement Format in RFP

5.1.3c Proposal Response

5.2 Issuing the RFP

5.3 Site Visit and Sharing Information

5.4 Selection Criteria

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## 5.1 Proposal Basis and Procedures

At this stage in the performance contracting process, the Facility Owner will have:

- Performed ESCO prequalification
- Identified his team members and leadership for evaluating the proposals
- For organizations with limited technical staffing, contracted with an energy consultant to develop the background support data and documentation requirements to define the: need basis, project definition, preliminary work scope, preliminary cost estimates, and inquiry basis for a performance contract
- Defined the energy benchmarks and initially quantified the potential of the facilities and equipment to exhibit favorable performance contracting consideration
- Developed an order of magnitude cost estimate of facility changes and defined equipment replacements that are reasonably assured to justify cost for the energy savings
- Reviewed the NC statutes with legal counsel and understand what information must be submitted in the RFP for proposers to comprehend the total proposal requirements and denoted what documentation filing is required for local government entities.
- Reviewed the State Board of Education, Department of Public Instruction publication: an *Engineering Checklists for Public School Facilities - Electrical, HVAC, Plumbing, and Structural* and denoted reference to this document, if dealing with K-12 schools
- Notified the designated proposal evaluators (local, state and/or consultant engineer) of the RFP's completion schedule and ESCOs expected site visit for project discussions.

In the Appendix A, a sample RFP document is provided to serve as a guideline to a representative formal inquiry for proposals. **The RFP process will involve:**

### 5.1.1 Review the SEO ESCO Prequalification Document

If the SEO listing of prequalified ESCOs has not been revised within a year of the RFP expected release, then it would be acceptable to request an update of ESCO's prequalification using the SEO Guidelines as a basis. If there are firms that you would like to propose on the RFP but are not yet prequalified with the North Carolina SEO, then certainly this document should be the first step to consider for a proposal on a performance contract. This document is found at [www.energync.net](http://www.energync.net)

### 5.1.2 Formal Communications of Intent (See Appendix B for Example of Each)

- RFP Announcement - letter inviting proposals, site visit date, brief description of facilities and initial energy use, and follow-up requirements for those having interest
- Cover Letter for RFP - general scope of intent, financing approach, services to be offered, preliminary background information of customer's work that has been completed, copy of the RFP document
- Site Visit Registration - mandatory for proposal response, includes date, length of facility tour, address, map, contact person, details (cameras allowed), all ESCOs to tour at same time, follow-up question procedures.

### 5.1.3 RFP Document

The Request for Proposal seeks to gain important evaluation information about the proposers, but also conveys the scope of work, project boundaries, and expectations of the owner. An example RFP document is included in Appendix A. The outline of this RFP template is as follows:

- Introduction
- Overview
- Scope of Work
- Administrative Information
- Attachment A: General Contract Terms and Conditions
- Attachment B: Insurance and Licensing Agreements
- Attachment C: ESCO Response Format
- Attachment D: Evaluation Criteria
- Attachment E: Technical Facility Profile

#### 5.1.3.a Owner's Scope of Work for RFP

The Owners project objectives are presented in the RFP Scope of Work. The level of detail presented in the RFP's Scope of Work must balance multiple objectives and will reflect the present energy management capacity of the organization. Organizations with limited facilities management staffing should establish a clear set of "expectations" within the scope of work, since they may not have done much preliminary energy saving analysis on their own. Facilities with energy management expertise may opt to be more prescriptive in their scope of work, but also should allow for innovative approaches by the ESCO. The more prescriptive the scope, the clearer the proposal evaluations can be. Scopes should be clear in stating facilities "issue" areas (e.g., temperature control issues in building "X"). It is also acceptable to state what is not wanted (e.g., waterless urinals) within the scope. The key is to allow the ESCO to meet the owner's specific objectives while still providing flexibility for technology innovation.

If the Owner or energy consultant has conducted previous work, energy conservation measures (ECMs) can be arranged by category with preliminary energy savings opportunities revealed. Section III of this guide covers in detail the **project definition** which provides the basis for the RFP Scope of Work. All site specific data, utility accounting, physical support documents, and pertinent information derived during any benchmarking analysis, facility profiling of buildings, and inventory of equipment should be shared with bidders as part of the RFP, Attachment E—technical facility data. This sharing process could be represented as shown in Tables 5.1.3a and 5.1.3b.

One reason for grouping by specific categories is to allow for measurement and verification protocols to be chosen that best fit the ECM application. The lighting

upgrade might be tracked for energy conservation by one option while a dedicated new chiller by another M & V option. Additional useful information would include the profiling of buildings by prior developed energy benchmarks. This allows the ESCO proposers to focus on the potential cost savings as defined by the preliminary data collected by the owner/energy consultant.

**Table 5.1.3.a Energy Conservation Measures Matrix Example**

Energy Conservation Measures	Building A	Building B	Building C	Building D
ECM - 1 Lighting Upgrade	X	X	X	X
ECM - 2 HVAC Controls Upgrade & EMS	X			X
ECM - 3 Domestic Water Conservation	X	X		
ECM - 4 Demand Generator		X		X
ECM - 5 Solar Hot water Heating	X			
ECM - 6 New Chiller/Cooling Tower/Controls				X

**Table 5.1.3.b Estimated Energy Usage and Cost (3 year average)**

ECM's	Description	Electricity kwh & kw	Electricity Savings \$	No. 2 Fuel Oil, Gal. NG KCF	Fuel Cost, \$	Water & Sewer , kgal	Water & Sewer Cost , \$	Mainte- nance, \$	Total Cost
ECM-1	Lighting								
ECM-2	HVAC								
ECM-3	Water								
ECM-4	Power								
ECM-5	Solar								
ECM-6	Chiller								

**Owner's Consumption and Cost Data  
Listed by ECM**

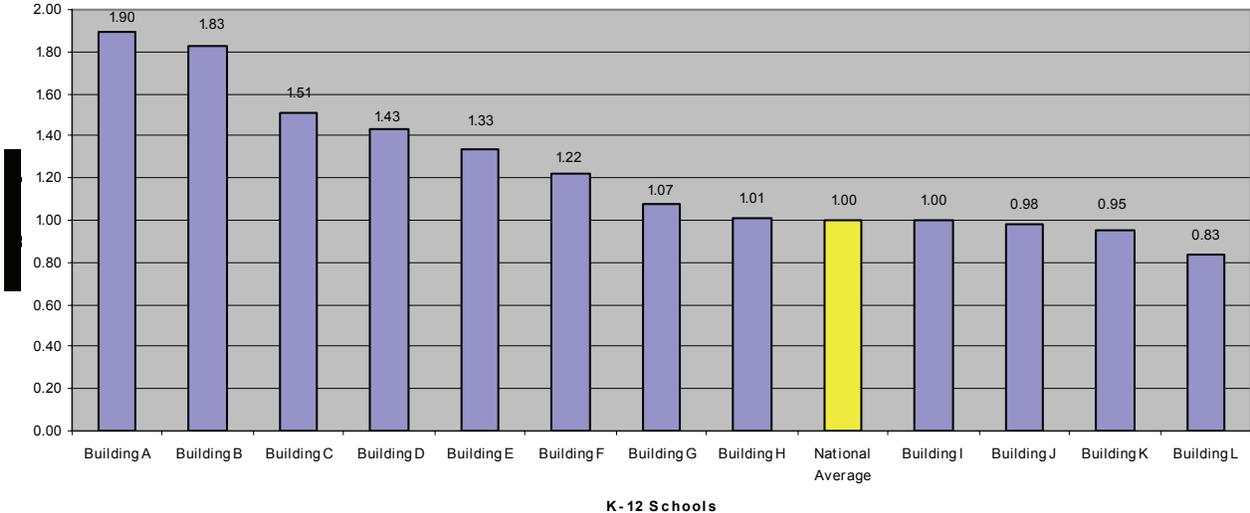
EXAMPLE:

**5.1.3. b—Technical Facility Profile Data— (RPF Appendix E)**

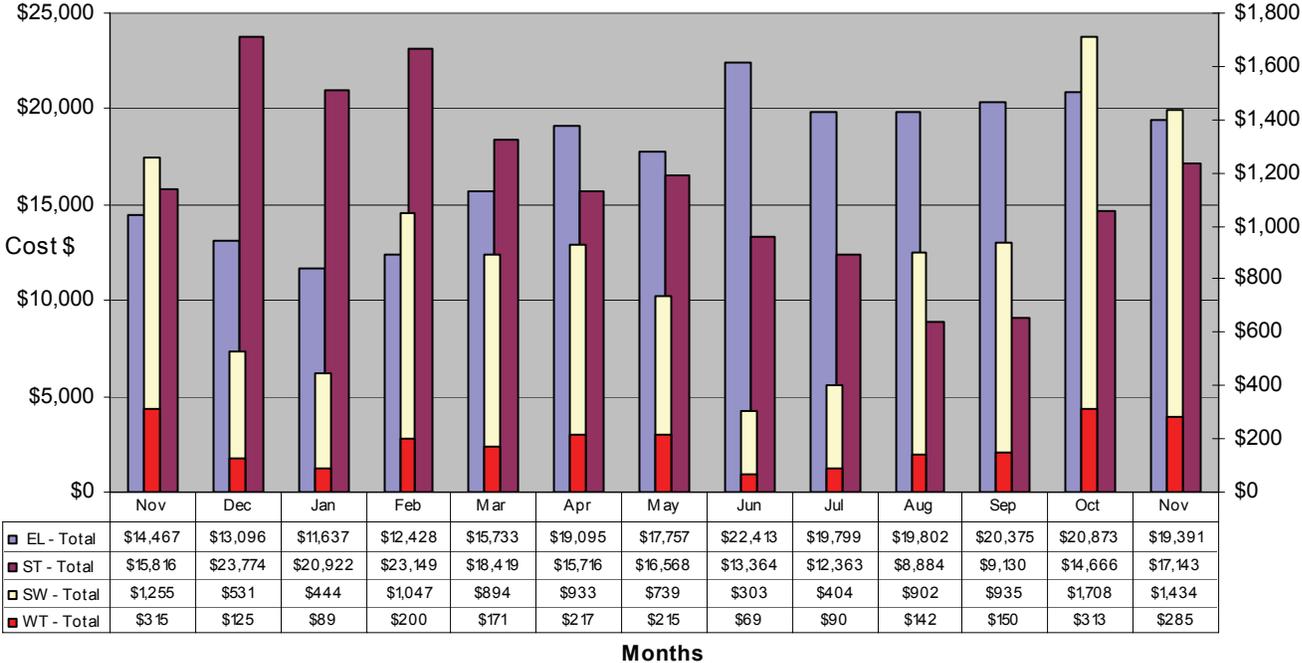
Appendix E—Technical Facility Profile of the RFP could show energy saving priorities by consumption according to the preliminary benchmark for each building, such as shown in Chart 5.1.3.c.

This chart recognizes that buildings A thru F have the greatest energy consumption per square foot of building area and should be a focal point of initial concern by the winning ESCO. This will save time and money during the investment grade audit as information shared by the owner will promote early investment grade audit solutions.

**Chart 5.1.3.c Example K-12 Schools Benchmarks - Annual Energy Cost \$/sf**



**Chart 5.1.3 d Example Energy Cost - Main Building  
Period - November 200X thru November 200X+1  
EL - Electricity, ST - Steam, SW- Sewer, WT - Water**



Other ways to present historical energy consumption data should be charted to visually represent the overall relationships between consumption of energy on a seasonal basis. This will show the highs and lows of energy consumption with seasonal transitions - heating season to cooling season variations. This could be included in the RFP Appendix A, as represented by Chart 5.1.3.d. The ESCO will have a good representation of how energy is consumed within each building over a monthly scale which will further shorten the ESCO investigation time through the confirmation of these earlier findings.

### **5.1.3.b Communicating NC Requirements and Expectations in the RFP**

The RFP should identify what documents (provide sample exhibits) the ESCO will be required to sign to go forward with the project, if selected. It also should provide a listing of documentation requirements that will satisfy the particular local government according to statutes and department guidelines. North Carolina's performance contracting procedures include consideration of the following:

- Guaranty Agreement of Payment - for any shortfalls of guaranteed energy savings
- Certificate of Acceptance - Technical Audit Completion
- Certificate of Substantial Completion and Acceptance - Equipment Warranty Commencement Date
- Certificate of Final Completion - Equipment Warranty Commencement Dates
- Energy Services Agreement - Guaranteed Energy Performance Contracting Program
- Equipment List - Detail listing of equipment to be installed by ESCO
- Pre-Existing Equipment Inventory
- Energy Saving Guarantee - Detail energy analysis, basis for savings, methods of verification, adjustments, use and rate savings, reconciliation, term, responsibilities, exclusions
- Compensation Schedule to the ESCO
- Baseline Energy Consumption/Benchmarks
- Savings Measurement and Calculation Approach Formulas: Methodology to Adjust Baseline
- Construction and Installation Schedule
- System Start-Up and Commissioning; Operating Parameters of Installed Equipment
- Standards of Comfort - temperatures, relative humidity, IAQ minimums
- ESCO Maintenance Responsibilities
- Issuer's Maintenance Responsibilities
- Facility Maintenance Checklist
- ESCO's Training Responsibilities

- Issuer's Payment Schedule
- ESCO's Project Cash Flow Analysis - utility escalation rates, financed amount, term, interest rate, principal, interest
- ESCO's Insurance and Bonding Details
- ESCO's Certificate of Insurance
- Equipment Warranties
- ESCO's Installation Guarantee/Warranty

The winning ESCO would be expected to fulfill all obligations through signature with completion of documentation requirements prior to a final contract award. Awareness of these requirements should be brought to the ESCO's attention during the RFP process either formally in the request or during the negotiation process when leverage might be stronger. In addition to the above, there are breakouts in the RFP that will give the Issuer a better position for evaluating ESCO's experience and capabilities.

#### **5.1.3.c Sharing Energy Service Agreement format in RFP**

There is important information to be presented to the ESCO - both required by the statutes and defined by the customer as a condition of business. Awareness of these requirements will need to be addressed by the ESCO to ensure that the owner's risk is being diminished.

North Carolina Energy Services Agreement - contractual terms and conditions approved by administrative and local legal counsel with attachments as follows:

- Schedule A Equipment to be Installed by ESCO
- Schedule B Description of Premises Pre-Existing Equipment Inventory
- Schedule C Energy Saving Guarantee
- Schedule D Compensation to the ESCO
- Schedule E Baseline Energy Consumption
- Schedule F Savings Measurement and Calculation Approach
- Schedule G Construction and Installation Schedule
- Schedule H System Start-Up and Commissioning
- Schedule I Standards of Comfort
- Schedule J The ESCO's Maintenance Responsibilities
- Schedule K ISSUER's Maintenance Responsibilities
- Schedule L Facility Maintenance Checklist
- Schedule M The ESCO's Training Responsibilities
- Schedule N Installment Payment Schedule
- Schedule O Proposed Final Project Cost and Proposed Final Project Cash Flow Analysis
- Schedule P Insurance and Bonds

Schedule Q Warranties (including Equipment)  
Schedule R Equipment and Installation Guarantees or Warrantees  
Schedule S Security Agreement

Attachment A Construction Process language

Exhibit I Certification of Acceptance--Technical/Audit  
Exhibit II Certificate of Substantial Completion  
Exhibit III Certificate of Final Completion

Three phases of the project will need to be defined by the RFP— 1) investment grade audit phase, 2) construction/implementation phase, and 3) commissioning/monitoring phase. **It is important that the potential winner of the proposal be aware of customer’s expectations during each of these phases prior to submitting a proposal.** Some of these requirements are embedded in NC Statutes and ESA’s but are worthy of identifying prior to proposal submittals so ESCOs can evaluate their proposal position.

The ESCOs must be made aware of all the conditions of the performance contracting processes to fully respond to an RFP. Providing this information early, prior to the award of the investment grade audit, determines if there are conditions that would prevent the ESCO from going forward to each succeeding phase of the project. Sharing this information enhances Customer and ESCO business relationships for beneficial discussions during RFP evaluation and final negotiations, and, in particular, sharing the requirements of North Carolina Statutes and any specific requirements that might be required by a local governmental unit.

### **5.1. 3.d Proposal Response—Defining the Format**

The following is a suggested Table of Contents of the proposal response. It is worthwhile to review the ESCO Prequalification Documents on file at the State Energy Office prior to issuing the RFP to ensure that all requirements are being covered in the response. If all proposers respond accordingly, then the evaluation process will be much easier when comparing several proposers.

Section 1 Executive Summary (2 to 3 pages MSWord)

- Energy savings and project cost summary
- Experience and company differentiators
- Prior successes
- Project approach

### Section 2 Experience and Qualifications (2 to 3 pages)

- Value (\$) of prior projects executed
- Pre-qualified in what states
- Current workload of similar scope
- Awards and recognitions
- Value added benefits
- Project references and listing (Appendix item)

### Section 3 Preliminary Energy Study (4 to 8 pages)

- General scope of work discussion
- Estimate of project improvement costs
- Total savings projected
- Term of contract
- Facility Profiles - age, sf, boiler size, setbacks, lighting, hot water, HVAC

### Section 4 Energy Conservation Measures (As required)

It is good to list these (ECM's) by categories (example, ECM-1 lighting, ECM-2 HVAC upgrade, ECM-3 EMS, etc) for each affected facility since the measurement and verification procedure would be specific for each energy conservation measure.

- Summary of what is proposed by each category
- Discussion based upon order of magnitude estimated cost, historical project costs, and benchmarks compiled by the customer/consultant
- References to any standards that are applicable to final designs
- Project approach and unique ESCO services to be provided

### Section 5 Project Cost and Savings Summary (2 to 3 pages)

- Financing capital cost
- Advantages and benefits
- ECM listing and non-ECM projects that can be financed
- Summary of ECM savings by category - cost, consumption, water, electricity, fuel oil, gas, maintenance
- Proposed Finance Structure - Tax Exempt Lease Purchase, lessor, local school bond issue, advantages

### Section 6 Project Approach (8 to 10 pages)

- Discussion of each phase of the project - Investment Grade Audit, Construction/Implementation, Commissioning/Monitoring
- Measurement and Verification Methodology - baseline, adjustments, cost saving calculations, exclusions, measured, non-measured
- Construction - subcontractors, material and labor purchases, specifications and rights of refusals, safety program, quality assurance, support services

### Section 7 Project Team (2 to 3 pages)

- Project Management Approach
- Technical Capabilities
- Support Services - Purchasing, Subcontracts, Expediting
- Status Reporting
- Project Team Organization
- Loaded cost (including fringes, fees, mark-ups) per proposed employee assignment

### Appendix Items (for consideration) bulk of RFP submittal

- Training and Education Plans
- Awards and Recognitions
- Project References - customer, contract type, project cost, contract term, financing type, annual savings, description of what was done, contact reference with phone number
- North Carolina references of a similar scope
- Special Programs proposed such as NC GreenPower
- Project Cash Flow Analysis
- Documentation and delivery process
- Project Commission approach
- Quality Assurance Program
- Support Services
- Resumes of Proposed Project Team

## **5.2 Issuing the RFP**

Once the owner has developed the RFP document, it will be issued publicly. An RFP is publicly posted for 15 days and should be sent to the State Energy Office's approved list of qualified ESCOs operating in NC. A mandatory pre-bid meeting is held for interested ESCOs (explained below). If the owner does not receive more than one response to the RFP, it must be publicly posted for a second time.

## **5.3 Site Visit and Sharing Information**

Two to three weeks (or allocated time) after the RFP was received by the ESCO and a formal announcement has been sent to each ESCO representative explaining the mandatory site visit and the opportunity to share additional proposal inquiry information, site meeting will take place. Some considerations include:

1. Introduction of the Owner's team and responsibilities
2. Future communication channels and Owner's requirements for communication/documentation sharing - all questions will be answered for all ESCO's attending
3. Pre-site tour questions answered in the following order:

- General - RFP clarifications/additions/deletions
- Site Specific - Building/Infrastructure
- Scope of Work
- RFP Schedule - timeline of project schedule, 3 phases of project (MSProject)
- Energy Savings Analysis - Confirmation and Verification
- Order of Magnitude Cost Estimate and its derivation
- Technical - Best Practices and Cost Effectiveness
- Financial/Purchasing
- Legal/Statutory Reference
- Review of Proposals Evaluation Basis
- Other

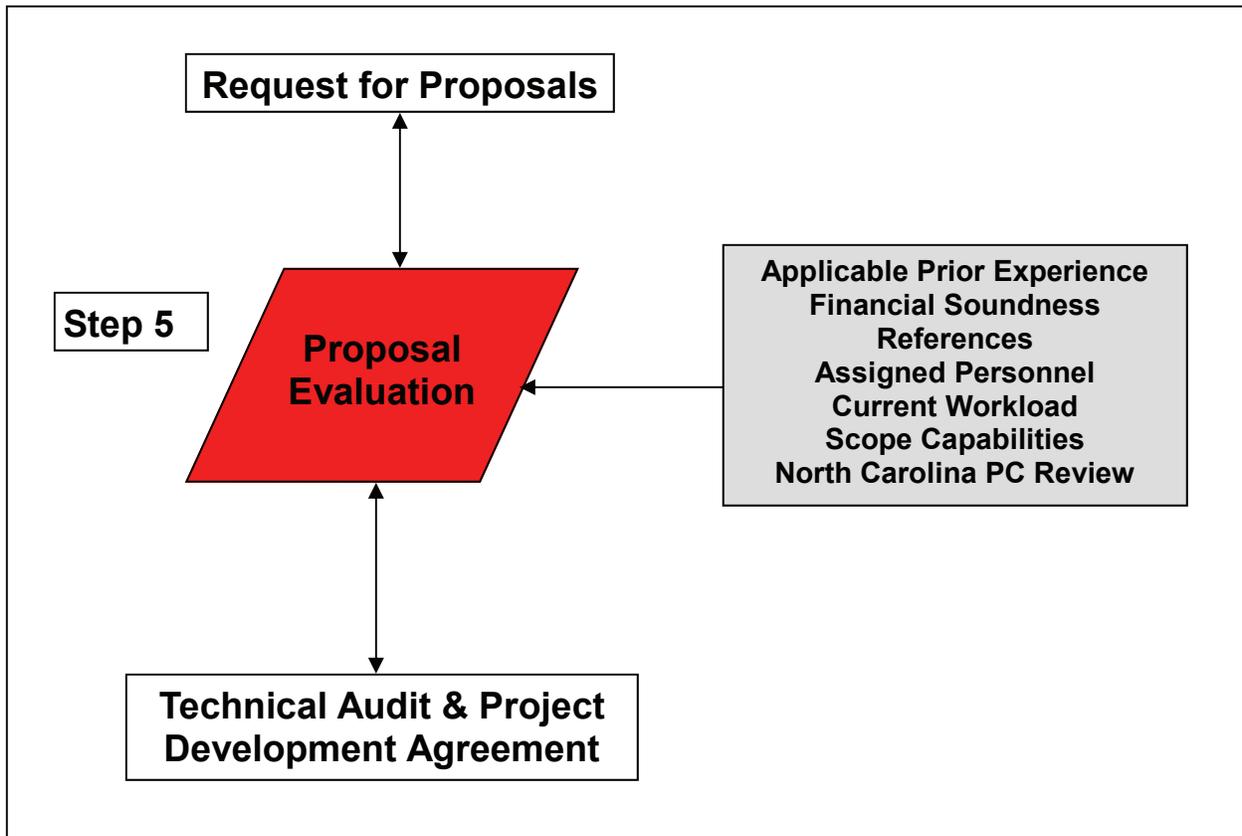
This site meeting would be conducted by the Owner's representative or designated facilitator. All proposers should hear responses to each question that is asked so that a common understanding is presented at the site visit meeting.

#### **5.4 Selection Criteria**

The evaluation of proposals should have some weighting system established that represents the greatest concerns of Owner's risk. The process should involve two steps: 1) the initial inquiry response requirements of the RFP and 2) the final oral interview of the two leading contenders. The second part is primarily to reconfirm that the offering is as stated and that there are no "bait and switch" areas that allow substitutions of people, price, and procedures. Confirming this in a personal interview of ESCO Team members can build confidence in the selection process and give the ESCO a chance to sell and market company and staff qualifications (see Section 6 - Proposal Evaluation).

The next section will address the evaluation of proposals and some of the options available for scoring the responses.

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## VI. PROPOSAL EVALUATIONS

- 6.1 Initial Proposal Screening
- 6.2 Proposal Scoring
- 6.3 Normalizing the Proposals
- 6.4 Reference Interviews
- 6.5 Oral Presentations
- 6.6 Question and Answer Session
- 6.7 Negotiating Future Costing Basis
  - 6.7.1 Raising the Bar
  - 6.7.2 Price and Cost
  - 6.7.3 Engineering/Design Charges for the Work
  - 6.7.4 Construction Charges for the Work
  - 6.7.5 Cost as Percentage of Total Project Cost
- 6.8 Selection of an ESCO
- 6.9 North Carolina Requirements

## 6.1 Initial Proposal Screening

The first requirement of the screening process is to refer back to the prequalification documents on file for each proposer that was initially used as a basis for proposing the work. These documents developed by the NC SEO provide much vital information on the experience and qualifications of the proposing companies. It should be current. It should also be a point of the scoring process for proposal evaluations.

The second requirement of proposal evaluation is to determine if proposals are responsive to the inquiry: 1) Did the proposal track RFP instructions for content and inclusions? 2) Does prior performance contracting experience meet RFP requirements? 3) Does proposer have a valid General Contractor's license for North Carolina? and 4) What are the credit worthiness and financial resources of proposers?

Third, there must be a defined method and procedure for scoring the significant elements of the proposal that weigh the customer's concerns and scope of work. If the project's success is dependent on minimizing capital cost then evaluation emphasis should be placed on capabilities for design/build with checks and balances for tracking. If control strategy of equipment is a prime concern, then emphasis should be scored higher in instrumentation and assigned people's experience in this area. Each customer will have unique requirements that will have weighting requirements that are specific to the energy saving measures to be implemented and, additionally, to the services provided to ensure success.

## 6.2 Proposal Scoring

The project team should identify those proposal evaluation criteria that are of most significant concern to the success of the project and hopefully have been identified in the proposal request. The importance of these criteria can be assigned a weighting number of 5, 10, 15, etc., depending upon the importance to the perceived success of the project. The higher the number, the higher the importance. In the example to follow, ten criteria have been listed. Three firms, A, B, and C are to be evaluated based upon the listed proposal criteria. Numbers 1 through 5 are selected to rank each firm according to the strengths of each firm in the evaluation criteria. There can be an explanation of what each ranking means in terms of the criteria, for instance:

Project Team Qualifications - Ranking Numbers - 1. Below, 3. Average, 5. Above

### Example of Scoring Process - Ranking Criteria

#### 5 Above Others

- ⇒ Project Manager registered professional engineer in North Carolina, 15 yrs experience
- ⇒ More than three projects of similar scope, quality references
- ⇒ 10 to 20 years' experience in energy saving technical field
- ⇒ Executive sponsorship and company commitment

#### 4 Slightly Above Average

- ⇒ Project Manager has at least 10 years with company
- ⇒ Full service capability of team, positive references

- ⇒ 5 to 10 years' experience
- ⇒ Same team on similar prior projects, good team working with each other
- 3 Average
  - ⇒ Project Manager assigned
  - ⇒ At least one project of similar scope
  - ⇒ Some subcontracting of service needs
  - ⇒ One reference listed, response good
- 2 Below Average
  - ⇒ Project Manager new to company
  - ⇒ Scope of work new to firm in some areas
  - ⇒ Construction a subcontract
  - ⇒ References lacking
- 1 Below All Others
  - ⇒ Project Manager not identified, choice given for others
  - ⇒ Scope of work strong in wrong area
  - ⇒ Multiple subcontracts, services and construction
  - ⇒ References indicate some problem areas of significance

Looking at the prior ESCO Proposal Response Evaluation, some initial conclusions can be observed. In the example in Table 6.2, the ESCO prequalifications were strong; however, the project “A” team was not proposed. Cost was very competitive - maybe the company is trying to buy (lowest price) the project with the weaker project team proposed. A weaker team in experience without a defined level of executive sponsorship is not a good contractual arrangement. Had there been any changes in the company since the prequalification materials were submitted and the request for proposal issued? Good price, excellent range of services, but best qualified team must be working elsewhere according to prequalifications. This is the time to find out why proposal C didn't meet expectations of the prequalifications.

### 6.3 Normalizing the Proposals

It is the intent prior to negotiations and oral presentations to normalize proposal areas, especially of the two leading contenders. In the example in Table 6.2, Firm B is first in the evaluation analysis and presents the strongest proposal based upon the selected criteria. Efforts should be used during follow-up discussions with firm C, **prior to oral presentations**, to determine if there are options available to be pursued to level the playing field in team capabilities. Are there any circumstances or proposal conditions that lead to a weaker position for Firm C? Two strong proposals are always better than one! So every effort should be made to have a competitive proposal basis for several prequalified firms. The customer's project manager should pursue the discussions to ensure that the second leading proposal is worthy of selection if the primary candidate does not meet customer requirements during negotiations. Additionally, it is a good idea to verify the results of the evaluation with Firm B, not only to substantiate the strong position but also to determine if a stronger position can be obtained.

### 6.4 Reference Interviews

**Table 6.2 ESCO PROPOSAL RESPONSE EVALUATION (Example)**

**ESCO Name:** Firm C

**Location:** Raleigh, NC

**Evaluator:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Evaluation Index**

Selected Evaluation Criteria	Evaluation Rating					a	x	b	=	c
	Below 1	2	Average 3	4	Above 5	Rating Value (a)	Criteria Weight (b)	Score (c)		
1. Prequalification Rating				√		4	10	40		
2. Project Team Qualifications		√				2	15	30		
3. Prior Relevant Projects			√			3	10	30		
4. Technical Approach				√		4	10	40		
5. Management Plan		√				2	10	20		
6. Credit Worthiness Assets/Liabilities			√			3	10	30		
7. Full Range of Capabilities					√	5	10	50		
8. Executive Support		√				2	5	10		
9. Financial Benefits			√			3	15	45		
10. Competitive Price					√	5	5	25		
<b>Evaluation Index Weighted Score</b>								<b>Totals</b>	<b>100</b>	<b>320</b>

**Firm C—This Score 320**



**Firm A 260 Score**

**Firm B 410 Score**

Firm B has the highest score for this series of evaluation criteria. The Evaluators would submit their results for each firm. A master listing for the total evaluation would be compiled for all involved in the selection process. The objective of this procedure is to make the proposal evaluation more than just a subjective discussion but based upon criteria that in the past have been effective in promoting successful results. Weighing the importance of the selection criteria and then ranking each proposer to a numeric strength/weakness in the criteria area is a common method of capabilities evaluation. The criteria and ranking system are flexible to the proposal information that is sought. The important thing is to have a method and procedure to rank proposers against each other in the most significant measures of project success.

**EXAMPLE:**

Interviewing client references is a valuable source of information regarding proposers, especially when a proposer has not previously done business within the state or for a particular school/local government unit. Client reference interviews establish independent support for claims made by the proposer and provide valuable insight into the proposer's strengths and weaknesses, based on past performance.

It is recommended to check references of the two highest-ranking proposers after preliminary scores have been determined by evaluators. One member of the evaluation committee should be selected to make all reference calls to maintain consistency. Often this person will be the Contracting Officer, County manager, Technology Advisor, or the Finance Advisor. The results of the reference checks should be distributed to all evaluators so that they can re-evaluate their scores before assigning a final rank.

The following outline and questions are suggested for reference interviews.

- 1) Briefly introduce yourself and describe the project for which the proposer is being considered. Ask for the client reference's title and description of responsibility if they are not already known. Find out how the reference was involved in the project done by the proposer. It may be helpful to state that the entire interview will be kept in confidence and will not be shared or discussed with the proposer.
- 2) Ask the reference to describe the projects completed by the proposer. Which of the following services were included?
  - feasibility study
  - investment grade energy audit
  - detail design of efficiency projects
  - construction/installation
  - project financing
  - savings guarantees
  - maintenance and repair services
- 3) Ask for comments on the quality of the energy audit. Did the project deliver the level of energy savings promised in the proposal?
- 4) Ask for comments on the quality of design documents prepared by the proposer. Did the reference or someone representing the client review and approve design submittals? Were they prepared by a licensed engineer?
- 5) Ask for comments on the construction process. How did the proposer handle the scheduling and coordination of work? Subcontracting? Was construction completed on schedule?
- 6) Ask how the project was financed.

- 7) Ask if staff training needs were met timely and were appropriate for the staff experience and culture of the organization.
- 8) Ask if the M&V process was clearly communicated. Have savings exceeded the guaranteed amount? Has the proposer made guaranteed payments in a timely manner if applicable? Does the reference still agree with the savings measurement method being used?
- 9) Ask whether maintenance and repair services are included. How have they performed in terms of responsiveness?
- 10) Ask whether there have been any disputes under the contract, e.g., regarding actual energy savings accomplished.
- 11) Ask the reference if one thing in their work with the proposer could be changed, what would it be?
- 12) Ask the reference for an overall appraisal of the proposer’s performance.
  - “one of a kind” excellent
  - better than average
  - average
  - below average
- 13) Ask if the reference has any advice to offer before we begin this project.

### 6.5 Oral Presentation

Oral presentations by the short-listed proposers are the last stage in the selection process. Each of the short-listed proposers makes a 40- to 60-minute presentation followed by a 40-minute question-and-answer session.

The proposers are notified of the date, time, and location of the oral interviews; they also receive an outline for their presentation. This outline is a simplified version of the scoring system used in the RFP, as shown:

	<u>Weight</u>
<b>1. Prequalification Rating</b>	<b>10</b>
<b>2. Project Team Qualifications</b>	<b>15</b>
<b>3. Prior Relevant Projects</b>	<b>10</b>
<b>4. Technical Approach</b>	<b>10</b>
<b>5. Management Plan</b>	<b>10</b>
<b>6. Credit Worthiness</b>	<b>10</b>
<b>7. Full Range of Capabilities</b>	<b>10</b>
<b>8. Executive Support</b>	<b>5</b>
<b>9. Financial Benefits</b>	<b>15</b>
<b>10. Competitive Price</b>	<b>5</b>

The criteria have been set. The scores have been tallied. The oral presentation should allow each selected proposer an opportunity to improve his initial results. The proposer can address any of the criteria of the RFP. The scoring basis of the proposer can be shared; however, expect questioning by the proposer as to how the results were obtained. Of course, the results would be ranked according to competition and thus the incentive would be in place for the proposer to make improvements.

## **6.6 Question-and-Answer Session**

The Question-and-Answer session following the oral presentation can be used to clarify earlier questions presented by the proposal, oral presentation, or questions that arose in discussions with references. This really needs to be an informal session with a certain comfort level being reached by both parties. An informative but casual approach is suggested.

One size does not fit all. Pick and choose questions that seem the most useful to your organization or project. The point is to create a list of questions that allow you to better discern the relative strengths of each proposal and proposing ESCO. These questions are just as important in assessing which ESCO your group finds best to work with over the long term. Distribute selected questions among the review team for the interview.

Example Questions:

1. HISTORY: How long has your organization been operating in the area?
2. CORPORATE AFFILIATIONS: Explain the affiliation of your company to a larger company, subsidiary, independent arm of utility company, etc.
3. CHANGES IN OWNERSHIP AND BUSINESS STABILITY: Has the company been bought/sold over the last year, five years, ten years, etc.?
4. COMPLETED CONTRACTS IN YOUR SECTOR: How many successful contracts have been completed in the K-12, local government, or community college sector. What size were these projects?
5. PROJECT TEAM: Have the actual team members of the project team been fully identified? Have adequate staff and resources been documented and qualified?
6. LOCATION OF NEAREST OFFICE: How close or far is the nearest support/service office for your firm?
7. EXPERIENCE WITH TECHNOLOGIES PROPOSED: How much experience does the firm have with the energy technologies proposed. Has the firm implemented such technologies in the past with success?
8. PROPOSED ENERGY SAVINGS: What is the estimated range of energy and demand savings achievable for projects similar to ours and how are estimates derived? What is the estimated range of gross annual utility cost savings achievable for projects

- 
- similar to ours, and the basis for those estimates? What has been the history of past projects between “documented actual” versus “projected savings.”
9. **COMMUNICATION:** Describe the communication channels that will exist during the project. Is there a key point person involved throughout the process or are there different people who we will be contacting for each process (processes include audit, contract negotiations, installation, monitoring)?
  10. **SCHEDULE:** Can you meet the proposed project deadlines? What is the current workload of those staff identified to work on this project? How well has the company done on completing past projects on schedule, including both development and construction?
  11. **SUBCONTRACTORS:** How do you select and qualify subcontractors? How are you willing to work with us in selecting subcontractors? Do you emphasize local subs?
  12. **AUDIT:** Explain your process for conducting the Technical Energy Audits? What is the process? Who is completing the audits? Explain your firm’s creativity in developing a list of energy efficiency recommendations.
  13. **GUARANTEE:** Describe your views on savings guarantees and the terms of your standard guarantee.
  14. **POST-PROJECT SUPPORT:** What type of post-project support does your company usually provide once a guarantee begins? Do you provide local or remote support? How are project support fees included into the overall project cost?
  15. **MAINTENANCE AGREEMENT:** What is involved in a maintenance agreement? Is it required? How does it relate to the guarantee? What site specific operational and maintenance changes does your firm usually propose for similar projects?
  16. **MONITORING & VERIFICATION:** What is involved in monitoring & verification? What methodology will be used? How does this account for changing variables such as utility rate increases, occupancy changes, climate changes, and additional energy-using equipment such as computers? How are costs assigned to energy savings? How does it relate to the guarantee? How accurate have you predicted energy performance on past projects?
  17. **TRAINING:** What training is provided for building operators? Who will conduct the training and how frequently? Is there an additional cost?
  18. **COST:** What is the estimated cost-range for our project? Describe your approach to ensuring we get good value at a reasonable cost for this project. How will costs be reported for this project? Are you prepared to provide markup and overhead breakouts? Describe your process for project invoicing.
  19. **PROBLEMS/SOLUTIONS:** What problems have you had in other performance contracting projects. What process do you propose for resolving issues and problems with us throughout this process? How will you accommodate site inspectors and their findings?
  20. **FINAL OPEN-ENDED QUESTION:** Why should we select you?

21. FINANCING: Describe your firm's preferred approach to project financing. What financing rates are currently being accessed by your company? Who are your financial partners?
22. LEGAL AGREEMENT: What are key provisions and flexibility of your standard legal agreements/contracts. Have you utilized the state's Energy Services Agreement in the past? Any issue with the use of this ESA?

## 6.7 Negotiating Future Costing Basis

**The ability to get specific proposal concessions are best when there is more than one competitor proposal still in the running.** This will allow the customer to seek the best from each proposer using the competition to improve the offering. Prior to awarding a preliminary Investment Grade Energy Saving Audit, it would be prudent to learn more about ESCO total costs while two or more proposers are in the running. Some considerations of these negotiations include:

### 6.7.1 Raising the Bar

The cost of money and the debt service of local government units/institutions dictates the willingness of future project commitments involving financial resources. Administrative acknowledgement of project approval based on low cost and high return is one negotiating tool that is always appropriate. The preliminary energy assessment report should raise the bar to a higher level from the initial results, such as consideration for project approvals based upon the following targets:

- Contract Term - Savings to Cost Ratio (includes debt) greater than 2.0,
- Measured Savings to Non-measured Savings in the 10 to 20 range, and
- Savings beyond the contractual term of 80% of initial cost (includes debt).

High returns mean that project cost will need to be lower with higher savings. In either case, the objective is to lower cost and improve energy saving performance by raising the bar of benchmark performance criteria.

### 6.7.2 Price and Cost

An initial **price** was submitted with each proposal. It represents an estimated **marked-up cost** for the professional and construction services to be rendered, based on salary multipliers consisting of a base salary, salary fringes, and a firm's overhead mark-ups. The "price" presented in an ESCO response to the RFP is based on preliminary facilities information and a basic facilities walk-thru audit. From generally accepted engineering standards, the accuracy of this level estimate is plus or minus 25 percent. (See table 2.3.2). It is also very probable that the proposed projects may change or be modified at the subsequent stage of the investment grade/technical audit. Knowing with some certainty how ESCOs cost mark-ups are developed for the two leading contenders will improve project payback periods and

the benefits/cost ratios of the project.

**6.7.3 Engineering/Design Charges for the Work** *(Note: the following information is in more detail than will be revealed by the Contractor; however, this is the normal basis for budgeting a project to fixed-price contract such as performance contracting)*

**Professional Services** - The ESCO/Engineer/Consultant is normally reimbursed or paid for all charges, costs, and expenses necessarily incurred in the performance of the work. How the charges are applied and at what mark-ups is an evaluation of total project cost. Most engineering firms track internal project charges on a budgeted time and hourly charge basis of the individual assigned to the project. The individual estimates the time to complete the work assignment for the project scope with his estimate being the budget for the discipline department or specific assignments. The amount billed to the customer is the individual hourly rate times the multiplier for fringes and OH&P. Expenses are billed at cost unless the contract allows mark-ups.

**Salaries** - professional services hourly cost mark-ups should be on the order of **1.8 to 3.0**, consisting of:

**Base Salary** - The employee's annual salary, usually divided by 2080 (40 hrs/week x 52 weeks/year = 2080) annual hours = hourly charge \$/chargeable individual

**Fringes** - **0.32 to 0.36** consisting of fixed charges for Federal (FICA) and State (SUI) payroll taxes and insurance, company benefits programs, such as vacations, holidays, sick leave, excused absences, jury duty, health and group life insurance, long-term salary continuation, general liability insurance, errors and omission insurance, and company pension and saving programs. These fixed charges are subject to appropriate adjustment for statutory changes in payroll taxes or insurance.

**Overhead and Profit** - **0.48 to 1.64** a fixed charge for overhead (cost of doing business such as light bill, building lease, office equipment, computers, etc.) and profit or fee portion of cost, including executive and administrative office personnel not assigned or chargeable to project work and proposal costs not recovered in the proposal process. (Note the range of this component)

**Expenses** - transportation, traveling (rent-a-car and personal car mileage (\$0.XXX/mile or latest rate)), hotel and living expenses (meals) and out-of-office expenses for field assignments and relocation expenses for long-term field assignments.

**Miscellaneous Expenses** - Include the following: telephone service, postage, internet connections, and reproduction cost for drawings, manuals, specifications, and sepias, all associated with the project. Costs of permits, fees, licenses, or royalties required for engineers to complete the work. Costs of any sales, use or

similar taxes, or fees imposed by Federal, State, Municipal or other government or agency incurred as a result of customer's directions or instructions. Fees, costs, expenses, damages or disbursements incurred in connection with any third party claim, suit, or cause of action, arising out of or in connection with any design and or construction work performed by any third-party pursuant to or as a result of the work. Premiums and brokerage fees on all bonds and insurance policies, cost for soil investigations, tests, laboratory fees, and any special consultant needs including third party providers of goods and and/or services engaged by the ESCO/contractor engineer.

#### **6.7.4 Construction Charges for the Work** *(Informational Only)*

Remodeling or upgrading existing facilities involves labor cost for services, materials and equipment costs. This work is usually more complicated than a "green field" construction project due to the demolition of the old and the replacement of the new. Contractors estimate their cost based upon work categories. These work categories are further defined by "direct cost" and "indirect costs". As the size and complexity of the construction project increases, additional program costs are applied such as safety programs with field administration and work incentive programs for early completion.

**Directs** - work categories include: site, buildings, equipment foundations, mechanical/HVAC, instrumentation, piping, and electrical with each of these categories defined by cost for labor, materials, and subcontracts. Depending on the size of the job, there can be mark-ups for labor, construction materials, and subcontractors. Additionally, if purchasing and expediting of equipment is included in the contract, there can be mark-ups of equipment that are pass-throughs to the customer. **It is good to know if pass-throughs involve markups and how much.**

**Indirects** - these charges are similar to professional service charges but differ in the percentage mark-up for direct hire labor. Workman's compensation is a charge that is based upon how safe and accident-free a contractor might be over his work history. Each contractor will have a **workman compensation modifier** that indicates charges for workman's compensation insurance. **This modifier should be asked for if the ESCO is a general contractor and direct hires labor.** The higher the modifier the greater the cost being paid by the contractor for workman's compensation and the greater the labor cost. Indirect costs include - home office and field office management (field office fringes would be at 0.22 to 0.28), safety program, temporary construction (mobilization cost and expenses), small tools/equipment rentals, nondestructive testing, field office computer services, general liability insurance, automobile liability insurance, escalation, contingency, special incentive safety programs, bonding, and construction overhead and profit or a construction management fee, if a subcontracted work approach. See Section 7.5 for details.

Another approach is to define major costs in terms of a percentage of the total

project costs. This will allow the comparison of cost and percentages that show efficiency of project execution. Some of these cost categories might be as shown in the following section.

**6.7.5 Cost as a Percentage of Total Project Cost**

Comparing different firms for cost performance requires the understanding of organization structure. One way to gauge a firm’s production efficiency is to evaluate component cost as a percentage of total project cost. A high overhead and profit percentage would certainly be an indicator of a need for an exceptional firm and team qualification to justify the added cost. Some of these comparisons might be as follows:

Energy Study Cost \$ \_\_\_\_\_ or \_\_\_\_\_ % of Total Project Cost

Estimated Cost to Prepare Energy Study (if different from price above) \$ \_\_\_\_\_

Design Services \$ \_\_\_\_\_ or \_\_\_\_\_ % of Total Project Cost

Construction/Project/Management Services \$ \_\_\_\_\_ or \_\_\_\_\_ % of Total Project Cost

General Contractor Overhead and Profit - Overhead \_\_\_\_\_ % of Total Project Cost  
 Profit \_\_\_\_\_ % of Total Project Cost

Commissioning and Initial Training \$ \_\_\_\_\_ or \_\_\_\_\_ % of Total Project Cost

Interest During Construction \$ \_\_\_\_\_ at \_\_\_\_\_ %

Bond Fees \$ \_\_\_\_\_ or \_\_\_\_\_ % of Total Project Cost

Miscellaneous Fees and Permits \$ \_\_\_\_\_ or \_\_\_\_\_ % of Total Project Cost

Term Financing Interest Rate \_\_\_\_\_ % of Principal (APR)

Monitoring, Verification, and Savings Guarantee \$ \_\_\_\_\_ or \_\_\_\_\_ % of Energy Savings

Comparing these percentages and cost for each proposal would be an indication of work efficiency and the ESCO’s cost for doing business. Most companies track this information on every project for the purpose of internal audits to determine business competitiveness.

**6.8 Selection of an ESCO**

Based on the weighted overall evaluation scoring, the presentations and question-and-

answer session, the project team will select the ESCO to proceed with the technical audit.

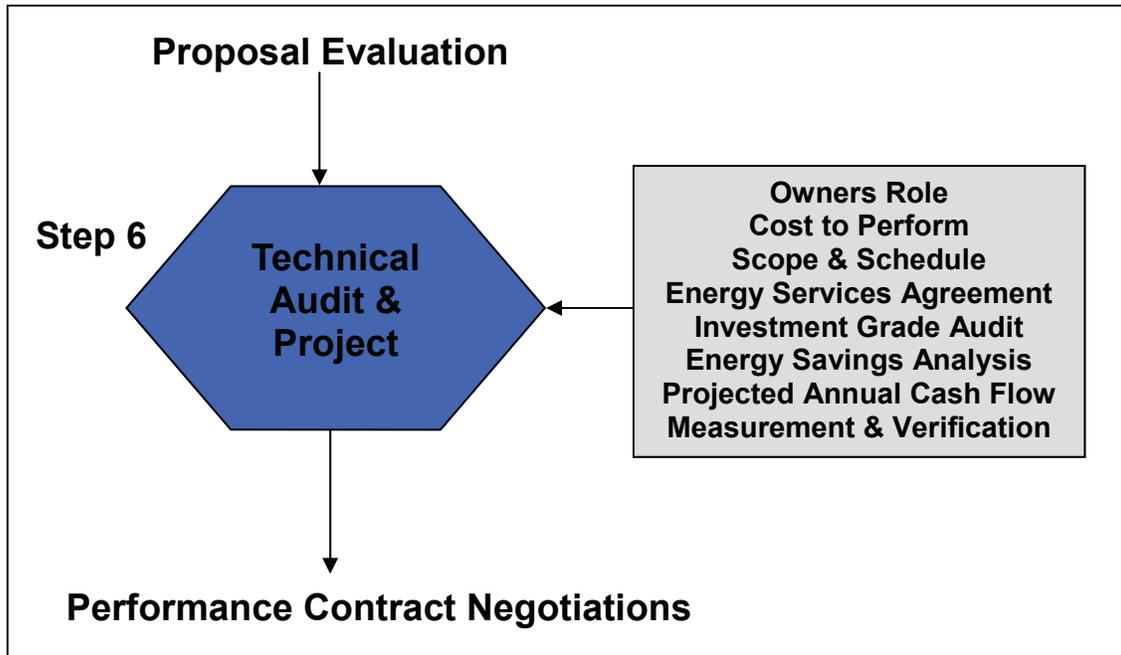
## 6.9 North Carolina Document & Resources

The **North Carolina Energy Services Agreement (ESA)** for Guaranteed Energy Performance Contracting Program (Appendix B) should be reviewed for consideration as a binding document for the ESCO's proposal and future work activities. This will require perhaps the involvement of legal counsel if there are many exceptions to these contract documents. It is better to find out early any concerns that the ESCO may have with the Agreement prior to pursuing proposal details, especially if there is indication of difficult negotiations. Also, for K-12 public schools, community colleges, and local governments, the **Local Government Commission is a defining resource for validating the finance and contract terms**. This can also be an opportunity for separate meetings/discussions with ESCO's legal counsel and Customer's legal counsel for negotiating a compromise position for any legal contract language that can later be reviewed at the oral presentation. It is important during the review of ESCO and individual experience and capabilities not to ignore the importance of having a contractual agreement that will allow recovery if requirements are not satisfied.

Additionally, there are guideline documents that have been published by institutions, K-12 schools, and municipal/county government units that point out unique design and construction requirements that will govern new additions to existing facilities. These guidelines have been developed by several state architectural and engineering departments that have focused on the conservation of energy in the design process. Reference to these documents and departments as **approval partners** in the negotiating process during the development of technical audit documentation for specification and design should be acknowledged as a requirement of approval and certification to proceed. Facility Owners should check with the organizations for any additional requirements.

- 1) North Carolina Public Schools –Energy Guidelines May, 2004 and Engineering Checklist for Public School Facilities—Electrical, HVAC, Plumbing, Structural State Board of Education Dept. of Public Instruction
- 2) North Carolina League of Municipalities (any requirements or guidance for local municipalities)
- 3) North Carolina Association of County Commissioners (any requirements or guidance for County government units)

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## VII. TECHNICAL AUDIT AND ENERGY SERVICES AGREEMENT

- 7.1 Background Information Details
- 7.2 Reviewing North Carolina Requirements
- 7.3 Preliminary Energy Assessment - Upgrade to Energy Audit Report/Investment Grade Cost
  - 7.3.1 Discussion of Energy Conservation Measures and Baseline Energy Bench marks
- 7.4 North Carolina Engineering Services Agreement - Schedule Attachment Examples
  - 7.4.1 Schedule C - Energy Saving Guarantee (Example)
  - 7.4.2 Schedule D - Compensation to the ESCO (Example)
  - 7.4.3 Schedule E - Baseline Energy Benchmarks (Example)
  - 7.4.4 Schedule F - Savings Measurement and Calculation Approach (Example)
  - 7.4.5 Schedule G - Construction and Installation (Example)
  - 7.4.6 Schedule H - System Start-Up and Commissioning (Example)
  - 7.4.7 Schedule I - Standards of Comfort (Example)
  - 7.4.8 Schedule J - ESCO's Maintenance Responsibility (Example)
  - 7.4.9 Schedule K - Issuers Maintenance Responsibilities (Example)
  - 7.4.10 Schedule M - ESCO's Training Responsibility (Example)
  - 7.4.11 Schedule N - Installment Schedules (Example)
  - 7.4.12 Schedule O - Proposed Final Project Cost & Proposed Final Project Cash Flow Analysis
  - 7.4.13 Schedule Q - Equipment Warranties (Example)
  - 7.4.14 Schedule R - Equipment and Installation Guarantees or Warrantees (Example)
- 7.5 ESCO Cost Breakouts

defined by the Agreement should be explored with the ESCO to determine the final documents to be provided and the degree of detail that will be included.

## 7.2 Reviewing North Carolina Requirements

The following discussion is referenced to the **Energy Services Agreement (ESA)** for Guaranteed Energy Performance Contracting. The government agency/institution/customer has performed a preliminary energy assessment and budget grade cost estimate ( $\pm 25\%$ ) that will be reviewed by the ESCO and extended to an investment grade quality ( $\pm 0\%$ ) and finalized for an **Energy Audit Report** that will serve as the technical basis for the performance guarantee. The finalized Energy Audit Report prepared by the ESCO and accepted by the Owner or “Issuer” (or the agreement) contains specific recommendations and documentation concerning the **Energy Conservation Measures** to be provided. The issuance of a **Certificate of Acceptance** means that the contractual requirements have been satisfied. The major elements of the ESA that impact the Energy Audit Report can be arranged so that **simultaneous execution of parts** of the ESA can be addressed by project team members to improve the schedule. These ESA Schedules can be arranged for Customer review/approval and ESCO execution by the topical groupings shown below.

**Preliminary Energy Assessment - Upgrade to Energy Audit Report/Investment Grade Cost:** Responsible Reviews - Customer’s Project Manager & Technical Support (Consultant)  
Customer’s Project Manager & Technical Support (Consultant)

- Schedule A - Equipment to be Installed (Scope of Work)
- Schedule C - Energy Saving Guarantee (technical aspects of guarantee)
- Schedule E - Calculations of Baseline/Benchmarks
- Schedule F - Savings Measurement and Calculation Approach
- Schedule G - Construction and Installation Schedule
- Schedule I - Operating Parameters for ECMs/Standards of Comfort and Service
- Schedule S – Guarantee Security acceptable to the Treasurer

**Financial/Costing:** Responsible Reviews - Customer’s Project Manager & Financial Officer

- Schedule C - Energy Saving Guarantee
- Schedule O - Project Final Cost/Cash Flow Analysis
- Schedule D - Compensation to the ESCO
- Schedule P - Insurance and Bonds
- Schedule N - Installment Payment Schedule

**Facility Operations:** Responsible Reviews- Customer’s Project Manager and Facilities Operations Manager

- Schedule M - The ESCO’s Training Responsibilities
- Schedule K - ISSUER’s Maintenance Responsibilities
- Schedule L - Facility Maintenance Checklist

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## 7.1 Background Information Details

The Technical Audit, also called **Energy Audit Report or Investment Grade Audit/Cost Estimate**, will take 6 weeks to 3 months, depending upon the scope and range of activities required. It will define in detail the scope of work, the quality and quantities of replacement components and equipment, and the financial basis for justifying a performance contract. There are certain preliminary activities that the Facility Owner and/or his consultant can do to shorten the schedule and potentially save audit costs. These include:

- Share the owner's preliminary energy assessment report(s) and facilities benchmarks
- Agree to communication procedures and informational "need to know" lists
- Take a day or two just to review the preliminary scope of work in as much detail as possible; record the minutes and distribute
- Locate and have available all the pertinent drawings, specifications, design manuals of the equipment and systems in the project scope as a starting point for new designs
- Determine if the ESCO will perform any data logging of utilities for verification of energy consumption and demand for historical reference and what will be required for connection of data logging instrumentation to facility services
- Provide the calculation basis of energy benchmarks used to justify the initial performance contract potential - this includes consultant and customer basis
- Update any changes in utility rate schedules and cost information associated with energy purchases
- Share the five-year plan of facilities/equipment life cycles and future growth areas
- Advise the ESCO of problem areas with maintenance of equipment and control systems that would influence design, and describe any "as built" changes that are not reflected in the drawings and original specifications
- Identify local permitting authorities and requirements for updating project cost for obtaining these items in the technical audit and investment grade cost estimate
- Identify any local contracting partners that are familiar with the facilities and would be a cost-effective subcontractor to the ESCO if such an arrangement were feasible
- Identify progress meetings and expectations for meeting results and the preliminary agenda of each meeting and who will attend
- Interface to the ESCO early to develop a work schedule that will allow tracking of the major activities and progress reporting
- Identify State Agencies/Departments that may have approval jurisdiction and responsibilities (see Section 8.5.1 Department of Administration, page 120)

The Investment Grade Audit developed will serve as the basis for energy cost savings of the Performance Contract and the Guaranteed Results. The State Energy Office has developed a useful template for an Investment Grade Energy Audit Agreement which can be downloaded from the SEO Web site: [www.energync.net](http://www.energync.net), found under performance contracting topics. North Carolina has also prepared an Energy Services Agreement (ESA) template that has been executed on many projects for defining the project execution basis involving energy services for guaranteed performance. A copy is included in the Appendix B. These requirements should be reviewed in detail with the ESCO at the start of the Technical Audit and the development of an Investment Grade Project Cost. Each of the major work areas

- Schedule B - Description of Premises Pre-Existing Equipment Inventory
- Schedule H - System Start-Up and Commissioning
- Schedule J - The ESCO's Maintenance Responsibilities

**Contract Terms and Conditions:** Responsible Reviews - Customer's Project Manager and Legal Counsel

- Schedule R - Equipment and Installation Guarantees or Warranties
- Schedule Q - Warranties (including Equipment)
- Embedded Legal Issues/Language in the ESA for Customer/ESCO Negotiations

### **7.3 Preliminary Energy Assessment - Upgrade to Energy Audit Report/Investment Grade Cost:** Responsible Customer's Project Manager and Technical Support Staff and/or (Energy Consultant)

The ESCO will develop **each energy conservation measure** (ECM) in detail. This will include an Equipment List (Schedule A) for specifying quantity and quality; a Calculation of Baseline/Benchmarks (Schedule E); the defining operating parameters that fix baseline energy consumption/demand for comfort level standards (Schedule I); and the tracking Method for Measurement and Verification of Savings (Schedule F). The assignment of a unique ECM number will identify each type of ECM that can be categorized by like parameters so that measurement and verification methods are distinct for each energy conservation measure category. The collective ECMs developed by the ESCO will define the Energy Saving Guarantee (Schedule C) and a major part of the Final Project Cost and Cash Flow Analysis (Schedule S). Other costs will include: ESCO Maintenance (Schedule J), Insurance and Bonds (Schedule P), and costs for Measurement and Verification (Schedule F). A list of schedules is addressed in an ESA included in the Appendix B. Several of these schedules are described in detail as follows:

#### **7.3.1 Energy Conservation Measures and Baseline Energy Benchmarks**

ECM's are to be grouped according to like M & V tracking procedures - measured and non-measured or stipulated. Collecting all the information under one unique ECM tracking number provides a good documentation procedure for energy use history, current and future projected consumption, and implementation cost for installation.

##### ***Establishing a Baseline***

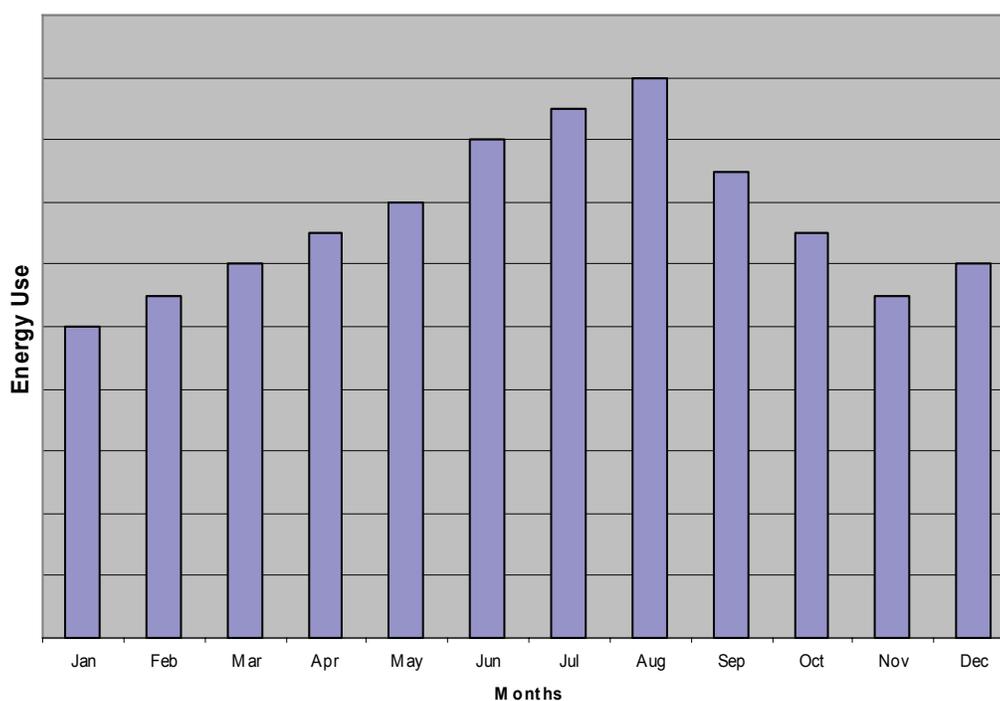
Energy savings can be estimated, but not be directly measured. Savings are always a calculated difference between (1) what was actually used and (2) what would have been used if improvements had not been made. The second part of this formula is the energy baseline: "a calculation of each type of energy that would have been consumed in existing facilities, if the ESCO had not installed energy efficiency measures."

Energy baselines can be calculated differently depending on which energy

efficiency measures are being evaluated. A baseline may be created from historical utility billing data, or special-purpose metering of existing equipment. The simplest energy baseline is a previous year's utility bills. This is illustrated in Figure 7.3.1. In this example, savings would be calculated by the difference between the future usage and the usage in the baseline year. See Figure 7.3.2.

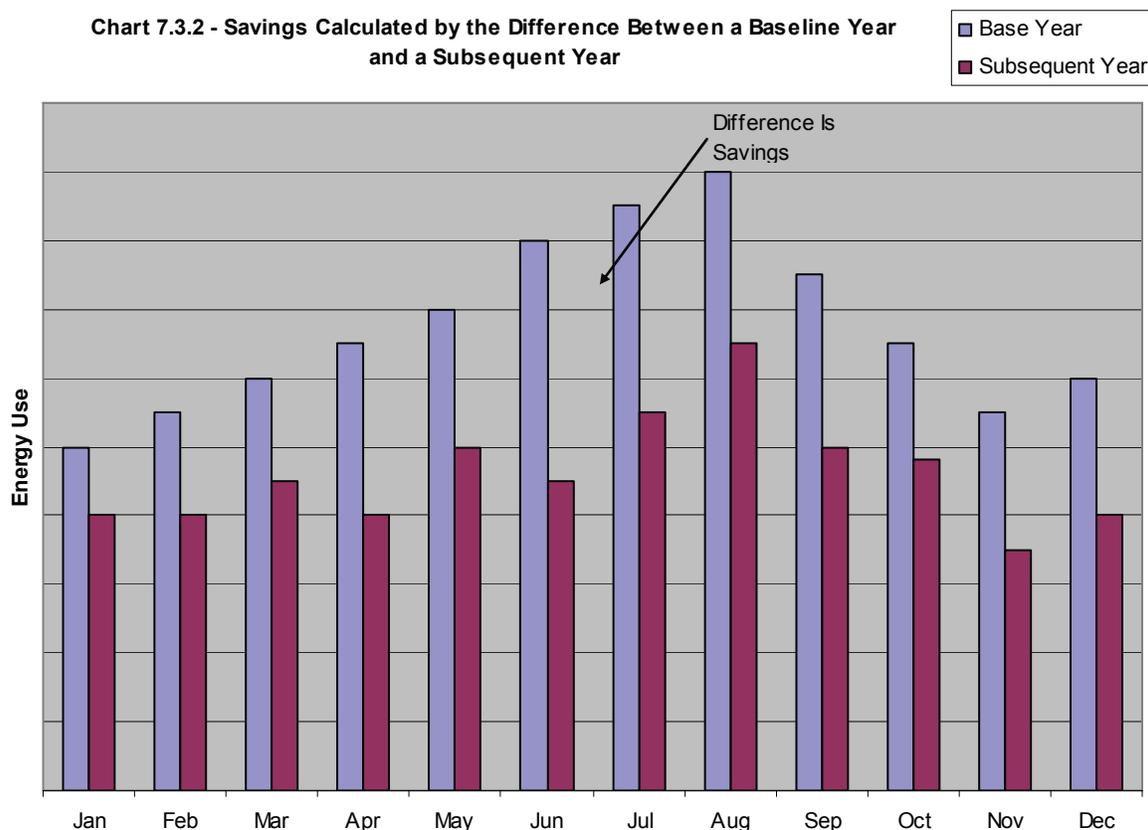
There are several problems with this type of simplified analysis. In any particular year, various influences will make energy use increase or decrease in unpredictable ways. These irregularities, if incorporated into the baseline, will over- or under-estimate the true savings. This is sometimes addressed by using the average of two or more years to establish the baseline.

**Chart 7.3.1 - 12 Month Energy Baseline**



Averaging over several years helps reduce random yearly variations in the baseline, but will not address long-term trends. For example, if a facility is increasing its hours of use and adding new equipment, a more accurate forecast of future use might show a steady increase. In this case, using a particular year or average of previous years will underestimate the savings. If energy use has been tending to decline due to reduced enrollment, reduced hours of operation, or other efficiency improvements, a historical baseline will over-estimate savings.

Chart 7.3.2 - Savings Calculated by the Difference Between a Baseline Year and a Subsequent Year



The primary disadvantage of using billing data to measure savings is that it reflects not just the impact of the energy efficiency equipment, but the impact of all changes that affect building energy usage. These include weather, changes in occupancy, addition or removal of equipment, and many others. In order to reliably use billing data as a baseline, we must establish that these other factors have **small impacts compared to the efficiency measures** or determine a method to adjust for their effect.

One common method to adjust for the impacts of other factors is to develop a computer model of the facility's energy use. The inputs to this model are adjusted until the predicted energy use agrees closely with the historical use. This calibration is intended to ensure that the model is a valid representation of the facility's energy performance.

Data on weather, schedule, connected loads, and building area are entered into the model on an annual basis in order to calculate the baseline energy use based on that year's actual operating and weather conditions. One major disadvantage of this method is that, because of the opportunity (and incentive) for the ESCO to change the model in its favor, the Facility Owner's staff must become equally knowledgeable about the computer model and its sensitivity to different data

inputs. Annual adjustment of the baseline creates a regular opportunity for major disputes to arise.

An alternative approach designed to overcome these disadvantages is to use end-use or equipment-level metering to establish a baseline. For example, savings from lighting upgrades can be accurately determined by measuring the connected load (in watts or kilowatts) of the existing lighting and the new, upgraded lighting and the operating hours of the lighting after the upgrade. The calculation of baseline energy use is then simply the pre-upgrade kilowatts multiplied by the hours of use after the upgrade. This is shown in the equation as follows;

$$\textit{Baseline energy use (kilowatt-hours)} = \textit{kilowatts}_{pre} \times \textit{hours of use}$$

The energy use after the retrofit (“post-retrofit”) is the new kilowatts multiplied by the hours of use. The equation for the energy use of the new lighting system is:

$$\textit{Post-retrofit energy use (kilowatt-hours)} = \textit{kilowatts}_{post} \times \textit{hours of use}$$

Since the energy savings is the post-retrofit energy use subtracted from the baseline energy use, the equation for the energy savings can be simplified to:

$$\textit{Energy savings} = (\textit{kilowatts}_{pre} - \textit{kilowatts}_{post}) \times \textit{hours of use}$$

The energy savings is the difference between post-retrofit and “baseline” lighting wattage, multiplied by the light fixture hours of use after the retrofit. If usage declines after the lighting upgrade, then calculated energy savings will also decline.

In practice, calculation of energy baselines based on equipment metering may be more complex. **Only for simple lighting fixture replacements is it this simple.** The baseline calculation for other devices, such as air conditioning chillers, fan motors, or chilled water pumps, is fundamentally the same as in this example. In the case of cooling equipment, other variables, such as weather and indoor temperature, should also be considered. Nevertheless, energy baselines can still be developed using measurement of the equipment demand under various conditions and appropriate measurement of operating hours under similar conditions. In most cases involving air conditioning systems, an understanding of the engineering principles basic to refrigeration and fluid dynamics is necessary in order to fully evaluate the validity of an energy baseline calculation based on equipment metering. Obviously, if more horsepower of equipment is added for the same function and the run time is the same, more energy is going to be consumed

Each alternate approach has advantages and disadvantages. Establishing an energy baseline using billing data is low cost, because the metering and data collection are already being performed. Billing data reflects changes in energy use at a facility. Therefore, if many different improvements are implemented in a comprehensive

project, a single measurement evaluates the impact of all of them together, including all of the possible interactions between the improvements. **If there are significant changes in energy use that are unrelated to the efficiency improvements, then this all-inclusive feature is also a disadvantage.**

**Table 7.3.1: Advantages and Disadvantages of Alternate Energy Baseline Calculation Methods**

Method	Advantages	Disadvantages
Utility Billing History	<ul style="list-style-type: none"> <li>• Low cost</li> <li>• Data already available</li> <li>• Independent data</li> <li>• Represents effects of all EEMs</li> <li>• Accounts for interactive effects</li> </ul>	<ul style="list-style-type: none"> <li>• Effects of weather, occupancy, other changes may mask savings</li> <li>• May be unreliable unless savings are large compared to normal bill variations</li> </ul>
Equipment Metering	<ul style="list-style-type: none"> <li>• Isolates effect of EEM</li> <li>• Very accurate for lighting measures</li> <li>• Results are more predictable (lower risk)</li> </ul>	<ul style="list-style-type: none"> <li>• Higher cost</li> <li>• Misses interactive effects</li> </ul>

Equipment metering has the potential advantage of observing only the change in energy use accomplished by the efficiency improvement. This is usually true for lighting and motor efficiency upgrades. However, for cooling improvements, other influences such as **weather effects and thermostat setpoints** affect the energy used and must be included in the baseline calculation. Since metering must be specially installed, read, and calibrated for the duration of the contract, it is more expensive than analysis of utility billing data. Interactive effects between improvements (for example, lighting improvements reduce the amount of cooling required) may be impossible to measure. ESCOs will often propose that an estimate of interactive savings be added to the amount measured. However, this practice may result in double-counting.

The selection of the appropriate method to calculate the energy baseline depends partially on what energy efficiency measures are finally adopted. The ESCO should identify and propose the methodology for each measure used in its Proposal. The Proposal will be supported by the Energy Study. As a result, the Facility Owner will have the option of reviewing and approving the methodology before the contract is executed.

### *Modifying the Baseline*

As mentioned earlier, the use, equipment, or buildings of a facility may change in a manner that makes the previous energy use baseline not representative of the facility. To take an extreme example, reducing a building's operating hours from 60 to 40 hours a week would reduce energy usage significantly. This reduction **would not be energy "savings"** under the performance contract because the reduction did not result from equipment installed by the ESCO, but from unrelated changes in usage. If the utility bills from a previous year were the baseline for measuring savings, the savings measurement would include not only the actual savings but the savings from reduced operating hours as well. This would be considered a "material change" and should result in a modification of the baseline.

Since conditions change regularly in most facilities, only certain changes should trigger a baseline modification. Changes that are likely to have little or no impact on energy use should be ignored as far as the baseline is concerned. A standard should be established in the performance contract to clearly define which changes will be considered "material." Standard language used in typical performance contracts is any change "which may reasonably be expected to change the energy consumption of the facility **by more than ten percent of the total energy savings.**" In such an event, the ESCO and Facility Owner mutually agree on an appropriate modification. If "material changes" are listed in the performance contract, they could include:

- Changes in occupied square footage;
- Changes in operating hours of the facility;
- Changes in the facility's energy equipment or operating parameters other than the ESCO equipment;
- Changes in weather between the base year and guarantee year as measured by daily degree-day comparisons;
- Energy equipment, other than ESCO equipment, that malfunctions, or is repaired, or replaced in a manner that increases or decreases energy consumption;
- Other actions taken by the Facility Owner that may reduce or increase energy use; and,
- Discovery of an error in the original baseline, in which case the change would be retroactive.

Changes in the baseline are always made by mutual agreement between the Facility-Owner and the ESCO.

**7.4 North Carolina Energy Services Agreement - Schedule Attachment Examples**

The execution of a technical audit will require a format of results that defines specific ESA attachments (schedules) for final negotiations. Recent performance contracts executed by the State of North Carolina provide some insight to what might adequately describe the supporting schedules of the agreement. The extent of detail required for a performance guarantee contract will vary according to project size and complexity of the work to be performed and the magnitude of financial risk. Such schedules were developed for a modernization project of an existing building that required demolition and new construction of about \$5,000,000.

**7.4.1 Schedule C-Energy Saving Guarantee (Example)**

Two different methods can be utilized to measure and calculate the Energy Use Savings Guarantee: 1) the continuous metering method and 2) the stipulated method. The type and location of energy conservation measures installed determine which method of energy use savings guarantee to utilize. Table 7.4.1 shows guaranteed savings for each method.

**Table 7.4.1 Savings Methods Example**

Building	Continuous Metering Method			
	KWH Saved	KW Saved	Therms Saved	Gallons Saved
Building A	5,973,935	7,908	143,648	
Total Continuous Metering Savings	5,973,935	7,908	143,648	
	Stipulated Savings Method			
	KWH Saved	KW Saved	Therms Saved	Gallons Saved
Building A				1,978,114
Stipulated Total				1,978,114
Grand Total	5,973,935	7,908	143,648	1,978,114

**Continuous Metering Guarantee:**

**Savings Guarantee.** ESCO guarantees that, as a result of the Services ESCO shall furnish hereunder, Issuer will realize Total Energy Savings of 5,973,935 KWH; 7,908 KW; and 143,648 Therms (the “Guarantee”), in each of the consecutive twelve-month periods following the Commencement Date for the Guarantee Term (each such twelve-month period being hereafter referred to as a "Guarantee Year.")

**Operational Savings.** Issuer and ESCO agree that, as a direct result of the Services, as of the Commencement Date, Issuer shall have achieved no less than \$25,129 in annual operational cost savings for each Guarantee Year during the Guarantee Term and \$0 in total future capital cost avoided during the Guarantee Term. Issuer and ESCO worked together to identify and quantify the Operational Savings based upon past and projected expenditure data provided by the Issuer. Throughout the Guarantee Term, Operational Savings for each Guarantee Year after the First Guarantee Year will be deemed by Issuer and ESCO to escalate at a rate of two and

EXAMPLE:

seven tenths percent (2.7%) per year; accordingly, the Operational Savings, excluding future capital costs avoided, for each Guarantee Year after the first Guarantee Year, will be calculated by multiplying the immediately preceding Guarantee Year's Operational Savings by one hundred two and seven tenths percent (102.7%). The parties agree that the 2.7% escalation rate is a reasonable projection of inflation based on past inflation experience and the parties' expectations. Issuer and ESCO worked together to identify and quantify the Operational Savings based upon past and projected expenditure data provided by the Issuer. The Operational Savings specified herein are stipulated, will not be measured, monitored or verified by ESCO, and are considered satisfied effective on the Commencement Date. The Operational Savings include the following category (as applicable):

- a. Direct Cost Avoidance. Issuer's assessment and determination of the annual reduction or elimination of existing or planned service contracts, and material, supply, and labor expenditures:

<u>Guarantee Year</u>	<u>Operational Savings</u>
Year 1	\$25,129
Year 2	\$25,807
Year 3	\$26,504
Year 4	\$27,220
Year 5	\$27,955
Year 6	\$28,710
Year 7	\$29,485
Year 8	\$30,281
Year 9	\$31,098
Year 10	\$31,938
Year 11	\$32,800
Year 12	\$33,686

**Total Energy Savings.** The energy savings shall be computed as specified in this Exhibit. Two different types of energy savings may be achieved under this Agreement: Energy Use Savings and Energy Rate Savings (hereinafter collectively referred to as "Total Energy Savings"). Total Energy Savings will be determined by adding the Energy Use Savings and Energy Rate Savings for each Billing Period (as hereinafter defined), together with any Installation Period Savings. Utilizing energy related bills furnished by Issuer pursuant hereto, ESCO shall then determine Total Energy Savings for each Billing Period and for each Guarantee Year when completed (not to be accrued). Hereof, ESCO will begin recording annual savings from and after the Commencement Date.

**Energy Use Savings.** Energy Use Savings are those savings achieved through reduction or shift in energy or demand use. ESCO will calculate Energy Use Savings achieved at the Premises by subtracting energy consumption and demand for the current Billing Period from Baseline energy consumption and demand for the corresponding month as shown in Schedule E and multiplying those savings by the current utility rate unit cost or the Base Utility Rates as

EXAMPLE:

described herein, whichever is higher. The Energy Use Savings will be adjusted for weather, occupancy, utilization, and facility changes as described herein.

**Energy Rate Savings.** Energy Rate Savings are those savings achieved through a reduction in fuel and/or electricity rates by one of the following means:

- (i) Improved rate from local electric utility company, natural gas company, or fuel company;
- (ii) Direct purchase of natural gas or electricity; or
- (iii) Bulk purchase of fuel.

ESCO will calculate the Energy Rate Savings obtained for each Billing Period by multiplying energy consumption and demand for the current Billing Period by the energy rate reduction, as shown in the Rate Reduction Projections exhibit, which is the amount by which the Base Energy Rate exceeds the improved rate. There will be no Energy Rate Savings calculation unless an energy rate reduction has been achieved either directly or indirectly by ESCO through one of the means listed above in clauses (i) through (iii).

**Installation Period Savings.** Energy Use Savings, during the installation period, will not be used or accrued to meet the Savings Guarantee. Installation period savings may be calculated for the owner to be used for cash flow management issues.

**Billing Period.** The Billing Period is based on the calendar month of said period. Utility bills will be prorated based on the number of days (days of meter reading service) in the Billing Period month.

**Commencement Date and Guarantee Term.** The "Commencement Date" shall be the first calendar day of the month following the month in which the Date of Final Completion occurs, unless the Date of Final Completion falls on the first calendar day of a month, in which event the Commencement Date shall be the Date of Final Completion, but in no event later than ninety (90) days after the date noted in the Certificate of Final Completion and Acceptance. This Guarantee shall begin as of the Commencement Date and, unless this Agreement shall terminate earlier, shall expire on the day immediately preceding the 12th year anniversary of the Commencement Date (hereinafter the "Guarantee Term").

**Base Utility Rates.** The Base Utility Rates are those utility rates used in the Utility Baseline Analysis (as defined in Schedule E) that are used to calculate the energy savings and are the rates set forth below. The Base Utility Rates used to calculate energy savings will be used as the floor price for the Guarantee Term and shall be the lowest rate used. In calculating any energy savings, ESCO will use the greater of the then current applicable utility rate unit cost, or the Base Utility Rates, or the Base Utility Rates plus the Issuer's stipulated escalation rate, whichever is higher, as described herein. The Base Utility Rates used to calculate energy increases will be used as the ceiling price for the Guarantee Term and shall be the highest rate used. In calculating any reduction in energy savings, ESCO will use the lesser of the then current applicable utility rate unit cost or the Base Utility Rates as described herein.

EXAMPLE:

**Metering Information**

ACCOUNT NUMBER	METER NUMBER	UTILITY TYPE	SERVES	RATE
6198104204880	175468	Natural Gas	Building 1 and Central Plant	NC Gov't
6111960081	TB0272	Electric	Building 1 and Central Plant	LGS-TOU-3
07057-005476	Main Meter	Water	Building 1 and Central Plant	Commercial

The following table describes the electric rate schedules.

**Current Electric Rate Structure (Example)**

**LGS-TOU-3 Electric Rate Structure**

	<u>Jan - Dec</u>	
BASIC ISSUER CHARGE, per month	\$500	
ENERGY CHARGE (per kWh)		
On Peak	3.267¢	
Off Peak	2.767¢	
DEMAND CHARGE (per kW)		
	<u>Jun-Sept</u>	<u>Oct-May</u>
On Peak Billing Demand		
First 5,000 kW	\$19.56	\$14.25
Next 5,000 kW	\$18.56	\$13.25
Above 10,000 kW	\$17.56	\$12.25
Off Peak Excess Billing Demand	\$1.00	\$1.00
DETERMINATION OF ON-PEAK AND OFF-PEAK HOURS		
On-Peak Hours (excluding holidays)		
April 1- September 30: 10 A.M to 10 P.M. Monday through Friday		
October 1 – March 31: 6 A.M. to 1 P.M. plus 4 P.M. to 9 P.M. Monday through Friday		
Off-Peak Hours		
All hours not specified as on-peak above. All hours for the following holidays will be considered off-peak: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and the day after, and Christmas Day.		
SALES TAX	2.73%	

**Current Natural Gas Rate Structure (Example)**

EXAMPLE:

**Natural Gas Rate Structure**

NYMEX Closing Cost for Natural Gas (varies)  
 + Basic Cost (Transportation Cost to PSNC pipeline) (varies)  
 + Marketer Management Fee (\$0.01175 per therm)  
 + PSNC Transportation Fee (within PSNC pipeline) (varies)  
 \$ Per Therm  
 Note: cost per therm during Oct. 2004 was \$0.81

**Proposed Electric Rate Structure (Example)**

<b><u>SGS-TOU-3 Electric Rate Structure</u></b>	<u>Jan - Dec</u>	
BASIC ISSUER CHARGE, per month	\$21.00	
ENERGY CHARGE (per kWh)		
On-Peak	4.309¢	
Off-Peak	3.106¢	
DEMAND CHARGE (per kW)	<u>Jun-Sept</u>	<u>Oct-May</u>
On-Peak Billing Demand	\$10.10	\$7.48
Off-Peak Excess Billing Demand	\$1.00	\$1.00

**DETERMINATION OF ON-PEAK AND OFF-PEAK HOURS****On-Peak Hours (excluding holidays)**

April 1- September 30: 10 A.M to 10 P.M. Monday through Friday

October 1 – March 31: 6 A.M. to 1 P.M. plus 4 P.M. to 9 P.M. Monday through Friday

**Off-Peak Hours**

All hours not specified as on-peak above. All hours for the following holidays will be Considered off-peak: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and the day after, and Christmas Day.

SALES TAX 2.73%

**Guarantee Reconciliation.** Subject to Issuer's obligations to furnish the data and information required hereunder, within ninety (90) days after the final month of each Guarantee Year, ESCO will determine the actual Total Energy Savings (the "Actual Savings") as described in the sub-Exhibits and report the same to Issuer in a Reconciliation Report. Issuer shall be deemed to have accepted the determinations contained in the Reconciliation Report in the event Issuer fails to object to the same within fourteen (14) calendar days after delivery of the Reconciliation Report to Issuer. In the event the Actual Savings, together with any Installation Period Savings that have not been previously applied against any shortfall in Total Energy Savings, are less than the Guarantee, at Issuer's option: (i) within thirty (30) days after delivery of the Reconciliation Report and notice from Issuer that it has selected this payment option, ESCO will pay Issuer the difference between the Guarantee and the Actual Savings (credited by unapplied Installation Period Savings) for that Guarantee Year; or (ii) ESCO will carry such

EXAMPLE:

obligation forward to one or more succeeding Guarantee Year(s). If in any Guarantee Year the Actual Savings exceed the Guarantee, the excess savings shall be credited to one or more preceding or succeeding Guarantee Year(s) in which Actual Savings were less than the Guarantee. In the event excess savings are credited to any Guarantee Year in which Actual Savings were less than the Guarantee and, with respect to such Guarantee Year, ESCO shall have paid to Issuer the difference between the Guarantee and the Actual Savings, Issuer shall refund such payment to ESCO to the extent of the excess savings being credited.

**Adjustments.** ESCO may, at its sole discretion, make adjustments to the Baseline using standard and sound engineering principles, as follows:

- a. Building Utilization: The total number of building occupants is a variable which may be adjusted for if the number of occupants differs from the Baseline quantity;
- b. Building Occupancy Hours: The hours the building (s) is/are occupied and/or equipment and/or lighting is utilized is a variable which may be adjusted for if the hours (quantity or time-of-day) differs from the hours identified in the Detail Energy Audit. Buildings that have ESCO energy management equipment will be monitored by ESCO to verify hours of equipment operation. Buildings without energy management systems will have to have equipment operation logged by Issuer's building staff as specified in Issuer Responsibilities, of this Exhibit;
- c. Weather: Utility bills will be adjusted for weather;
- d. Building Changes: The Baseline may be adjusted to account for any building square footage changes, remodeling, addition of equipment or change in usage. Issuer agrees to contact ESCO within seven (7) calendar days of commencement of any changes or additions of equipment or environments; and
- e. At ESCO's discretion, based on data or other information newly discovered or otherwise not readily available at the time the Baseline was prepared; and/or
- f. Failure of Issuer to perform its obligations under Issuer Responsibilities of this Schedule.

**Issuer Responsibilities:** Issuer acknowledges that it has an integral role in achieving savings and agrees to perform the following responsibilities:

- a. Properly maintain, repair, and replace all energy-consuming equipment with equipment of equal or better energy and operational efficiencies and promptly notify ESCO of the repair and /or replacement, but no later than fourteen (14) calendar days from the commencement thereof;
- b. Make available to ESCO upon its request copies of maintenance records and procedures regarding maintenance of the Premises;
- c. Promptly provide ESCO with notice of system and building alterations at the Premises that

EXAMPLE:

impact energy consumption, including but not limited to: energy management systems, automatic door operation, structural, occupancy sensors, photocell/timer control of exterior lighting, and heat recovery systems;

- d. Log any utility meters and the operation of any energy-consuming devices or equipment as directed by ESCO and furnish copies of such logs to ESCO within thirty (30) calendar days after preparation of the logs;
- e. Provide to ESCO true, accurate and complete copies of all energy related bills within ten (10) days after Issuer's receipt of such bills. The parties stipulate that, in each event that Issuer fails to provide an energy related bill within thirty (30) days after the end of the Billing Period to which the bill relates, Issuer shall be deemed to have realized that portion of the Total Energy Savings prorated for the utility billing period to which said energy related bill relates and for such subsequent utility billing periods as are affected by an increase in energy and/or demand use that could have been avoided had ESCO been provided with the energy related bill in a timely manner. In the event ESCO subsequently receives or obtains the untimely energy related bill and such bill discloses that savings were achieved in an amount greater than had been stipulated hereunder, such greater savings will be used in calculating Actual Savings;
- f. Provide to ESCO true, accurate and complete descriptions of all energy-consuming devices within seven (7) days after installation and start up of such equipment. This equipment includes, but is not limited to, heating, cooling or ventilating equipment, computers and other electronics, water heaters, kitchen equipment, laundry equipment, mobile trailer units, and portable hospital equipment. The parties stipulate that, in each event that Issuer fails to provide this information within thirty (30) days after the start up of such equipment, Issuer shall be deemed to have realized that portion of the Total Energy Savings prorated for the utility billing period to which said energy related bill relates and for such subsequent utility billing periods as are affected by an increase in energy and/or demand use that could have been avoided had ESCO been provided with the energy related information in a timely manner. In the event ESCO subsequently receives or obtains the untimely energy related bill and such bill discloses that savings were achieved in an amount greater than had been stipulated hereunder, such greater savings will be used in calculating Actual Savings;
- g. Furnish to ESCO true, accurate and complete copies of any utility rate schedules or tariffs promptly upon ESCO's request for the same and, in any event, within thirty (30) calendar days after Issuer's receipt of notice of a utility rate change;
- h. Maintain in effect and fully perform its obligations under the Maintenance Agreement throughout the duration of the Guarantee; and
- i. During the Term of the Agreement, permit only ESCO-authorized personnel to repair, adjust or program equipment, systems, and/or controls covered by this Agreement or affecting equipment, systems, and/or controls covered by this Agreement, except in the event of an emergency, in which event Issuer shall immediately notify ESCO of the existence of the emergency no later than twenty-four (24) hours of the commencement of

EXAMPLE:

the emergency condition.

**Exclusions from ESCO's Responsibilities:** ESCO shall not be responsible for any of the following:

- a. Any shortfalls in Total Energy Savings or Operational Savings, failure to satisfy the Guarantee, or for loss, damage or malfunction to equipment, systems, controls or building structures resulting from non-ESCO personnel examining, adjusting or repairing equipment, systems, or controls;
- b. Any damage or malfunction resulting from freezing, corrosion or erosion on the water side of the equipment or caused by scale or sludge on equipment;
- c. Problems or damages caused by utility service or damage sustained by equipment or systems;
- d. Furnishing any items of equipment, material, or labor, or performing tests recommended or required by insurance companies or federal, state, or local governments; and
- e. Failure or inadequacy of any structure or foundation supporting or surrounding equipment or work or any portion thereof.

**Independent Audit.** Within thirty (30) days after each anniversary of the Commencement Date, Issuer may provide written notice to ESCO that Issuer intends to have performed an audit of the savings calculations and billings for the immediately preceding Guarantee Year. Issuer and ESCO shall thereupon select agreed upon experienced and qualified energy engineering auditors to complete and submit to the parties an audit of the savings calculations and billings for the immediately preceding Guarantee Year. Issuer shall pay for the entire cost of the audit. The audit shall be completed within thirty (30) days of selection of the auditor. Exercise of the right to request an audit shall in no way relieve Issuer of its continuing obligation to make current payments pursuant to this Agreement. Any payments between the parties necessary to resolve any agreed upon irregularities identified in the audit will be made within sixty (60) days after submission of the audit to the parties. Any dispute arising from or related to the audit shall be resolved by recourse to the procedures set forth in this Agreement.

**Stipulated Water Use Savings:**

**Stipulated Water Savings.** Issuer agrees and stipulates that, as a result of the Services ESCO shall furnish hereunder, Issuer will realize water savings of 1,978,114 gallons (the "Stipulated Savings"), over each of the consecutive twelve-month periods following the Commencement Date (each such twelve-month period being hereafter referred to as a "Guarantee Year") for the Guarantee Term.

**Operational Savings.** Per Earlier Section Operational Savings (Defined at \$25,129 annually)

**Stipulated Energy Savings.** The water savings have been computed as specified in this

EXAMPLE:

Schedule at 1,978,114 gallons. Two different types of water savings may be achieved under this Agreement: Water Use Savings and Water Rate Savings (hereinafter collectively referred to as "Stipulated Water Savings"). Stipulated Water Savings will be determined by adding the Water Use Savings and Water Rate Savings for each Billing Period (as hereinafter defined), together with any Installation Period Savings without accrual hereof. ESCO will begin recording annual savings from and after the Commencement Date.

**Water Use Savings.** Water Use Savings are those savings achieved through reduction in water use. ESCO will calculate Water Use Savings achieved at the Premises as documented in this Schedule C.

**Water Rate Savings.** Water Rate Savings are those savings achieved through a reduction in water rates;

If Water Rate Savings are applicable, ESCO will calculate the Water Rate Savings achieved by multiplying current water consumption and demand by the water rate reduction, as shown in the Exhibit pertaining to rate reduction projections, which is the amount by which the Base Water Rate exceeds the improved rate. There will be no Water Rate Savings calculation unless a water rate reduction has been achieved either directly or indirectly by ESCO.

**Installation Period Savings.** Water Use Savings, during the installation period, will not be used or accrued to meet the Savings Guarantee. Installation period savings may be calculated for the owner to be used for cash flow management issues.

**Commencement Date and Guarantee Term.** The "Commencement Date" shall be the first calendar day of the month following the month in which the Date of Final Completion occurs, unless the Date of Final Completion falls on the first calendar day of a month, in which event the Commencement Date shall be the Date of Final Completion. The term of the stipulated savings shall begin on the Commencement Date and, unless this Agreement shall terminate earlier, shall expire on the day immediately preceding the twelve (12) year anniversary of the Commencement Date (hereinafter the "Guarantee Term").

**Base Utility Rates.** The Base Utility Rates are those utility rates used to calculate the water savings and are the rates set forth below. The Base Utility Rates will be used as the floor price for the Guarantee Term and shall be the lowest rate used to calculate energy savings. In calculating any water savings, ESCO will use the greater of the then current applicable utility rate unit cost or the Base Utility Rates as described herein. The Base Utility Rates used to calculate energy increases will be used as the ceiling price for the Guarantee Term and shall be the highest rate used. In calculating any reduction in water savings, ESCO will use the lesser of the then current applicable utility rate unit cost or the Base Utility Rates described herein. Notwithstanding any provision or thing to the contrary, savings will be determined by multiplying water unit savings by the greater of (i) the applicable utility rate in effect for the subject Guarantee Year or (ii) the Adjusted Base Utility Rates. Adjusted Base Utility Rates are the Base Utility Rates adjusted upward for inflation by two and seven tenths percent (2.7%) per year, compounded annually. The parties agree that the 2.7% escalation rate is a

EXAMPLE:

EXAMPLE:

reasonable projection of inflation based on past inflation experience and Issuer’s budgetary practices

The following are the Base Utility Rates:

Water and Sewer service is provided by the City.

**Water / Sewer Rates (Example)**

**City Water and Sewer Rates**

Units	Water	Sewer
Cost per CCF	\$1.37	\$1.38
Cost per 1000 Gallons	\$1.83	\$1.845

**Agreed Upon Parameters.** Issuer agrees that the parameters set forth in the sub-Schedule C.1 will be mutually agreed upon and form the basis of the Guarantee. These parameters are hereby recognized, for the purposes of this Agreement, as fact and will not be measured, monitored or adjusted. These parameters apply to savings that shall be computed as specified in this Schedule C, and outlined in Schedule F.

Detailed Energy Analysis:

The “Detailed Energy Analysis,” dated February 7, 200X, presented by ESCO and its consultants, EMC Engineers, Inc., and Acme Water, Inc., is incorporated herein for the limited purposes of presenting a description of existing conditions and the methodologies used for calculating projected energy and water savings with respect to the conservation measures comprising the scope of services in Detail Energy Audit. Statements of savings contained in the Detailed Energy Analysis are projections only and do not constitute, and shall not in any way modify, the statements of guaranteed savings contained in this Schedule C and Schedules referenced herein.

EXAMPLE:

**7.4.2 Schedule D-Compensation to the ESCO (Example)**

Construction Services: \$4,966,763.00

<u>Services and</u> <u>Maintenance:</u>	<u>Description of Deliverable</u>	<u>Cost</u> <u>(annual payments)</u>
Year 1	Maintenance Services	\$32,630
Year 2	Maintenance Services	\$33,511
Year 3	Maintenance Services	\$34,416
Year 4	Maintenance Services	\$35,345
Year 5	Maintenance Services	\$36,299
Year 6	Maintenance Services	\$37,279
Year 7	Maintenance Services	\$38,286
Year 8	Maintenance Services	\$39,320
Year 9	Maintenance Services	\$40,381
Year 10	Maintenance Services	\$41,472
Year 11	Maintenance Services	\$42,591
Year 12	Maintenance Services	\$43,741

**Natural Gas**

<u>Dates</u>	<u>Therms Baseline</u>	<u>Dates</u>	<u>Therms Baseline</u>
11/2/01	21,581	3/2/03	22,724
12/2/01	24,026	4/2/03	21,015
1/2/02	24,553	5/2/03	20,412
2/2/02	22,217	6/2/03	18,487
3/2/02	22,776	7/2/03	18,718
4/2/02	20,163	8/2/03	18,669
5/2/02	20,224	9/2/03	19,202
6/2/02	18,228	10/2/03	21,535
7/2/02	18,733	11/2/03	21,508
8/2/02	18,998	12/2/03	25,118
9/2/02	18,499	1/2/04	25,745
10/2/02	21,435	2/2/04	23,272
11/2/02	47,907	3/2/04	22,904
1/2/03	25,982	4/2/04	20,616
2/2/03	22,627	5/2/04	19,177
	<b>Total</b>		<b>667,053</b>

**7.4.3 Schedule E-Baseline Energy Benchmarks (Example)**

**Calculation of Baseline / Benchmarks**

The Baseline was arrived at through analysis of the actual utility bills (electricity and natural gas) for Building 1. The analysis of the utility bills included correlating the utilities to the actual daily weather data. This data will be used as the baseline for energy savings calculations as specified in Schedule F.

**Electric (Account # 611-196-0081): Tuning Period is 701 days from 5/29/04 until**

EXAMPLE:

**4/29/06**

Below are the equations used to calculate the Baseline values for the tuning period and all future periods:

**Baseline (kWh) = 18,141.19 x #Days + 570.1589 x CDD**

Regression has an R<sup>2</sup>=0.959

**Baseline (kW) = 947.57 + 25.5787 x CDD/day**

Regression has an R<sup>2</sup>=0.793

HDD=Heating Degree-Days calculated for Raleigh, NC, for a 65.0°F balance point.

CDD=Cooling Degree-Days calculated for Raleigh, NC for a 55.0°F balance point

**Electricity**

<b>Dates</b>	<b>kW Baseline</b>	<b>kWh Baseline</b>
5/29/02	1,490	932,142
6/28/02	1,539	1,057,631
7/31/02	1,518	948,624
8/30/02	1,405	852,941
9/28/02	1,229	834,078
10/30/02	1,028	629,698
11/26/02	985	800,726
12/31/02	994	664,939
1/29/03	989	686,544
2/28/03	1,078	761,630
4/1/03	1,144	718,007
4/30/03	1,284	784,478
5/29/03	1,396	877,081
6/28/03	1,499	1,062,754
8/1/03	1,507	879,333
8/29/03	1,386	842,074
9/27/03	1,176	777,517
10/28/03	1,154	696,402
11/25/03	990	801,269
12/30/03	1,002	738,266
1/31/04	988	617,563
2/27/04	1,066	784,684
3/31/04	1,169	734,489
<u>4/29/04</u>	<u>1,392</u>	<u>817,20</u>
<b>Total</b>	<b>29,406</b>	<b>19,300,078</b>

**Natural Gas (Account # 6198104204880 ): Tuning Period is 912 days from 11/2/01 until 5/2/04**

Below is the equation used to calculate the Baseline values for the tuning period and all future periods:

**Baseline (Therm) = 552.81 x #Days + 9.9389 x HDD**

Regression has an R<sup>2</sup>=0.805

**EXAMPLE:**

HDD=Heating Degree-Days calculated for RALEIGH, NC, for a 75.0°F balance point.  
Periods

CDD=Cooling Degree-Days calculated for RALEIGH, NC, for a 65.0°F balance point.

Note: the following baselines are computed from a mathematical model that has a regression correlation factor of 0.959 for electricity and 0.805 for natural gas.

#### 7.4.4 Schedule F-Savings Measurement and Calculation Approach (Example)

Savings projections for all ECMs were calculated by computer simulation modeling, the specific energy performance of each ECM in Building 1. Details of savings calculations are presented in the “Detail Energy Analysis” dated February 7, 2006, presented by the ESCO.

#### *A Analysis Methodology (Note this is a method from a particular vendor but is intended to give some idea of the approach taken for the procedural savings calculations)*

##### **A.1 Loads**

Accurate architectural data for the facility were obtained from architectural plans provided by the Issuer. Lighting and people density, plug loads, and miscellaneous loads were obtained from site surveys. The computer program uses these parameters, along with the latest American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) methodologies, to calculate cooling and heating loads for the facility.

##### **A.2 Systems**

Accurate HVAC system descriptions at the facility were obtained from mechanical plans provided by the Issuer, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facility on an hourly basis. The program uses a weather file representing the average temperature profiles for Raleigh, North Carolina.

##### **A.3 Plant Equipment & Energy Consumption**

Accurate information describing the energy-consuming equipment in the central plant is input into this portion of the computer model. The program uses the load profiles and system requirements to calculate the energy consumption.

##### **A.4 Energy Economics**

In this final section, current electric and gas rate structures are defined in the computer model. The program uses this information to apply cost to the energy consumption calculated herein. The model is then adjusted until the following criteria are met:

EXAMPLE:

- i. Calculated plant and system loads closely match the actual installed capacity.
- ii. Calculated energy consumption closely matches the actual energy consumption determined from the utility bills.
- iii. Calculated peak demand closely matches the actual demand determined from the utility bills (estimated since demand is not metered by utility).

Energy conservation measures that cannot be analyzed with the vendor program must be evaluated by an alternative method. Industry standard calculation methods, as outlined by such sources as ASHRAE and Association of Energy Engineers, have been input into spreadsheet format to determine the probable energy savings.

### ***B Energy Rates***

This facility purchases electricity from XYZ Energy and natural gas from the Gas Energy Marketing with local transportation fees paid to PSNC Energy. Electricity is metered at one meter using XYZ's Large General Service, Time-of-Use (LGS-TOU-3) rate structure. Natural gas is metered at a second meter and is also purchased from Gas Energy Marketing under an agreement with the state of North Carolina

### ***C Measurement and Verification Plan***

ESCO will utilize Continuous Metering as set forth in the FEMP M & V Guidelines for Energy Projects in effect at the time of execution of this Agreement. Each ECM's potential to perform and generate savings will be verified through the commissioning plan (see "Commissioning Plan for Building 1 Guaranteed Energy Savings Performance Contracting"), by confirming that (a) the baseline conditions are accurately defined and (b) that the appropriate equipment components or systems were properly installed, are performing per specification, and have the potential to generate the predicted savings.

### ***D Verifying ECM Operations***

**Baseline Verification:** Baseline physical conditions such as equipment counts, nameplate data, and control strategies will be determined through the commissioning plan. Baseline energy consumption will be defined by using any of the following: metering, billing analysis, and/or engineering calculations that may entail computer simulation.

**Post-Installation Verification:** In a post-installation M&V verification, ESCO and the Issuer will determine that the proper equipment components or systems were installed, are operating correctly and have the potential to generate the predicted savings. Verification methods may include surveys, inspections during the commissioning plan process, and/or continuous metering, depending on the ECM.

### ***E Verifying ECM Performance***

At defined intervals during the term of the contract, ESCO and the Issuer will verify that the installed equipment components or systems have been properly maintained, continue to operate correctly, and continue to generate savings. After the ECMs are installed, ESCO and the Issuer will determine energy savings by continuously metering through the facility utility meters in accordance with an agreed upon M & V method utilizing verification techniques that are defined in the site-specific M & V plan. Various verification techniques will be employed. Baseline energy use, post-installation energy use, and energy (and cost) savings will be determined using

EXAMPLE:

the following M&V techniques: Engineering calculations, utility meter billing analysis and computer simulation.

### **Baseline Adjustments:**

#### **E.1 Adjustments for Variables Affecting Savings.**

The Issuer is advised that Energy Cost Savings realized will be affected by, among other things, the following variables and that ESCO shall have the right to make adjustments to account for the following:

- E.1.a Building Utilization: The total number of building occupants is a variable which may be adjusted for if the number of occupants differs from the Baseline quantity;
- E.1.b Building Occupancy Hours: The hours the building (s) is/are occupied and/or equipment and/or lighting is utilized is a variable which may be adjusted for if the hours (quantity or time-of-day) differs from the hours identified in the Technical Energy Audit. Trane energy management equipment will monitor by verifying hours of equipment operation.
- E.1.c Weather: Utility bills will be adjusted for weather;
- E.1.d Building Changes: The Baseline may be adjusted to account for any building square footage changes, remodeling, addition of equipment or change in usage. The Issuer agrees to contact ESCO within seven (7) calendar days of commencement of any changes or additions of equipment or environments;
- E.1.e Any adjustment in the baseline model of the building created as part of the engineering study appropriate to represent operation of the building if it had been designed, constructed, and/or operated in accordance with local and national codes in place as of the date of the Agreement. Such adjustments can include, but are not limited to, increased ventilation rates for code compliance and the addition of heating and/or air-conditioning to areas that previously had no environment conditioning.
- E.1.f Latent conditions at the time the Baseline was prepared, may have a material effect on energy consumption.

#### ***F Method for Estimating Savings***

The energy consumption calculated from a vendor program that uses the appropriate electric rate structure (most current) and calculates the operating cost of the building. This operating cost is then compared to the actual cost obtained from the utility bills. The resulting model is then used as the base model from which all energy and cost savings are computed. This report sequentially adds (cascades) the recommended ECMs to the base model to show ECM interaction.

The facility's existing envelope, internal conditions and schedules, and energy-using systems as described above were input into the vendor program. The input was interlaced with Typical Meteorological Year (TMY) weather data to calculate annual energy consumption and cost

EXAMPLE:

representative of existing conditions. This following section summarizes the results of this analysis based on the vendor program output reports.

Because weather conditions vary from year to year, the calculated annual energy consumption and cost will not (and should not) be exactly equal to the actual energy consumption over the past year. However, the calculated results should be close in value to the actual consumption and cost. Moreover, the calculated relative energy consumption per energy system (e.g., space cooling) should be very representative of the actual usage distribution between energy systems.

For measures evaluated external to the vendor program, the current electric and natural gas utility rates were applied to the energy savings determined to arrive at a net cost impact.

**7.4.5 Schedule G-Construction and Installation Task Schedule**

As a part of the technical audit, the ESCO would be responsible for providing a detailed schedule of the major scheduled activities of the project, including:

- Detail Survey
- Post-Survey Acquisition
- Validation
- Engineering design
- Procurement
- Installation
- Start-up Commissioning
- Training
- Administration
- Project Close-Out

**7.4.6 Schedule H-System Start-Up and Commissioning**

**Overview**

The Commissioning Plan is a single source of information on the key steps that must be completed throughout this energy savings project, from planning through on-going operations, to attain the desired results. ESCO has adopted the Commissioning Process as its quality oversight of the project.

A key premise of the Commissioning Process is documentation, which enables everyone involved to be aware of the steps in the process and the criteria that define a success. The Commissioning Plan provides this information to the ESCO, the design

EXAMPLE:

Building Name	Weekdays Monday-Friday	Weekends Saturday & Sunday	Occupied Room Temperatures (within ± 2°F)	Unoccupied Room Temperatures (within ± 2°F)
Building 1	9:00 AM - 5:00 PM	10:00 AM - 5:00 PM	76°F Cooling 70°F Heating	86°F Cooling 60°F Heating

professionals, contractors, and operation and maintenance personnel in a concise manner.

The key sections of the Commissioning Plan are:

1. **Overview:** a description of the *Owner's Project Manual* along with basic background information.
2. **Planning:** a summary of the information developed during the planning phase of the project. For this project, this includes the *Initial Project Development* of Phase 1 and Phase 2 of the energy savings program.
3. **Design:** a summary of the information developed during the design phase along with the requirements of the design team to ensure a quality design. For this project, this includes the *Negotiating and Awarding the Final Signed Agreement* of Phase 2 and Phase 3 of the energy savings program.
4. **Construction:** details the quality assurance initiatives implemented during construction. For this project, this includes *Implementing the Signed Agreement* of Phase 4 of the energy savings program.
5. **Acceptance:** provides a review of the tests to be completed during system start-up to ensure the owner's design intent is met. For this project, this includes *Implementation Period* of Phase 4 of the energy savings program.
6. **Operation:** a synopsis of the on-going requirements by the O&M staff to ensure the owner's original design intent is maintained. For this project, this includes *Performance Period of Phase 4 through Closeout* of Phase 5 of the energy savings program and the operations of the systems installed under this project.
7. **Lessons Learned:** a summary of the lessons learned from this project to improve the next project. (Note: This Phase is optional for retrofit projects.)
8. **Appendices:** miscellaneous information and samples of forms used throughout the design-construction-operation of the building/system.

#### 7.4.7 Schedule I-Standards of Comfort (Example)

The Equipment will be maintained by the ESCO as set forth in Schedule J, below, and operated in a manner that will provide the Standards of Comfort for heating, cooling, hot water, and lighting as follows:

The following operating standards shall be maintained by the Owner. These are the Standards of Comfort upon which the savings estimates and guarantee are based. The Issuer is responsible for room set-points and will advise the ESCO of any deviations

EXAMPLE:

which would positively or negatively impact the savings guarantee.

**Table 7.4.7 Standards of Comfort**

**Humidity Requirements:**

Occupied:	50% RH	50% RH
Unoccupied:	50% RH	50% RH
Temperature Drift	± 2 °F	± 2 °F
Humidity Drift	± 5% RH	± 5% RH

**7.4.8 Schedule J-ESCO's Maintenance Responsibility (Example)**

Beginning on the Commencement Date, ESCO will furnish the Maintenance described in this Schedule with respect to the Covered Equipment (identified below) upon the terms and conditions contained in this Schedule. In the event of any inconsistency or conflict between the terms and conditions of this Schedule and the terms and conditions of the balance of this Agreement, the terms and conditions of this Schedule shall control with respect to the Maintenance described in this Schedule J.

- 1. Maintenance Price.** (Separate Contract) The Maintenance Price for each year of the Contract is set forth in Schedule D. ESCO may invoice the Maintenance Price once each year, semi-annually, or quarterly and each such invoice shall be due in arrears of performance of the Maintenance, net thirty (30) days from date of invoice. ESCO may discontinue Maintenance whenever payment is overdue. Unless otherwise expressly agreed in writing, Issuer shall pay, in addition to the stated Maintenance Price, all taxes not legally required to be paid by ESCOs or, alternatively, shall provide ESCO with an acceptable, valid certificate of tax exemption. Issuer shall pay all costs incurred by ESCO in attempting to collect amounts due.
- 2. Term.** ESCO's obligations to furnish the Maintenance shall begin on the Commencement Date (the "Maintenance Commencement Date") and, unless this Agreement is terminated earlier, shall end upon expiration of the Term.
- 3. Performance.** ESCO shall perform the Maintenance services hereunder with reasonable promptness in a workmanlike manner in accordance with industry standards generally applicable in the area. The ESCO shall respond to all emergency calls placed by Issuer within two (2) hours. Except as otherwise provided in writing, Maintenance will be performed during ESCO's normal business hours. Should the Issuer request that ESCO perform Maintenance during other than normal business hours, the additional labor cost of performing such Maintenance shall be at the Issuer's expense. During the Term, ESCO may elect to install/attach to Issuer equipment or provide portable devices (hardware and/or software) for execution of control or diagnostic procedures. Such devices shall remain the proprietary property of ESCO and shall in no event become a fixture of Issuer locations. Issuer shall not acquire any interest, title or equity in

EXAMPLE:

any hardware, software, processes and other intellectual or proprietary rights to devices used in connection with providing service on equipment. ESCO reserves the right to remove such items at its discretion.

**4. Exclusions.** Unless expressly included in the Maintenance, the Maintenance to be provided by ESCO does not include, and ESCO shall not be liable for, any of the following:

- a. Any guarantee of room conditions or system performance,
- b. Inspection, maintenance, repair, replacement of or services for: chilled water and condenser water pumps and piping; electrical disconnect switches or circuit breakers; motor starting equipment and interconnecting power wiring; recording or portable instruments, gauges or thermometers; any pipe covering or insulation containing asbestos, or non-maintainable parts of the system such as unit cabinets, shells, ductwork, electrical wiring, hydronic piping, structural supports, boiler refractory material and shells, storage tanks and similar items; the appearance of decorative casing or cabinets; damage sustained by other equipment or systems; and/or any failure, mis-adjustment or design deficiencies in other equipment or systems;
- c. Repairs or replacement of parts made necessary as a result of electrical power failure, low voltage, burned-out main or branch fuses, low water pressure, vandalism, misuse or abuse, improper operation, unauthorized alteration of Covered Equipment, accident, negligence of Issuer or others, damage due to freezing weather, calamity or malicious act;
- d. Any damage or malfunction resulting from freezing, contamination, corrosion or erosion on the water side of the equipment or caused by scale or sludge on internal tubes except where water treatment protection services are provided by ESCO as part of this Agreement;
- e. Furnishing any items of equipment, material, or labor, or performing special tests recommended or required by insurance companies or federal, state, or local governments;
- f. Failure or inadequacy of any structure or foundation supporting or surrounding the Covered Equipment or any portion thereof;
- g. Building access or alterations that might be necessary to repair or replace Issuer's existing equipment;
- h. The normal function of starting and stopping the Covered Equipment or the opening and closing of valves, dampers or regulators normally installed to protect the Covered Equipment against damage;
- i. Any responsibility for design or redesign of the system or the Covered Equipment, obsolescence, safety tests, or removal or reinstallation of valve bodies and dampers; and
- j. Any services, claims, or damages arising out of Issuer's failure to comply with its obligations under this Agreement.

**5. Maintenance Warranties.** (a) ESCO-manufactured material supplied is warranted

EXAMPLE:

be free from defects in material and manufacture for a period of twelve months from date of start-up or replacement and ESCO's obligation under this warranty is limited to repairing or replacing the defective part at its option; (b) labor is warranted to have been properly performed for a period of 90 days from completion and ESCO's obligation under this warranty is limited to correcting any improperly performed labor; and (c) non-ESCO equipment and/or parts are not warranted by ESCO and shall have such warranties as are extended to ESCO by the respective manufacturer.

**THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.**

#### **7.4.9 Schedule K-Issuer's Maintenance Responsibilities (Example)**

Issuer's Responsibilities: Issuer acknowledges that it has an integral role in energy use achieving savings and agrees to its responsibilities set forth below:

- a. Provide ESCO reasonable and safe access to all Equipment;
- b. Reimburse ESCO for services, repairs, and/or replacements performed by ESCO beyond the scope of Maintenance or otherwise excluded hereunder. Such reimbursement shall be at the then prevailing overtime/holiday rates for labor and prices for materials and may at ESCO's option, be subject to a separate written agreement prior to its undertaking such work;
- c. Promptly notify ESCO of any unusual performance of equipment;
- d. Permit only ESCO or ESCO-authorized personnel to repair or adjust Equipment and/or controls during the Term;
- e. Utilize qualified personnel to properly operate the Equipment in accordance with the applicable operating manuals and recommended procedures;
- f. Properly maintain, repair, and replace all energy-consuming equipment with equipment of equal or better energy and operational efficiencies and promptly notify ESCO of the repair and /or replacement, but no later than within fourteen (14) calendar days from the commencement thereof. Schedule J outlines the Covered Equipment by ESCO and ESCO's responsibilities for scheduled maintenance and inspection service.
- g. Make available to ESCO, upon its request, copies of maintenance records and procedures regarding maintenance of the Facility;
- h. Promptly provide ESCO with notice of system and building alterations at the

EXAMPLE:

Facility that impact energy consumption, including, but not limited to: energy management systems, automatic door operation, structural, occupancy sensors, photocell/timer control of exterior lighting, and heat recovery systems;

- i. Provide to ESCO with true, accurate and complete copies of all energy related bills within ten (10) days after Issuer's receipt of such bills or provide ESCO with proper authorization to receive billing data directly from the respective utility. In each event that Issuer fails to provide an energy related bill within thirty (30) days after the end of the Billing Period to which the bill relates, ESCO shall calculate savings equal to the guaranteed energy use savings, prorated for the utility billing period to which said energy bill relates, until such time as the bills are provided. The ESCO may charge the Issuer an hourly rate of \$75.00 for additional time required of ESCO to recalculate the actual savings for the annual reconciliation if the Issuer later provides such missing energy related bill.
- j. Provide to ESCO true, accurate and complete descriptions of all energy-consuming devices within fourteen days (14) days after installation and start-up of such equipment. This equipment includes, but is not limited to, heating, cooling or ventilating equipment, computers and other electronics, water heaters, kitchen equipment, laundry equipment, mobile trailer units, and portable hospital equipment. The parties stipulate that, in each event that Issuer fails to provide this information within thirty (30) days after the start-up of such equipment, Issuer shall be deemed to have realized that portion of the Energy Cost Savings prorated for the utility billing period to which said energy related bill relates and for such subsequent utility billing periods as are affected by an increase in energy and/or demand use that could have been avoided had ESCO been provided with the energy related information in a timely manner. In the event ESCO subsequently receives or obtains the untimely energy related bill and such bill discloses that savings were achieved in an amount greater than had been stipulated hereunder, such greater savings will be used in calculating Energy Cost Savings;
- k. Furnish to ESCO true, accurate and complete copies of any utility rate schedules or tariffs promptly upon ESCO's request for the same and, in any event, within thirty calendar days after Issuer's receipt of notice of a utility rate change;
- l. Maintain in effect and fully perform its obligations under the Maintenance Agreement throughout the duration of the Guarantee;
- m. During the Term of the Agreement, permit only ESCO or ESCO-authorized personnel to repair, adjust or program equipment, systems, and/or controls covered by this Agreement or affecting equipment, systems, and/or controls covered by this Agreement, except in the event of an emergency, in which event Issuer shall immediately notify ESCO of the existence of the emergency no later than within twenty-four (24) hours of the commencement of the emergency condition.
- n. The following items are expressly excluded from this contract and are the Issuer's

EXAMPLE:

responsibility to properly maintain in order for the system to function properly:

- Exhaust Fans
- o. Maintain a clean environment for the equipment to operate. Debris, materials, and other equipment shall not be stored, placed, or discarded in locations of new equipment. Access to all furnished equipment shall be maintained.
- p. Insure that equipment is not tampered with, damaged, vandalized, or taken out of service without the express knowledge of ESCO.

#### **7.4.10 Schedule M-ESCO's Training Responsibility (Example)**

##### **Training Provisions**

ESCO will provide 40 hours of training that will cover all new and existing HVAC systems. This training will be conducted on-site, and in ESCO's training center. ESCO will be willing to accommodate up to fifty (50) Department of Administration and Building 1 personnel as part of this training. Also, Department of Administration employees and Building 1 employees may use ESCO's Internet-based training free during the contract Term.

Additionally, each year as part of the annual reconciliation, ESCO will provide sixteen (16) hours of refresher/new orientation training. This can be accomplished in four (4) 4-hour segments.

##### **Issuer's HVAC and Control Systems**

##### **Ten (10) 4-hour training sessions:**

- 1. Chiller Operation and Maintenance**
  - a. Basic chiller operation
  - b. Basic troubleshooting and maintenance
  - c. Chiller control systems
- 2. Chilled Water Systems**
  - a. Basic pump theory
  - b. Primary-secondary systems-design and operation
  - c. Variable pump operation and maintenance
  - d. Variable frequency drive operation and maintenance
  - e. Pumping system controls
  - f. Pump maintenance
- 3. Cooling Tower Systems**
  - a. Cooling tower theory and operation
  - b. Tower chemical systems operation and maintenance
  - c. Cooling tower controls

EXAMPLE:

- d. Cooling tower maintenance

#### **4. Hot Water Systems**

- a. Hot water boiler operation and maintenance
- b. Hot water pumping system theory and control
- c. Boiler controls
- d. Boiler system troubleshooting
- e. Boiler safety

#### **5. Fan & Air Distribution Systems**

- a. Basic fan operation
- b. VAV system theory and operation
- c. VAV system controls
- d. Hot water and chilled water coils

#### **6. Psychometrics**

- a. Basic psychometric-air and humidity relationship
- b. Dehumidifying cycles
- c. Humidifying cycles
- d. Basic IAQ theory and control

#### **7. EMS/DDC Control/Building Automation**

- a. Basic control theory and unique features
- b. Vendor system operation
- c. Controls maintenance
- d. Troubleshooting

#### **8. Humidification System**

- a. Basic humidification theory
- b. System operation and maintenance
- c. R/O filter operation and maintenance
- d. Pump controls, operation and maintenance
- e. Nozzle operation and maintenance

#### **9. Safety Issues**

- a. Basic refrigerant safety
- b. Systems Lockout/tagout
- c. Basic boiler safety
- d. MSDS
- e. Fire hazards
- f. Ladders and fall protection

EXAMPLE:

**7.4.11 Schedule N-Installment Schedules (Example)**

Customer will make payments to ESCO at the times and in the amounts set forth in the following schedule:

<b>Milestone</b>	<b>Payment Due</b>
Mobilization date - Mobilization Upon Execution of Agreement by Issuer will pay \$496,676	
1 <sup>st</sup> Month - Monthly Payment	\$265,000
2 <sup>nd</sup> Month - Monthly Payment	\$65,000
3 <sup>rd</sup> Month - Monthly Payment	\$115,000
4 <sup>th</sup> Month - Monthly Payment	\$54,000
5 <sup>th</sup> Month - Monthly Payment	\$76,000
6 <sup>th</sup> Month - Monthly payment	\$224,000
7 <sup>th</sup> Month - Monthly Payment	\$335,000
8 <sup>th</sup> Month - Monthly Payment	\$425,000
9 <sup>th</sup> Month - Monthly Payment	\$650,000
10 <sup>th</sup> Month - Monthly Payment	\$525,000
11 <sup>th</sup> Month - Monthly Payment	\$614,411
12 <sup>th</sup> Month - Monthly Payment	\$625,000
13 <sup>th</sup> Month - Final Payment	\$496,676
<b>Total Contract Total</b>	<b>\$4,966,763</b>

**7.4.12 Schedule O-Proposed Final Project Cost and Proposed Final Project Cash Flow Analysis (Example)**

The pro forma example in Table 7.4.12 shows interest rates that will vary with credit rating and financial stability. It displays the projected cost savings over the life of the contract. It shows the operational cost savings, maintenance, monitoring, measurement and verification cost, and training fees along with the financing costs. The net savings pay for the equipment, construction, financing, and ESCO service fees. After the contract and payout period, the annual savings amount to about \$675,000. It is important at the conclusion of the technical audit and issue of the Energy Audit Report that a specific pro forma be scrutinized to the method and accounting basis for savings projected from the project.

**Table 7.4.12. A-3  
ESCO's PRELIMINARY ANNUAL CASH FLOW ANALYSIS USING  
ESCO'S PROPOSED INTEREST RATE  
STATE OF NORTH CAROLINA  
GUARANTEED ENERGY SAVING CONTRACT**

Financed Project Costs: \$ 4,966,763  
 Finance Term: 12 years  
 Annual Interest Rate: 4.247%  
 Construction Months: 10  
 Annual Payment: \$ 470,197.00 Non-Linear payments  
 Principal: \$ 4,966,763  
 Interest: \$ 1,593,688  
 Escalation Rate for Annual Fees: 2.70%  
 Escalation Rate by Utility/Fuel:  
 Electric: 2.70%  
 Natural Gas: 2.70%  
 Steam: 2.70%  
 Water: 2.70%  
 Other (specify): 2.70%

Yr.	Electric Cost Savings	Natural Gas Cost Savings	Steam Cost Savings	Water Cost Savings	Other Please Specify	Operational Cost Savings	Total Cost Savings	Maintenance Monitoring, M&V, & Training Fees	Financing Cost	Net Savings	Guaranteed Cost Savings
1	\$337,581	\$134,211	\$0	\$5,906		\$25,129	\$502,827	\$32,630	\$ 470,197	\$0	\$0
2	\$346,696	\$137,835	\$0	\$6,065		\$25,807	\$516,403	\$33,511	\$ 482,892	\$0	\$0
3	\$356,056	\$141,556	\$0	\$6,229		\$26,504	\$530,346	\$34,416	\$ 495,931	(\$1)	(\$1)
4	\$365,670	\$145,378	\$0	\$6,397		\$27,220	\$544,666	\$35,345	\$ 509,321	(\$0)	(\$0)
5	\$375,543	\$149,303	\$0	\$6,570		\$27,955	\$559,372	\$36,299	\$ 523,072	\$0	\$0
6	\$385,683	\$153,335	\$0	\$6,748		\$28,710	\$574,475	\$37,279	\$ 537,195	\$0	\$0
7	\$396,096	\$157,475	\$0	\$6,930		\$29,485	\$589,985	\$38,286	\$ 551,699	\$0	\$0
8	\$406,791	\$161,727	\$0	\$7,117		\$30,281	\$605,915	\$39,320	\$ 566,595	\$0	\$0
9	\$417,774	\$166,093	\$0	\$7,309		\$31,098	\$622,275	\$40,381	\$ 581,894	(\$1)	(\$1)
10	\$429,054	\$170,578	\$0	\$7,506		\$31,938	\$639,076	\$41,472	\$ 597,604	\$0	\$0
11	\$440,638	\$175,183	\$0	\$7,709		\$32,800	\$656,331	\$42,591	\$ 613,740	(\$0)	(\$0)
12	\$452,536	\$179,913	\$0	\$7,917		\$33,686	\$674,052	\$43,741	\$ 630,311	(\$0)	(\$0)
<b>Total</b>	<b>\$4,710,118</b>	<b>\$1,872,587</b>	<b>\$0</b>	<b>\$82,404</b>		<b>\$350,614</b>	<b>\$7,015,723</b>	<b>\$455,272</b>	<b>\$ 6,560,451</b>	<b>(\$0)</b>	<b>(\$0)</b>

**Workmanship and Equipment Warranty.** Company warrants that, for a period of one year from the date of Substantial Completion (the “Warranty Period”), Vendor-manufactured equipment installed hereunder and the installation work included within the Services (i) shall be free from defects in material, manufacture, and workmanship and (ii) shall have the capacities and ratings set forth in vendor’s catalogs and bulletins. For vendor-manufactured equipment not installed by Company, the Warranty Period is 12 months from initial start-up. Equipment and/or parts that are not manufactured by Acme equipment are not warranted by Company and have such warranties as may be extended by the respective manufacturer. If such defect in vendor-manufactured equipment or the installation work is discovered within the Warranty Period, Company will correct the defect or furnish replacement equipment (or, at its option, parts therefor) and, if said vendor of manufactured equipment was installed pursuant hereto, labor associated with the replacement of parts or equipment not conforming to this warranty. No liability whatever shall attach to Company until said equipment and Services have been paid for in full and then said liability shall be limited to Company’s cost to correct the defective equipment or work and/or the purchase price of the equipment shown to be defective. Company’s warranties expressly exclude any remedy for damage or defect caused by corrosion, erosion, or deterioration, abuse, modifications or repairs not performed by Company, improper operation, or normal wear and tear under normal usage. Company shall not be obligated to pay for the cost of lost refrigerant.

The foregoing does not apply to Maintenance and the warranties for Maintenance are separately stated on Schedule I of this Agreement.

**THE WARRANTY AND LIABILITY SET FORTH IN THIS SECTION ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESS OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, LOST PROFITS), OR PUNITIVE DAMAGES. NO REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS OF PURPOSE IS MADE REGARDING PREVENTION BY THE SCOPE OF SERVICES, OR ANY COMPONENT THEREOF, OF MOLD, FUNGUS, BACTERIA, MICROBIAL GROWTH, OR ANY OTHER CONTAMINANTS. COMPANY SPECIFICALLY DISCLAIMS ANY LIABILITY IF THE SCOPE OF SERVICES OR ANY COMPONENT THEREOF IS USED TO PREVENT OR INHIBIT THE GROWTH OF SUCH MATERIALS.**

#### **7.4.14 Schedule R-Equipment and Installation Guaranties or Warrantees**

EXAMPLE:

**Overview**

The Warranty is for the equipment installed and the installation of that equipment. The ESCO is responsible for ensuring that all warranties are met. A key premise is the documentation the warranty for each item of equipment. This documentation is provided so that all parties have written details of the warranties.

The key sections of the Warrantees are:

1. **Patent Defects:** The ESCO shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship and negligence for a period of twelve (12) months following the date of the final acceptance of the work or the beneficial occupancy and shall replace defective materials or workmanship at no cost to the issuer.
2. **Manufacturer's Warranties in Excess of 12 Months:** Manufacturer's warranty for any period in excess of twelve (12) months, the manufacturer's warranty shall apply for that particular piece of equipment or material. The ESCO shall replace such defective equipment or materials, without cost to the issuer, within the manufacturer's warranty period.
3. **Latent Defects:** Additionally, the issuer may bring action for latent defects caused by the negligence of the ESCO or the ESCO's contractors, which are hidden and not readily apparent to the issuer at the time of acceptance or beneficial occupancy, whichever occurred first, in accordance with applicable law.
4. **Guarantees for roof, equipment, materials, and supplies:** Guarantees for roof, equipment, materials, and supplies shall be stipulated in the specification's sections governing such roof, equipment, materials, and supplies.

**7.5 ESCO Cost Breakouts (Detail Example of major categories and subcategories)**

The evaluation of ESCO's cost for materials, labor, and fees determines to a great extent the potential savings to be realized from the investment. Just as the savings have been defined in detail, the cost must also be reviewed for reasonable expectations for profit, overhead, and material and labor mark-ups. Each ESCO will have estimating procedures and methods for defining these costs according to proven historical project successes. Understanding these spreadsheets and the backup details that support the Class 10 cost estimate is a worthy investigation of savings-to-cost potential. The example to follow is one such spreadsheet that categorizes cost according to an ESCO that has full capability for a design/build project. Providing sufficient detail to fill out this form in full or at least partially according to the ESCO's estimating basis will provide a better understanding of project cost and at the same time validate the cost estimate.

EXAMPLE:

### Estimate Summary Sheet (Example)

File:

Client:

Accuracy Range: Guaranteed Performance 10% to 0%

Contract:

Date:

Start

Month

Day

Year

Duration

By:

Engineering

April

2

2007

8 Months

Construction

September

18

2007

11 Months

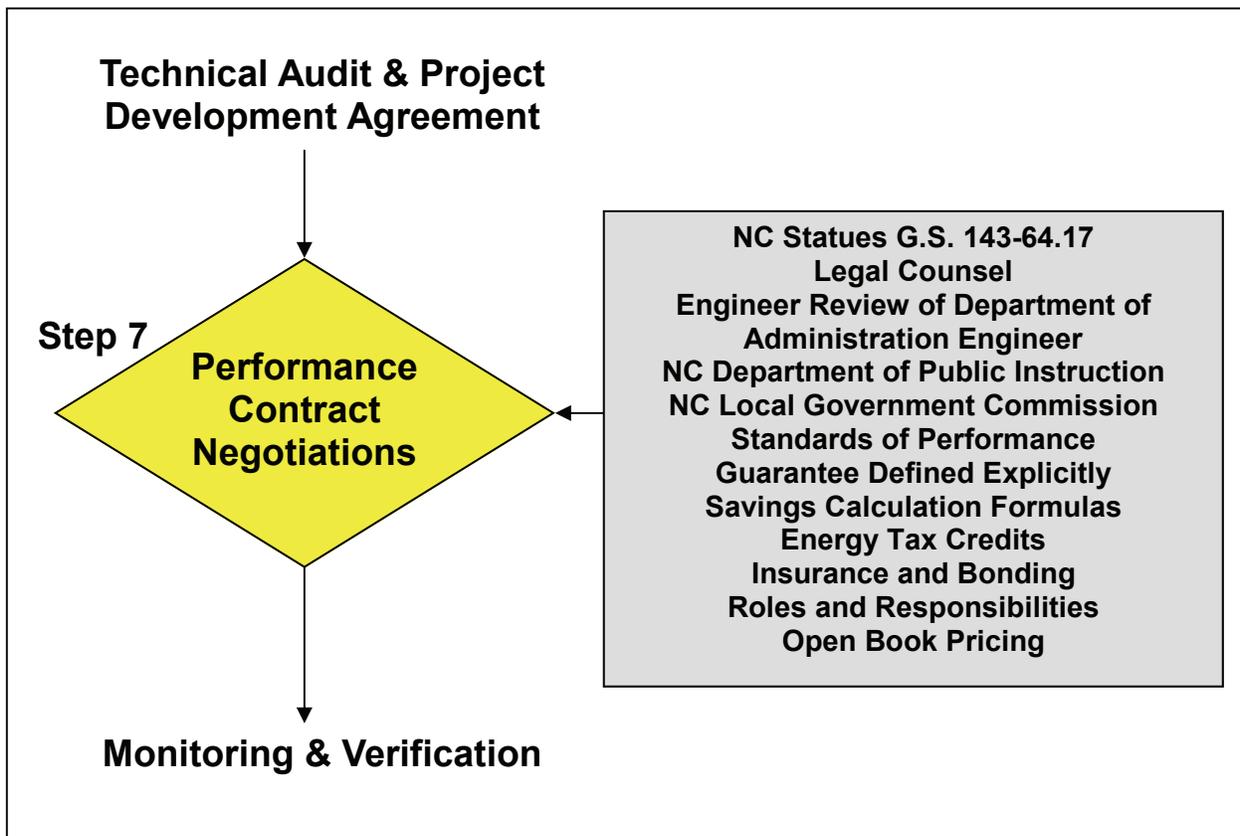
Category of Work	Description	% Direct Labor Man hrs.	Hours	Rate \$/hr	Labor Dollars	Material Dollars	Subcontract Dollars	Salary Dollars	Total Dollars	% Direct Dollars	% TIC Dollars
1.	Site	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
2.	Buildings	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
3.	Equip. Fdns.	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
4.	Equipment	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
5.	M & E	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
6.	Instrumentation	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
7.	Piping	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
8.	Electr.	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
	Subtotal	0.0%	0	00.00 Avg.	0	0	0	---	0	0.0%	0.0%
	Premium	0.0%	---	---	0	---	---	---	0	---	---
	Total Directs	---	0	00.00	0	0	0	---	0	---	---
	Total Dir % Mix	---	---	---	0.0%	0.0%	0.0%	---	0.0%	---	---
Account #	Constr. Indirects	% Direct Labor Man hrs	Hours	Rate \$/hr	Labor Dollars	Material Dollars	Subcontract Dollars	Salary Dollars	Total Dollars	% Direct Labor Manhours	% Total Direct \$
Account #	Mgt. Home Off.	0.0%	0	00.00	---	0	0	0	0	0.0%	0.0%
Account #	Mgt. Fld. Office	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
Account #	Safety	0.0%	0	00.00	0	0	---	0	0	0.0%	0.0%
Account #	Temp. Constr.	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
Account #	Sm Tls./Eq Rtl.	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
Account #	Fld Off. Misc.	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
Account #	Comp. Services	0.0%	0	---	---	0	0	---	0	0.0%	0.0%
Account #	Exp/Lab	0.0%	---	---	---	0	---	---	0	0.0%	0.0%
	Total Indirects	0.0%	0	00.00	0	0	0	---	0	0.0%	0.0%
	Subtotal Indirects & Directs	---	0	00.00	0	0	0	0	0	0.0 % TIC	0.0 % TIC

### Estimate Summary Sheet (Example) Construction Indirects

The level of detail that can be shared for better understanding of engineering and construction cost, the greater potential to control cost against a tight and well defined budget. Getting the ESCO to share this information with the customer is not an easy task but is necessary to ensure that energy savings are justified for the shortest period of contract time, thus ensuring future avoidance cost prior to additional maintenance requirements for aging equipment

Category of Work	Description	% Dir. Lab. MH	Hours	Rate \$/MH	Labor \$	Material \$	Subcontract \$	Salary \$	Total \$	% TIC or TD
Account #	Taxes S&U	0.0%	—	—	—	0	—	—	0	—
Account #	Engineering	0.0%	0	00.00	—	0	0	0	0	0.0% TIC
Account #	Constr. Mgt.	0.0%	0	00.00	—	0	0	0	0	0.0% TD
Account #	Misc. Insurance	—	—	—	—	0	—	—	0	—
Account #	Constr. HO. O.H	—	—	—	—	0	—	—	—	0.0% HOS
Account #	Eng. O.H.	—	—	—	—	0	—	—	—	0.0% ES
Account #	Project Fee	—	—	—	—	0	—	—	—	0.0% TIC
Account #	Field Constr. O.H.	—	—	—	—	0	—	—	—	0.0% FOS
Account #	Total OH&P	—	—	—	—	—	—	—	0	0.0% TIC
Account #	Contingency	—	0	00.00	0	0	0	—	0	0.0% TIC
Account #	Escalation	—	0	00.00	0	0	0	—	0	0.0% TIC
Account #	Schedule Incentives	—	0	—	0	0	—	—	0	0.0% Pride Safety
Account #	Owner's Cost	—	—	—	—	0	—	—	0	0.0% TIC
Account #	Sub Bonding	—	—	—	—	0	—	—	0	0.0% TIC
	Subtotal Other Costs	—	0	00.00	0	0	0	—	0	0.0% TD
	Total Dir. & Indirects	—	0	00.00	0	0	0	—	0	0.0% TD
	Allowances	—	—	—	—	—	—	—	0	—
	Grand Total	—	—	—	—	—	—	—	0	—

EXAMPLE:



## VIII. PERFORMANCE CONTRACT NEGOTIATIONS

- 8.1 Principles of Negotiations
- 8.2 Legal Counsel
- 8.3 Third Party Engineer Review
- 8.4 Local Government Commission Review
- 8.5 Other Agency Requirements
  - 8.5.1 Department of Administration - State Construction Office
  - 8.5.2 North Carolina Department of Public Instruction K-12 Schools
  - 8.5.3 North Carolina League of Municipalities
  - 8.5.4 North Carolina Association of County Commissioners
- 8.6 Certification of Completion and Acceptance

## 8.1 Principles of Negotiations

Most project-specific contracts and agreements require negotiated terms and conditions that define the customer's and ESCO's risks and liabilities when executing the work and, in the case of performance contracts terms and conditions, extend the work even longer. In many instances, the one paying for the work can negotiate from a favorable position unless the work is unique (limited skills and competition in work areas), ESCO is not willing to negotiate (limited number of proposals), and/or ESCO has plenty of work and does not need the extra business. Many books\* have been written about the principles of negotiation. Recent seminars have been devoted to the processes of successful negotiations.

Peter Lowe\* \*conducts "success seminars" that involve famous motivational speakers to describe specific aspects of the reasons for their success. One such part of the business skills seminar involves "**The Science of Negotiation.**" Peter's guiding principles of mastering the art of negotiation follows.

**Principle # 1-Concentrate on Communication** - Despite the importance of communication to successful negotiating, most people enter negotiating sessions concentrating on their own interests, positions and prepared statements. They think they already know what the other side is thinking, or fear that honest and direct communication will put them at a disadvantage. They are wrong. Good communication is the foundation of a good agreement.

First, listen. Pay close attention to what your counterparts are saying and how they are saying it. Listen even harder for the reasons and interests underlying their statements.

Second, show that you understand. If you have been listening actively, you will have clarifying questions to ask. Ask them. Questions prompt answers, and with them, valuable information.

Third, speak to be understood. Avoid long, bureaucratic words, confusing jargon, or inside jokes. Instead, use simple, clear words, which will increase your chances of being properly understood.

Fourth, never confuse the negotiating table with a soapbox. Concentrate on communicating with your counterparts. It is important not only to concentrate on communication, but also to concentrate on the people with you wish to communicate.

Fifth, always be honest. Always. Honesty is the best policy in any negotiation and any form of communication. Never compromise your integrity for the sake of dishonest gain at the negotiating table. Even if you profit in the short run, you will lose in the long haul.

**Principle # 2-Respond to the Situations, Not Personalities** - The key to preventing, or breaking, the statement of personal conflicts is to focus on the situation, not the personalities. Regard the negotiating session as a problem-solving session in which the other party is your partner in reaching a solution, not an adversary to be defeated. Our actions follow our focus. If you allow yourself to be distracted by someone's manners or mannerisms, you lose sight of your objectives and thus you lose control of the session. First, attack problems, not people.

\* *You Can Negotiate Anything* by Herb Cohen Lyle Stuart Publishing

\*\* Peter Lowe Success Seminar , Peter Lowe International - The Success Authority

The aggressiveness with which you tackle the issue should be matched by the courtesy you extend to your counterparts. Always take the time to express your appreciation for time and efforts, as well as your concern with their objectives. Second, remember that all negotiations take place between individuals. All negotiations take place between people, with emotions, desires, insecurities, private pressures, sleep deficiencies, and headaches. During negotiations, it is important to consider the context, as well as the content, of what is said, and how it is likely to be interpreted. To be a strong negotiator, one must first develop strong interpersonal skills.

### **Principle # 3-Prepare!**

First, you must consider outcomes in advance. Prioritize your objectives, and develop strategies to help you achieve them. Know what your options are, should the negotiations fail. Consider also what the other side's opinions are should the situation become irresolvable. The more positive your options, the stronger the case. Second, gather as much information about the negotiation and the negotiators as you can. Research the services and contract involved, the background of the company, the situation surrounding the negotiations, and the careers of the negotiators. In any negotiation, knowledge is power. If you are unfamiliar with the other party, you are easy prey to misinformation. Preparation is the best defense against dirty tricks.

### **Principle # 4-Pursue Interests, not Positions**

Position-based negotiation prevents both sides from inventing and considering creative ways to advance their interests. The more each side argues its position, the less flexibility it has to explore other options. Rather than focusing on positions, the less flexibility it has to explore other options. Skilled negotiators will aggressively present their interests, but avoid talk of positions.

### **Principle # 5-Strive for a Win/Win Outcomes**

The most common mistake an inexperienced negotiator makes is to think that one side must win and one must lose. Not only does this inhibit the ability to develop creative and synergistic solutions to resolve differences, but it usually poisons what could have been a productive relationship with the other party. Striving for a win/win outcome is not merely nice, it is shrewd and practical. It will increase the chances of furthering your interests, but it can open up opportunities for further partnerships and business.

### **Principle # 6-Be Creative**

Creativity is the spark that ignites negotiating breakthroughs. The most exciting, most rewarding agreements are those that meet unique and specific needs of the parties involved in the unexpected ways and through imaginative means. The better you communicate, the harder you prepare, the more you concentrate on the situation and the interests of both parties, the better equipped you are to recognize and develop inspired solutions to negotiate a dilemma.

**Principle # 7-Make Concessions Wisely**

In any professional negotiation, concessions should be made wisely and sparingly for the purpose of reaching an agreement that advances your interests. **Concessions in a business negotiation do not buy friendships, and they do not advance your interests.** Instead, they demonstrate a lack of resolve and encourage the other side to demand more.

**Principle # 8-Follow up the Deal**

Successful negotiating is never complete until all the paperwork is finished. You should put the same amount of attention and effort into checking the particulars of the agreement as you were negotiating them. Always re-examine the paperwork of your final agreement to make sure it is in order, and that each of the agreements you negotiated is properly worded. Effective follow-up provides additional opportunities to cement a good working relationship between you and your fellow negotiators, and sets the stage for the next negotiation.

**8.2 Legal Counsel**

It is wise for the execution of a performance contract involving guarantees to have legal counsel review all contract documents and supporting schedules, participants, and matters involving contractual risk and recovery terms and conditions. North Carolina statutes also involve legal terms and requirements that involve interpretations of unfamiliar word meanings to most persons and consequential results if failure to execute is not completed according to the requirements. Legal counsel trained in contract language and negotiation of this “legal language,” and that can serve the customer’s best interest, should be a requirement for:

1. Defining Customer Risk and Liabilities
2. Review of Pertinent North Carolina Statutes
3. Enforcement of the Contract Terms
4. Defining Recovery if Default Occurs
5. Identifying Arbitration Procedures

Identifying who, when, and how this is to be accomplished should be investigated early in the technical audit stage when this requirement is most likely to be voiced by the ESCO’s concern for the support documentation to the Engineering Services Agreement. It can be a part of the process during the development of the technical audit and culminate at the negotiation of the final product. If local counsel is qualified in this effort, then it will be more economical for their participation, since they have participated with the customer in prior activities involving legal counsel. The important thing is to recognize that this must be accomplished and it is a very important step to reach an amenable agreement that is fair and equitable to both parties as much as possible.

Table 8.2.1 shows some of the risks involved and coverage areas of these risks. It only is a part of the total legal picture to be covered during the negotiations.

An ESCO that has full service capabilities (design, construction, maintenance) will have cost accounts specifically designated to cover his project risks. These cost accounts are normally categorized as follows:

**Table 8.2.1 Risk vs. Coverage**

<b>RISK</b>	<b>COVERAGE</b>
<b>Inflation</b>	Escalation Account
<b>Hyper Inflation</b>	Contract (rare, but imported equipment)
<b>Foreign Currency Fluctuation/Exchange Rates</b>	Hedge Account (long term purchases)
<b>Default of Subcontractor/Vendors</b>	Contract Conditioned Bids
<b>Growth In Quantities</b>	Contingency Account (not allowed by NC Statutes)
<b>Growth In Engineering/Indirects, S/C Labor Wage</b>	Contingency Account (not allowed by NC Statutes)
<b>Material Price Growth</b>	Contingency Account (not allowed by NC Statutes)
<b>Different Subsurface Conditions</b>	Contract
<b>Changes In the Law</b>	Contract
<b>Hazardous Waste Site Contamination</b>	Contract
<b>Defective Material/Workmanship</b>	Contingency Account (not allowed by NC Statutes)
<b>Defective Equipment</b>	Contract Pass through to Owner (vendor recovery)
<b>Weather Delays</b>	Contract Force Majeure
<b>Labor Shortages/Disputes</b>	Contract - Risk Account
<b>Damage to Existing Structure</b>	Insurance
<b>Damage to Material/Equip. under Construction</b>	Insurance
<b>Theft</b>	Insurance
<b>Acts of God Flood, Fire, Wind, Rain, Earthquake</b>	Contract and Insurance
<b>War, Civil Disorder, Embargos, Detention</b>	Contract and Insurance
<b>Personnel Injuries</b>	Insurance
<b>Process Warranties</b>	Insurance
<b>Liquidated Damages</b>	Insurance
<b>Safety Violations</b>	Risk Account and Contract

### 8.3 Third-Party Engineer Review

Independent engineering consultant expertise in matters involving technical support documentation of calculations, specifications and drawings of the Engineering Services Agreement Schedules and Technical Audit can be a valuable asset to performance contracting success. Technical analysis, rather than subjective analysis, affords a checking process of those individual results that may have questionable assumptions and conclusive

results that should have independent review to define the reality of the expectation. North Carolina State University has many technical resources that are expert in the energy and engineering fields and on a daily basis perform engineering analysis of complex integrated energy problems involving engineering calculations and equipment performance analysis. Utilizing third party technical resources can be justifiable on larger projects where risks are significant and results are tight in achieving success. Several weeks of a third-party engineering review can pinpoint areas of questionable results or opportunities for further discussions of results expected. A long-term guaranteed contract of 10- to 20-years' duration before results are fully realized, needs the opinions of seasoned professionals to ensure that the technical basis is founded on sound engineering design, reliable equipment operation, and the trained staff that will maintain and monitor the criteria originally defined for performance. A third-party project review report can be shared with the ESCO during negotiations to further strengthen customer's technical position if there are significant results to be considered.

#### **8.4 Local Government Commission Requirements**

The Local Government Commission (LGC) must approve all Guaranteed Energy Saving Contracts for local governments, school, and community college. A copy of the LGC "Application for Approval" is included in Appendix C. The LGC application includes a helpful checklist of requirements for the project management team. A pre-submission meeting is highly recommended. Typically, the application must be submitted 28 days before the LGC meets. [Appendix C also includes sample resolutions for Boards/Councils to acknowledge application of the project to the LGC. Boards are required to approve the Energy Services Agreement and Financing contract, which may also require public hearings. The sample resolutions provided do not include ESA and Financing agreement approval language.]

The Local Government Commission is composed of nine members: the State Treasurer, the Secretary of State, the State Auditor, the Secretary of Revenue, and five others by appointment. The State Treasurer serves as Chairman and selects the Secretary of the Commission, who heads the administrative staff serving the Commission.

A major function of the Commission is the approval, sale, and delivery of substantially all North Carolina local government bonds and notes. A second key function is monitoring certain fiscal and accounting standards prescribed for units of local government by the Local Government Budget and Fiscal Control Act. In addition, the Commission furnishes on-site assistance to local governments concerning existing financial and accounting systems, as well as aid in establishing new systems. Educational programs and materials are also provided for local officials concerning finance and cash management.

Before any local government can incur bonded indebtedness, the proposed bond issue must be approved by the Commission. In determining whether to give such approval, the Commission may consider, among other things, the government's debt management procedures and policies, its compliance with the Local Government Budget and Fiscal

Control Act, and its ability to service the proposed debt. All general obligation issues are sold on the basis of formal sealed bids submitted at the Commission's offices in Raleigh and are subsequently delivered to the successful bidder by the Commission. The Commission maintains records for all local governments of principal and interest payments coming due on bonded indebtedness in the current and future years and monitors the payments by the local governments of debt service through a system of monthly reports.

Additional information can be obtained on the NC Department of State Treasurer's Web site.

## **8.5 Other Agency Requirements**

Specific agencies may have additional contractual, legal, and technical standards that should be reviewed and addressed. Four of these agencies are described in the following paragraphs.

### **8.5.1 Department of Administration - State Construction Office**

(<http://www.nc-sco.com/>)

(Note: This service is for State Buildings Only)

The purpose of the State Construction Office is to provide professional architectural and engineering services and management leadership to state agencies. This office carries out its responsibility by (1) processing cost estimates and contracts relating to construction or renovation of state buildings; (2) review and approval of all plans and specifications for the construction or renovation of state buildings; (3) supervision of the letting of all contracts for the design, construction or renovation of state buildings; (4) inspection and acceptance of all work done and materials used in the construction or renovation of state buildings; (5) conducting assessments of state facilities to identify deficiencies, and (6) providing administrative and technical support to the State Building Commission. These services protect the interest of the state and assure the proper expenditure of public funds for the citizens of North Carolina. This provides for efficiency in the expenditure of state funds in its capital improvement program.

**Physical Address:**

New Education Building  
301 N. Wilmington Street, Ste. 450  
Raleigh, NC 27601

**Phone:** 919-807-4100

**Fax:** 919-807-4110

**Mailing Address:**

State Construction Office  
1307 Mail Service Center  
Raleigh, NC 27699-1307

**Courier Number:** 56-02-01

### **8.5.2 North Carolina Department of Public Instruction K-12 Schools**

(<http://www.schoolclearinghouse.org/>)

The School Planning Section assists North Carolina school districts, architects and designers in the planning and design of high quality school facilities that enhance education and provide lasting value to the children and citizens of the state. Major areas of concentration are: Plan Review and Commentary, Prototype School Design

Clearinghouse , Planning Assistance, Publications and Workshops, School Facilities Information, The Public School Building Capital Fund (including Lottery Funds for construction), and other school construction funding.

### 8.5.3 North Carolina League of Municipalities (<http://www.nclm.org/>)

The North Carolina League of Municipalities is a nonpartisan federation of more than 530 cities, towns and villages in North Carolina.

#### **Purposes:**

- Advocate for municipalities at the state and federal level.
- Provide a forum for the exchange of ideas among municipal officials.
- Promote excellence and efficiency in municipal government.
- Provide services and information that will help municipal officials meet the needs of their citizens.

#### **Who are League Members?**

- Incorporated cities, towns and villages are the **Voting Members** of the League.
- **Affiliate Members** - Any other unit of local government, public authority or special district that has a direct and significant link to a municipality or has authorized municipal functions. **Individual Members** – former municipal elected or appointed officials who meet conditions set by the North Carolina League of Municipalities board of Directors.
- **Honorary Members** – Individuals who have rendered distinguished service to the cause of local government in North Carolina.
- **Affiliate Organizations** – Groups whose members are mostly municipal officials, usually professional organizations. Examples are the NC Association of Municipal Clerks, the NC Association of Municipal Attorneys, and the Organization of Municipal Personnel Officers.

The membership of the League, meeting at the Annual Conference, adopts the Municipal Legislative Goals and Policies, which state the League’s position on state and federal legislative issues of importance to cities and towns.

Cooperation and interaction between governments is a guiding principle for the League. The founders of the League understood that, working together, local governments could accomplish a great deal more than could be accomplished separately. Today, as responsibility and authority for various services and regulations are divided among levels of government, intergovernmental cooperation remains essential if citizens are to be served effectively and efficiently.

### 8.5.4 North Carolina Association of County Commissioners (<http://www.ncacc.org>)

Founded in 1908, the North Carolina Association of County Commissioners (NCACC) is one of the most successful and active statewide local government

associations in the nation. The NCACC was established for the betterment of county government in North Carolina.

North Carolina's 100 counties are vibrant and essential partners with state government in providing services to the state's more than eight million citizens.

As the form of government closest to the people, counties offer a unique perspective that makes them critical players in decisions affecting their citizens. The North Carolina Association of County Commissioners serves as the counties' advocate before the executive, legislative and judicial branches of state government.

Boards of commissioners in every county are eligible for membership in the Association. Collectively through the Association, they strive to preserve and protect the authority and ability of county governments to deliver the services for which they are responsible.

The Association employs a professional staff to run the day-to-day operations and to provide expertise in the areas of lobbying, fiscal and legal research, communications, intergovernmental relations, information technology, field visits and risk management services.

**8.6 Certificate of Completion and Acceptance** (Note: this is for public State Buildings Only; however, such a sign-off procedure is wise to be incorporated in each stage of the project)

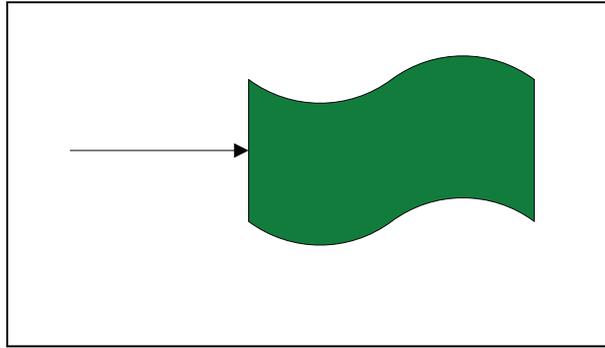
Several Exhibits (located in the Appendix B) are signatory by the ESCO, Customer, and North Carolina Department of Administration (if a public building) when final negotiations have been satisfied, as follows:

**Exhibit I - Certificate of Acceptance Technical Audit** between Ownership and ESCO when the Technical Audit is completed.

**Exhibit II - Certificate of Substantial Completion and Acceptance** between Ownership and ESCO when the construction of projects has been completed and warranty commencement date is defined for all warranties.

**Exhibit III - Certificate of Final Completion and Acceptance** between Ownership and ESCO after final inspection is found to be complete with Warranty Period commencing at the final date of completion.

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## **IX. MONITORING, MEASUREMENT, AND VERIFICATION**

- 9.1 Introduction - Monitoring, Measurement, and Verification**
- 9.2 Overview of Measurement & Verification Options - International Performance Measurement and Verification Protocol**
- 9.3 Overview of Measurement & Verification Options - Federal Energy Management Program Measurement and Verification for Federal Energy Management Projects**
- 9.4 Measurement Issues**

## 9.1 Introduction - Monitoring, Measurement, and Verification

There are three protocols that are often used as reference documents for measuring and verification of energy savings:

**1. International Performance and Measurement Verification Protocol (IPMVP) - Volume I: Concepts and Options for Determining Energy and Water Savings** (can be downloaded in pdf format)

**2. Federal Energy Management Program (FEMP) - M & V Guidelines: Measurement and Verification for Federal Energy Management Projects, Version 2.2** (can be downloaded in htm format)

**3. American Society of Heating, Refrigeration, and Air Conditioning Engineers - Guideline 14: Measurement of Energy & Demand Savings**

The ESCO selected will have some derivation of one of these protocols as the basis for defining the measurement and verification of energy savings. Many ESCO's have developed unique computer modeling programs specific to the ECM's that can be categorized of like characteristics for tracking energy savings. These mathematical models are developed from base year energy historical data and predict post-retrofit future energy use based on correlation (regression analysis) of a best fit curve of the model. Explanation and examples of how this might be accomplished is given in Reference 1, above. Understanding how these programs function should be requested to ascertain the calculation basis for any **adjustments** being performed for weather, hours of operation, utility rate escalation, equipment loading variations, and equipment additions. These adjustments are defined by the following relationships:

**Energy Savings = Base year Energy Use - Post-Retrofit Energy Use ± Adjustments**

Adjustments are commonly made to restate base year energy use under post-retrofit conditions. Such adjustments yield savings that are often described as "avoided energy use" of the post-retrofit period. The level of such savings depend on post-retrofit period operating conditions. Adjustments can be **Routine** for changes in parameters that can be expected to happen throughout the post-retrofit period such as seasonal effects of weather or occupancy variations. **Non-routine** adjustments include changes in parameters that are not predictable but significantly affect energy use/demand such as changes in the amount of space being heated or air conditioned, changes in the use of equipment, changes in environmental conditions, and changes in occupancy. These changes alter baseline conditions and thus need to be well documented.

## 9.2 Overview of M & V Options - International Performance Measurement and Verification Protocol

There are four options for determining how savings are measured. Each method is based upon the ECM application and the operating conditions that can be isolated or not be isolated

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to best define the measurements, as follows:

#### **Option A - Partially Measured Retrofit Isolation**

Savings are determined by partial field measurement of the energy use of the systems to which the ECM was applied, separate from the use of the rest of the facility. Savings are calculated from the post-retrofit measurements. An example would be lighting, where power draw (kwh) could be measured periodically. The feeder circuits of the lighting system can be isolated from other electrical services and be measured with a watt-hour meter.

Best applied when:

- The application can be isolated as single meter kwh measurement
- Too small for application in a whole facility metering arrangement
- Could be skewed by other applications of higher kwh/kw

#### **Option B - Retrofit Isolation**

Similar to Option A, Option B involves equipment items that can be isolated from other electrical feeder circuits and a kwh meter can be applied to the individual piece of equipment. In the base year the meter is in place to verify loading and then compared to post-retrofit readings after the energy saving application is in place. An example would be the application of a variable speed drive to vary the loading of a constant speed pump or fan.

Best applied when:

- Equipment that has continuous duty cycles that vary under loading conditions
- Data loggers are necessary to isolate time based load swings
- Cost of measurement instrumentation is justified due to energy saving potential
- Isolation is readily definable

#### **Option C - Whole Facility**

Savings are determined by measuring energy use at the whole facility with short-term or continuous measurements being taken throughout the post-retrofit period. This application can vary from a sub-metered area to a single building utility meter that includes modeling and regression analysis. This is a multi-faceted energy management program requiring energy use measurements for gas and electricity for a twelve- to thirty-six-month base year period and throughout the post-retrofit period to track the savings.

Best applied when:

- All ECM's can be collectively involved with a single utility meter
- The whole facility is to be assessed for savings
- There are many different types of ECMs in one building
- Major future changes to the facility are not expected

- A high degree of interaction between the ECM's and the rest of the building
- Isolation and measurement of individual ECM's is difficult or too costly
- Large saving potential which is discernable from random energy variations of the whole facility
- Long-term period of application with less significant variations of short-term unexplained influences

#### **Option D - Calibrated Simulation**

Energy use is simulated for the whole facility. Demonstration of the simulated routines to adequately model actual energy performance as measured in the facility. This option requires considerable technical and engineering skills in the calibrated simulation and is usually applied when no base year is available. Base year energy use is simulated using the model and compared to post-retrofit data measured by the gas and utility meters.

Best applied when:

- Base year or post-retrofit energy data not available or unreliable
- There are too many ECMs to assess using other options
- ECMs diffused by additions such as window and insulation upgrades that cannot be easily isolated from the rest of the facility
- An experienced energy simulation professional is available for setting the model in place
- Interaction between ECMs and other facility equipment is complex, making isolation difficult

To learn more about the details of each method and to review examples it is recommended to read the material at [www.ipmvp.org](http://www.ipmvp.org).

### **9.3 Overview of M & V Options - Measurement and Verification for Federal Energy Management Projects**, published by the Federal Energy Management Program (FEMP)

The *M & V Guidelines* provide Federal energy managers, procurement officials, and energy service providers with standard procedures and guidelines for quantifying savings. Intended for use in Energy Savings Performance Contracting (ESPC) and other federal program projects, the guidelines provide methods for establishing savings called for in the ESPC rule.

Types of Federal projects include areas such as energy efficiency and water conservation measures, new construction, improved operation and maintenance, cogeneration, and renewable energy.

#### **Background**

Before the development of FEMP's *M&V Guidelines* and other resources, such as the International Performance Measurement and Verification Protocol and *ASHRAE Guideline 14: Measurement of Energy & Demand Savings* (First Public Review Draft, April 2000),

procedures such as these had to be negotiated for each project. This was time-consuming and often resulted in inconsistent energy cost savings.

### **Approaches to Assessing Savings**

The objective of measurement and verification is to verify savings with minimum cost and to the satisfaction of all parties. The FEMP protocol is based on, and is intended to be fully compatible with, the *International Performance Measurement and Verification Protocol (MVP)*.

Both the FEMP *M&V Guidelines* and the *IPMVP* are based on four general approaches to assessing savings. The approaches—called Options A, B, C, and D—are designed to cover the spectrum of project complexity. For many projects, savings may be verified with a minimum of measurement and at a minimum cost. Other projects call for a more rigorous approach to measurement and verification. In general, the more rigorous the verification requirements, the more expensive the verification process will be.

### **Cost Factors**

Factors that affect measurement and verification costs include:

- Level of detail and effort associated with verifying baseline and post-installation surveys
- Sample sizes (number of data points) used for metering representative equipment
- Duration and accuracy of metering activities
- Confidence and precision levels specified for energy savings analysis
- Number and complexity of dependent and independent variables that are metered or accounted for in analyses
- Availability of existing data collecting systems
- Contract term

### **Downloading and Ordering ([http://www1.eere.energy.gov/femp/financing/superespcs\\_measguide.html](http://www1.eere.energy.gov/femp/financing/superespcs_measguide.html))**

You can download the PDF version of the *M&V Guidelines* as one complete document (PDF 2.4 MB, 340 pp) or by section. Download Adobe Reader.

Section I: ESPC Program Description and M&V Overview (PDF 339 KB, 32 pp)

Section II: Incorporating M&V into ESPCs (PDF 270 KB, 29 pp)

Section III: Selected M&V Methods—Option A (PDF 372 KB, 35 pp)

Section IV: Selected M&V Methods—Option B (PDF 449 KB, 62 pp)

Section V: Whole Building M&V—Option C (PDF 299 KB, 19 pp)

Section VI: Whole Building Computer Simulation—Option D (PDF 332 KB, 19 pp)

Section VII: M&V for Water Projects (PDF 285 KB, 45 pp)

Section VIII: M&V Plan Overviews for Other Project Categories (PDF 264 KB, 38 pp)

Appendices: (PDF 442 KB, 47 pp)

In addition, sample lighting and motor survey forms are also available in spreadsheet form.

- Transducer Installation and Calibration Report Example
- Motor Survey Pre- and Post-Installation Data
- Pre-Installation Results of Operating Hours Survey

## 9.4 Measurement Issues

Instrumentation used for sensing electric power, fuels, and integrated time-based consumption/demand data have accuracy and ranges that are to be reviewed. Calibration procedures against a known reference over the range of expected operation has to be defined to expect long-term viable information for calculating energy savings. Appendix C in the IPMVP Concepts and Options for Determining Energy and Water Savings, Volume I, gives the standards and accuracy that govern many of the measurement instruments that would be expected for M & V activities. These Include:

Alternating Current

Voltage

Watt-hour transducers

Temperature - RTDs, Thermocouples, Thermistors, IC Sensors

Humidity

Flow - Differential Pressure, Obstruction, Turbine , Vortex, Ultrasonic, Magnetic

Pressure - Bourdon Tube Transmitters, Strain Gauge Based, Mechanical/Solid State

Thermal Energy - Temperature Differential combined with Flow to measure Energy Flow  
(Btu's/Time)

Runtime - Digital Clocks, Accumulative Time, Start-Stop Actuated, Time Actuated

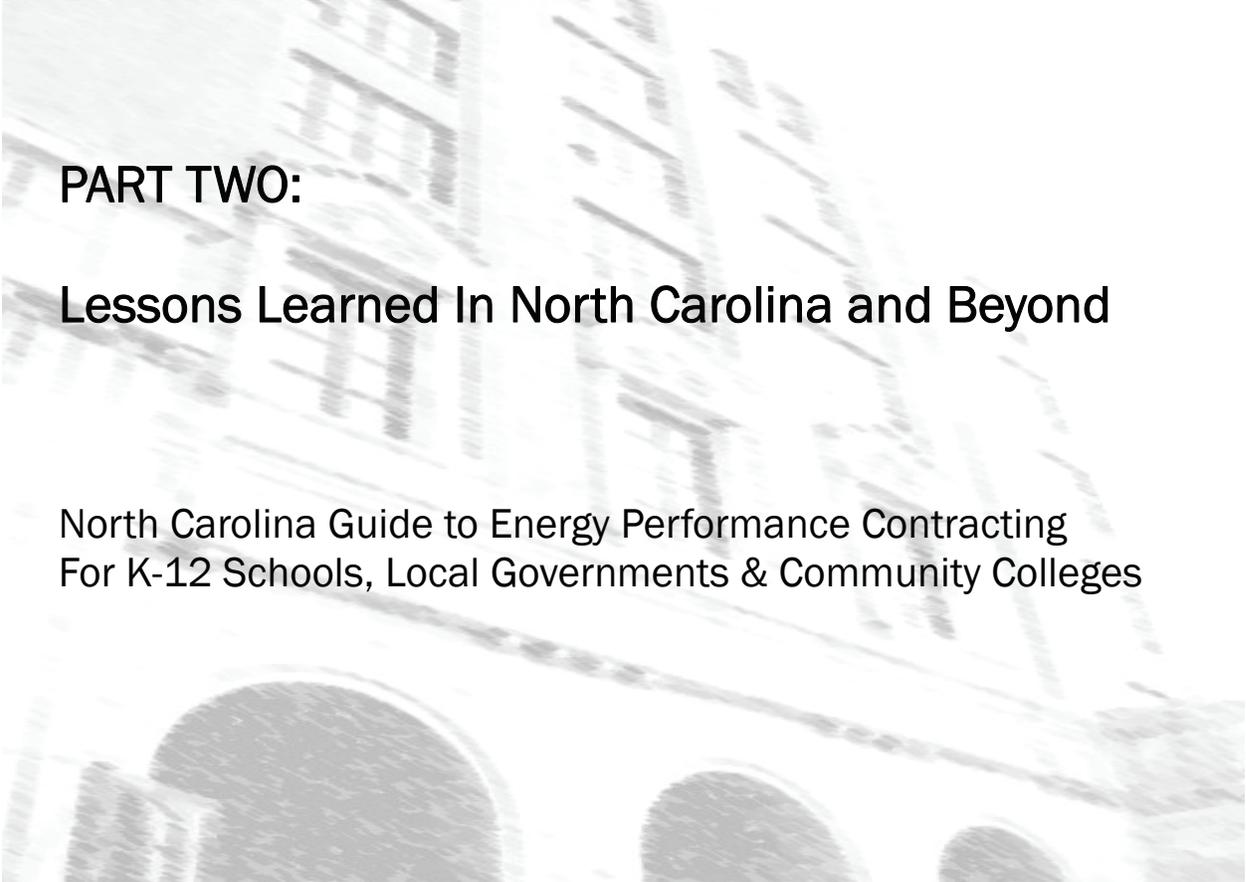
Data Loggers - receive measurements from analog and/or digital sensors and store vast amounts of data over time. These are extremely helpful to watch the operating behavior of major equipment items, such as chillers, when optimizing control strategies and/or observing energy saving actions under varying load conditions. Data is uploaded from the data logger to the computer, allowing the plotting of many energy variables (multi-channel) over time and in many cases, 3D graphical formats. These daily energy load profile slices (24 hours typically) can be compared with base year, monthly, weekly, daily, and hourly times for energy saving potential and equipment efficient checks under loaded conditions.

The accuracy of most sensors are in the 1% to 2% range over full-scale reading. This should always be checked closely if there are significant energy savings being based upon the output and calibration frequency.

Any baseline and post-retrofit measurements involving connected instrumentation sensors should have a specification data sheet that defines the performance accuracy, application limitations, service and calibration requirements, and installation details that properly position the sensor for measurement accuracy over the operating range of conditions.

ESCOs should provide this information when requested.

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**PART TWO:**

**Lessons Learned In North Carolina and Beyond**

North Carolina Guide to Energy Performance Contracting  
For K-12 Schools, Local Governments & Community Colleges

**LESSONS LEARNED IN NORTH CAROLINA AND BEYOND**

- 10.1 Introduction**
- 10.2 Soliciting Performance Contracting Information**
  - 10.2.1 National Survey Results**
  - 10.2.2 North Carolina Result (1996 - 2006)**
  - 10.2.3 UNC Survey of Five Local Governments**
- 10.3 Lessons Learned 2007**
- 10.4 Areas of Discussion (Interview Areas)**
  - 10.2.1 General Project Approach**
  - 10.2.2 Investment Grade Audit (IGA)**
  - 10.2.3 Contracts**
  - 10.2.4 Details Design/Engineering/Architectural/Construction**
  - 10.2.5 Costs**
  - 10.2.6 Measurement and Verification**
- 10.5 The Interview List**
- 10.6 Problems and Successes with Energy Saving Performance Contracts**
  - 1.6.1 Problem Areas**
  - 1.6.2 Success Factors**
- 10.7 Other Tips for Performance Contracting Stakeholders**

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## Lessons Learned in North Carolina Performance Contracting

### 10.1 Introduction

Public school systems, local governments, and community colleges in North Carolina have tremendous opportunities to implement energy saving projects in their building facilities. These energy saving projects can achieve the following objectives:

- 1) lower utility operating expenses,
- 2) reduce energy use,
- 3) Improve comfort conditions of occupants/students
- 4) reduce related environmental effects, such as air emissions from coal-fired power plants,
- 5) reduce water use and,
- 6) foster sustainable building management practices.

In North Carolina, local governments purchase over \$225 million of electricity, natural gas and fuel oil annually. There are 100 counties, 539 municipalities, and 117 school districts representing over 2000 schools, all involved in consuming energy. Based on state technical assistance efforts, school districts and local governments (LG) could expect to reduce energy use between 10 and 20 percent in existing building through progressive energy management and building upgrades. Local governments alone could realize well over \$50 million savings over a five year period.

Even with all these energy and cost saving opportunities, few local governments and schools districts can make the investments to upgrade energy management systems, HVAC systems, lighting, or restroom water fixtures. Fierce competition for capital budget dollars leaves energy savings projects well down the list of priorities. Facility operating budgets fare no better, barely able to pay for escalating utility costs and short-term repairs.

Recently the use of energy performance contractors, termed Energy Saving Companies (ESCO), in the public sector has become much more attractive, due to low interest rates, more NC experience, State efforts, and rising utility costs. Performance contractors implement energy saving projects and guarantee annual energy savings, which pay for the project financing. In effect, the performance contractor self-finances the energy saving projects without affecting capital budgets.

Over the past ten years relatively few NC school districts, local governments and community colleges have utilized Energy Saving Performance Contracting – with mixed results. School systems and Local government units need balanced, non-biased guidance on the performance contracting process, lessons learned, and technical assistance to ensure project success. The following attempts to summarize experiences in the public sector with performance contracting as an approach to accomplish energy saving project and facility upgrades.

## 10.2 Background: Prior Performance Contracting Experience

Since the late eighties, performance contracting agreements have been a means for implementing energy saving projects by local governments/municipalities and K-12 Schools. There have been many successes and sometimes difficulties in achieving expected contract results. Utilizing prior experience of how success was achieved and avoiding the pitfalls of project weakness provides confidence that the performance contracting process is a viable alternative to conventional bid and spec contracting methods. A review of this experience is a worthy endeavor.

### 10.2.1 National Survey Results (1990-2003)

A recent national survey\* of performance contracting projects provide some insight to expectations for: project size, investment costs, project scope, energy savings, and payback time of the contract. Table 10.2.1 below shows some of the survey statistics.

**Table 10.2.1 National Performance Contracting Survey (1990 - 2003)**

<u>Municipalities/Local Governments</u>		<u>K-12 Schools/Community Colleges</u>	
Number of Projects -	172	Number of Projects -	405
% of ESCO Market -	15%	% of ESCO Market -	30%
Median Savings/Cost Ratio -	1.8	Median Savings/Cost Ratio -	1.1
Median Investment Cost 2003 \$/SF -	\$3.71	Median Investment Cost 2003 \$/SF -	\$3.33
Median Building Size SF -	48,500	Median Building Size SF -	67,500
Median Project Floor Area SF	341k	Median Project Floor Area SF	239k
Energy Savings (% Utility Bill) -	20%	Energy Savings (% Utility Bill) -	18%
Annual Energy Savings kbtu/sf -	17	Annual Energy Savings kbtu/sf -	12.5
Simple Payback Time (Years) -	7.2	Simple Payback Time (Years) -	14.7
Retrofit Projects (% of Total Projects)		Retrofit Projects (% of Total Projects)	
- Lighting Only -	26%	- Lighting Only -	9%
- Electricity Generation -	3%	- Electricity Generation -	4%
- Major HVAC (boilers, chillers) -	21%	- Major HVAC (boilers, chillers) -	21%
- Minor HVAC -	35%	- Minor HVAC -	47%
- Non-Energy -	9%	- Non-Energy -	16%
- Other-	7%	- Other -	2%

\*Source: Public and Institutional Markets for ESCO Services: Comparing Programs, Practices and Performance, March 2005, Berkeley National Laboratory

This national survey reveals projects varied from a median savings/cost ratio of 1.8 to 1.1 and the payback period varied from slightly over 7 years to over 14 years. (North Carolina Statutes require a project payback of less than 20 years for performance contracting.) As can be seen there is a fairly broad range of results. **The degree of project success will most often be attributed to the quality of scoping detail and the quality of estimated cost that defines the performance contract result. Control of both is critical to any fixed cost contract where recovery of**

**initial cost is based upon a long-term payback period of energy savings.**

### 10.2.2 North Carolina Result (1996-2006)

The State of North Carolina Treasurer Office keeps records of all Guaranteed Energy Saving Contracts that are implemented according to the North Carolina statutes. Table 10.2.2 reveals these performance contracting results over the past twelve years.

<b>Date</b>	<b>K-12 Schools</b>	<b>Amount</b>	<b>Date</b>	<b>Community Colleges</b>	<b>Amount</b>
9/3/96	Clay County Schools	\$309,297	1/7/96	Coastal Comm. College	\$810,802
2/4/97	Carteret Cty. B of E	\$875,000	7/1/97	James Sprunt Comm. College	\$228,425
5/5/98	Nash Rocky Mtn Schools	\$339,917	4/8/98	James Sprunt Comm. College	\$230,000
6/2/98	Jackson Cty. Schools	\$311,597	1/5/99	Richmond Comm. College	\$132,947
7/7/98	Elizabeth City B of E	\$1,127,992	1/8/01	Johnston Comm. College	\$1,794,291
11/3/98	Montgomery Cty. Schools	\$744,838	1/8/01	Wilkes Comm. College	\$973,192
4/6/99	Haywood Cty. B of E	\$942,243	1/3/02	Davidson Comm. College	\$2,083,714
12/7/99	Pender Cty. Schools	\$600,643	6/4/02	Blue Ridge Comm. College	\$699,187
4/4/00	Caldwell Cty. B of E	\$884,440	11/4/03	Southeastern Comm. College	\$1,044,050
6/4/02	Harnett Cty. Schools	\$2,580,580	11/4/03	Wayne Comm. College	\$509,522
6/3/03	Vance Cty. Schools	\$3,092,802	8/3/04	South Piedmont Comm. College	\$376,481
6/3/03	Columbus Cty. Schools	\$1,990,327	9/7/04	Sampson Comm. College	\$686,800
10/7/03	Clinton Cty. Schools	\$1,047,388	<b>Totals</b>	<b>Community Colleges</b>	<b>\$9,569,411</b>
11/4/03	Sampson Cty. Schools	\$2,948,107	<b>Date</b>	<b>County Governments</b>	<b>Amount</b>
2/3/04	Yancey B of E	\$1,710,364	6/3/97	Edgecombe County	\$485,052
1/4/05	Blanden Cty. Schools	\$2,286,080	9/2/97	Union County	\$495,000
4/5/05	Lexington Cty. Schools	\$1,968,645	9/2/03	Anson County	\$1,583,833
7/5/05	Charlotte/Mecklnbg Schs	\$5,559,560	9/2/03	Davidson County	\$1,006,837
7/5/05	Wayne Cty Public Schools	\$2,884,608	12/7/04	Carteret County	\$665,324
10/4/05	Davie Cty Schools	\$1,189,269	12/7/04	Cumberland County	\$4,537,080
12/6/05	Person Cty Schools	\$1,976,711	7/5/05	Pitt County	\$2,697,002
2/7/06	Allegheny Cty. Schools	\$719,439	<b>Totals</b>	<b>County Governments</b>	<b>\$11,470,128</b>
<b>Totals K-12 Schools</b>		<b>\$36,089,847</b>	<b>Date</b>	<b>Municipality</b>	<b>Amount</b>
			9/1/98	City of Mt. Airy	\$429,503
			10/6/98	City of Asheboro	\$428,629
			11/4/03	City of High Point	\$1,138,668
			1/06	<b>State Buildings (Raleigh)</b>	<b>\$25,000,000</b>
<b>Total for All Contracts</b>		<b>\$84,126,186</b>	<b>Totals</b>	<b>Municipalities and State</b>	<b>\$26,996,800</b>

Below is a summary of the Table 10.2.2a that shows K-12 Schools are the prime users of this contracting method, which also tracks with the National Survey results as well. Community Colleges, County Governments, and Municipalities are all participants but not as much activity as the K-12 School sector. It is only recently that State Buildings had any significant participation in performance contracting. In 2006, a \$25 million award to an ESCO for energy saving improvements to many of the state buildings in Raleigh.

**Table 10.2.2b Summary - Energy Saving Performance Contracts in North Carolina**

Category	K-12 Schools	Community Colleges	County Governments	Municipalities
Total Projects Value	\$39,089,847	\$9,569,411	\$11,470,128	\$1,996,800
% of Total Projects	64%	15%	18%	3%
Average Project Size	\$1,776,811	\$797,451	\$1,638,590	\$665,600
Number of Projects	22	12	7	3

### 10.2.3 UNC Survey of Five Local Governments

In 2003 study of NC five local government units by Leslie Steward at the University of North Carolina, revealed prior experience with performance contracting in North Carolina. The bibliography sources of this study are significant and provide resources for further in-depth investigation. However, the recommendations and conclusions are worthy considerations for performance contracting. It is revealed from this study that:

- New bookkeeping methods are required for performance contracting
- A specialized understanding of the performance contracting process is required
- Request for proposals are enhanced by utilizing the NC SEO RFP Template
- Third party engineering consultants can enhance the evaluation process of ESCO's
- M and V processes should focus on the risks that affect the determination of savings
- Local governments resources may be limited to monitoring the energy savings
- ESCO's can generate the reporting functions for a fee if resources are limited
- A listing of operational performance criteria/settings and monitoring instruments should be included in the requirements for post retrofit analysis of energy savings
- Reporting of Energy Savings by the State Energy Office to the Local Government Commission - Finance Division is required annually
- Evaluation of ESCO proposals should include measured savings to cost ratios exceeding 1.21
- Non-measured savings, such as operational benefits, are to be identified
- A designated individual should be in charge, with replacement for turnover identified
- Hard work, commitment, a good contract, recognize staff limitations, correct weaknesses are prerequisites for a well-designed and well managed performance contract.

The 2003 UNC survey, compiled the numeric characteristics of the five Guaranteed Energy Saving Contracts (GESC) for Local Government Units of North Carolina and gives further evidence to the range of expectations and results obtained.

**Table 10.2.2c GESC Results - Five NC Local Governments**  
Report Compiled March, 2003

<b>Evaluation Parameters</b>	<b>City of Asheboro</b>	<b>Johnston Community College</b>	<b>Wilkes Community College</b>	<b>County of Edgecombe</b>	<b>City Of Mt. Airy</b>
<b>Year Contract Was Initiated</b>	<b>1998</b>	<b>2000</b>	<b>2001</b>	<b>1997</b>	<b>1998</b>
<b>Years Contract Has Been in Place (through 2006)</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>Completed 2005</b>	<b>8</b>
<b>Length of Contract Terms</b>	<b>8</b>	<b>12</b>	<b>12</b>	<b>8</b>	<b>8</b>
<b>Project Cost Without Debt Service</b>	<b>\$428,629</b>	<b>\$1,794,291</b>	<b>\$715,841</b>	<b>\$485,052</b>	<b>\$429,503</b>
<b>Interest Paid Over Life of Contract</b>	<b>\$84,906</b>	<b>\$711,981</b>	<b>\$257,351</b>	<b>\$109,151</b>	<b>\$97,745</b>
<b>Total Project Cost With Debt Service</b>	<b>\$513,535</b>	<b>\$2,506,272</b>	<b>\$973,192</b>	<b>\$594,203</b>	<b>\$527,248</b>
<b>Total Guaranteed Savings Over Term of Contract</b>	<b>\$558,501</b>	<b>\$3,039,749</b>	<b>\$1,195,803</b>	<b>\$657,144</b>	<b>\$940,374</b>
<b>Projected Savings Beyond Cost of Contract</b>	<b>\$44,966</b>	<b>\$533,477</b>	<b>\$222,611</b>	<b>\$62,941</b>	<b>\$413,126</b>
<b>Contract Term Savings to Cost Ratio (includes debt)</b>	<b>1.08</b>	<b>1.21</b>	<b>1.23</b>	<b>1.11</b>	<b>1.81</b>
<b>Measured to Non-measured Savings</b>	<b>0.34</b>	<b>24.2</b>	<b>3.07</b>	<b>2.56</b>	<b>1.21</b>

**Source:** Paying for Capital Investment with Resulting Savings - Evaluating Guaranteed Energy Saving Contracts in North Carolina, Leslie S. Stewart, University of NC -Chapel Hill, Masters Program Paper March 29, 2003

The GESC presents a projected annual savings schedule for the contract term based upon an investment grade audit. As with all GESC's, the contract establishes measured and non-measured savings that together make up the total guaranteed savings. In some instances the ESCO total guaranteed savings are escalated at a 2% to 3% rate per year over the life of the contract. Measured savings represent those savings that are identified by the annual energy savings report and should be realized through actual savings reflected in the utility budget. Non-measured savings consist of stipulated energy savings and operational savings. Some ESCO contracts escalated measured savings at one percentage over the contract period and non-measured savings at another percentage rate. The contractual amount of guaranteed non-measured savings is assumed each year without being confirmed by the annual energy report. The purpose of non-measured savings is to account for savings that would be realized outside of the utility budget. Reduced maintenance and operational cost or avoided personnel cost might be examples of non-measured savings.

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### 10.3 Lesson Learned 2007—Soliciting Performance Contracting Information

In 2007, Waste Reduction Partners of the Land-of-Sky Regional Council embarked on a process to capture lessons learned experiences in performance contracting in the public sector. Based on the Table 10.2.2a of performance contracts issued in North Carolina in the last 12 years, Waste Reduction Partners utilized the below criteria to select K-12 Schools, Community Colleges, Local Government Units and Municipalities to be interviewed:

1. Performance Contract executed in the last 1 to 4 years
2. Contract value in the range of \$350,000 to \$10,000,000
3. Listed by the NC State Treasury Office, with contact references available
4. Initial contact person indicated a willingness to share information
5. Persons who participated were still employed by listed government unit

It was not too infrequent that the original lead person that was most involved with the initial performance contracting process had left the employer either retiring or gone on to another place of employment. In particular, those government units that had elected officials, there was a tendency for transitions in some positions such as County Manager when new Commissioners began new terms.

After receiving a positive response from the initial screening of the NC Treasury Listing a letter was sent to each contact asking for permission to interview their team or individual about the performance contract they were currently implementing. In some cases, a preliminary copy of this NC Guide to Energy Performance Contracting was left with the government unit or school for seeking additional response about the usefulness of information being provided. The interview process began with a general discussion of the overall performance contracting process including:

- Organization - Leadership, Authority, Team
- Need Basis for Performance Contracting
- Qualifications and Proposals
- Energy Saving Benchmarks that Justified the Contracting Basis
- Resources and References

After the general discussions, a list of more detailed questions were referred to for isolating specific areas.

### 10.4 Interview Areas of Discussion

We have heard the expression - “the devil is in the details” and the significance to performance success often resides with the details. The following questions were developed to learn more about some of the details of the implemented PC projects. Often these questions were reserved for in depth discussions when time was given to research the issues further.

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### 10.4.1 General Project Approach

Could you describe the process of how the performance contract was initiated?

1. Was there a team of people that helped with the early stages of the process?
2. What was the organization structure? Single leadership position? What authority?
3. What were the reasons for going with performance contracting? Need basis?
4. How did you qualify the ESCOs? What information was requested?
5. What information was requested in proposals? How many proposals?
6. Did you establish some basis for evaluating proposals? Describe the process.
7. Did you involve local subcontracting of parts of the performance contract?
8. Did you contact others who had experience with performance contracting?
9. Was there any feasibility analysis performed prior to the contract award? By who?
10. Describe what initial information was given to the ESCO's that would allow the ESCO to define a scope of work for the proposal basis.
11. Did you have energy saving benchmarks that defined the initial savings potential to be realized?
12. Did you use any of the informational resources of the State Energy Office?

### 10.4.2 Technical Audit or Investment Grade Audit (IGA)

Can you give us some idea about how the Investment Grade Audit was accomplished and the results?

1. Was the IGA cost incorporated into the total cost of the contract? Cash flow analysis provided?
2. Did you have access to the make-up of the cost of the ECM's?
3. Were there any changes in investment cost after the contract was let?
4. Was the Investment Grade Audit performed by the ESCO? Or others?
5. Was there an Engineering Services Contract issued separate to the Performance Contract?
6. Did a licensed professional engineer review the IGA?
7. Was utility billing information shared with the contractor prior to the IGA?
8. What was the accuracy of the estimated cost of the ECM's?
9. What documentation supported the estimates? Was a Life-Cycle Analysis performed?
10. Was a progress report issued by the ESCO?
11. How long did it take to complete the IGA?

### 10.4.3 Contracts

How did you handle all of the legal requirements of contracting for design services and construction?

1. Were the energy savings guaranteed? What were the consequences of failure to meet guarantee?

2. What contract form or resource was used to define the performance contract? Legal counsel review?
3. Were there any contract terms that the ESCO did not sign off on? What were they?
4. What owner risks were covered by contract language?
5. Did you feel that the contract was sufficient to meet the needs of the project? Did the contract refer to the Scope of Work? Schedule? Penalties? Incentives?
6. What was the length of the guaranteed energy savings contract? Years? When started?
7. Was the contract modeled after NC General Statutes for Guaranteed Energy Savings?
8. Was there a maintenance contract or agreement issued for the period of the performance contract?
9. Did you report results of the contract annually to the State Energy Office?
10. Was a performance bond and material payment bond issued?
11. Was there a reference to arbitration if the contractor failed to meet contractual obligations?

#### 10.4.4 Design/Engineering/Architectural

Describe who took the lead in design, engineering, and architectural services? Did it work O.K.?

1. What was the size of the buildings where the ECM's were applied?
2. Was there a preliminary scope of work developed prior to the ESCO becoming involved?
3. What major equipment items were replaced? Lighting? Chillers? Boilers? HVAC? EMS?
4. Was any of the design subcontracted by the ESCO?
5. Was the ESCO the General Contractor? What subcontracts?
6. Did the ESCO submit a work schedule and time of completion?
7. Was the ESCO an equipment manufacturer? Independent contractor? Specialists in the field?
8. Did the ESCO provide a specification for each replacement item? Quality defined?
9. Who was responsible for permits?
10. Did the ESCO provide purchasing?
11. Power disruption and disconnect interface to the utility? ESCO?
12. Was the design documentation adequate? Layout with "as builds", electrical single line, piping and HVAC duct layouts, etc.
13. Were the fees for design and engineering broken out? Cost, fringes, overhead and profit?
14. Are there any things you would do differently in design in retrospect?
15. Was the ESCO easy to deal with considering that the contract was for fixed price?
16. How did you handle change orders?

#### 10.4.5 Costs

How were the financial issues and cost defined for the contracts? Who reviewed these costs?

1. Were the costs for each ECM documented by equipment, materials, labor, and subcontracts?
2. Were equipment bids shared with the owner?
3. What was the total cost of the project?
4. What was the amount interest paid over the life of the contract?
5. What was the total guaranteed savings?
6. Were the guaranteed savings escalated over the life of the contract? What percentage?
7. What were the projected savings beyond the cost of the contract?
8. Describe how the financing of the ECM's was accomplished? Tax Exempt Lease Purchase? Local School Bond Issue? ESCO Financed? Other?
9. Was a surety bond provided?
10. Were there tax savings through the local government unit for equipment and materials purchases?
11. What was the interest rate of the loan?
12. Did the owner issue a payment schedule? ESCO issue one?
13. Was it possible to determine the profit being made by the ESCO? What percentage of total project cost?

#### **10.4.6 Measurement and Verification**

What methods and success were realized in keeping track of energy savings?

1. Were cost savings tracked for each ECM or collectively?
2. Were the costs for each ECM based upon calculations and assumptions or were there base and post retrofit measurements made by instrumentation? (Data logger or service meter?)
3. Did ECM's correct for power factor if utility power factor charges apply?
4. Were there any ECM's eligible for power incentive funding and has this been included to reduce ECM capital cost and shorten payback?
5. Did the ESCO **not** include savings from maintenance or deferred capital expense in the project cash flow analysis?
6. Did the IDA specify adequately the handling and disposal of hazardous materials associated with ECM installation?
7. Did the lighting ECM's include an area by area of readings per IES standards rather than a "blank" retrofit?
8. Did the ECM's meet local, school guidelines, and state codes for applications?
9. Did the IGA include special training for facility staff for long-term ECM maintenance and operation?
10. Did the ESCO correct baseline for weather, utility rate changes, occupancy changes, shutdowns, and schedule changes in use?
11. Was the facility at the best electric rate and did the ESCO consider rate changes for energy cost savings?

- 
12. Was there correlation between historical baseline and modeled baseline and was it close enough to use the model baseline (the r squared)?
  13. What measurement and verification protocol was used to track savings? IPMVP?
  14. Were non-measured savings tracked? (Not a part of the annual Energy Report)
  15. Were there equipment energy efficiency benchmarks tracked for operational performance?
  16. Were building energy saving benchmarks (energy \$/sf) tracked annually for improvements?
  17. Were load factor and power factor looked at prior to and post retrofit?
  18. Were there escalation clauses incorporated for utility service changes?
  19. Were there standards of service and comfort defined for facility performance requirements? Such as humidity (30% to 60%), temperatures - winter (70° F), summer (76°F), minimum fresh air makeup (ASHRAE Std 90), lighting levels (IES).
  20. Who was responsible for operation after post retrofit? For how long?
  21. Were there any new control strategies implemented during the post retrofit and how were they tracked for savings? Such as:
    - Night setback controls of building HVAC equipment
    - “Free” air cooling with enthalpy control of fresh air make-up/return air
    - Boiler/Furnace optimization of fuel/air ratio for combustion efficiency, start/stop
    - On-Peak/Off-Peak Electric Demand scheduling/limiting
    - Thermal Energy Storage System Applications
    - Multiple chiller programming for efficiency and size selection based upon building load
    - Analytical instrument recording CO<sub>2</sub>, and relative humidity for air quality
    - Customized lighting control based upon schedules and occupancy
    - Adaptive control algorithms for making corrections based upon prior results
    - Daily scheduling, holiday programming, yearly scheduling for activity based buildings
    - Duty cycling of equipment for even wear service
    - Chiller water and condenser water reset based on cooling load
    - Data logging for trouble shooting and making efficiency corrections
    - Alarm monitoring and energy conservation recording and reporting

## 10.5 List of North Carolina Performance Contracting Interviews

The following list of NC schools systems, community colleges, and local governments that were chosen and available for interviews

K-12 Schools	Contract Date	Project Cost
Lexington City Schools	4/5/2005	\$1,968,645
Charlotte-Mecklenburg Schools	7/5/2005	\$6,363,127
Columbus County Schools	6/3/2003	\$1,990,327
<b>Community Colleges</b>		
Davidson County Community College	1/3/2002	\$1,984,494
South Piedmont Community College	8/3/2004	\$376,481
Southeastern Community College	11/4/2003	\$1,057,356
<b>County Governments</b>		
Anson County	9/2/2003	\$1,583,833
Cumberland County	12/7/2004	\$5,063,272
<b>Municipality</b>		
City of High Point	11/4/2003	\$1,138,668
City of Kings Mountain	10/24/06	\$2,400,000

## 10.6 Problems and Successes with Energy Saving Performance Contracts

### 10.6.1 Problems Areas

The ten interviewees were asked the question, “**What were the major difficulties that presented the most problems during the implementation of the performance contract?**” A summary of their responses or their direct quotations follow.

**Measurement and Verification Protocols** - There is a need expressed by nearly all interviewees to simplify the basis for evaluating energy savings. Just having a table that lists by each year of the contract the guaranteed energy and operational savings does not reveal how the savings are accomplished and what the contributions are for the total program implemented. One respondent stated “To explain this, we got 20 pages of formulas, calculations, tables, and rate schedules that formed the basis for the annual energy saving guarantee. Tying this information back to the contract terms and conditions was just too complicated to track energy performance in the short term to improve the savings return and subsequently allow some shared savings. We need a better method that is not so complicated that we have to hire an energy

engineer to evaluate the results.”

**Before and After Benchmarks** - Establish some benchmarks prior to implementing the energy savings for lighting, equipment, and HVAC systems and compare these benchmarks after the recommended changes are presented. Make these benchmarks easy to track such as:

1. Total Connected Kw, before and after
2. Total Input Rating - Btu/hr, before and after
3. Peak kwh and kw at the highest CDD recorded over last 3 years, before and after
4. Peak NG, Propane, Fuel Oil annual consumption for annual HDD, before and after
5. Equipment Efficiencies - Chillers (kw/ton nameplate), Heat Pumps (SEER), Boilers (AFUE), reduction in capacity?, before and after
6. HVAC Total Fans or pumps connected Kw, before and after
7. Lighting - Total connected watts or Kw of the building system, before and after, what was the ballast factor changes (0.77 to 1.15) before and after
8. Building Envelope - Insulation R values, Windows, Doors, before and after

In addition to requesting a detailed explanation of M and V Protocols, the above will provide a relative indication of energy consumption potential and how much is being improved by size reduction/increase(?) and efficiency improvements. These major indicators will certainly reveal potential for savings when replacements are being considered.

### **Getting Competitive Bid Proposals**

Most of the earlier ESCO proposals were non-competitive bids. This was because of one or more reasons:

1. ESCO had a Prior Maintenance Contract in place; thus there were no other bidders because the ESCO had an insider advantage
2. Preliminary Energy Assessment was made by an ESCO prior to bids
3. Project Size and Effort/Cost to prepare a competitive proposal were not compatible
4. Qualified ESCO's were minimal in the earlier years
5. ESCO already had EMS/HVAC control systems in place, readily interfaced

The number of ESCO's today that have qualified for working in North Carolina have increased over the last several years. The SEO has qualified many of these and today there are opportunities for multiple bidders. However, several of the interviewees had maintenance contracts in place with an ESCO that would be asked to propose the performance contract work later. There was never a time when a competitive bid resulted in the award of a performance contract to a new ESCO, that did not have a prior

maintenance work history with the customer. The on-site ESCO performing maintenance work knew the people, the HVAC systems, and had established a working relationship that was hard to overcome. Several ESCO's having this on-site maintenance capability offered a "free" energy assessment with the offer of preparing bid documents if the justification of performance contracting proved viable. This discouraged competitive bidding. In most cases, a second advertisement for the work resulted in no bidders and the on-site ESCO proceeded with the work.

### **Savings not Measured by Consumption (Over half interviewees had stipulated savings greater than 50%)**

ESCO's often prefer to stipulate cost savings rather than to measure consumption. Before and after consumption tied to a metered or sub-metered quantity is the only way to verify true energy saving results. It also allows the adjustments of cost to rate schedule changes that occur over time and to weather conditions that affect consumption. While modeling and mathematical calculations stipulate expected results it does not always correlate with actual returns. Several interviewees indicated that their contract was tied to a majority (67%) of stipulated savings and that consumption was not tracked and that annual cost guarantees was the only indicator they had for gauging the savings. This often eliminated cost sharing, not knowing the monthly consumption rates for NG, propane and fuel oil consumption nor having the ability to adjust weather conditions with kwh consumption usage on a monthly basis. It also allowed the ESCO to target the year end result rather than focusing on the monthly improvements expected. Meter maintenance and calibration accuracy are important for consumption tracking and must be programmed.

### **Contract Resolution**

Liens for lack of payment are nasty clauses in ESCO contracts. Monetary recovery for failing to meet a defined payment should be reviewed carefully. Such was a case where the ESCO had defined contractually the right to place a lien on multiple buildings if payments were not met for the initial cost. These contract clauses have been included in the past and require the scrutiny of professionals to negotiate equitable language.

### **Paper Work**

All interviewees noted that there is a lot of approvals, written documentation, and statutory checks and balances that have to be executed for developing, managing and executing a performance contract. "It would be nice if this could be reduced and that skill levels and expertise for developing the project were a little simpler: i.e., NC Statutes, M & V Protocols, legal requirements, project management of a turn-key, fixed price project, construction management, maintenance scope of work delineation, finance, standard operating conditions, and many choices that are not normally associated with our project work."

### **Equipment Warranties**

Warrant the equipment for the life of the contract. This was not spelled out in the contract and some early failures caused problems with replacement. The ESCO will provide a “pass through” of what the equipment vendor allows. If the ESCO is also the manufacturer of the equipment then extended warranties can be negotiated.

### **Performance Bond**

A performance bond acceptable to the Local Government Commission is required for financing a government unit performance contract. It must also be valid over the life of the contract. Some bonds were listed for 10 years, project term was 12 years.

### **Disposal of Hazardous Materials**

Magnetic ballast used in fluorescent fixtures manufactured before 1979 have PCB's that require special disposal requirements. If the ESCO has the means to dispose of these units, which can be in the hundreds to thousands in a major lighting upgrade, then it should be specified in the Scope of Work. Asbestos remediation should be identified in the contract. Some older buildings could have these materials still in place and working in this environment is not acceptable.

### **Know Your Subcontracts**

Contractual agreements between subcontractors and ESCO's often are good working relationships that are equitable. Local contractors can perform work where there are not specialty requirements if work histories are sound. On occasion, subcontractor work was not of quality expected. It required some effort to make corrections that were related to the Scope of Work of the subcontractor.

### **Energy Management Systems**

Compatibility with existing systems and standard interface protocols are important when the EMS will be retrofitted to several buildings having multiple control features and signal levels. “Check the EMS interface thoroughly and the ability to interface and manipulate dedicated equipment controls such as chillers, boilers and HVAC systems.”

### **Operating Schedules**

The building operating schedule must be defined in detail for normal operation and holidays and the setback conditions for temperatures for both winter and summer setpoints of offices, classrooms, zones, and central computer rooms. Energy consumption is temperature driven and these setpoints are key for baseline and post construction. These have to be agreed to and set prior to award. Some were not.

**People Resources**

“Our project manager resigned and we had no one that had been involved with the details sufficiently to take over the project. We suffered for this during the project until the new project manager was able to come up to speed on the learning curve.” There needs to be *two* people that are fairly involved in the process to cover the likelihood of someone leaving. This happened in three of the ten performance contracts interviewed.

**Documentation Resources**

“We didn’t know that there was a listing of qualified ESCO’s nor a sample RFP document found on the SEO web site. These would have helped with our project development.”

**Taxes**

“The contractor had some purchasing responsibilities and did not keep track of taxes paid making it difficult to recover monies for our being a tax-exempt entity. The contractor should have been identified as having purchasing authority early.”

**Scope of Work**

“We implemented many energy saving projects but were unable to justify the replacement of single-pane windows for our older multi-story buildings. These windows were wooden framed and quite old but the contractor placed a premium cost for removal and replacement. We don’t think there was enough thought placed on how to accomplish the work.”

“We replaced our sinks, showers, lavatories, and toilets with low flow water designs and had drainage problems because of it. Others have experienced this as well but the contractor was not aware of this problem before.”

“We should have done a better job of retrofitting systems and equipment. We now have three different control systems and have installed new controls on old equipment that doesn’t work very well.”

**Capital Cost and Savings**

“Even though the consumption decreased, the savings are not paying for the capital cost” Our contract has not allowed for recovery yet. We are still checking for reasons.”

**Utility Accounting**

“Talk early with the utility about access to utility accounting information. We have 746 accounts with the utility and found one meter that had not been read in 3 years and it cost us \$500,000 in back charges.”

**Adjustments - M & V Protocols**

“These were not tracked adequately. The schedules, occupancy, and operating conditions of our buildings were changing sufficiently in some cases that would influence the energy use but these adjustments were not identified a head of time.”

**Work Schedules and Equipment Expediting**

“We tried to get all our work performed during the summer months when schools were closed for the summer. Expediting equipment delivery schedules by the contractor was non-existent. Late equipment deliveries caused problems with the schedule causing overtime and catch-up to meet original schedule. Major equipment deliveries should have a schedule.”

**Thermostat Settings and Comfort Levels**

“Energy savings and comfort levels are in conflict. We have a policy but it is often ignored. If comfort level does not feel right, thermostats were adjusted that allowed deviation from contract terms of settings agreed to earlier. ESCO used this to rationalize the additional energy consumption and deviation from plan, which was not arguable.”

**Utility Rate Increases**

“These seem to occur on a yearly basis and must be reconciled during mid-year accounting for cost impact on annual guaranteed savings. They can impact consumption and demand thus complicating the math for total cost accumulation for multiple accounts. Tracking corrections for cost can be tedious for multiple accounts.”

**Fresh Air Make-up**

“There needs to a better way of tracking how much energy is being used each day for heating/cooling fresh air into the building. We want it to be sufficient but not measuring this in any way seems a waste of energy. How do you track this?”

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### **10.6.2 Success Factors**

Nine out of 10 interviewees reported that they felt that their project was a success and that knowing what they know now that they would consider a similar approach for new energy saving project work. The only one that had mixed feelings about this approach, inherited the project after the original project manager had left. He got involved at the last of the project where there were many problems associated with the transitional period.

#### **What do you attribute the successful outcome of the project as it stands today?**

##### **Project Management Knowledge**

“Our project manager had worked for the ESCO chosen to implement the project. He had worked for us for a number of years. He knew our systems - equipment, controls, and efficiencies/inefficiencies. He also knew the replacements being suggested and the contractual relationships that allowed us to diminish the risks for implementation of the work. His efforts and long work hours contributed to our success. He followed the installation of equipment and solved field problems as they occurred”

##### **Local Government Commission (Local Government Unit, Debt Overseer)**

“We involved these people early in the contract basis, the financing arrangements, and the bonding requirements. They provided guidance and suggestions that were most helpful to get us over some administrative and project hurdles.”

##### **Quantity and Quality Defined**

“Our Scope of Work defined quantities and quality that was compatible with purchasing agreements in place for maintenance and equipment reliability issues. We knew what we wanted and why we wanted it and had a feel for efficiencies expected from what we were doing. We worked with the ESCO to get what we wanted.”

##### **Project Schedule**

“No slippage, we expected the ESCO to meet the project schedule! If we detected slippage, we wanted to know why and how we would get back on schedule. We removed barriers and excuses. The project schedule was studied in detail and followed exclusively through out the project execution. The schedule needs to be in enough detail to control the work flow and deliveries of equipment.”

##### **Contract Terms and Risks**

“Guarantees are governed by contracts and we scrutinized our legal documents through internal resources and via the LGC. Identifying our risks for recovery if savings were not met was important to us. The ESCO in the first three years has made payments for not meeting stated commitments. Failure to have not watched this carefully would have

presented real problems later. The ESCO wrote us a check for \$88,000 the first year, \$35,000 the second year and \$35,000 the third year to cover the lack of savings proposed by the performance contract. If it were not for the tightness of our contract this would have been our problem”

### **Administrative Approval**

“This forced us to have “our ducks in a row”. Our team was responsible for defining the project costs, positive cash flow over the contract period, scope of work, energy savings, and risks. We presented the project to the City Council and provided a Memorandum of Understanding from the Financial Services Department stating - what capital improvements would be made, the lease-purchase agreement, application for the LGC, advantages of the guaranteed savings approach, ESCO reference contacts made, and the positive cash flow required by the NC statutes. This resulted in a resolution of the governing body and the Board of County Commissioners filing for application and approval by the LGC of the Guaranteed Energy Saving Contract. Also, in the filing process we had to provide additional documentation for the requirements of the application.

“We made presentations to the School Board and County Commissioners before any commitment was made for the work. The two final selections were brought back for presentations to the Board and the Commissioners.”

### **Maintenance Training**

“We went from the dark ages to the 21 first century in terms of technology improvements. It was kindergarten to college in terms of knowing how the control systems were to achieve the energy savings. This took 4 weeks of on-site training and follow-up by the ESCO to get us up to speed on everything installed and how to get the most from what we had. We still have one ESCO representative on site for maintaining some of the systems.”

### **Third Party Engineering Review**

“A third party, independent, registered engineering firm reviewed the ESCO’s Energy Audit results and gave us an opinion of the scope of work and technologies proposed for achieving the energy savings. We feel this was well worth the money to have others look at what was proposed.”

### **ESCO’s Performance Specialist**

“We had on-site a performance specialist that kept making improvements in control systems for optimum performance. We feel that we are getting the maximum energy savings from our EMS because of the time spent tweaking the system to a higher level of performance.”

**Submetering**

“We perform submetering data logging through the utility meter. This allows us to retrieve important operating conditions of consumption and demand that can be used in our “Time of Use” energy saving strategies. Kw demand monitors are on all meters.”

**ESCO was easy to work with on Contract Terms**

“Amendments to the contract were not difficult. Both parties worked smoothly to get an equitable arrangement. We felt that this helped to satisfy the “What If’s” of several unknowns.”

**Financing**

“We were able to get 3.12% financing for the project cost from a North Carolina Bank. This rate and local bank presence helped with the security of the project.”

**Equipment Selection**

“We had made some bad choices of equipment in the past. Heating hot water with steep demand charges, large, single stage chillers that had wide load conditions, and an electric boiler were replaced with more load range flexibility and less costly energy sources. The cost came down as a result.”

**Performance Awareness and Comfort Levels**

“Energy consumption is a daily focus and we controlled to performance benchmarks, not according to individual circumstances.”

**ESCO References**

“We spent days calling references and determined that several ESCO’s were not meeting their expected savings projections. We focused on projects that had similar scopes of work and weather conditions similar to ours. We feel that the extra effort allowed us to focus in on the most capable ESCO for executing a project similar to ours.”

**EMS**

“Our EMS allows us to adjust setpoints due to weather conditions, building schedules, remotely from outside the intranet, and from a central control point. This flexibility allows us the ability to make energy saving adjustments that take advantage of the capabilities of what was installed and it saves energy cost.”

### **ESCO Maintenance Contract**

“We elected to have three ESCO maintenance people under a separate contract for service of the HVAC systems. We had some maintenance people retirements and this allowed our existing maintenance people to learn over a longer period of time the new control and equipment features that are energy driven. Our contract is renewable every three years. We have a supervisor, a maintenance technician and a performance technician that are working on energy saving improvements in our daily operations.”

### **Demand Scheduling (Peak Shaving)**

“A diesel generator was installed for demand scheduling of electric power. The EMS determines from demand readings when the generator is switched to supplemental power to diminish the demand charges.”

### **Future Performance Contracting Work**

Two interviewees are formulating plans for future projects. They feel that their recent success can be carried forward to make improvements in some other areas.

## **10.7 Other Tips for Performance Contracting Stakeholders**

All parties need to be “on board” for a performance contract to be successful. This includes Managers/Superintendents/Presidents, Finance Officers, Purchasing, Facilities Directors, Public Works and Public Utility Director(s), the Council/Commissioners/Board/Trustees, and the Attorneys.

The performance contracting approval process is very long. The more officials are educated and informed about the process, the faster it can progress.

The finance charges are part of the overall project costs.

Do not have the expectation that the performance contract will produce substantial money above and beyond the project cost. The focus should be on achieving the best and most complete upgrades with the savings achieved.

Do not let politics interfere with the decision and ESCO selection process.

The fear of debt can cause some organizations to opt for shorter financing periods, which decreases the projects that can be incorporated into a performance contract.

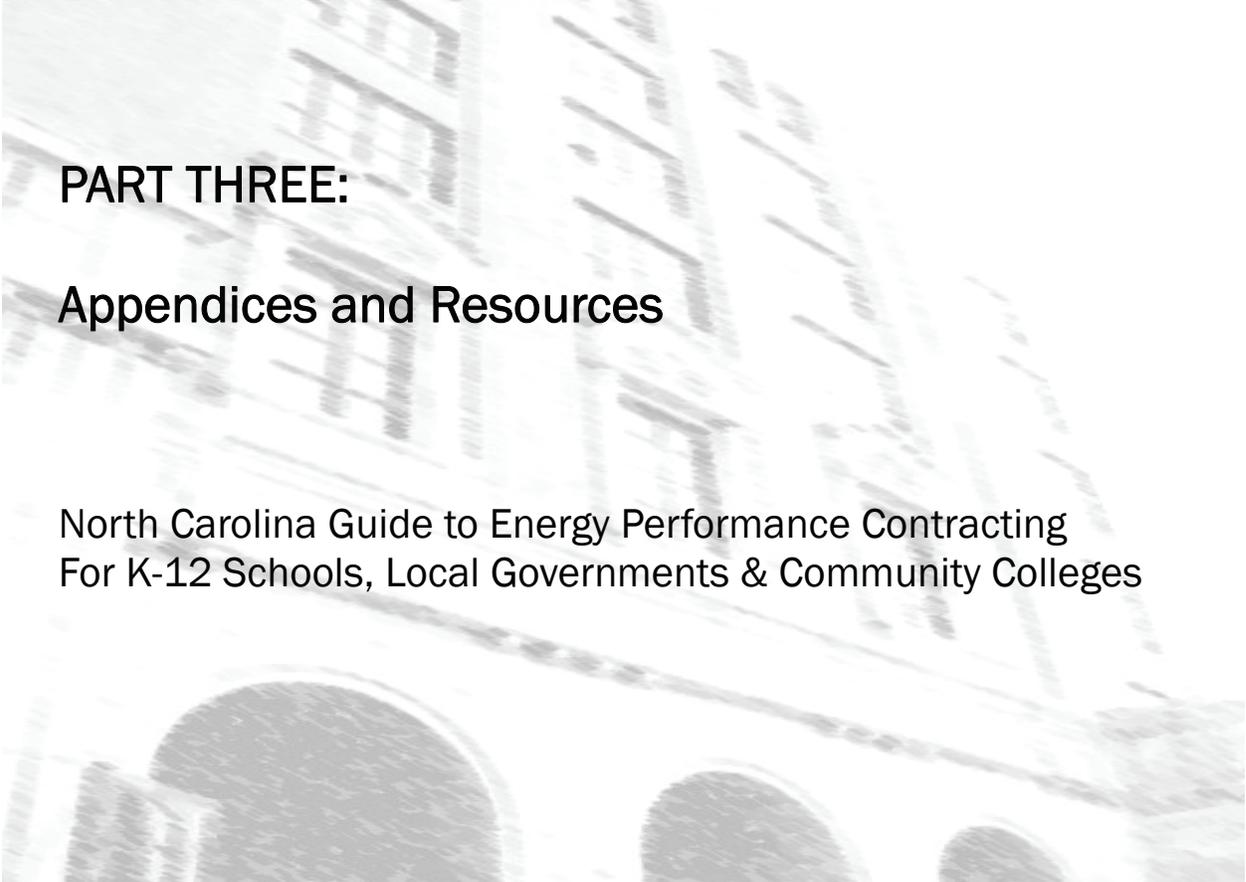
When selecting a third party engineer to review the ESCO proposal, choose one with experience with energy saving performance contracts. Relatively few consulting engineers have this direct experience.

Be realistic about “self-performing.” Carefully weigh the pros and cons, staffing expertise and time availability to manage and execute sophisticated energy savings upgrade projects. Self-performed projects do not carry the performance guarantee to facilitate financing.

Realize that the performance contracting terms are a long period, typically 12 years and now allowable up to 20 years. Organizations should have a utilities cost management process in place that will span personnel changes. All large organizations should have a utility tracking system in place that reviews both utility consumption and costs, before payment is issued. With performance contracts, there should be responsible staff also charged with the review of ESCO M&V data and guarantee saving Reconciliation Reports. The State Energy Office suggests that a 3rd party be utilized to independently verify the M&M and annual reconciliation. (The use of 3rd party to specifically review M&V is a requirement for State Agencies with performance contracts. The third party review of M&V should be paid out of saving, not paid by the ESCO or owner.

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**PART THREE:**

**Appendices and Resources**

North Carolina Guide to Energy Performance Contracting  
For K-12 Schools, Local Governments & Community Colleges

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## Resources

**NC State Energy Office**, 130-A Tillery Place, Raleigh, NC 27604, 1-800-662-7131,  
[www.energync.net](http://www.energync.net)

**Pre-Qualifications Listing for the Provision of Performance Contracting** - State Energy Office, North Carolina Department of Administration <http://www.energync.net/programs/usi.html#pc>

### **Tips for Working with Performance Contracting in NC**

**Energy Services Coalition** - ESC Model Performance Contracting Procurement and Contracting Documents <http://www.energyservicescoalition.org/resources/documents/index.htm>

**National Association of Energy Service Companies** - Search Engine by State for ESCO Providers <http://www.naesco.org/>

**Waste Reduction Partners**, 339 New Leicester Hwy., Suite 140, Asheville, NC 28806  
1-828-251-6622 [www.landofsky.org/wrp](http://www.landofsky.org/wrp)

**US. Department of Energy**, *Best Practices Manual*, <http://www.doe.gov/bridge>

**National Clearing House for Educational Facilities**, <http://www.edfacilities.org/index.cfm>

**How to Avoid an ESCO Fiasco by Dorothy Wright, College Planning and Management, November 2000.** [http://www2.peterli.com/cpm/resources/articles/archive.php?article\\_id=81](http://www2.peterli.com/cpm/resources/articles/archive.php?article_id=81)

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Public Schools of North Carolina, State Board of Education, 301 N. Wilmington Street, Raleigh, NC 27601-2825

***Public and Institutional Markets for ESCO Services: Comparing Programs, Practices and Performance***, March 2005, Berkeley National Laboratory

***Paying for Capital Investment with Resulting Savings - Evaluating Guaranteed Energy Saving Contracts in North Carolina***, Leslie S. Stewart, University of NC -Chapel Hill, Masters Program Paper March 29, 2003

NC State Energy Office, 130-A Tillery Place, Raleigh, NC 27604, 1-800-662-7131, [www.energync.net](http://www.energync.net)

Waste Reduction Partners, 339 New Leicester Hwy., Suite 140, Asheville, NC 28806  
[www.landofsky.org/wrp](http://www.landofsky.org/wrp)

SEO/WRP ***Self-Assessment Guide for Energy Savings Opportunities***, Land of Sky Regional Council, 339 New Leicester Hwy., Suite 140, Asheville, NC 28806

US. Department of Energy ***Best Practices Manual*** <http://www.doe.gov/bridge>

***Performance Contracting: Expanding Horizons***, Hansen and Weisman, Prentice Hall

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## Glossary of Terms

**Adjustments** - a part of the Measurement and Verification procedures for energy savings, the routine adjustments to bring the base year energy use to the conditions of the post-retrofit period. Some include: building utilization, occupancy, occupancy hours, weather, building schedule hour changes, utility rate changes.

**Audit** - a review and evaluation of records, operations, and performance against some standard, for example, energy consumption and cost versus best practice benchmarks at a level of detail prescribed by the audit. Investment Grade Audit means cost estimates at +/- 0% quality, thus engineering design is at 65% to 85% complete so quantities can be taken off the drawings.

**Benchmark** - a reference to a level of performance relative to other standards of performance. A gauge to measure the “best practice” standards of operation. Used to define the need basis for performance contracting.

**Baseline** - a complete set of assumed conditions of design efficiency, use, operation, and occupancy.

**Base year** - a calculation of each type of energy that would have been consumed in existing facilities if the contractor had not installed energy efficiency measures. The base year is used in the measurement of energy savings from the project. Ex. Energy Savings = Base year Energy Use – Post-Retrofit Energy Use ± Adjustments

**Cooling Degree Days (CDD)** - a quantitative indices designed to reflect the demand for energy needed to cool a home or business. These indices are derived from daily temperature observations, and the cooling requirements for a given structure at a specific location are considered to be directly proportional to the number of cooling degree days at that location.

**Energy Efficiency Measure (EEM)** - the installation of new equipment, modification of existing equipment, or revised operations or maintenance procedures to reduce energy costs by improving efficiency of use. Often called **Energy Conservation Measure (ECM)** as well.

**Energy Management System (EMS)** - In the context of this guide, an EMS refers to a computer system which is designed specifically for the automated control and monitoring of the heating, ventilation and lighting needs of a building or group of buildings such as university campuses, office buildings or factories. Most of these energy management systems also provide capabilities for the reading of electricity, gas and water meters. The data obtained from these can then be used to produce trend analysis and annual consumption forecasts

**Energy Performance Contract** - an agreement for the provision of energy services and equipment, including but not limited to building energy conservation enhancing retrofits and alternate energy technologies. A partnership in which a private company agrees to assist in

financing, designing, constructing, installing, maintaining, operating, or managing energy systems or equipment to improve the energy efficiency of, or produce energy in connection with, a facility in exchange for a portion of energy cost savings, lease payments, or specified revenues. The level of payments is made contingent upon the measured energy cost savings or energy reduction.

**Energy Services Coalition** - is a national nonprofit organization composed of a network of organizations (ESCOs) that work at state and local level to increase energy efficiency and building upgrades through energy savings performance contracting. [www.escperform.org](http://www.escperform.org)

**Energy Service Company (ESCO)** - a private company providing energy management equipment and services including feasibility studies, design, installation, maintenance, and financing.

**Governmental Lease** - a contract granting use of property during a specified period in exchange for a specified rent. When a public agency is the user of the property, the income from the lease is exempt from income taxes. These tax savings are passed on to the agency through a reduced interest rate.

**Guaranteed Energy Savings Contract (GESC)** - a performance contract under which the facility pays a lump sum price (usually in monthly installments) for the energy saving improvements. The ESCO guarantees energy cost savings will equal or exceed this payment.

**Heating Degree Days (HDD)** are a quantitative indices designed to reflect the demand for energy needed to heat a home or business. These indices are derived from daily temperature observations, and the heating requirements for a given structure at a specific location are considered to be directly proportional to the number of heating degree days at that location. More specifically, the number of heating degrees in a day is defined as the difference between a reference value of 65°F (18°C) and the average outside temperature for that day.

**IPMVP** - The International Measurement and Verification Protocol - one of four options (A, B, C, D) for measuring and verifying energy savings before and after implementation of the energy saving additions. Further information at [www.ipmvp.org](http://www.ipmvp.org)

**Investment Grade Audit** - a quality assessment of energy consumption and cost in the past, presently, and after changes are made to improve operational performance. It includes for North Carolina a +/-0 % cost estimate (contingency not allowed) based upon a quantity takeoff of equipment, installation materials, labor, subcontracts, and defined indirect cost. The basis for a performance contract.

**Measured Savings** - the contract establishes measured and non-measured savings (non-measured normally consist of Operational Savings and Stipulated Savings) that together make up the total guaranteed savings. Measured savings represent those savings that are identified by the annual energy savings report and should be realized through actual savings reflected in the utility budget and utility measuring systems or meters.

**Measurement and Verification (M&V)** — Measurement and Verification is a set of recognized protocols which allow buyers, sellers and financiers of energy projects to quantify Energy Conservation Measures (ECM) performance and savings. By using one of the different M&V options discussed in this document, readers can allocate various risks associated with achieving energy or water cost savings to either the buyer or seller of the project, facilitating financing and allowing risk reduction and better risk management.

**Model** - a mathematical representation or calculation procedure that is used to predict the energy use and demand in a building or facility. Models may be based on equations that represent the physical processes or maybe the result of statistical analysis of measured energy use data.

**Non-Measured Savings** - non-measured savings consist of stipulated energy savings (see next page for example) and operational savings. The contractual amount of guaranteed non-measured savings is assumed each year without being confirmed by the annual energy report. The purpose of non-measured savings is to account for savings that would be realized outside of the utility budget.

**Operational Savings** - these are a result of less manpower required, service requirements and consumables are decreased/eliminated, annual service contracts that can be cancelled, calibration that is no longer required, etc.

**Order of Magnitude Cost Estimate** - a factored cost estimate of  $\pm 25\%$  quality used to make a preliminary evaluation of the potential for seeking an ESCO to perform an Investment Grade Audit

**Post-Retrofit** - the energy use after the installation of the energy saving measures.

**Preliminary Energy Assessment** - the first evaluation of energy consumption for benchmarking the findings against known best practices so as to gauge the potential for performance contracting.

**Request for Proposals (RFP)** - a selection process designed to qualify an ESCO to develop an engineering study (Investment Grade Audit) that supports and confirms the ESCO's energy savings proposal.

**Request for Qualifications (RFQ)** - a selection process designed to pre-qualify ESCO's who propose to provide energy savings measures for a Local Governments and Schools. North Carolina's State Energy Office has prequalified many ESCO's through formal inquiry solicitations.

**Scope of Work** - the specific description of the work to be performed and the quality of equipment, materials, and workmanship to meet the specifications defined by the scope. Guiding documentation to the requirements, expectations, and performance of the project. A part of the Engineering Service Agreement and Performance Contract to be executed.

**Simulation Model** - an assembly of computerized algorithms that calculate energy use for specified time intervals at the systems level and at the whole building level based on engineering equations and user defined parameters

**Simple Pay-Back or Pay-Back Period** - a measure of project economic effectiveness. The pay-back period is calculated by dividing the initial project cost (including financing cost, time value of money, and Measurement and Verification cost) by the annual project savings. It is the time period required for the cost savings to equal the cost of implementing the project. The current maximum is 20 years for North Carolina, with positive cash flow expected.

**Stipulated Savings** - are non-measured, based upon the computation of energy use before the contract and after the replacements, such as lighting.  $(\text{Watts before} - \text{Watts after}) \times \text{quantities} \times \text{annual use hours} \times \text{cents/kwh} \div 1000 \text{watts/kwh} = \$ \text{ annual savings}$ .

## Appendix A: Example Request for Proposal Documents

Example RFP Template  
Other Examples

EXAMPLE REQUEST FOR PROPOSALS (RFP)  
for Energy Performance Contracting Services

for

*Local Government Unit (LGU), K-12 Schools,  
and Community Colleges*

*<Date Issued>*

**RFP**

**ATTACHMENTS**

- Attachment A:** General Contract Terms and Conditions
- Attachment B:** Insurance and Licensing Agreements
- Attachment C:** ESCO Response
- Attachment D:** Evaluation Criteria
- Attachment E:** Technical Facility Profile

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## **Local Government Unit, or K-12 School, or Community College (*termed the Owner, insert name*) of North Carolina**

### **Requests for Proposal for Performance Contracting Services**

#### **INTRODUCTION**

**Owner** requests your proposal for the performance of the work herein described, for a proposed Performance Contract to identify and implement capital improvements that will reduce energy use and related costs of its facilities at **Place**, North Carolina. All proposers are to be pre-certified by the State of North Carolina to prepare and submit to the Owner a Preliminary Technical Audit and Cost Proposal for a guaranteed energy savings performance contract. North Carolina General Statute 143-64.17 (or as amended) provides for statutory requirements to utilize energy savings and other utility savings for funding capital improvements. The services to be included but not limited to preliminary investigation and verification of Owners facilities, areas for energy conservation applications, with future investment grade energy audit, detail design, equipment and materials acquisition, installation, modification, maintenance of equipment, staff training, and performance measurement and verification. Your response to this Request for Proposal (RFP) will be used to evaluate your company's capability, experience, and cost in performing this work.

Proposals are due on or before **Date, Time** (E.S.T.) at **Place**. Proposals received by Owner after this time will not be considered.

One signed original and three copies of your proposal are to be submitted and addressed to:

**Owners Contact, Title  
Owners Address and Telephone Number  
E-mail address of Owners Contact**

**Owners Representative (Name)** is the sole point of contact for this RFP. Each prospective Energy Services Company (ESCO) is expected to familiarize itself with the site, the site conditions and the surrounding area through a **mandatory pre-bid meeting** that will be conducted on **Date, Time, Place** with any questions directed to Owners Representative.

#### **Proposal General Information**

- Proposals are specific to the terms and conditions attached hereto.
- Proposals must be made in the official name of the firm or individual under which business is conducted and the original must be signed in ink by a person duly authorized to legally bind the person, partnership, company or corporation submitting the proposal
- Proposals become the property of the Owner.
- Proposals will be sealed, opened by the Owner and read in public.

- All confidential materials shall be clearly marked as such.
- The proposal is required to have printed on the envelope or wrapping containing the proposal, the words “Guaranteed Energy Saving Proposal,” and the date and time of the bid opening as specified in the document.
- If the proposal fails to conform to the essential requirements of the RFP, the Owner will have final and complete decision as to whether the variance is significant enough to consider the RFP non-responsive and thereby rejected. The Owner reserves the right to reject any and/or all proposals.
- All legal interpretations shall be based upon the North Carolina General Statutes and the rules and regulations of the Local Government/Owner.

## OVERVIEW

Owner seeks to maximize energy cost savings and other utility savings and related costs in order to pay for facility modifications through technology upgrades and performance enhancing services.

### Project Goals

Services and capital improvements will be financed through an energy performance contract which has the following goals:

- incurs no initial capital costs
- achieves significant long-term cost savings through reduced energy use and related operating cost savings
- achieves an annual guarantee for cost savings for each year with no carryover for future years
- Upgrades old and inefficient systems
- Bring building mechanical system in compliance with or xx% above current energy code
- maintains consistent and reasonable levels of occupant comfort according to standard values given
- maintains consistent levels of building functionality and compatibility with existing equipment and controls
- Improve utilization of technology to achieve optimum performance and savings
- Enhance personnel development and training to manage new equipments and systems
- Review opportunities for renewable energy applications or demonstrations
- captures additional benefits that may directly result from energy related services and capital improvements, such as environmental protection, hazardous materials disposal or recycling, improved occupant comfort, reduced maintenance needs, improved indoor air quality, additional building improvements, etc.
- Minimize financial and technical risk from the Owner

The RFP and contracting process has four phases:

- RFP Phase: Through this RFP, an ESCO will be selected based on written proposals and a final reference check.

- Audit and Project Development Phase: A Technical Energy Audit and Project Development Agreement will be developed with the selected ESCO to define the detailed project scope, cost and financial terms.
- Construction/Implementation/Financing Phase: Upon satisfactory results of the Technical Energy Audit, an Energy Performance Contract will be developed to implement the negotiated and recommended projects.
- Guarantee/Monitoring Phase: Upon completion of construction, the ESCO will offer a variety of services, associated with a savings guarantee, such as staff training and follow-up monitoring, to ensure savings are met.

## SCOPE OF WORK

**Owners** proposed energy conservation measures include the following.

### Proposed Energy Conservation Measures

[Specific Energy Conservation Measures (ECM) and their site application as developed by the Owner's Project Definition can be listed in table here]

### ESCO Services

ESCO must have the demonstrated capability in engineering and management to provide a broad range of services. Services may include, but are not limited, to the following:

#### Audit and Project Development Phase

- technical audit to evaluate costs and savings of a variety of energy saving and utility-savings measures
- project development plan including financial analysis

#### Construction/Implementation/Financing Phase

- design services
- equipment procurement and purchasing
- construction management
- hazardous waste disposal or recycling
- financing capability or ability to help find financing.

#### Guarantee/Monitoring Phase

- staff training for routine maintenance and operation of systems
- performance and cost guarantee of savings
- monitoring and verification for measurement and reporting of the performance and savings
- analysis and application for Energy Star label equipment, materials, and components
- monitoring and verification reporting of energy savings

### **Buildings and Facilities**

Facilities identified for this work are listed in **Attachment E: Technical Facility Profile**. Owner reserves the right to reduce or expand the scope of work once an ESCO is selected. **Note:** Standards of building design for school facilities should be followed such as: North Carolina Department of Public Instruction (DPI) - Engineering Checklist for Public Schools Facilities – Electrical, HVAC, Plumbing, and Structural May, 200X or the latest issue thereof. Local Government standards and design criteria guidelines and requirements are applicable as identified.

## **ADMINISTRATIVE INFORMATION**

### **RFP Phase**

**Site Visit.** A site meeting and tour of the facilities will be held prior to the proposal due date. Knowledgeable representatives will be available to answer questions about operation and maintenance practices, problems, concerns and future plans. Fill-out the **Site Visit Registration Form** in this RFP to register for the site visit.

The site visit is mandatory for all ESCOs who will submit a proposal. ESCO's understanding of requirements and the technical approach will be evaluated in the proposal. All ESCOs will tour the facility at the same time so each ESCO hears all questions and answers.

**Review of Written Proposals.** Proposals must be prepared as described in **Attachment C: ESCO Response**. An evaluation team will review and score written proposals based on the evaluation criteria identified in **Attachment D: Evaluation Criteria**.

**Final Selection.** Final reference checks will be conducted with the apparent awardee (top-ranked ESCO) prior to making the final selection. An award will be made to the selected ESCO within 60 days of the response due date.

### **Audit and Project Development Phase**

**Technical Audit and Project Development Contract.** A Technical Audit and Project Development Agreement will be negotiated. (also see **Attachment A: Special Contract Terms and Conditions**).

### **Construction/Implementation/Financing Phase**

**Energy Performance Contract.** Following successful completion of the Technical Audit and Project Development, an Energy Performance Contract will be negotiated to implement the project. (also see **Attachment A: Special Contract Terms and Conditions**).

<b>FAX TO:</b>  <b>ATTENTION:</b>
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**SITE VISIT REGISTRATION**

for ESCOs Responding to RFP for

***Energy Performance Contract***

**Owner** invites you to attend a tour of facilities prior to responding to the RFP for Energy Performance Contracting Services. This site visit is mandatory. The ESCO’s technical approach will be evaluated in the proposal that is derived from preliminary assessment of the facilities and the Owners discussions.

**DATE:** *Date of tour*  
**TIME:** *Start time of tour to End time of tour*  
**LOCATION:** *Building and Room Number*

All ESCOs will tour the facilities at the same time so that all respondents will hear the same questions, comments and answers. **NO FOLLOW-UP TOURS OR ALTERNATIVE DATES FOR TOURS WILL BE ALLOWED UNLESS OFFERED TO ALL RESPONDENTS.**

<p>_____ <i>Yes, I plan to attend the site visit.</i></p> <p><i>Today’s Date:</i> _____</p> <p><i>Name:</i> _____</p> <p><i>Company Name:</i> _____</p> <p><i>Mailing Address:</i> _____</p> <p>_____</p> <p><i>Phone:</i> _____ <i>Fax:</i> _____</p> <p><i>E-mail Address:</i> _____</p>
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## ATTACHMENT A: GENERAL CONTRACT TERMS AND CONDITIONS

Following are the special contract terms and conditions that will be an integral part of the subsequent contracts and are highlighted here to emphasize their importance. The contracts are included as templates only and may not yet incorporate all of the below requirements.

### ENERGY AUDIT PHASE

**Payment for Audit.** If an energy performance contract is not developed after the audit has been accepted, Owner agrees to pay the cost of the audit as stated in the submitted proposal or as negotiated in the subsequent Technical Audit and Project Development Agreement.

**Cost Estimates.** The technical audit must include estimates of savings for each measure. Also, the cost estimate for each measure must include all costs including design, engineering, installation, and commissioning. A plan for Measuring and Verifying the savings will be required with the Technical Audit.

Any cost savings related to maintenance and operation of the facilities will be rigorously reviewed and, if agreed to, will be limited to those that can be thoroughly documented and approved.

**Annual Savings Estimates:** The utility and operational and maintenance cost savings for all measures must be estimated for each year during the contract period.

### CONSTRUCTION/IMPLEMENTATION PHASE

**Equipment Compatibility or Standardization.** All equipment installed that is comparable to similar equipment at the facilities, shall offer compatibility with existing systems, and/or be of the same manufacturer for standardization of equipment, unless accepted by Owner.

### COMMISSIONING/GUARANTEE/MONITORING PHASE

**Contract Term.** The maximum contract term, per NC Statute is 20 years.

**Annual Appropriations.** Payment is subject to annual appropriations.

**Annual Savings Exceed Annual Costs.** Actual savings for each year during the contract period shall exceed annual contract payments. Annual project costs include debt service, maintenance services, monitoring services, and other services as required.

**Annual Guaranteed Cost Savings.** A written guarantee will be provided such that the sum of utility cost savings and operation and maintenance cost savings for each year will equal or exceed the amount of the all associated annual payments. ESCO shall administer the monitoring services from an office within North Carolina and shall have a Professional Engineer, registered in NC, on their local staff.

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## **ATTACHMENT B: Insurance and Licensing**

All ESCOs shall have proper insurance, shall be licensed as a General Contractor in North Carolina, and have a Registered Professional Engineer in NC on their local staff. The bidder and sub-contractors will maintain Workers Compensation Insurance as required by the laws of the State of North Carolina. Commercial General Liability for bodily injury, personal injury and property damage must be in the amount of not less than \$1,000,000 per occurrence. The Owner shall be named as an additional insured on said policy. Policy shall carry an AAA rating in the Best Insurance Guide. The proposer will be required to confirm and hold the certificate of insurance in the amount stated for one year after the acceptance of the contract and all times during the term of the contract.

The ESCO is responsible for all local permits, licensing, taxes and any state statutory requirements in the process of executing the contract.

## **ATTACHMENT C: ESCO RESPONSE**

### **GENERAL INFORMATION**

Responses must be submitted in the format outlined in this section. Each response will be reviewed to determine if it is complete prior to actual evaluation. The Owner reserves the right to eliminate from further consideration any response which is deemed to be substantially or materially incomplete or non-responsive to the requests for information contained in this section. Begin each SECTION and SUBSECTION described here on a separate page. Number the pages in each section consecutively. Each page shall have the name of the respondent indicated clearly at the top of each page.

**TABLE OF CONTENTS** – Sections and pages numbers outlined

**EXECUTIVE SUMMARY** – Respondents shall include an abstract on the information presented in the proposal and the contractor's unique qualifications and services. Response must include a statement of guarantees and other actions taken to minimize Owners risks related to this project.

### **ESCO PROFILE & APPROACH TO PROJECT**

- *Answer all questions or state "N/A" if not applicable.*
- *Please number and re-state each subheading or question, followed by your response. This improves clarity and makes it much easier to evaluate your proposal.*
- *Number all pages.*

#### **I. Qualifications and Capability**

##### **A. General Firm Information**

1. Type of Firm (corporation, partnership, sole proprietorship, joint venture)
2. Year Firm Established. Number of years has your firm been in business under its present business name

3. Related Services. Indicate other technologies and services provided by your firm.
4. Company Size. Provide total revenue or latest fiscal. Provide tax identification number.
5. Participating Office. State office, including address and telephone information, that will be primarily responsible to Owner.

## **B. Experience of Firm**

1. Number and Value of Contracts. Indicate the number of energy savings performance contracts actually implemented by your firm for the past 5 years. Indicated the associated dollar value. Include breakout of NC project.
2. Full-Time Personnel. Indicate the number of full-time personnel employed by your firm in North Carolina.
3. Certifications. Is your firm qualifications certified by the NC State Energy Office?

## **C. Scope of Services**

1. Services. Indicate the services performed directly by employees of your firm.
2. Expertise. Indicate the professional certifications held by employees in your participating office.
3. Provision of Insurance. Generally describe your capability to secure insurance policies.
4. Response time. Provide the technical response time for Services.

## **D. Financial Soundness**

1. Financial Statement. Attach one copy of your firm's most recent financial statement or annual report for each of the last two years.
2. Statement of Financial Conditions. Attach one copy of the most recent annual Statements of Financial Conditions, including balance sheet, income statement and statement of cash flows, dated within the past twelve (12) months. Provide the name, address, and the telephone number of firm(s) that prepared the Financial Statements:
3. Guarantee Surety. The successful ESCO will be required to provide a Letter of Credit for the savings guarantee. State your willingness and ability to provide this.

## **II. Experience and Expertise**

### **A. Project History.**

Identify three references projects and contacts for Performance Contract projects in North Carolina.

Include the following information on each project (*no preferred format*):

***Project Identification.*** Name of project owner, type of project, location (city, state).

***Project Dates.*** Actual construction start and end dates.

***Project Size.*** Number of buildings, total square footage, total contract amount and the total project capital cost.

***List of Improvements.*** Type of retrofits and operational improvements related to energy, water and other cost savings.

**Projected Annual Savings.** State the projected annual energy, water and O&M savings (Therms, kWh, kW, Gallons, etc.).

**Guaranteed Savings.** State the amount of the guarantee. Also describe how the guarantee functioned and if your firm was required to pay funds to meet the guarantee.

**Actual Annual Savings.** State the actual annual energy, water and O&M savings (Therms, kWh, kW, Gallons).

**Contract Terms.** Type of contract (shared-savings, lease purchase, guaranteed savings), contract term, and financing arrangement.

**Source of Funds.** Source of funds used for the project. If applicable, describe your firm's role in securing funds. (Corporate Guarantee, Irrevocable Letter of Credit, Surety Bond, Qualified Provider)

**Technical Design Personnel.** Include name(s) of primary technical design personnel that will be assigned to this project with their education, similar work experience. (See Attachment)

**Comments.** Comment on any special features, services, conditions, etc.

**References.** Names and contact information of owner(s)' representatives who can serve as references.

## **B. Personnel Information.**

1. Qualifications and Experience. Describe the number and capability of staff that will be working on the project, who will conduct technical analysis, engineering design, construction management, construction, training and post-contract monitoring. Team Member Qualifications are listed by individual in Appendix A
2. Areas of Expertise. List all areas of expertise related to potential energy, utility, and water improvements in facilities. Also describe the professional and skilled trades that your firm customarily performs with employees.
3. Technical Qualifications. Point out your firm's technical qualifications, awards, performance contracting achievements.
4. Subcontractors. Describe the nature of work generally conducted by subcontractors. List any subcontractors that you intend to use for this project.

## **III. Technical Approach**

### **A. Technical Audit**

1. Technical Site Analysis. Describe your general approach to auditing a facility. What is involved? How is Owner involved? Methodical approach? Level of expertise involved? Information and resources needed from Owner?

### **B. Design/Construction**

1. Engineering Design. Describe your firm's approach to the technical design of this project.
2. Standards of Comfort. Describe standards of comfort and functionality that are generally used for light levels, space temperatures, ventilation rates, etc. in the intended facilities.
3. MBE It is a policy of the Owner to provide minority and women-based business opportunity to participate in all aspects of the Owners procurement. The successful bidder shall make good faith efforts to encourage participation by minority and

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women-owned businesses.

### **C. Engineering Analysis**

1. Baseline Calculation Methodology. Describe in detail the methodology your firm normally uses to compute baseline of utility, energy, and water use as well as performance.
2. Adjustment to Baseline Methodology. Describe the method(s) used to adjust the baseline due to such factors as weather and facility use changes. Describe factors that would necessitate adjustment. Refer to **Attachment E: Technical Facility Profile** and address issues regarding buildings projected to have substantial changes in use.
3. Savings Calculations. List procedures, formulas and methodologies including special metering or equipment, which your firm will use to calculate utility, energy, water and O&M savings.
4. Dollar Savings Calculations. Describe the procedure to assign dollar values to the savings. Include energy savings as well as maintenance or material savings.
5. Cost Savings Guarantee Calculations. Describe your firm's procedures and schedule for measuring financial performance of projects. Describe how the guarantee provisions work in the event that project results vary from projections. Also describe how excess savings can be documented.

## **IV. Performance Contracting Approach**

### **A. Approach**

1. Differentiation of Your Firm. Describe particular characteristics of how your firm approaches performance contracting.
2. Management. Briefly describe your firm's approach to overall business management and customer satisfaction.

### **B. Other Services**

1. Training Provisions. Describe your firm's capabilities in providing technical training for facility personnel and experience on past projects.
2. Performance Guarantee. Describe your firm's approach to the performance guarantee.
3. Monitoring and Verification. Describe the methodology proposed for ongoing monitoring and savings verification.
4. Project Financing. Describe your firm's preferred approach to providing or arranging financing for the proposed project. Describe the mechanics of the financing arrangement, including equipment ownership, responsibilities/liabilities of each party, security interest required and any special terms and conditions that may be associated with the financing this project. Please comment on how you would work with Owner to utilize tax-exempt financing if appropriate, or other methods to keep financing costs to a minimum.
5. Energy Star Label. Describe your willingness and experience/capability to provide services and prepare an application to achieve the Energy Star Label on retrofitted buildings.
6. Emissions Reductions Reporting. Describe your willingness and experience/capability to calculate and report emissions reductions.

**C. Construction Issues**

1. Environmental Liability. State your firm's position with respect to the acceptance of liability for any hazardous materials encountered during the course of the project.
2. Equipment Ownership and Service Responsibility. Describe the status of equipment ownership and service responsibility at contract expiration.
3. Warranties. State the nature and term of equipment warranties.
- 4.

**D. Contracts**

Include a Sample *Technical Audit and Project Development Agreement* and a sample *Energy Savings Performance Contract*.

**V. Site-Specific Approach****A. Project Scope**

1. Potential Projects. Based on your preliminary assessment of the information provided, describe any facility improvement measures at the facilities that your firm would consider implementing as a part of this project. Address utilities, energy, water, and operation and maintenance opportunities. Each measure should show results for the entire building(s) system. Extrapolation is acceptable at this stage of the project.
2. Also describe any special features, renewable technologies, or advanced technologies that might be applicable. Describe any special features or services associated with your proposed improvements that would add value to Owner. Describe your approach to achieve compatibility and/or standardization of equipment in the facilities to be addressed.

**B. Relevant Experience to Apply to This Site**

1. Experience in K-12 Schools, Community Colleges, and LGU's. Identify projects (if any) your firm has completed in for these customers. Reference projects in the "Experience and Expertise" section if needed.
2. Provide a representative list of existing customers of your firm in this region of the state.

**C. Project Management**

1. Management Approach. Briefly describe your firm's approach to managing this project.
2. Qualifications and Experience of Staff Assigned to this Project. Identify the individual who will have primary responsibility for each task and phase of the project. List name, title, intended role and responsibilities for the duration of the contract, educational background, past relevant experience, number of years of relevant experience, list of projects individual was associated with during the last five (5) years including type of project and project cost.
3. Subcontractors. Describe the nature of work that will likely be conducted by

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subcontractors. Describe your willingness to use local subcontractors or subcontractors specified by Owner. What is the binding agreement between subcontracts and general contractor?

#### **D. Technical and Construction Issues**

1. Construction Management. Describe how your firm would work with current building management and maintenance personnel in order to coordinate construction and avoid conflicts with the building's operation and use. Describe your flexibility and/or any limitations regarding possible Owner activities such as integration of other identified capital or technology needs.
2. Project Schedule. Propose a preliminary project schedule.
3. Standards of Comfort. Describe standards of comfort (winter and summer with setback temperatures for seasons) and functionality that you would propose for light levels, space temperatures, ventilation rates, etc. in the intended facilities.

### **VI. Cost and Pricing**

#### **A. Cost of Audit**

1. State the total fixed cost of the technical audit.
2. State the cost per square foot of the audit.

This cost will be evaluated on the basis of reasonableness, so an unrealistically high or low cost will be devalued in the evaluation process. The audit cost will be the reimbursable cost if no performance contract is negotiated after completion of the Technical Audit.

**B. Other Costs.** Describe other costs such as maintenance and monitoring agreements and describe how they may be applied. Also point out if these are annual costs and if they are required each year of the contract.

### **ATTACHMENT D: EVALUATION CRITERIA**

The criteria listed below will be used to evaluate written proposals. The scoring weight is listed for each criteria.

These criteria will be applied and interpreted solely at the discretion of Owner. Proposals should include all necessary information that is pertinent to these evaluation criteria. Additional information required for proper assessment of proposals may be requested from the ESCO at the discretion of Owner.

The Evaluation Team recognizes it is premature to place a major emphasis on projected financial benefits prior to the completion of the Technical Audit, because the Audit will define the potential scope and cost benefit. Therefore, the most emphasis will be on qualifications and less emphasis will be placed on the cost information.

The criteria are not ranked in order of importance. The sub-criteria are of approximate equal weight.

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**1. QUALIFICATIONS (Scoring Weight: 30 %)**

- a. **General Firm Information.**
- b. **Experience of Firm.** General experience in energy-related and performance contracting services. Primary businesses and services provided as primary business.
- c. **Scope of Services.** Comprehensiveness of management, maintenance and monitoring services offered.
- d. **Financial Soundness.** Financial soundness and stability of the ESCO. Completeness and strength (financial viability) of most recent annual financial statements.

**2. EXPERIENCE AND EXPERTISE (Scoring weight: 25%)**

- a. **Project History.** Quality of past projects completed with respect to scope and documented savings.
- b. **Personnel Information.** Qualifications and relevant experience of the staff in engineering, project management and other areas of importance.

**3. TECHNICAL APPROACH to the PROCESS (Scoring Weight: 15%)**

- a. **Audit.** Overall scoping approach, data retrieval, how results are defined for performance basis.
- b. **Design/Construction.** Overall approach, plan, schedule, subcontracts, cost basis, time to complete.
- c. **Engineering Analysis.** Reasonableness of methodologies to determine the baseline and savings.

**4. SITE SPECIFIC APPROACH (Scoring Weight: 30%)**

- a. **Project Scope for This Project.** Understanding of existing building conditions, hvac systems and operation, and maintenance . Responsive to in developing and adapting strategies, equipment, and maintenance practices in response to changes in utility rates, technology, and building conditions in order to enhance project performance. Comprehensiveness and clarity of the technical approach to this project based on improvements likely to be included. Relevance and benefits of proposed retrofits for these facilities.
- b. **Project Management for This Project.** Management approach and relevant qualifications of key personnel assigned to the project.
- c. **Technical and Construction Issues.** Construction management, scheduling, operation and maintenance approach, approach to compatibility/openness/standardization of equipment, standards of comfort and provision of insurance.

**ATTACHMENT E: TECHNICAL FACILITY PROFILE**

All ESCO's shall use the data in Appendix A as the sole source of information in response to this RFP. During the Technical Audit, the data will be verified by both parties.

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**Building List**

All Facilities will be included and information on these facilities will be provided to those Certified ESCOs attending the Pre-bid meeting.

**Utility, Energy, and Water Cost & Consumption Information**

- The breakdown of the approximate utility expenses including water, sewer, electricity, fuel oil, propane, and natural gas for each facility is included in Appendix A. This information will be provided to those Certified ESCOs attending the Pre-bid meeting.

**Past Energy Improvement Efforts** (These are to be listed by the Owner)

- Water and sewer conservation – low flow applications in sanitary and hygiene fixtures
- Lighting improvements - occupancy sensors, T-12 to T-5, T-8
- Equipment upgrades for higher efficiency ratings – chillers, boilers, heat pumps
- Alternative energy supply changes - electricity to gas or oil heating
- Energy Management System – computer control, setback temperature control, occupancy sensor setbacks, adaptive control, weekend and holiday scheduling
- Building envelop changes – roof upgrades, insulation, windows, shading, doors, corridors
- Demand side management scheduling
- Standby generation
- Exit signs, food and drink vending machines for delamping, energy savings etc.
- Food preparation – kitchen hoods, rinse water booster temperatures, cold lockers,

**Future Plans**

- Five year plans for new construction or major changes in campus or LG building(s)

**Appendix A Facility Information**

This information will be provided to Certified ESCOs who attend the Pre-bid meeting.

- Two years history of electricity consumption and demand for each building involved in the project
- Two years natural gas use in therms, fuel oil in gallons, LP in gallons for each building
- Major hvac equipment – age, size, distribution and control approach for building temperature regulation
- Lighting quantities, type, fixture rates for each building
- Building square footages, construction features, insulation barriers
- Water and sewer use, supply resource, unit cost, and metered city or well water
- Special Conditions – operating schedules, occupancy levels, current setback temperatures – winter summer, ventilation rates for fresh air make-up
- As requested by the ESCO for a reasonable time of acquiring same

**Project Team Member Qualifications**

Briefly describe the relevant experience, qualifications, and educational background, for each individual team member assigned to this project using the format provided below. Do not include individual resumes in lieu of this information.

<p><b>Name of Project Team Member:</b></p>	
<p>Current Job Title: Job responsibilities: Number of years with ESCO: Primary Office Location:</p>	
<p>Employment History Company Name: Primary job responsibilities: Number of years with firm:</p>	
<p>Educational Background List all academic degrees, certifications, professional affiliations, relevant publications and technical training.</p>	
<p>List all energy performance contracting projects this individual has been involved with during past 5 years. Include project location, type of facilities, year implemented and dollar value of installed project costs.</p>	
<p>Describe the specific role and responsibilities this individual had for each listed project.</p>	
<p>Provide a detailed description of the role and responsibilities this individual will have for the duration of this project.</p>	
<p>Describe any other relevant technical experience.</p>	
<p>Indicate the total years of relevant energy-related experience for this individual.</p>	

## Appendix B: NC Energy Services Agreement Documents

**NC Energy Services Agreement (ESA) - Guaranteed Energy Performance Contracting**

**NC Construction Provisions - Attachment to NC ESA**

**Exhibits - I, II, and III Certificates of Completion and Acceptance**

**State of NC Investment Grade Energy Audit Agreement**

**State of NC Department of Treasure - Application of Approval of GESC**

**North Carolina Energy Services Agreement (ESA)**  
Guaranteed Energy Performance Contracting Program

**STATE OF NORTH CAROLINA  
ENERGY SERVICES AGREEMENT  
GUARANTEED ENERGY PERFORMANCE CONTRACTING PROGRAM**

This Energy Services Agreement, referred to herein as "Agreement" or "ESA", entered into \_\_\_\_\_, 200\_\_, by and between the \_\_\_\_\_, referred to herein as the "**ISSUER**" and \_\_\_\_\_ with offices located at \_\_\_\_\_, referred to hereafter as the "**ESCO**" for the purpose of providing energy conservation measures (ECMs), consisting of services, systems and facilities designed to reduce energy consumption and costs in buildings owned and operated by the **ISSUER** which are described herein as the "Premises."

**RECITALS**

WHEREAS, the **ESCO** was selected by the **ISSUER** as a qualified provider to provide services, herein after called the "Work" which will result in decreased energy consumption and costs, and which services may include but are not limited to the following: energy use analyses, the design, delivery and installation of ECMs which consist of systems and devices for the Premises, guarantee of energy savings, the training of designated **ISSUER's** employees, and the maintenance and monitoring of the ECMs as provided herein and measurement, verification and reporting of energy savings, financing of the project if herein provided and;

WHEREAS, under separate agreement with the **ISSUER**, the **ESCO** has performed a comprehensive Energy Audit and has prepared an Energy Audit Report which has been approved and accepted by the **ISSUER** as evidenced by the Energy Audit Report and **ISSUER's** Acceptance Certification as set forth in Exhibit II (i); and

WHEREAS, the **ESCO** has agreed to guarantee a level of monetary savings to be achieved as the result of the professional and other services to be provided under this Agreement; and

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, and intending to be legally bound hereby, the **ISSUER** and the **ESCO** hereby covenant and agree as follows:

**ARTICLE 1: THE ESCO'S RIGHTS AND RESPONSIBILITIES**

1.1 Independent Company Status. The **ESCO** is an independent Contractor and in providing its services under this Agreement, shall not represent otherwise.

1.2 Legal Responsibility. The **ESCO** shall perform the Work and all other services required by this Agreement. The **ESCO** shall assure that all of the Work is accomplished in a workmanlike manner and that all services which require the exercise of professional skills or judgment shall be accomplished by professionals qualified and competent in the applicable discipline and licensed as required in the State of North Carolina. All Project Documents as set forth in paragraph 3.3 and which are required to be prepared by the **ESCO** shall be in accord with all applicable codes, standards and regulations and shall be prepared by qualified personnel. Where required by North Carolina law, Project Documents shall bear the stamp or seal of architects or engineers licensed in the State of North Carolina. The **ESCO** shall remain responsible for all services performed, whether by the **ESCO** or its subcontractors or others on its behalf, throughout the term of this Agreement.

The **ESCO** shall be liable to the issuer for any failure and any expense or any expenses resulting from failure to comply with the terms of this agreement. Any review, approval, acceptance or payment for any and all of the **ESCO's** performance by the **ISSUER** shall not relieve the **ESCO** of its responsibility for the Work. This provision in no way limits the **ISSUER'S** rights and defenses against the **ESCO** either under this Agreement or otherwise in law or in equity.

1.3 Insurance. The **ESCO** shall purchase, maintain and provide evidence of insurance coverage of the types, in the amounts and for the periods specified in Schedule Q. Subsequent to the

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Commencement Date described in paragraph 5.1 hereof, the **ISSUER** shall be responsible for providing insurance coverage on the ECMs.

The **ESCO** may not commence performance of the Work or other services under this Agreement until all required insurance is obtained and evidence of it is received and approved by the **ISSUER**, but the failure of the **ISSUER** to obtain such evidence from the **ESCO** before permitting the **ESCO** to commence the Work shall not be deemed to be a waiver by the **ISSUER**, and the **ESCO** shall remain under a continuing obligation to obtain and maintain the required coverage and to supply evidence of coverage in accordance with Schedule Q.

The **ESCO's** failure to obtain or keep such insurance in force shall constitute an Event of Default under this Agreement within the meaning of Article 11, and in addition to the remedies provided therein, the **ISSUER** reserves the right to stop the Work until evidence of the requisite coverage is provided. The **ESCO** shall require all subcontractors performing any portion of the Work to carry the insurance required in Schedule Q and the **ESCO** may, at its option, provide the coverage for any or all subcontractors, and, if so, the evidence of insurance submitted shall so indicate. The **ESCO** and each of its subcontractors agree that each insurer shall waive any rights of subrogation against the **ISSUER**.

The **ESCO** shall timely renew the required insurance as necessary to keep such coverage in effect for the periods specified in Schedule Q and shall supply the **ISSUER**, not less than sixty (60) days prior to any expiration or renewal dates for such insurance policies, with evidence of all required insurance including updated replacement Certificates of Insurance and amendatory riders or endorsements that clearly evidence the continuation of all coverage in the same manner, limits of protection, and scope of coverage, as was provided by the Certificates of Insurance, amendatory riders or endorsements originally supplied. The **ISSUER** shall be a named additional insured in any policy of insurance required by this agreement.

The **ESCO** expressly understands and agrees that any insurance protection furnished by the **ESCO** hereunder shall in no way limit its responsibility to indemnify and save harmless the **ISSUER** under the provisions of this Agreement.

1.4 Performance and Labor and Material Payment Bonds. The **ESCO** shall, prior to commencing the Work, deliver to the **ISSUER** a Performance Bond and a Labor and Material Payment Bond in conformity with N.C. General Statute Chapter 44-A, Article 3.

1.5 Cooperation with the ISSUER's Consultants. The **ISSUER** reserves the right to designate authorized representatives or to retain consultants at its expense, including an Architect/Engineer, to act on its behalf with respect to administering the performance required under this Agreement throughout its term. The **ISSUER** and its representatives and consultants shall at all times have access to the Work. The **ESCO** agrees to cooperate with any representative of, or consultant retained by, the **ISSUER**.

1.6 Joint and Several Liability. Each and every obligation or undertaking herein to be fulfilled or performed by the **ESCO** shall be the joint and several obligation of the **ESCO** and any authorized successors or assigns.

1.7 Miscellaneous. Other rights and responsibilities of the **ESCO** are set forth throughout this Agreement and in the Project Documents described in paragraph 3.3 hereof and are included under other titles, articles, sections and headings for convenience. It is the responsibility of the **ESCO** to familiarize itself with all provisions of this Agreement and the Project Documents in order to understand fully the entirety of its rights and responsibilities hereunder.

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**ARTICLE 2: THE ISSUER'S RIGHTS AND RESPONSIBILITIES****2.1 Project Administration.**

2.1.1 Issuer's Responsibility. The **ESCO** shall be primarily responsible for the administration and monitoring of the performance of the Work. The **ISSUER's** personnel designated in paragraph 10.9 shall be the principal point of contact between the **ISSUER** and the **ESCO** relative to the performance required under this Agreement.

2.2 Responsibilities of the Issuer **ISSUER.** Tasks to be performed by the **ISSUER** in the administration and coordination of this Agreement include, but are not limited to the following areas:

- (i) Review and approve required insurance coverage and bonds to ensure compliance with the terms of this Agreement;
- (ii) Review and approve the ECM Submittals required under 2.3 hereof within \_\_\_\_ ( ) business days after receipt by the **ISSUER** of such ECM submittals to ensure:
  - (a) That the design and installation of the ECMs appears to be consistent with the ECMs contemplated in the **ESCO's investment grade audit.**
- (iii) Attend project meetings.

2.3. ECMs Submittals. ECMs submittals are in sufficient detail to allow the **ISSUER** to complete the reviews described in paragraph 2.2, and shall include:

- i) Date and revision dates.
- ii) Project Number and Title.
- iii) Stamp or seal of the preparer of the ECM submittal, and the Company's certification that it has reviewed and approved the submittal as to its accuracy and compliance with the provisions of this Agreement.
- iv) Drawings, plans, specifications, shop drawings, product data, and where appropriate or reasonably required, product samples.

At the request of the **ISSUER**, and where appropriate or required, the **ESCO** shall provide on-site "mock-ups" and demonstrations of the ECMs at the Premises which shall also be construed as ECM submittals under the provisions of this paragraph. The **ISSUER** may also request additional materials, documents, or information.

After receipt of the submittals, the **ISSUER** shall, within a reasonable time, complete its review of the submittals and provide written approval of the submittal or if the submittal has been disapproved, written explanation as to the reason therefore. Upon disapproval the **ESCO** shall submit a revised submittal within ten (10) business days to the **ISSUER** for review and approval. The **ESCO** shall be responsible for any delays caused by rejection of incomplete or inadequate submittals. The **ESCO** may not commence any of the Work which requires the submittals without written approval by the **ISSUER**.

The **ESCO's** responsibility for errors, omissions, deviation from existing conditions, or deviation from the Project Documents in submittals is not relieved by the **ISSUER'S** review and approval thereof.

**2.4 Drawings, Specifications and Surveys Provided by the Issuer**

- (a) The **ISSUER** shall provide the **ESCO** with such surveys as it may have describing the

physical characteristics, legal limitations and utility locations for the site of the Work. All such information furnished by the **ISSUER** is furnished without any representation as to the accuracy of such information.

(b) The **ISSUER** will make available for review by the **ESCO** such working drawings, specifications, surveys and "As-Built" drawings concerning the Premises which are available and which relate to work being performed by other Companies at the Premises. All such information furnished by the **ISSUER** is furnished without any representation as to the accuracy of such information;

(c) All drawings, specifications, surveys and copies thereof furnished by the **ISSUER** are and shall remain **ISSUER**'s property.

2.5 Ownership, Dissemination and Publication of Documents. The drawings, specifications, reports, renderings, models, electronic media and all such other documents to be prepared and furnished by the **ESCO** pursuant to this Agreement, shall be and remain the property of the **ISSUER**.

2.6 Interpretation of Agreement. The **ISSUER** shall have the authority to make a binding determination of questions of fact that arise in relation to the interpretation of this Agreement and the **ESCO**'s performance hereunder. The **ESCO** shall proceed diligently with the performance of this Agreement and in accordance with the **ISSUER**'S decision. Continuation of the Work shall not be construed as a waiver of any other rights accruing to the **ESCO**.

### ARTICLE 3: THE ENERGY CONSERVATION PROJECT (THE "PROJECT")

3.1 Project Defined. The **ESCO** shall design, procure, fabricate and install the energy conservation measures specified in Schedule A and provide training, commissioning, maintenance and monitoring and all other services specified in this Agreement and the Project Documents set forth in paragraph 3.3 at the Premises described in Schedule D.

3.2 Energy Audit Report. The Energy Audit Report prepared by the **ESCO** and accepted by the **ISSUER** contains specific recommendations and documentation concerning the energy conservation measures, systems and services to be provided at the Premises and is incorporated herein by reference. The Schedules and Project Documents referenced in paragraph 3.3 shall govern in the event of any inconsistencies between the Energy Audit Report and the provisions of this Agreement.

3.3 Project Documents. The Project Documents include:

- § The executed ESA
- § The Energy Audit Report
- § Accepted Submittals specified in paragraph 2.3.
- § Certificates of Insurance
- § Executed Performance Bond and Labor and Material Payment Bond

The Project Documents also include the following Schedules which are incorporated herein and made a part of this ESA when approved by the **ISSUER** and **ESCO**:

Schedule A	Equipment to be Installed
Schedule B	Energy Savings Guaranty
Schedule C	Compensation to ESCO
Schedule D	Premises
Schedule E	Calculation of Baseline/Benchmarks
Schedule F	[FINANCING AGREEMENT] (Optional)
Schedule G	Company Maintenance Responsibilities

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Schedule H	Customer Maintenance Responsibilities
Schedule I	Operating Parameters for ECMs/Standards of Comfort & Service
Schedule J	Company Training Responsibilities
Schedule K	Project Installation Schedule
Schedule L	Current and Known Future Capital Projects at the Premises
Schedule M	Pre-Installation Equipment Inventory
Schedule N	Methods of Savings Measurement and Verification
Schedule O	Systems Startup and Commissioning of ECMs
Schedule Q	Insurance and Bonds
Schedule R	Warranties (including Equipment)
Schedule S	Proposed Final Project Cost & Proposed Final Project Cash Flow Analysis
Attachment A	Sample Construction Process language

3.3.1 Review of Project Documents; Notification to the Issuer. The **ESCO** shall carefully review all Project Documents, including all addenda, whether prepared by the **ESCO**, its subcontractors or furnished by the **ISSUER** for errors, inconsistencies or omissions relative to the performance of the Work. Upon completion of its review of the Project Documents, and prior to commencing the Work, the **ESCO** shall provide written notice to the **ISSUER** that (i) there are no inconsistencies in the Project Documents pertaining to the performance of the Work at the Premises or conflicts with existing conditions on the Project.; or, (ii) specifying the nature of any conflicts or inconsistencies noted from the **ESCO's** review of the Project Documents. All Work to be performed under this Agreement by the **ESCO** or its subcontractors which the Project Documents indicate is in conflict with the Project Documents or the existing conditions shall be brought to the attention of the **ISSUER** before the Work is commenced.

3.3.2 Correction of Conflicting Work. In the event that the **ESCO** fails to properly prepare or review Project Documents or commences the Work without providing notice to the **ISSUER** of any inconsistency or conflict it discovers in the Project Documents, the **ESCO** shall, upon written direction from the **ISSUER**, remove all such Work or portion thereof so conflicting, and rebuild it as directed at no additional cost to the **ISSUER**.

#### **ARTICLE 4: IMPLEMENTATION OF THE ENERGY CONSERVATION PROJECT ("THE WORK")**

4.1 Description of the Work. The design, procurement, fabrication, installation and commissioning of the ECMs specified in Schedule A and any training services described in Schedule J, which are integral to the operation of the ECMs, are referred to in this Agreement as the "Work." The maintenance, monitoring, and savings measurement and verification services detailed in Schedules G and O and the any Post-Acceptance Training services detailed in Schedule J, performance of which does not commence until after the Commencement Date of this agreement but not part of the Work.

4.2 Performance of the Work. Construction and equipment installation shall proceed in accordance with the provisions contained in this agreement and the project installation schedule approved by **ISSUER** and attached hereto as Schedule K.

4.3 Systems Startup/Commissioning. The **ESCO** shall conduct a thorough and systematic performance test of each element and total system of the installed ECMs in accordance with Schedule O. The **ESCO** shall provide advance written notice of at least ten (10) business days to the **ISSUER** of the scheduled test (s). The **ISSUER** shall have the right to designate representatives to be present at any or all such tests including representatives of the manufacturers of the ECMs. The **ESCO** shall demonstrate that all ECMs installed comply with the requirements of the Project Documents. The **ESCO** shall test all components and systems of the installed ECMs. The **ESCO**, or its subcontractor(s), shall correct or adjust all deficiencies in operation of the ECMs.

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**ARTICLE 5: EXECUTION AND COMMENCEMENT DATES AND TERM; INTERIM PERIOD; FISCAL FUNDING**

5.1 Execution and Commencement Dates. Contract execution is contingent upon receipt of the required State of North Carolina approvals and financing. The Commencement Date shall be the first day of the month after the month in which all schedules are in final form and accepted by the **ISSUER** and **ESCO** shall have delivered a written Notice to the **ISSUER** that (i) it has completed the installation and commissioning and commenced operating all of the energy conservation measures specified in Schedule A; (ii) no Event of Default under Article 11 exists; and, (iii) the Energy Savings Guaranty set forth in Schedule B is in full force and effect; and the **ISSUER** has inspected and accepted said installation and operation as evidenced by the Certification of Acceptance as set forth in Exhibit II (ii). Compensation payments due to **ESCO** for project monitoring, savings measurement and verification, reporting and maintenance services under this Contract as set forth in Schedule C shall begin no earlier than \_\_\_\_ days from the Commencement Date as defined herein.

5.2. Term of Contract; Interim Period. Subject to the following sentence, the term of this Agreement shall be 12 years measured beginning with the Commencement Date. Nonetheless, the Agreement shall be effective and binding upon the parties immediately upon its execution. The period from contract execution until the Commencement Date shall be known as the "Interim Period". Energy savings achieved during the interim period will be fully credited to the **ISSUER**. (OPTIONAL)

5.3. Nonappropriation of Funds. In the event insufficient **ISSUER** or other funds are appropriated and budgeted in any fiscal period for which payments are due **ESCO** under this Agreement, then the **ISSUER** will, not less than \_\_\_\_ days prior to end of such applicable fiscal period, in writing, notify the **ESCO** of such occurrence and this Agreement shall terminate on the last day of the fiscal period for which appropriations were made without penalty or expense to the **ISSUER** of any kind whatsoever, except as to the portions of payments herein agreed upon for which the **ISSUER** and/or other funds shall have been appropriated and budgeted or are otherwise available.

**ARTICLE 6: ANNUAL SAVINGS GUARANTY; ANNUAL RECONCILIATION; COMPENSATION TO ESCO**

6.1 Annual Energy Savings Guaranty. The **ESCO** has formulated and guaranteed the level of cost savings as provided for in Schedule B, which will be achieved each year as a result of the performance by **ESCO** of the services specified in this Agreement utilizing the Methods of Savings Measurement and Verification set forth in Schedule N.

6.2 Annual Review, Reconciliation and Reimbursement. Cost savings achieved at the Premises shall be reported, reconciled and verified pursuant to the provisions of Schedule N. If said annual review, reconciliation and verification of energy savings discloses that the **ESCO** has failed to achieve the annual guaranteed energy savings and operating cost savings set forth in Schedule B, the **ESCO** will pay the **ISSUER** or the **ISSUER'S** designee, as may be directed by the **ISSUER**, the difference between the annual amount guaranteed and the amount of actual annual cost savings achieved at the Premises. The **ESCO** shall remit such payments to the **ISSUER** not later than thirty (30) days of written demand therefore by the **ISSUER**.

6.3 ESCO Compensation for the Work. **ISSUER** will pay **ESCO** for the performance of the work the grand total Contract Sum of \$ \_\_\_\_\_. Payments to the **ESCO** for the Work shall be made by the **ISSUER** in the amounts and in accordance with Schedule C hereto. The amount specified as Compensation for the Work is inclusive of all costs and fees to be paid for the Work pursuant to this Agreement including any training services provided prior to acceptance of the project by **ISSUER** and as provided for in Schedule J.

6.4. Payments to Company. Thirty (30) calendar days shall be allowed for the **ISSUERS** inspection and approval of the goods, equipment and services for which any Application For Payment is made.

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6.5 Progress Payments Against Contract Sum. Based upon Application For Payment submitted to the **ISSUER** by **ESCO**, upon approval by **ISSUER**, **ISSUER** shall make progress payments to the **ESCO** against the account of the Contract Sum, as provided for in Schedule C and in accordance with the following:

- (a) Within \_\_\_\_\_ ( ) Calendar Days from the **ISSUER's** inspection and approval of the goods and services for which any application for payment is submitted by **ESCO**, **ISSUER** shall pay, or cause to be paid to **ESCO**, 90% of that portion of the Contract Sum. The full 10% retainage shall be retained until completion of the work.
- (b) The **ISSUER** may, upon request or at its discretion, furnish to a Subcontractor, if practicable, information regarding the percentages of completion of the amount applied for by **ESCO** and the action taken thereon by the **ESCO** on account of Work done by such Subcontractor.
- (c) No Certificate for a progress payment, nor any progress payment, nor any partial or entire use of occupancy or the project by the **ISSUER** shall constitute an acceptance of any work not in accordance with the provisions of this agreement, schedules and Project Documents.

6.6 Final Installation Payment Against Contract Sum. Within \_\_\_\_\_ ( ) days from the Commencement Date set forth in Article 5, the **ISSUER** shall pay or cause to be paid to **ESCO** the entire unpaid balance of then Contract Sum, less the amount of any sums which continue to be retained to satisfy the cost of performing any change in the work which is the subject of any claim or dispute and which has not yet been satisfactorily performed by **ESCO**.

6.2 Maintenance, Monitoring, Savings Measurement and Verification and any Post-Acceptance Training Fees. Payment to the **ESCO** for maintenance, monitoring, savings measurement, verification and reporting, and Post-Acceptance Training services performed after the Commencement Date shall be made by the **ISSUER** pursuant to and in accordance with Schedule C.

## ARTICLE 7: ACCEPTANCE

7.1 Acceptance of the Work. Acceptance of the Work shall occur when the requirements of this article are met and the **ESCO's** performance of the entire scope of the Work is complete, in accordance with the Project Documents so that the **ISSUER** can utilize all the installed ECMs for their intended use and the Energy Savings Guaranty provided by **ESCO** under paragraph 6.1 and Schedule B becomes effective and the **ISSUER** has inspected and accepted said installation and operation as evidenced by the Certification of Acceptance as set forth in Exhibit II (ii).

7.2 Required Acceptance Submittals by the Company. The **ESCO** shall submit the following documents to the **ISSUER** with its notice of Final Completion:

- (a) All Project Record Documents as described in paragraph 3.5;
- (b) The **ESCO** shall submit lien waivers, sworn statements, guarantees, full releases or other evidence reasonably satisfactory to the **ISSUER** that there are no liens, claims or stop notices pending, filed or threatened against the **ISSUER**, the **ESCO**, the Work or the ECMs whatsoever.
- (c) Certificates of compliance for all ECMs which require local government inspection;
- (d) Asbestos abatement compliance records, if applicable;

(e) Any other documentation reasonably required by the issuer.

7.3 Any retainage amounts will be paid upon acceptance by **ISSUER** of the work. .

## **ARTICLE 8: THE ENERGY CONSERVATION MEASURES**

8.1 ECM Warranties. The **ESCO** warrants that all ECMs designed, procured, fabricated and installed pursuant to this Agreement are new, in good and proper working condition and are of merchantable quality and fit for the particular purposes of enabling the **ISSUER** to reduce energy consumption and operating cost. The **ESCO** further warrants that the ECMs are protected by appropriate written warranties covering all parts and equipment performance for the periods specified in Schedule R and Exhibit III. The **ESCO** shall deliver to the **ISSUER** for inspection and approval all such written warranties and shall pursue rights and remedies against the manufacturer and each prior seller of the ECMs under the warranties in the event of equipment malfunction, improper or defective function, or defects in parts, workmanship or performance. The **ESCO** shall be responsible for managing all warranty activity during the warranty periods set forth in Schedule R and Exhibit III and shall notify the **ISSUER** whenever defects in equipment, parts or performance occur which give rise to such rights and remedies and that those rights and remedies are exercised by the **ESCO**. The cost of any damage, loss or claims by any person arising out of the use or operation of the ECMs or damage to the ECMs and their performance, including damage to other property and equipment of the **ISSUER** or the Premises, due to the **ESCO's** failure to exercise its warranty rights shall be borne solely by the **ESCO**.

All warranties shall be transferable and extend to the **ISSUER**. The warranties shall specify that only new, and not reconditioned, parts may be used and installed when repair is necessitated by malfunction. The **ESCO** additionally warrants that all workmanship, materials, and equipment used in conjunction with the ECMs will be in conformance with the Project Documents and free from defects for the period, commencing with the date of the beneficial use of each ECM to the **ISSUER** and continuing for the period set forth in Schedule R and Exhibit III.

### 8.2 Correction of Warranted Work.

(a) Commencing with the date of beneficial use of each ECM to the **ISSUER** and continuing for the warranty periods set forth in Schedule R and Exhibit III for each ECM, or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Project Documents, the **ESCO** shall correct or replace all faulty, defective or nonconforming Work, or malfunctioning portions thereof, in accordance with the timeframes set forth in 8.2(c). The **ISSUER** shall give the **ESCO** written notice as soon as practical if the issuer has reason to believe that any portion of the work is nonfunctional, or otherwise nonconforming. After receipt of written notice from the **ISSUER** to correct such fault or defect, whether it was observed before or after acceptance of the Work, the **ESCO** will correct the Work unless the **ISSUER** has given the **ESCO** a written waiver of the specific fault or defect. Notice may be given by telephone in the event of an emergency situation. The **ESCO** shall bear all costs of replacing or correcting such faulty, defective or nonconforming Work.

(b) Prior to acceptance, The **ESCO** shall, at its own expense, remove from the Premises all portions of defective and nonconforming Work which **ESCO** is obligated to replace or correct under this paragraph 8.2 unless removal has been waived in writing by the **ISSUER**. If the **ESCO** fails to correct faulty, defective or nonconforming Work as provided in this Section within twenty-four (24) hours after notice, in the case of emergency conditions, or within five (5) business days in other cases after the **ESCO's** receipt of written notice from the **ISSUER** of such faulty, defective or nonconforming Work, the **ISSUER** may correct such work at the **ESCO's** expense including costs incurred due to the removal of faulty, defective or non-conforming and removal and storage of equipment or materials left at the Premises by the **ESCO**.

(c) Nothing contained in this Section shall be construed to establish a period of limitation with

respect to any other obligation which the **ESCO** might have under the Project Documents. The establishment of the time period set forth in paragraph 8.2(a) above, relates only to the specific obligation of the **ESCO** to correct the Work and has no relationship to the time within which its obligation to comply with the Project Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the **ESCO's** liability with respect to its obligations other than to specifically correct the Work. Notwithstanding the provisions of this paragraph 8.2, the **ESCO** shall, on demand made by the **ISSUER**, at any time within the ten (10) year period following Acceptance, promptly repair or replace all defective or non-conforming work resulting from fraudulent misrepresentation, fraudulent concealment or gross negligence by the **ESCO** or its subcontractors in the performance of the Work.

8.3 Location and Access. The **ISSUER** shall provide sufficient space at the Premises for the installation and operation of the ECMs for the term of this Agreement, including access to office space with a telephone line, if necessary to allow the **ESCO** to perform required maintenance, monitoring and training services. The **ISSUER** shall provide access to the Premises for the **ESCO** and its employees or subcontractors to install, adjust, inspect, maintain and repair the ECMs in accordance with the terms of this Agreement during regular business hours, or such other reasonable hours as may be requested by the **ESCO** and acceptable to the **ISSUER**. The **ESCO's** access to correct any emergency condition shall not be unreasonably restricted by the **ISSUER**.

8.4 ESCO Maintenance and Monitoring Responsibilities for ECMs. The **ESCO** shall be responsible for providing the maintenance, monitoring, repairs, and adjustments to the ECMs as set forth in Schedule G. All replacements of and alterations or additions to the ECMs by the **ESCO** shall become part of the ECMs and shall become the property of the **ISSUER**. Any replacements of and alterations or additions made by the **ESCO** to the **ISSUER's** pre-existing equipment, or equipment acquired by the **ISSUER** during the term of this Agreement, shall become part of said equipment and be owned by the **ISSUER**. The **ESCO** shall be compensated for such maintenance and monitoring services pursuant to Schedule C hereof. In the event of the **ESCO's** failure to provide required maintenance, service, repairs and adjustments to the ECMs, as provided in Schedule G or if an Event of Default exists pursuant to Article 11, the **ISSUER** may withhold fees due to the **ESCO** for such services until such repairs or adjustments are completed or such Event of Default is cured. The **ISSUER** shall notify the **ESCO** in writing when any payments are so withheld. The withholding of fees by the **ISSUER** under this paragraph 8.4 shall not release the **ESCO** from its obligation to provide the Energy Savings Guaranty pursuant to paragraph 6.1 and Schedule B hereof.

8.5 ISSUER Operating and ECMs Maintenance Responsibilities. The **ISSUER** shall be responsible for providing the maintenance, monitoring, service, repairs and adjustments to the ECMs as set forth in Schedule H. Except as set forth in Schedule H, the **ISSUER** shall not move, modify, remove, adjust, alter or change in any material way the ECMs, or any part thereof, during the term of this Agreement, without prior written approval of the **ESCO**, except in the event of an occurrence reasonably deemed by the **ISSUER** or the **ESCO** to constitute a bona fide emergency. The **ISSUER** acknowledges that substantial and long term deviations, from the operating conditions set forth in the Schedules to this Agreement may constitute a material change in accordance with paragraph 9.3 hereof. In addition to the responsibilities set forth in Schedule H, the **ISSUER** shall use its best efforts to maintain the Premises in good repair and to protect and preserve the ECMs in good repair and condition in accordance with applicable manufacturers' recommendations which shall be provided to the **ISSUER** by the **ESCO** and to maintain the operating conditions of all non ECM mechanical systems and energy related systems located at the Premises. The **ESCO** shall notify the **ISSUER** of any improper maintenance or repair as soon as **ESCO** has notice thereof. The **ISSUER** acknowledges that improper repairs or maintenance of the ECMs not seasonably corrected after notice may constitute a Material Change in accordance with paragraph 9.3, and that the provisions of paragraph 9.5 may be applicable.

8.6 Training by the ESCO. The **ESCO** shall conduct the training program described in Schedule J hereto.

8.7 ECMs Upgrades; Alterations. The **ESCO** shall have the right, at all times during the term of this

Agreement, subject to the **ISSUER's** written approval, to modify or replace any of the ECMs or install additional ECMs and to revise any procedures for the operation of the ECMs or implement other procedures at the Premises provided that: (i) such actions by the **ESCO** do not result in modifying the standards of comfort and service set forth in Schedule I without the express written approval of the **ISSUER**; (ii) such modifications or additions to, or replacements of the ECMs, and any operational changes, or new procedures are necessary to enable the **ESCO** to achieve the energy savings guaranteed by the **ESCO** at the Premises and (iii) any costs incurred relative to such modifications, additions or replacements of the ECMs, or operational changes or new procedures shall be the responsibility of the **ESCO**. All modifications, additions or replacements of the ECMs or revisions to operating or other procedures shall be described in a supplemental Schedule(s) to be provided to the **ISSUER** for approval, which shall not be unreasonably withheld, and incorporated into this Agreement provided that any replacement ECM shall be new and have equal or better potential to reduce energy consumption at the Premises than the ECM being replaced. The **ESCO** shall continuously update all ECM software unless the **ESCO** certifies to the **ISSUER** that a specific update would lower the savings that are realized from that **ECM**. All replacements of and alterations or additions to the ECMs shall become part of the ECMs described in Schedule A and shall become the property of the **ISSUER**.

8.8 Malfunction and Emergencies. The **ISSUER** shall use its best efforts to notify the **ESCO** or its designee within forty-eight (48) hours after the **ISSUER's** actual knowledge of the occurrence of:

8.8.1 Any material malfunction in the operation of the ECMs or any related non-ECM energy-related equipment or systems;

8.8.2 Any material interruption or alteration of the energy supply to the Premises;

8.8.3 Any material alteration or modification in the ECMs or their operation; and

8.8.4 Any material alteration, modification or change in the Premises or the use of the Premises.

8.9 Responsibility for Certain ECM Malfunctions. The **ESCO** agrees to compensate the **ISSUER** for business expenses, damages to real or personal property, lost profits, lost revenues, resulting from ECM malfunction due solely or in part to nonperformance or error by the **ESCO**.

8.10 Ownership of Certain Proprietary Property Rights. The **ISSUER** shall acquire no ownership interest in any software, formulas, patterns devices, secret inventions or processes, or copyright, patents, and other intellectual and proprietary rights or similar items of property which are or may become used in connection with the ECMs. The **ESCO** shall grant, or otherwise lawfully furnish, to the **ISSUER** a perpetual, irrevocable royalty-free license for any and all software or other intellectual property rights necessary for the **ISSUER** to continue to operate, maintain, and repair the ECMs in a manner that will maximize energy consumption reductions beyond the expiration of this Agreement for at least twice the useful life of each ECM..

## **ARTICLE 9: THE PREMISES**

9.1 Description of the Premises. The Premises in which the ECMs are to be installed and services are to be provided by the **ESCO** under this Agreement are described in Schedule D.

9.2 Ownership of Existing Property. The Premises and all equipment and materials existing at the Premises at the time of execution of this Agreement shall remain the property of the **ISSUER**.

9.3 Material Change Defined. A Material Change shall include any change in or to the Premises, not covered by Schedule B, whether structural, operational or otherwise in nature which reasonably could be expected, in the judgment of the **ISSUER** to increase or decrease annual costs of energy usage. Actions by the **ISSUER**

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which may result in a Material Change which is subject to this paragraph 9.3, include, but are not limited to the following:

- 9.3.1 Changes in the manner of use of the Premises by the **ISSUER**; or
- 9.3.2 Changes in the hours of operation for the Premises or for any equipment or energy using systems operating at the Premises; or
- 9.3.3 Permanent changes in the comfort and service conditions set forth in Schedule I; or
- 9.3.4 Changes in the occupancy of the Premises; or
- 9.3.5 Changes in the structure of the Premises; or
- 9.3.6 Changes in the types and quantities of equipment used at the Premises; or
- 9.3.7 Modification, renovation or construction at the Premises; or
- 9.3.8 The **ISSUER's** failure to provide maintenance of the ECMs pursuant to paragraph 8.5 hereof; or
- 9.3.9 Any significant damage to the Premises or the ECMs caused by fire, flood, or other casualty or any condemnation affecting a significant portion of the Premises; or
- 9.3.10 The permanent or temporary closing of a building at the Premises; or

9.4 Reporting of Material Changes; Notice by Customer. The **ISSUER** shall use its best efforts to deliver to the **ESCO** a written notice describing all actual or proposed Material Changes in the Premises or in the operations of the Premises no less than thirty (30) days before any actual or proposed Material Change is implemented. Where Material Changes result because of a bona fide emergency or other situation which precludes advance notification, the **ISSUER** shall give notice as soon as reasonably possible after the event constituting the Material Change occurred or was discovered by the **ISSUER** to have occurred.

9.5 Reported Material Changes; Adjustments to Baseline/Benchmarks. Any changes in energy usage which occur as the result of a Reported Material Change shall be timely reviewed by the **ESCO** and the **ISSUER** to determine what, if any, adjustments to the Baseline/Benchmarks set forth in Schedule E are necessitated by such Material Change(s). The **ESCO** and the **ISSUER** agree that any adjustments made to the Baseline/Benchmarks shall be in accordance with generally accepted engineering principles.

9.6 Unreported Material Changes. Upon and after the Commencement Date and in the absence of any reported Material Change(s) in the Premises or in their operations, if energy savings deviates more than 10 % percent during any month from projected energy savings for that month, after adjustment for normal deviations from climatic conditions, then the **ESCO** shall timely review such changes to ascertain the cause of such deviation. The **ESCO** shall report its findings to the **ISSUER** in a timely manner. The **ESCO** and the **ISSUER** may determine what, if any, adjustments to the Baseline/Benchmarks set forth in Schedule E are necessary.

## **ARTICLE 10: GENERAL TERMS AND CONDITIONS**

10.1 Assignment. The **ESCO** acknowledges that the **ISSUER** is induced to enter into this Agreement by, among other things, the professional qualifications of the **ESCO**. The **ESCO** agrees that neither this Agreement nor any right or obligation hereunder may be assigned in whole or in part, without the prior written approval of the **ISSUER**

10.2 Duty to Indemnify. The **ESCO** shall defend, indemnify, keep and save harmless the **ISSUER** and its agents and employees against all suits, claims, damages, losses and expenses, including attorney's fees, caused by, growing out of, or incidental to, the wrongful or negligent performance of the Work under this Agreement by the **ESCO** or its subcontractors to the full extent as allowed by the laws of the State of North Carolina. The **ISSUER** shall promptly notify the **ESCO** of any suits or claims. The **ESCO**, at its sole expense, to settle or defend and control the defense of any suit based upon such claim or claims. In the event of any such injury (including death) or loss or damage, or claims therefore, the **ESCO** shall give prompt notice to the **ISSUER**. The **ESCO's** subcontractors shall include a substantially identical indemnity and shall include the **ISSUER** as a named indemnitee parties as to whom indemnification is due under their subcontracts.

10.2.1 Effect of Statutory Limitations. In the event of any claim against the **ISSUER** or against any of its officials or employees, in either their personal or official capacities, made by any direct or indirect employee or agent of the **ESCO** or of any subcontractor, the **ESCO's** indemnification obligation shall not be affected by any limitation on the amount or type of damages, compensation or benefits payable to said employee or agent contained in any other type of employee benefit act.

10.2.2 Intellectual Property Claims Indemnification. The **ESCO** shall protect, defend, indemnify and hold the **ISSUER** harmless against and from any and all claims, judgments, amounts paid in settlement, costs and expenses, including attorneys' fees relating to alleged patent, trademark or copyright infringement, misappropriation of proprietary rights, or trade secrets or similar claims, resulting from actions taken by the **ESCO** in connection with this Agreement.

10.3 No Waiver. The failure of **ISSUER** or the **ESCO** to insist upon the strict performance of the terms and conditions hereof shall not constitute or be construed as a waiver or relinquishment of either Party's right to thereafter enforce the same in accordance with this Agreement in the event of a continuing or subsequent default on the part of the **ISSUER** or the **ESCO**.

10.4 Severability. It is agreed that the illegality or invalidity of any term or clause of this Agreement, shall not affect the validity of the remainder of this Agreement and this Agreement shall remain in full force and effect as if such illegal or invalid term or clause were not contained herein, provided that the remaining portions of the agreement shall be construed to effectuate as nearly as possible apparent intent of the term or clause

10.5 Complete Agreement; Amendments. This Agreement, when executed, together with all Project Documents and Schedules referred to in paragraph 3.3 and any other exhibits or attachments referred to in this Agreement, shall constitute the entire agreement between the Parties and this Agreement may not be amended or modified except by a written agreement signed by the Parties hereto.

10.6 Further Documents. The Parties shall execute and deliver all documents and perform all further acts that may be reasonably necessary to effectuate the provisions of this Agreement.

10.7 Applicable Law. This Agreement and the construction and enforceability thereof shall be interpreted under the laws and solely in the courts of the State of North Carolina.

10.8 Notices. All notices required under this Agreement shall be in writing and shall be deemed properly served if delivered in person to the individual to whom it is addressed or, three (3) days after deposit in the United States mail, if sent postage prepaid by United States registered or certified mail, return receipt requested, Shown as: \_\_\_\_\_

10.10 Termination for Convenience by the Issuer. Subsequent to the Acceptance Date, this Agreement may be terminated at the sole discretion of the **ISSUER** in accordance with the provisions of this paragraph 10.10.

The **ISSUER** shall provide written notice 30 days in advance **ESCO**. The termination shall

become effective on the last day of said guaranty period. The **ESCO's** obligation to report, reconcile and verify the energy savings achieved during the guaranty period proceeding termination remains in full force and effect, as does its obligation, pursuant to paragraph 6.2 of this Agreement, to remit payment to the **ISSUER** in the event that the energy savings have not been achieved at the level guaranteed by the **ESCO**. If the end of the notice period does not coincide with the end of the annual guaranty period all calculations of payments shall be prorated.

The termination of this Agreement by the **ISSUER** shall release the **ESCO** from its obligation to provide maintenance, monitoring and training services after the effective date of termination, as well as its obligation to provide the Energy Savings Guaranty after the termination date. Termination by the **ISSUER** shall release it from the obligation to make any payments to the **ESCO** for maintenance, monitoring and training services after the termination date, provided, however, that the **ISSUER** is responsible for payment for maintenance, monitoring and training services performed in accordance with the terms of this Agreement prior to the termination date.

#### **ARTICLE 11: EVENTS OF DEFAULT OR BREACH; TERMINATION; RIGHT TO OFFSET**

11.1 If the **ISSUER** considers it to be in its best interests, it may elect not to declare default or to terminate this Agreement in the event of breach or default by the **ESCO**. The parties acknowledge that this provision is solely for the benefit of the **ISSUER** and that if the **ISSUER** permits the **ESCO** to continue to perform the Work and other services despite a breach or default, the **ESCO** shall in no way be relieved of any of its responsibilities, duties or obligations under this Agreement nor shall the **ISSUER** waive or relinquish any of its rights.

11.2 The remedies under the terms of this Agreement are not intended to be exclusive of any other remedies provided, but each and every such remedy shall be cumulative and shall be in addition to any other remedies, existing now or hereafter, at law, in equity or by statute. No delay or omission to exercise any right or power accruing upon any breach or default shall impair any such right or power nor shall it be construed as a waiver of any breach or default or acquiescence therein, and every such right and power may be exercised from time to time and as often as may be deemed expedient.

11.3 Right to Offset. Any additional costs incurred by the **ISSUER** in the event of termination of this Agreement for breach or default or otherwise resulting from the **ESCO's** performance or non-performance under this Agreement, and any credits due to or overpayments made by the **ISSUER** may be offset by use of any payment due for the Work or other services completed before the termination for a breach or default or before the exercise of any remedies. If such amount offset is insufficient to cover such excess costs, the **ESCO** shall be liable for and promptly remit to the **ISSUER** the difference upon written demand thereof. This right to offset is in addition to and not a limitation of any other remedies available to the **ISSUER**.

#### **ARTICLE 12: REPRESENTATIONS AND WARRANTIES**

12.1 Each party warrants and represents to the other that:

(a) It has all requisite power, authority, licenses, permits, and franchises, corporate or otherwise, to execute and deliver this Agreement and perform its obligations hereunder;

(b) Its execution, delivery, and performance of this Agreement have been duly authorized, executed and delivered for it by the signatories so authorized, and it constitutes its legal, valid, and binding obligation;

(c) It has not received any notice, nor to the best of its knowledge is there pending or threatened any notice, of any violation of any applicable laws, ordinances, regulations, rules, decrees, awards, permits or orders which would materially and adversely affect its ability to perform hereunder.

12.2 Representations and Warranties by the Issuer. The **ISSUER** hereby warrants and represents to the **ESCO** that:

(a) It will provide throughout the term of this Agreement (or cause its energy suppliers to furnish) to the **ESCO**, upon its request, copies of all available records and data concerning energy usage for the Premises including but not limited to the following data: utility records and rate schedules; occupancy information; descriptions of any major changes in the structure or use of the buildings or heating, cooling, lighting or other systems or energy requirements; descriptions of all energy consuming or saving equipment used in the Premises; descriptions of energy management procedures presently utilized; and any prior energy analyses of the Premises. The **ISSUER** shall make knowledgeable employees and agents available for consultations and discussions with the **ESCO** concerning energy usage of the Premises.

(b) The **ISSUER** has not entered into any leases, contracts or agreements with other persons or entities regarding the leasing of energy efficiency equipment or the provision of energy management services for the Premises or with regard to maintaining any of the energy related equipment located in the Premises.

12.3 Representations and Warranties by the ESCO. The **ESCO** represents and warrants the following to the **ISSUER** (in addition to the other representations and warranties contained in the Project Documents), as an inducement to the **ISSUER** to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement and the Final Completion of the Work.

- (a) That it is financially solvent, able to pay its debts as they mature and possessed of sufficient working capital to complete the Work and perform its obligations under this Agreement;
- (b) That it and each of its employees, agents and subcontractors of any tier are competent to perform its obligations under this Agreement;
- (c) That it is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder and has sufficient experience and competence to do so;
- (d) That it is authorized to do business in the State of North Carolina and is properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over it and over the Work and the Premises;
- (e) That its execution of this Agreement and its performance thereof is within its duly authorized powers; and
- (f) That its duly authorized representative has visited the Premises, familiarized itself with the local conditions under which the Work is to be performed and correlated its observations with the requirements of the Project Documents.

### **ARTICLE 13: APPLICABLE LAWS**

13.1 ESCO's Failure to Comply with Statutory and Regulatory Requirements. The **ESCO**, and its subcontractors shall comply with all laws, rules regulations and codes applicable to performance of the Work and the maintenance, monitoring and training services to be performed pursuant to Article 6. Except where expressly required by applicable laws and regulation, the **ISSUER** shall not be responsible for monitoring the **ESCO's** compliance with any laws or regulations. When the **ESCO** observes conflicting regulatory requirements, it shall notify the **ISSUER** in writing immediately. If the **ESCO** performs any of the Work or other services required by

this Agreement knowing or having reason to know that the Work or such services are contrary to such laws, rules and regulations, the **ESCO** shall pay all costs arising there from.

**ARTICLE 14: RIGHT TO AUDIT.**

The **ISSUER** shall have the right to have access to and audit all of the **ESCO's** records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to this Agreement. In addition, the **ISSUER** or its authorized representative shall have access to the **ESCO's** facilities and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article.

IN WITNESS WHEREOF, the Parties have executed this Energy Services Agreement by their authorized signatures as of this \_\_\_ day of \_\_\_\_\_, 200\_\_.

**THE ISSUER :**

**THE ESCO:**

BY: \_\_\_\_\_

BY: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

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**ATTACHMENT A****CONSTRUCTION PROCESS PROVISIONS**

A.1.1 Description of the Work. The design, procurement, fabrication, installation and commissioning of the ECMs specified in Schedule A and the Training services described in Schedule J, which are integral to the operation of the ECMs, are referred to in this Agreement as the "Work." The maintenance, monitoring, and savings measurement and verification services detailed in Schedules G and N and the any Post-Acceptance Training services detailed in Schedule J, performance of which does not commence until after the Commencement Date, are not part of the Work.

A.1.2 Supervision of the Work. The **ESCO** shall supervise and direct the performance of the Work using its best skill, attention and judgment. The **ESCO** shall be solely responsible for site safety and for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under this Agreement.

A.1.3 Rejection of the Work by the ISSUER. The **ISSUER** may reject any sequences or procedures proposed by the **ESCO** in connection with the Work which might constitute or create a hazard to the Premises, or to persons or property, or which deviate from the Project Documents or will result in schedule delays or additional costs to the **ISSUER**. This provision shall not be construed to mean that Work which is not rejected is therefore approved.

A.1.4 Responsibility for the Work. The **ESCO** shall not be relieved of its obligations to perform the Work in accordance with the Project Documents by reason of observations or inspections, tests or approvals by any person or entity except as expressly agreed to in writing by an authorized representative of the **ISSUER**.

A.1.5 Coordination of the Work. The **ESCO** shall consult with the personnel designated by the **ISSUER** in order to coordinate the Work, including installation of any ECM, and to provide appropriate training in the operation of any ECM. The **ESCO** shall not permit any act which will interfere with the performance of the **ISSUER's** business activities at the Premises without the prior written approval of the **ISSUER**. The **ESCO** shall consult with the **ISSUER** regarding the coordination of the Work with any other work being performed by other Companies at the Premises.

A.1.6 Sufficient Workforce. The **ESCO** shall furnish a competent and adequate staff as necessary for the proper administration, coordination and supervision of the Work; organize the procurement of all materials and equipment so that they will be available at the time they are needed for the Work; and ensure that an adequate force of skilled workmen are available to complete the Work in accordance with all requirements of this Agreement.

A.1.7 Project Manager. The **ESCO** shall employ a competent project manager who shall be responsible for the coordination of the Work, and who shall be authorized to commit the **ESCO** with regard to manpower, schedule, coordination and cooperation. The project manager shall not have less than two years of documented experience in responsible field supervision for projects of comparable size and complexity. The **ESCO** shall give the **ISSUER** advance written notice if it intends to remove or replace the project manager. In the event the project manager fails to perform its duties under this Agreement the **ESCO** shall provide a competent replacement.

A.1.8 Harm to Structure of the Premises. The **ESCO** shall perform the Work under this Agreement and install the ECMs in such a manner so as not to harm the structural integrity of the Premises or their operating systems, except as specifically described in the Project Documents which have been approved by the **ISSUER**. The **ESCO** shall repair and restore to its condition immediately preceding the performance of the Work,

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any area of damage caused by its performance under this Agreement which has not been so described in the Project Documents and approved by the **ISSUER**.

A.1.9 Responsibility for Damages. The **ESCO** shall be responsible for all loss or damage to the Work, the Premises, or to improvements or personal property thereon and the work of other Companies caused by the **ESCO's** performance of the Work.

A.1.11 Verification of Dimensions and Existing Conditions. The **ESCO** is responsible for becoming knowledgeable of the conditions of the Premises relating to the performance of the Work and the conditions under which the Work is to be performed, All dimensions and existing conditions have been verified by the **ESCO** during the energy audit conducted at the Premises by actual measurement and observation. All discrepancies between the requirements of the Project Documents and the existing conditions or dimensions shall be reported to the **ISSUER** as soon as they are discovered. Failure to verify and report prior to the commencement of work shall constitute the **ESCO's** acceptance of existing conditions as fit for the proper execution of the Work under this Agreement,

A.1.12 Changed Conditions. Should the **ESCO** encounter subsurface or latent physical conditions at the site which differ materially from those indicated in the Project Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Agreement, the **ESCO** shall give written notice to the **ISSUER** before any such condition is disturbed or further disturbed. No claim of the **ESCO** under this provision will be allowed unless the **ESCO** has given the required notice. The **ISSUER** will promptly investigate and, if it is determined that the conditions materially differ from those which **ESCO** should reasonably have been expected to discover or anticipate, the **ISSUER** may approve such changes in the Project Documents as are necessary. If such changed conditions cause an increase or decrease in the **ESCO's** cost or time of performance, the parties may negotiate a mutually acceptable solution.

## A.2 The Issuer's Right to Carry Out the Work

A.2.1 In the event that the **ESCO** neglects or fails to carry out the Work in accordance with this Agreement and the Project Documents, the **ISSUER** may correct such deficiencies after giving twenty (20) business days written notice to the **ESCO** and its surety. This shall be without prejudice to any other remedy the **ISSUER** may have. **ISSUER** may deduct from the payments to be made to the **ESCO** for the Work, pursuant to paragraph 6.1 hereof and of Schedule C, the amount of all costs incurred in correcting deficiencies made necessary by such neglect or failure. If such payments to be made to the **ESCO** are not sufficient to cover such amount, the **ESCO** shall be liable in such amount to the **ISSUER**.

A.2.2 Emergencies. In case of bona fide emergencies as determined by the **ISSUER** involving public health or public safety or to protect against further loss or damage to the **ISSUER's** property or to prevent or minimize serious disruption of **ISSUER** services or to insure the integrity of **ISSUER's** records, the **ISSUER** may cause such Work as is necessary to be performed without prior notice to the **ESCO** or its surety.

A.2.3 Right to Reject or Stop the Work. The **ISSUER** may reject any of the Work which does not conform to the Project Documents. If the **ESCO** fails to correct defective Work or fails to supply labor, materials or equipment in accordance with the Project Documents or to execute the Work in a workmanlike manner, the **ISSUER** may order the **ESCO** to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

A.2.4 Right to Terminate the ESCO's Performance of the Work. If the **ESCO** fails or refuses to prosecute the Work with such diligence as to allow completion of the Work substantially in accordance with the Project Installation Schedule, or commits a material breach of any other provision of this Agreement or the Project Documents, and provided that such breach continues for thirty (30) days after written notice to the **ESCO** demanding that such breach be cured or if cure cannot be effected in such thirty (30) days, **ESCO's** failure to

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propose and commence a cure acceptable to the **ISSUER** within such thirty (30) days, the **ISSUER** may terminate the **ESCO**'s right to proceed with the Work as specified herein. In no event shall the **ISSUER** have any obligation to compensate the **ESCO** for delays arising pursuant to the **ESCO**'s failure or refusal to complete the Work and damages arising in connection therewith.

In such case, the **ISSUER** will give the **ESCO** and its surety written notice of intention to terminate the **ESCO**'s right to complete the Work and the reason therefore and, unless within seven (7) business days the delay or violation shall cease or a cure acceptable to the **ISSUER** for correcting the situation is proposed, the **ISSUER** may issue a termination notice to such effect for the **ESCO** and its surety. Thereupon, the surety will be given the opportunity to complete the Work in accordance with the Project Documents. Such completion may include, but not be limited to, the use of a completing **ESCO**, satisfactory to the **ISSUER**, pursuant to a written takeover agreement, the payment of a sum of money required to allow the **ISSUER** to complete the Work, or other arrangements agreed to by the **ISSUER** and the surety.

If within seven (7) business days following the issuance of the termination notice, the surety fails to notify the **ISSUER** that it intends to exercise its right to undertake the Work, the **ISSUER** may take over the Work, exclude the **ESCO** from the Premises and take possession of all of the **ESCO**'s tools, appliances, equipment and machinery at the Premises and use the same to the full extent they could have been used by the **ESCO** (without liability for trespass or conversion), incorporate into the Work all materials and equipment stored at the Premises and finish the Work as the **ISSUER** may deem expedient.

In the event the **ISSUER** terminates the **ESCO**'s right to complete the Work under this paragraph A.2(d), the **ESCO** shall not be entitled to receive further payments until a Certificate of Acceptance has been delivered pursuant to paragraph 5.3 hereof specifying the amount, if any, payable to the **ESCO** pursuant. If the **ISSUER**'s expenses in completing the Work exceed the **ESCO**'s Compensation for the Work, the **ESCO** shall pay the difference to the **ISSUER** upon demand therefore.

Provided further, that a Certificate of Acceptance directing payment to the **ESCO** for any portion of the Work be issued only if the notification required pursuant to Article 7 has been delivered by the **ESCO**. If the **ESCO** is not able to deliver such notification, the **ISSUER** shall not execute and deliver a Certificate of Acceptance and may terminate this Agreement in accordance with the provisions of Article 11 and may pursue any and all remedies provided therein.

A.3 Permits and Approvals. The **ESCO** shall obtain and pay for all necessary permits and approvals for the design, installation and operation of the ECMs. The **ISSUER** shall exercise its best efforts to assist the **ESCO**. The ECMs and the operation of the ECMs by the **ESCO** shall at all times conform to all applicable codes.

The **ESCO** shall furnish copies of each permit or license which is required to perform the Work to the **ISSUER** before the **ESCO** commences the portion of the Work requiring such permit or license.

If the **ESCO** observes that any of the Project Documents are at variance with permits or licenses granted, or laws, ordinances, codes, rules or regulations of governmental authorities, the **ESCO** shall promptly notify the **ISSUER** in writing and shall make any necessary changes, subject to the approval thereof by the **ISSUER** in accordance with the terms of this Agreement. If the **ESCO** performs any Work which is contrary to any permit or license granted, or any applicable laws, ordinances, codes, rules or regulations, the **ESCO** shall make changes as required to comply therewith and shall bear all costs arising therefrom.

A.4 Royalties and Patents The **ESCO** shall pay all royalties and license fees due to third parties in connection with the Work.

A.5 Project Schedule. The **ESCO** shall consult with the **ISSUER** concerning the development of a detailed Project Installation Schedule and, recognizing that time is of the essence of this Agreement, shall perform

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the Work in such manner and with such sufficient equipment and forces to complete the Work in accordance with Schedule K.

A.6 Subcontracts and Subcontractors. The **ESCO** shall have the right to have any of the services to be provided by the **ESCO** under this Agreement accomplished by subcontractors pursuant to written subcontracts between the **ESCO** and such subcontractors.

The **ESCO** shall, upon entering into any agreement with a subcontractor, furnish the **ISSUER** with an executed copy thereof. All subcontracts shall be subject to, consistent with, and in conformance with all applicable State and federal laws, rules, regulations and codes, and shall contain provisions that require all services to be performed in strict accordance with the requirements of this Agreement and shall provide that the subcontractors are subject to all the terms of this Agreement. Provided that such agreements do not prejudice any of the **ISSUER**'s rights under this Agreement, such agreements may contain different provisions than are provided herein with respect to extensions of schedule, time of completion, payments, guarantees and matters not affecting the quality of the Work.

The **ESCO** shall not grant or allow to exist any lien or security interest for labor or material or otherwise on the ECMs, the Premises or any other property owned by the **ISSUER**.

A.7 Interim Savings; and Utility Rebates.

- (a) Interim Savings. Interim Savings as defined in Article 4 belong to the **ISSUER**
- (b) Utility Rebates. Utility rebates secured or obtained due to the installation of the ECMs at the Premises belong to the **ISSUER**.

A.8 Hazardous Materials.

(a) The **ESCO** acknowledges that compliance with the National Emission Standard for Hazardous Air Pollutants as promulgated by the United States Environmental Protection Agency pursuant to Section 112 of the Clean Air Act is a continuing obligation requiring any and all demolition or renovation activity completed by or on behalf of the **ISSUER**, to conform to the standards for such activity as set forth in 40 CFR 61.145. The **ESCO** shall observe all notification procedures established by the United States and North Carolina Environmental Protection agencies in the execution of the Work under this Agreement.

(b) In the event that the **ESCO** or any of its subcontractors encounters any hazardous substance or material covered by the Act in the performance of the Work, the existence of which has not previously been disclosed to the **ESCO** by the **ISSUER**. The **ESCO** shall, before disturbing such materials, immediately notify the **ISSUER** of the location thereof. The **ESCO** shall advise the **ISSUER** as to whether it is feasible to re-route the Work as to avoid such materials. If such re-routing is reasonably feasible, the **ESCO** shall do so without additional compensation hereunder.

If such re-routing or avoidance is not reasonably feasible in the judgment of the **ISSUER** and such material must be disturbed or relocated to complete the Work, and if (i) removal or containment of the hazardous substance or material cannot be effectuated without a cessation of the Work; or (ii) applicable law, rule or regulation requires cessation of the Work, or (iii) continuation of the Work exposes any person to a substantial risk, the **ESCO** may suspend its performance of the Work without penalty until the substance or material is removed or contained by the **ISSUER**.

(c) The following options are available to the **ISSUER** in the event that undisclosed hazardous materials are encountered in the performance of the Work by the **ESCO** or its subcontractors:

- (i) If feasible, the **ISSUER** may direct the **ESCO** to modify the scope of the Work to eliminate portions of the Work affected by the undisclosed hazardous substance or material.
- (ii) The **ISSUER** may terminate this Agreement upon payment to the **ESCO** of the amount due for services or materials and equipment supplied by the **ESCO** prior to suspension of the Work, including damages caused by the delay as prescribed by the Act. Provided, however, that the **ISSUER** shall not be liable for damages or other costs or expenses incurred by the **ESCO** if the existence of the hazardous substance or material was disclosed to the **ESCO** by the **ISSUER** or, if as a result of the **ESCO's** review of the Project Documents, including any Asbestos Management Plan developed for the Premises and its investigation of the Premises, the **ESCO** should reasonably have been expected to discover or anticipate the existence of the hazardous substance or material and the **ESCO** could have developed the scope of the Work in such a manner as to avoid said hazardous substance or material.

(d) The **ESCO** and the **ISSUER** agree that any work relating to (i) asbestos, material containing asbestos, or the existence, use, detection, removal, containment or treatment thereof, or (ii) pollutants, hazardous wastes, hazardous materials, contaminants (collectively "Hazardous Materials") or the storage, handling, use, transportation, treatment or the disposal, discharge, leakage, detection removal or containment thereof which is not specifically provided for in this Agreement, is the responsibility of the **ISSUER**. Notwithstanding the foregoing, the **ESCO** will utilize due diligence in order to determine whether the Work will require the removal of PCB ballasts and whether asbestos is likely to be encountered in the performance of the Work. **ESCO** shall provide the **ISSUER** with an estimate for the cost of removal and disposition of PCB ballasts and asbestos it expects may be encountered in the performance of the Work and shall allow for an amount equal to the estimated cost of removal and disposal in the Guaranteed Savings detailed in Schedule B.

If an Asbestos Management Plan has been developed for the Premises, the **ISSUER** shall make said plan available for the **ESCO's** review and inspection throughout the Interim Period.

#### A.9 Material and Workmanship.

(a) The **ESCO** shall ensure that all materials used by the **ESCO** and its subcontractors and workmanship performed or caused to be performed by the **ESCO** in connection with the Work meets or exceeds all applicable codes and is performed in a workmanlike manner. Where conflicts exist between applicable codes, the more stringent provision shall apply;

(b) The **ESCO** shall ensure that all equipment and materials to be used in the Work for which Underwriters Laboratory labeling services is provided shall be UL labeled;

(c) The **ESCO** shall obey the following list of codes where applicable:

- 1) Applicable construction and electrical code;
- 2) Underwriters Laboratories (UL);
- 3) Insulated Power Cable Engineers Association (IPCEA);
- 4) National Electrical Code (NEC);
- 5) National Electrical Manufacturers Association (NEMA);
- 6) American National Standards Institute (ANSI); and
- 7) Institute of Electrical and Electronic Engineers (IEEE).

d.) The **ESCO** shall be responsible, at it's sole cost, for the disposal of all equipment and materials removed or replaced through its performance of the Work in accordance with

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all applicable laws and regulations regarding such disposal, except those items designated by the **ISSUER** as non-disposable. The cost of disposal to be performed by the **ESCO** is included in the **ESCO** compensation for the Work set forth in Schedule C.

A.10 Warranty of Materials. The **ESCO** warrants that all materials and equipment installed as part of the Work will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the Project Documents. All work not so conforming to these requirements may be considered defective. If required by the **ISSUER** the **ESCO** shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of paragraph 8.1 below. This warranty of materials, equipment and workmanship is separate from, independent of, and in addition to any other guarantees in this Agreement or any other warranties in this Agreement or required by the Project Documents.

A.11 Responsibility for Materials. The **ISSUER** does not assume any responsibility for the availability of any controlled materials or other materials and equipment required for the Work. However, **ISSUER** reserves the right to review and approve the quality and standards for all materials. The **ESCO** shall be responsible for the contracted quality and standards of all materials, components or completed Work furnished by the **ESCO** pursuant to the terms hereof. Materials, components or completed Work which fails to comply with this Agreement and the Project Documents may be rejected by the **ISSUER** and shall be replaced by the **ESCO** at no cost to the **ISSUER**. The **ESCO** shall remove from the Premises within a reasonable time any materials or components so rejected at the entire expense of the **ESCO**, after written notice has been delivered by the **ISSUER** to the **ESCO** that such materials or components have been rejected. \

A.12 Inspections.

(a) All materials and equipment and each part of the detail of the Work shall be subject at all times to inspection by the **ISSUER** or its designated representatives or consultants, and the **ESCO** will be held strictly to the true intent of this Agreement and the Project Documents with regard to quality of materials, workmanship, and the diligent execution of the Work.

(b) The **ESCO** shall allow the **ISSUER** access to all parts of the Work, and shall furnish such information and assistance as is required to make a complete and detailed inspection or inspections.

(c) All material and equipment installed as part of the Work must be inspected, tested and approved in accordance with the Project Documents and this Agreement prior to its use.

(d) The **ESCO** shall, if the **ISSUER** requests, remove or uncover such portions of the finished Work as the **ISSUER** may direct. After the examination, the **ESCO** shall restore said portion of the Work to the standard required by this Agreement and the Project Documents. If the Work thus exposed or examined proves acceptable, the expenses of uncovering or removing and the replacing of the parts removed shall be the responsibility of the **ISSUER** and such uncovering, removing and replacing shall be deemed to be an excusable event of delay, if a delay in completion is caused thereby. If the Work so exposed or examined has not been performed in accordance with the Project Documents, the expense of uncovering, removing and replacing any portion of the Work necessary to comply with this Agreement and the Project Documents shall be borne by the **ESCO** and requests for a time extension or claims for delay will not be granted.

(e) Upon written request by the **ESCO**, the **ISSUER** shall schedule preliminary inspections of the Work as soon as practicable after notification by the **ESCO** that major ECMs or systems are substantially installed. If such Work is not acceptable to the **ISSUER** at the time of such preliminary inspections, the **ESCO** will be provided written notice as to the particular defects to be remedied before the Work will be accepted. The date such Work is approved by the **ISSUER**, shall be the date of beneficial use to the **ISSUER** for the applicable ECM, relative to the commencement of the warranty period set forth in Schedule R for such ECM.

Notwithstanding the foregoing, the Certificate of Acceptance shall not be executed until a final inspection has been performed.

A.13 Project Meetings. The **ESCO** shall provide for regularly scheduled project meetings in the Project Installation Schedule, and shall give timely advance written notice and agenda of such meetings to the **ISSUER**. The **ESCO** shall record minutes and distribute copies of minutes of meetings to the **ISSUER** within five (5) business days after each meeting. The **ESCO** shall schedule additional project meetings if requested by the **ISSUER**.



**Exhibits  
(State Owned Buildings)**

(A sign-off procedure is applicable to Local Government Units  
as well)

**Exhibit I - Certificate of Acceptance Technical Audit**

**Exhibit II - Certificate of Substantial Completion and Acceptance**

**Exhibit III - Certificate of Final completion and Acceptance**

**EXHIBIT I**  
**Certificate of Acceptance Technical Audit**

Exhibit I Certificate of Acceptance Technical Audit

The Services performed pursuant to the Energy Audit Agreement, by and between the North Carolina Building 1 (Issuer) and ESCO, dated as of 200X has been delivered by ESCO to the undersigned and has been determined to be finally complete.

The North Carolina Building 1, by and through the undersigned duly authorized representative, accepts the Services as finally complete and assumes full possession thereof.

**Issuer Address**

By: \_\_\_\_\_

Its: \_\_\_\_\_

Date: \_\_\_\_\_

**EXHIBIT II**  
**Certificate of Substantial Completion and Acceptance**

Exhibit II      Certificate of Acceptance Technical Audit

The Services performed pursuant to the Energy Services Agreement, by and between Department of Administration and the North Carolina Building 1 (“ISSUER”) and ESCO dated as of 200X, have been inspected by the undersigned ISSUER, have been determined to be substantially complete, and ISSUER accepts the same.

The Date(s) of Substantial Completion for the Services noted below is/are hereby established as the earlier of (i) the date ISSUER executes this Certificate, as noted below, or (ii) fourteen (14) calendar days after the date noted above as the date this Certificate is submitted to ISSUER.

The Warranty Period, pursuant to the Agreement, commences as of the Warranty Commencement Date stated below with respect to the following corresponding equipment or

Services: Description of Equipment or Work	Warranty Commencement Date

work:

ISSUER, by and through the undersigned duly authorized representative, accepts the above listed Services as substantially complete and assumes full possession thereof as of the Date of Substantial Completion.

**ISSUER ADDRESS**

By: \_\_\_\_\_

Its: \_\_\_\_\_

Date: \_\_\_\_\_

**EXHIBIT III**  
**Certificate of Final Completion and Acceptance**

The Services performed pursuant to the Energy Services Agreement, by and between Department of Administration and the North Carolina Building 1 (“ISSUER”) and ESCO, dated as of 200X, have been inspected by the undersigned ISSUER, have been determined to be have been determined to be finally complete.

The Date of Final Completion is hereby established as the earlier of (i) the date ISSUER executes this Certificate, as noted below, or (ii) fourteen (14) calendar days after the date noted above as the date this Certificate is submitted to Customer.

The Warranty Period, pursuant to the Agreement, commences as of the Date of Final Completion, except as noted below with respect to the following equipment or work:

Description of Equipment or Work	Warranty Commencement Date

ISSUER, by and through the undersigned duly authorized representative, accepts the Services as finally complete and assumes full possession thereof as of the Date of Final Completion.

**ISSUER ADDRESS**

By: \_\_\_\_\_

Its: \_\_\_\_\_

Date: \_\_\_\_\_

## Formal Communications of Intent

### Supporting Letters

- **RFP announcement, with fax-back request for RFP**
- **Cover letter for RFP**
- **Site visit registration letter with fax-back form**
- **Interview announcement letter with fax-back confirmation form**

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**RFP ANNOUNCEMENT for Energy Performance Contracting Services for  
<Customer Name>**

<Note to Customer: Use this letter and the following fax-back form to announce your RFP to all ESCOs. Send out a complete RFP to those ESCOs that request it. Ask for an updated list of energy service companies.>

<Date>

<Customer – include complete name, and Board name if applicable> invites proposals from interested Energy Services Companies (ESCOs) to conduct a technical energy audit of facilities and implement an energy performance contract. The ESCO will identify and implement capital improvement projects to reduce energy and related costs in facilities, such that annual cost savings are applied to annual payments for improvements. Services may include but are not limited to: technical energy audit, engineering design, equipment procurement, construction management, financing capability or advising, commissioning, staff training, monitoring and verification, and a performance guarantee.

If you are interested in receiving the RFP, please fax back the “RFP Request” form. RFP responses must be *received* by <Date> at <Time>.

A mandatory site visit will be held on <Date> for ESCOs responding to the RFP. Please fax back the “Site Visit Registration” form.

For your background information in deciding whether to respond to this RFP, attached is a brief description of facilities and energy use.

Attachments:

- RFP Request Fax-Back Form
- Site Visit Registration Fax-Back Form

Description of Facilities <Note to Customer: Consider including the excerpt from the RFP – *Technical Facility Profile -- that describes your facilities.*>

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**RFP REQUEST Fax-Back Form for Energy Performance Contracting  
Services for <Customer Name>**

*Yes, I am interested in receiving a copy of the RFP for Energy Performance Contracting Services.*

*Today's Date:* \_\_\_\_\_

*Name:* \_\_\_\_\_

*Company Name:* \_\_\_\_\_

*Mailing Address:*

*(City)*

*(State)*

*(Zip)*

*Phone:* \_\_\_\_\_ *Fax:* \_\_\_\_\_

*E-mail Address:* \_\_\_\_\_

\_\_\_\_ *Yes, I would like an electronic copy of the ESCO Response section e-mailed to me to assist in proposal development.*

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**SITE VISIT REGISTRATION for ESCOs Responding to RFP for *Customer Name***

<Note to Customer, excluding state agencies: For small projects of less than 50,000 square feet, a site visit can be eliminated to simplify the proposal process for all.>

<**Customer**> invites you to attend a tour of facilities prior to responding to the RFP for Energy Performance Contracting Services. This site visit is mandatory, because the ESCO's technical approach will be evaluated in the proposal.

**DATE:**           <*Date of tour*>

**TIME:**           <*Start time of tour*> to <*End time of tour*>

<*Note to Customer: A 2-hour tour is sufficient to tour key buildings; not all buildings need to be visited at this time.*>

**LOCATION:**

    <*Facility name*>

    <*Physical address*>

    <*Directions or map*>

All ESCOs will tour the facility at the same time so that all respondents will hear the same questions, comments and answers. Individuals knowledgeable in the maintenance and operation of facilities will be available to answer questions. NO FOLLOW-UP OR ADDITIONAL TOURS WILL BE ALLOWED UNLESS MADE AVAILABLE TO ALL RESPONDENTS.

<*Note to Customer: only key or typical buildings need to be included for the ESCO's purpose of developing a proposal.*>

**INTERVIEW ANNOUNCEMENT for Energy Performance Contracting Services for**  
*<Customer Name>*

*<Note to Customer: Consider making a phone call announcement before sending out this letter to set the interview time. This letter will serve as confirmation of date, time and location.>*

*<Date>*

Dear *<Name of Energy Service Company (ESCO)>*:

After reviewing proposals received for energy performance contracting services, we invite the following *<insert quantity of firms invited for interview>* firms to participate in the interview portion of the final selection process (not presented in any significant order).

*<Name of firm invited to interview>*

*<Name of firm invited to interview>*

*<Name of firm invited to interview>*

Your interview is scheduled for *<time>* on *<date>* at *<location>*. Please include all persons with major responsibility for the project's technical design, management and contract negotiation in the interview.

The interview will last *<duration of interview – often 90 minutes>* minutes, with *<duration of presentation – often 30 to 45 minutes>* minutes for your prepared presentation and the remaining *<duration of question/answer segment – often 30 to 45 minutes>* minutes for questions and answers. Note that the presentation will involve technical issues and your approach to this project, rather than a sales and marketing presentation. We will have available for your use a *<audio-visual equipment on hand – screen, overhead projector, etc.>* Note that the interview may be tape-recorded for later use. *<Note to Customer: It is a good idea to tape-record the interview for later reference.>*

The Project Evaluation Team will score and rank the ESCOs based on interview responses, check references of the top-ranked ESCO, and proceed with contract negotiations with the selected ESCO.

Please fax-back the attached form to confirm the interview time and date and to list the people who will attend the interview. We look forward to meeting you and learning more about your services.

Sincerely,

*<Name of Customer>*

*<Title>*

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Attachment: Interview Confirmation & Attendance List, Fax-Back Form  
**COVER LETTER For RFP <Date>**

Dear Energy Service Company:

<Customer> requests proposals from Energy Service Companies (ESCOs) to provide a full range of capital improvements and services to reduce costs of energy and water use. Projects will be financed through an energy performance contract such that annual savings cover all or most <Note to Customer: *Eliminate “or most” if you have no capital to contribute*> capital costs. These services include a technical audit to assess energy, water and operations and maintenance savings opportunities, as well as the design, acquisition and installation or modification of energy-using equipment and maintenance and training in the operation of such equipment.

The attached RFP describes the services requested, terms and conditions, the proposed project schedule and the energy-using systems and maintenance issues in the facilities.

A mandatory site visit will be offered to all interested ESCOs on <Date>. The site visit is mandatory for all ESCOs because understanding of requirements and technical approach will be evaluated in the proposal. Please fax back the enclosed SITE VISIT REGISTRATION form.

RFP responses must be prepared as described in Attachment C: ESCO Response. Responses must be *received* by <Customer> on <Date> by <Time> as described in the RFP. To aid you in developing your response an electronic copy of the ESCO Response portion of the RFP is available.

Sincerely,

<Name>  
<Title>

Attachments: Request for Proposals (RFP) for Energy Performance Contracting Services

**STATE OF NORTH CAROLINA  
GUARANTEED ENERGY PERFORMANCE CONTRACTING PROGRAM**

**INVESTMENT GRADE ENERGY AUDIT AGREEMENT**

This Energy Audit Agreement is entered into on \_\_\_\_\_, 200 \_\_, by and between the *Insert name of (State Agency or University (herein after called the issuer))* \_\_\_\_\_ and \_\_\_\_\_ (the ESCO herein after called the "ESCO"). **Issuer and the ESCO** are referred to herein as the "**Parties**".

**WHEREAS**, the **Issuer** has issued a Request For Proposals (RFP) to **select** a **Qualified ESCO** for a guaranteed energy savings contract; and

**WHEREAS**, the **ESCO** submitted a response to the RFP and participated in a competitive evaluation procedure designed to **select** a **Qualified ESCO**; and

**WHEREAS**, the **Issuer** has accepted the ESCOs proposal selected the **ESCO** to complete the project; and

**WHEREAS**, the **Issuer** is responsible for the operation, management and maintenance of the **Buildings and or** Facilities (Herein after collectively referred to as Buildings) as identified in the RFP, Appendix I, (Project Sites); and

**WHEREAS**, a comprehensive energy use and savings analysis (the "**Investment Grade Energy Audit**") is required by the accepted RFP to be performed at the **Buildings** identified in the RFP, Appendix I, (Project Sites) in order to verify the feasibility of the Energy Performance Contracting Project to provide for the installation and implementation of energy conservation measures (ECMs) at the **Buildings**; and

**WHEREAS**, if the ECMs are **verified** to be feasible, and if the amount of energy savings can be reasonably ascertained and guaranteed in an amount sufficient to cover all costs associated with an energy performance contracting project at the Facilities, the Parties have **contracted to** negotiate a final Energy Services Agreement (ESA) under which the **ESCO** shall design, procure, implement, provide training, **offer maintenance services** and monitor such energy conservation measures at the Buildings and or Facilities **identified in the RFP**;

**NOW THEREFORE**, the Parties agree as follows:

**ARTICLE 1**

**SCOPE OF INVESTMENT GRADE ENERGY AUDIT**

The **ESCO** will perform the **Investment Grade** Energy Audit and prepare a detailed engineering and economic report (*herein after called* the "Report") which specifically identifies the energy improvements and operational changes which are recommended to be installed or implemented at the **Buildings**. The Report shall contain detailed projections of energy and cost savings to be obtained at the **Buildings** as a result of the installation of the recommended energy conservation measures (ECMs). The savings calculations must utilize assumptions, projections and baselines which best represent the true value of future energy or operational savings for **the Buildings**, including accurate marginal cost for each unit of savings at the time the audit is performed; documented material and labor costs **that may be actually avoided**; adjustments to the baseline to reflect current conditions at **the Buildings**, compared to

the historic base period; calculations which account for the interactive effects of the recommended ECMs; etc. The Report shall clearly describe how utility tariffs were used to calculate savings for all ECMs. The Report shall describe in detail the **ESCO's** plan for installing or implementing the measures in the **Buildings**, including all anticipated costs associated with such installation and implementation.

The **ESCO's required tasks** in performing the Energy Audit and preparing the Report:

**A. Collect General Information For Each Building.**

The **ESCO** shall collect **detailed building** information such as: size, age, construction type, condition and general use of each **building** except as provided below. The **ESCO** shall also collect and summarize **building** utility cost and consumption data for the most recent 36-month period. **If after reasonable inquiry, the ESCO can demonstrate that less than 36 months of data is available, the ESCO with the written approval of the issuer may collect such data is available, but in any event not less than 24 months of data.** The **ESCO** shall evaluate the impact on utility cost and consumption for any energy measures currently being installed or currently contemplated to be installed by the **Issuer** in the **building** which will remain separate from the Energy Services Agreement throughout the duration of the ESA.

**Issuers** shall furnish (or cause its energy suppliers to furnish) all available records and data concerning energy and water usage for the **building** for the most current 36 month period, if available, including but not necessarily limited to, utility records, occupancy information, descriptions of any changes in the structure of the **building** or its heating, cooling, lighting or other systems or energy requirements, descriptions of all major energy and water consuming or energy and water saving equipment used in the Facility, and description of energy management procedures presently utilized. The **Issuer** shall also furnish a record of any energy related improvements or modifications that have been installed during the past three years, or are currently being installed or are currently contemplated to be installed by **Issuer** in the **Building** separate from the Energy Service Agreement throughout the duration of that agreement. **Issuer** shall also provide copies of drawings, equipment logs and maintenance work orders to the **ESCO** insofar as this information is readily available. The **issuer** shall make available any FCAP, IES, or other survey reports available for that **building**.

**B. Inventory Existing Systems and Equipment.**

The **ESCO** shall compile an inventory based on a physical inspection of the major electrical and mechanical systems at the **building**, including:

- Cooling systems and related equipment
- Heating and heat distribution systems
- Automatic temperature control systems and equipment
- Air distribution systems and equipment
- Outdoor ventilation systems and equipment
- Kitchen and associated dining room equipment, if applicable
- Exhaust systems and equipment
- Hot water systems
- Electric motors 5 HP and above, transmission and drive systems
- Interior and exterior lighting
- Laundry equipment, if applicable
- Water consumption end uses, such as restroom fixtures, water fountains, irrigation, etc.
- Other **applicable** energy using systems **identified in the RFP or otherwise recognized.**

The inventory shall address the following considerations:

1. The loads, proper sizing, efficiencies or hours of operation for each system (Where measurement costs, facility operating or climatic conditions necessitate, engineering estimates may be used, but for large fluctuating loads with high potential savings, appropriate measurements are required unless waived by the **Issuer**).
2. Current operating condition for each system.
3. Remaining useful life of each system , identifying or describing the method used to determine that remaining useful life.
4. Feasible replacement systems.
5. Hazardous materials and other environmental concerns.

The **ESCO** shall use data loggers and or other measurement and recording devices and conduct interviews with building operation and maintenance staff regarding the building's system operation, occupancy patterns and problems with comfort levels or equipment reliability.

**C. Establish Base Year Consumption and Reconcile with End Use Consumption Estimates.**

The **ESCO** shall examine the most recent 36 months of utility bills except as previously noted in in Article 1 – Section A and establish Base Year consumption for electricity, fossil fuels and water by averaging; or selecting the most representative contiguous 12 months. The **ESCO** shall consult with building staff and account for any unusual or anomalous utility bills which may skew Base Year consumption from a reasonable representation.

The **ESCO** shall estimate loading, usage and/or hours of operation for all major end uses representing more than 5% in aggregate of total Facility consumption including, but not limited to:

- Water
- Lighting
- Heating
- Cooling
- HVAC motors (fans and pumps)
- Plug load
- Kitchen equipment
- Other equipment
- Miscellaneous

Where loading or usage is highly uncertain The **ESCO** shall employ spot measurement and/or short term monitoring at its discretion, or at the request of **Issuer**. Reasonable applications of measurement typically include variable loads that are likely candidates for conservation measures, such as cooling equipment. The annual end use estimated consumption shall be reconciled with the annual Base Year consumption to within 5% for electricity (kWh), fossil fuels and water. The contribution to electric peak demand for each end use shall also be reconciled to within 5% of the annual Base Year peak. The “miscellaneous” category shall not be more than 10% and each component shall be separately set forth. The purpose of this is to place reasonable limits on potential savings.

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**D. Develop List of Potential Energy Conservation Measures (ECMs).**

The **ESCO** shall:

1. Identify and propose potential ECMs for installation or implementation at the **building** including cut sheets on proposed equipment. For non-standard ECMs provide information regarding product site installations.
2. Provide a detailed estimate of the cost, savings and life expectancy of each proposed ECM.
3. Specify operations and maintenance procedures of **the building** which will be affected by the installation/implementation of the proposed ECMs.
4. Provide analysis methodology, supporting calculations and assumptions used to derive baselines (e.g. lighting operating hours) and estimate savings. Provide the existing and proposed air and hot water temperatures, amount of outdoor air ventilation (CFMs) lighting and acoustic levels. Provide copies of the utility tariffs and commodity price histories used in savings calculations. Manual calculations should disclose essential data, assumptions, formulas, etc. so that a reviewer could replicate the calculations based on the data provided.
5. For savings estimates using computer simulations, the **ESCO** shall provide access to the program and all inputs and assumptions used, if requested by **the Issuer**.
6. Provide a detailed preliminary savings Measurement and Verification plan for each proposed ECM.
7. Provide a detailed preliminary commissioning plan for the proposed ECMs.
8. Provide detailed calculations for any rate saving proposals.
9. Provide detailed supporting calculations for any proposed maintenance, material or other operational savings. Describe annual variances in savings from year to year (e.g. lighting, warranties).
10. Estimate any environmental costs or benefits of the proposed ECMs (e.g. disposal costs, avoided emissions, water conservation, etc.). Provide emissions reductions data for NOX, CO2 and SO2. Segment emissions data for direct site emissions reductions (e.g. fossil fuels) and indirect emissions reduction data (e.g. electricity/water).
11. For all proposed ECMs, **the ESCO** shall comply with all applicable state, federal and local codes and regulations in effect at the time of this analysis.

**This list shall be compiled and submitted to **the Issuer** within 120 (one hundred and twenty) days of the execution of this Energy Audit Agreement.**

**E. Select Final Recommended ECMs.**

The **ESCO** shall, in consultation with **the Issuer**, recommend specific ECMs from its preliminary compilation for installation and implementation at the **Building and or Facility**.

**F. Cost and Fee Estimates.**

The **ESCO** shall provide detailed estimates of costs associated with the installation, implementation and commissioning of each of the ECMs proposed in the Audit including breakouts for labor, materials, and equipment. In addition, project cost data must be provided in the format included in Attachment B and B-1 : ESCO Cost Proposal and Cash Flow Analysis

The **ESCO** shall also provide estimates of monthly costs associated with sustaining the project performance including breakouts for maintenance fees, monitoring fees, and training fees.

**G. Savings Estimates.**

**The Issuer** has endeavored to provide the **ESCO** with sufficient general and specific guidance in this Article 1 to develop the savings estimates for the Report. In the event that questions arise as to the calculation of savings or whether certain items will be allowed as savings, the **ESCO** should seek written guidance from **the Issuer**. **The Issuer** reserves the right to reject items claimed as savings which are not in **the Issuer's** utility budget line or which have been claimed contrary to the guidance given in this agreement or contrary to written guidance given to **the ESCO**. **The Issuer** also reserves the right to reject **the ESCO's** calculations of savings when it determines that there is another more suitable or preferable means of determining or calculating such savings.

**For the purposes of completing the Cash Flow Analysis in Attachment B and B-1, the following items will be allowed as savings or in the development of savings:**

- Escalation rates of \_\_\_\_\_ % for natural gas
- Escalation rates of \_\_\_\_\_ % for electricity
- Escalation rates of \_\_\_\_\_ % for oil
- Escalation rates of \_\_\_\_\_ % for steam
- Escalation rates of \_\_\_\_\_ % for water
- Escalation rates of \_\_\_\_\_ % for other fuel type (specify)
- Escalation rates of \_\_\_\_\_ % for operation and maintenance cost savings
- Escalation rates of \_\_\_\_\_ % for material/commodity cost savings
- Escalation rates of \_\_\_\_\_ % for allowable labor savings

**It should be noted that the base value for each fuel and water unit will not devalue in the event of any rate decrease. The issuer reserves the right to impose ceiling rates for fuel escalations**

**The following items will not typically be credited as savings derived from a proposed ECM: Issuer's in-house labor cost, Issuer's deferred maintenance cost and offset of future Issuer's capital costs.**

The **ESCO** may seek, in writing, permission to include such items from the **Issuer** on a case-by-case basis. However, the final determination of allowable savings in each case considered shall reside with **Issuer**.

## H. **Report Format.**

The **ESCO** shall prepare a two-volume report as follows:

*Each volume should be submitted using 8 ½ " x 11" sheets of paper and a font size no smaller than 10 point. The pages in each volume should be numbered sequentially, include a Table of Contents and tabbed with the visible titles of corresponding Schedules (Volume 1) or Sections (Volume 2).*

**Volume 1 of 2** shall include the presentation of information in the following Schedules required for the Guaranteed Energy Services Agreement (GESA) to the extent the information has been developed during the course of performing the audit. Schedules may be finalized during negotiations, prior to execution of the ESA.

### Schedules

Schedule A	Equipment to be installed by the <b>ESCO</b>
Schedule B	Description of Premises; Pre-Existing Equipment Inventory
Schedule C	Energy Saving Guarantee
Schedule D	Compensation to the <b>ESCO</b>
Schedule E	Baseline Energy Consumption
Schedule F	Savings Measurement & Calculation Formulae; Methodology to Adjust Baseline
Schedule G	Construction and Installation Schedule
Schedule H	Systems Start-Up and Commissioning; Operating Parameters of Installed Equipment
Schedule I	Standards of Comfort
Schedule J	<b>The ESCO's</b> Maintenance Responsibilities
Schedule K	<b>Issuer's</b> Maintenance Responsibilities
Schedule L	Facility Maintenance Checklist
Schedule M	<b>The ESCO's</b> Training Responsibilities
Schedule N	Installment Payment Schedule
Schedule O	Proposed Final Project Cost & Proposed Final Project Cash Flow Analysis (See Attachment B at the end of this Energy Audit Agreement)

### *Exhibits (Volume 1)*

Exhibit I	Performance Bond/Construction Bond
Exhibit II (i)	Certificate of Acceptance—Technical Audit
Exhibit II (ii)	Certificate of Acceptance—Installed Equipment
Exhibit III	Equipment Warranties

**Volume 2 of 2** shall include all of the information required in Section D and the Sections below, and presented in the following format:

- 1. Executive Summary:** Provide an executive summary which describes the **buildings**, measures evaluated, analysis methodology, results and a summary table presenting the cost and savings estimates for each recommended measure. Include a summary of the recommended measures and costs using the table format provided below.

	ECM	TOTAL COST	ENERGY COST SAVINGS	SIMPLE PAYBACK
1.				
2.				
3.				
TOTALS				

2. **Measures Not Evaluated:** Include a discussion of measures not evaluated in detail and the explanation of why a detailed analysis was not performed.
3. **Baselines:** Provide a summary of all utility bills, consumption baselines and how they were established, and end use reconciliation with respect to the baselines including a discussion of any unusual characteristics and findings.
4. **ECM Summaries:** Provide detailed descriptions for each ECM including analysis method, supporting calculations (may be submitted in appendices), results, proposed equipment and implementation issues. Provide a financial analysis for each proposed ECM (See Section F).
5. **Cost and Savings Estimates:** Conclusions, observations and caveats regarding cost and savings estimates.
6. **Appendices:** Provide thorough appendices which document the data relied upon to prepare the analysis and how that data was collected.

#### I. Submission of the Report.

The Report shall be completed within 120 (one hundred and twenty) days of the date of execution of this Energy Audit Agreement. The not-to-exceed cost for the completed Energy Audit and Report will be \_\_\_\_\_.

### **ARTICLE 2** **ENERGY SERVICES AGREEMENT (ESA)**

Upon the verification of the final Energy Savings under this agreement, the ESCO is obligated to execute an ESA under which the ESCO shall design, install and implement energy conservation measures which the Parties have agreed to and provide certain training, maintenance and monitoring services as agreed to by both Parties. However, nothing in this Agreement should be construed as an obligation on any of the Parties to execute such an ESA. The precise terms and provisions of such an ESA shall be set forth in a separate agreement.

### **ARTICLE 3**

## PAYMENT

Payment to **the ESCO** for services performed in connection with the Energy Audit Agreement shall be made by **the Issuer** only in accordance with the provisions of Article 4 herein.

## ARTICLE 4 TERMINATION

### A. By **the ESCO**:

**The ESCO** may terminate this Agreement prior to the completion of the Energy Audit and Report or subsequent to the scheduled completion of the Energy Audit and Report if:

- (i) **The ESCO** determines that it cannot guarantee a minimum savings in energy costs through the implementation of an energy performance contracting project at the **Buildings and or Facilities**; or
- (ii) **The ESCO** determines that even though it can guarantee a savings in energy costs, that amount would be insufficient to cover the costs associated with performing the Audit, installing energy conservation measures and related training, maintenance and monitoring services.

In the event **the ESCO** terminates the Agreement pursuant to Section 4 A (i) or (ii) **the Issuer** shall not be obligated to pay any amount to **the ESCO** for services performed or expenses incurred by **the ESCO** in performing the Energy Audit and Report required under this Agreement. **The ESCO** shall provide the **Issuer** with any Audit documents (preliminary notes, reports or analysis) which have been produced or prepared prior to the effective date of the termination. **The ESCO** will return any documents or information that was provided by **the Issuer**.

Termination under this section shall be effective upon **the Issuer's** receipt of written notification from the **ESCO** stating the reason for the termination and all documents which support termination pursuant to 4 A (i) or 4 A (ii) herein.

### B. By **the Issuer**:

**The Issuer** may terminate this Agreement:

- (i) If the **ESCO** fails to complete the Energy Audit and deliver the Report to **the Issuer** by the date established in Article 1 I. above; or fails to obtain a written extension of that date from **the Issuer**. Termination under this subsection B (i) shall be effective upon **the ESCO's** receipt of written notification from **the Issuer** that the deadline for submission of the Energy Audit and Report has past. In this event, **the Issuer** shall not be obligated to pay any amount to **the ESCO** for services performed or expenses incurred by **the ESCO** in performing the Energy Audit and preparing the Report required under this Agreement. **The ESCO** shall provide **the Issuer** with any Audit documents (preliminary notes, reports or analysis) which have been produced or prepared prior to the effective date of the termination. **The ESCO** will return any documents or information that was provided by **the Issuer**.
- (ii) If, prior or subsequent to the completion of the Energy Audit or Report, the **ESCO** notifies **the Issuer** in writing that it is unable to guarantee a sufficient level of savings pursuant to

Article 4 A (i) or (ii) above, termination under this subsection B (ii) shall be effective upon Company's receipt of written notification of termination from **the Issuer**. In this event, **the Issuer** shall not be obligated to pay any amount to **the ESCO** for services performed or expenses incurred by **the ESCO** in performing the Energy Audit and preparation of the Report required under this Agreement. **The ESCO** shall provide the **Issuer** with any Audit documents (preliminary notes, reports or analysis) which have been produced or prepared prior to the effective date of the termination. **The ESCO** will return any documents or information that was provided by **the Issuer**.

- (iii) If, prior or subsequent to the completion of the Energy Audit or Report, the **Issuer** notifies the **ESCO** Company in writing that it has elected to terminate this Agreement and not enter into an ESA, **the Issuer** shall reimburse **the ESCO** for either the actual expenses incurred or the percent of the Audit and Report completed as of the effective date of the termination, the amount being determined as fair and equitable by **the Issuer**. Termination under this subsection B (iii) shall be effective upon **the ESCO** receipt of written notification from **the Issuer**.

**The ESCO** agrees to provide **the Issuer** with any records of expenses incurred and any preliminary notes, reports or analyses which have been produced or prepared prior to the effective date of the termination. Such documentation shall be used by **the Issuer** to determine the extent of work completed by **the ESCO** prior to termination and shall become the property of **the Issuer**.

If after completion and acceptance of the Energy Audit, **the Issuer** does not enter into an ESA with the **ESCO** within 60 (sixty) days after written acceptance of the Energy Audit, **the Issuer** agrees to reimburse **the ESCO** for the cost of the Energy Audit as detailed herein. Termination under this subsection B (iii) shall be effective upon **the ESCO** receipt of written notification from **the Issuer**. The Energy Audit and Report will become the property of **the Issuer**.

**It is clearly understood by both parties hereto that, if the Parties successfully negotiate and execute an Energy Services Agreement, no payment shall be due for the Energy Audit or Report under the terms of this Agreement. This Agreement shall automatically terminate upon the execution of an ESA by the ESCO and the Issuer for a guaranteed energy performance contracting project at the Building and or Facilities. It is further understood that provisions for payment for the Energy Audit shall be incorporated into the ESA.**

## **ARTICLE 5**

### **STANDARD TERMS AND CONDITIONS**

#### **Section 1. Agreement Term**

The Agreement term shall commence on the date the Agreement is executed by the **Issuer** and end on \_\_\_\_\_, unless earlier terminated pursuant to the provisions of Article 4 hereof. Notwithstanding, **the ESCO** shall adhere to the deadlines set forth in Article 1 regarding the completion and submittal of the list of ECMs and the Report.

#### **Section 2. Materials, Equipment, and Supplies**

The **ESCO** shall provide or cause to be provided all facilities, materials, equipment, and supplies necessary to perform the Energy Audit and prepare the Report.

#### **Section 3. Patent and Copyright Responsibility**

The **ESCO** agrees that any material or design specified by the **ESCO** or supplied by **the ESCO**

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pursuant to this Agreement shall not knowingly infringe any patent or copyright, and **the ESCO** shall be solely responsible for securing any necessary licenses required for patented or copyrighted material utilized by **the ESCO** in the performance of the Energy Audit and preparation of the Report.

#### **Section 4. Customer Access to Records**

**The Issuer** shall have the right, throughout the term of this Agreement and for a minimum of \_\_\_\_\_ years following completion of the Agreement, to inspect, audit and obtain copies of all books, records, and supporting documents which **the ESCO** is required to maintain according to the terms of this Agreement.

#### **Section 5. Personnel**

All personnel necessary for the effective performance of the Energy Audit shall be employed by **the ESCO**, and its designated subcontractors shall be qualified to perform the services required under this Agreement, and shall in all respects be subject to the rules and regulations of **the ESCO** governing staff members and employees. Neither **the ESCO**, its designated subcontractors, nor its personnel shall be considered to be agents or employees of the **Issuer**.

#### **Section 6. Compliance with Applicable Law**

In performance of its obligations pursuant to this Agreement, **the ESCO** shall comply with all applicable provisions of federal, state, and local law. All limits or standards set forth in this Agreement to be observed in the performance required under this Agreement are minimum requirements, and shall not affect the application of more restrictive federal, state, or local standards applied to the performance of the Agreement.

#### **Section 7. Waivers**

No right of either party hereto shall be deemed to have been waived by non-exercise thereof, or otherwise, unless such waiver is reduced to writing and executed by the party entitled to exercise such right.

#### **Section 8. Assignment**

This Agreement may not be assigned by **the ESCO** without the prior written consent of the **Issuer**.

#### **Section 9. Federal Taxpayer Identification Number and Legal Status Disclosure**

Under penalty of perjury, **the ESCO** certifies that \_\_\_ - \_\_\_\_\_ is **the ESCO** Company's correct Federal Taxpayer Identification Number and that **the ESCO** is doing business as a Corporation.

#### **Section 10. Governing Law**

This Agreement shall be governed by and construed only in accordance with the laws of the State of North Carolina.

#### **Section 11. Agreement**

The following documents are incorporated in, and made a part of, this Agreement:

- Attachment A – **Building and or** Facility's Recommended ECMs (Optional)
- Attachment B – ESCO Cost Proposal and Project Cash Flow Analysis

**NOTE:** **The Issuer shall** include all required policy provisions, and **shall** also include the following attachments.

- Attachment I - Drug Free Workplace Provisions
- Attachment II - Equal Employment Opportunity Clause
- Attachment III - Certification of Capacity to Contract
- Attachment IV- Americans with Disabilities Act
- Attachment V- Certifications

**Section 12. Project Management**

All necessary and ordinary communications, submittals, approvals, requests, and notices related to Project work shall be issued or received by:

For **Issuer**: \_\_\_\_\_

For **ESCO**: \_\_\_\_\_

**Section 13. Amendments**

This Agreement and Attachments referenced in Section 11 herein constitute the entire Agreement between the Parties. No amendment hereof shall be effective until and unless reduced to writing and executed by the Parties.

**ARTICLE 6  
EXECUTION**

**IN WITNESS WHEREOF**, the parties have executed this Agreement this \_\_\_\_\_ day of \_\_\_\_\_, 200\_.

**Issuer** \_\_\_\_\_

**ESCO** \_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

**ATTACHMENT A**

**ESCO's COST PROPOSAL**

<b>COST PROPOSAL</b>
----------------------

**ISSUER'S NAME:** \_\_\_\_\_ **ESCO NAME:** \_\_\_\_\_

**VALUE OF HARD COSTS<sup>1</sup>:** \$ \_\_\_\_\_

Category of Service Fees	Estimated Percentage (%) of Hard Costs	Dollar (\$) Value of Service Fees
<b>Project Service Fees</b>		
<b>Investment Grade Energy Audit</b>		
<b>Design Engineering Fees</b>		
<b>Construction Management</b>		
<b>System Commissioning</b>		
<b>Equipment Initial Training Fees</b>		
<b>Contingency Costs</b>		
<b>Construction Interest</b>		
<b>Totals</b>		
<b>Annual Service Fees</b>		
<b>Measurement and Verification</b>		
<b>Maintenance</b>		
<b>Performance Monitoring</b>		
<b>On-going Training Services</b>		
<b>Totals</b>		

<sup>1</sup>The total value of Hard Costs is defined in accordance with standard AIA definitions which include:

- Labor Costs
- Subcontractor Costs
- Costs of Materials and Equipment, Temporary Facilities and Related Items
- Miscellaneous Costs such as Permits, Bonds Taxes, Insurance, etc.

**NOTE:** Percentages should include all mark-ups, overhead, and profit. Figures stated as a range (e.g. 2%-5%) are not acceptable.

**ESCO's ANNUAL PROJECT CASH FLOW ANALYSIS  
GUARANTEED ENERGY PERFORMANCE CONTRACTING PROJECT**

Financed Project Costs: \_\_\_\_\_  
 Finance Term: \_\_\_\_\_  
 Annual Interest Rate: \_\_\_\_\_  
 Construction Months: \_\_\_\_\_  
 Annual Payment: \_\_\_\_\_  
 Escalation Rate by Savings Category\*  
     Electric: \_\_\_\_\_  
     Natural Gas: \_\_\_\_\_  
     Steam: \_\_\_\_\_  
     Water: \_\_\_\_\_  
     Operations & Maintenance costs: \_\_\_\_\_  
     Other (specify): \_\_\_\_\_  
     Escalation Rate for Annual Fees\*: \_\_\_\_\_

\* Information to be provided by Customer

Yr.	Electric Cost Savings	Natural Gas Cost Savings	Steam Cost Savings	Water Cost Savings	Other (Please Specify)	Operational Cost Savings	Total Cost Savings	Maintenance Monitoring, M&V, & Training Fees	Guaranteed Cost Savings	Financing Payment	Net Savings
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
Total											

**STATE OF NORTH CAROLINA  
DEPARTMENT OF STATE TREASURER**

**STATE AND LOCAL GOVERNMENT FINANCE DIVISION  
AND THE LOCAL GOVERNMENT COMMISSION**

**Mailing Address:** 325 North Salisbury Street  
Raleigh, NC 27603-1385

**Federal Express & Courier:** 4505 Fair Meadow Lane, Suite 102  
Raleigh, NC 27607

**Telephone:** (919) 807-2350

**Fax:** (919) 807-2377

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**APPLICATION FOR APPROVAL OF  
GUARANTEED ENERGY SAVINGS CONTRACTS**

**APPLICATION DUE DATE**

The Local Government Commission (the “LGC”) meets the first Tuesday of each month, unless otherwise announced, to conduct its business, including the approval of applications of units of government to incur debt. Generally, to allow adequate review of applications, the staff of the LGC (the “staff”) requires that applications be received no later than twenty-eight (28) days prior to the date of the LGC meeting at which the unit wants its application to be considered. However, in more complex transactions the staff may require earlier submission.

Although this application form is available to interested parties by internet access; the project and the related proposed financing should be discussed with the staff prior to submission of an application. Before the application is accepted for submission to the LGC a preliminary conference may be required (G.S. 159-149).

**STATE OF NORTH CAROLINA  
DEPARTMENT OF STATE TREASURER**

State and Local Government Finance Division  
*and the Local Government Commission*  
325 North Salisbury Street, Raleigh, North Carolina 27603-1385

**APPLICATION FOR APPROVAL OF GUARANTEED  
ENERGY SAVINGS CONTRACTS**

1. Unit \_\_\_\_\_ Date \_\_\_\_\_
2. Project Description \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Necessity \_\_\_\_\_  
\_\_\_\_\_
4. Principal Amount to be Financed (Do not include any maintenance costs.)..... \$ \_\_\_\_\_
5. Interest to be paid during life of contract ..... \$ \_\_\_\_\_
6. Amount due throughout life of contract ..... \$ \_\_\_\_\_  
(i.e., amount of periodic payment times number of payments. Should also be  
the total of 4 & 5 above.)
- Term of contract including options to renew (if any)*** \_\_\_\_\_
8. Qualified Provider selected \_\_\_\_\_  
\_\_\_\_\_

***9. The attached are furnished in support of this application:***

- a. ***Certified copy of resolution of governing body making necessary findings and authorizing the contract.***
- b. Resolution from Board of County Commissioners acknowledging this project.
- c. Publisher's Affidavit of Notice of Request for Proposals (at least 15 days in advance of opening).
- d. Publisher's Affidavit of Notice of Award (at least 15 days before date of meeting).
- e. Certified copy of minutes of hearing.
- f. Evidence that two proposals were received. If not, explain.
- g. Summary of licensed architect/engineer evaluation of final proposal.
- h. LGC 108F Estimates of Project Costs and Energy Savings, certified by qualified provider.

- i. Performance Bond equal to 100% of total cost of guaranteed energy savings contract plus security acceptable to the Treasurer.
- j. Proposed financing contract.
- k. Proposed guaranteed energy savings contract with all schedules and exhibits.
- l. Completed IRS form 8038-G (2 copies) (To be provided at loan closing).
- m. Unit Attorney's Opinion.
- n. Fee Arrangement Letters:
- Special Counsel
- Banker/Underwriter
- o. Notice from Electric Company/ies that dual invoices will be mailed — one to unit, one to vendor.
- p. Other: Specify \_\_\_\_\_
- q. Application fee for installment/lease purchase agreement contract. Attach check for appropriate amount.
- \$500 for private placement.
- \$5,000 for public offering.
10. Current audited financial statements have been received by Fiscal Management. Audit Reports are due October 31 each year. For units with a calendar year or fiscal year not ending on June 30, audited financial statements should be received within four months of year-end. Yes  No
11. Unit's Attorney \_\_\_\_\_ Telephone \_\_\_\_\_  
Address \_\_\_\_\_ Fax \_\_\_\_\_
12. Guaranteed Energy Savings Contract vendor  
Contact Person \_\_\_\_\_ Title \_\_\_\_\_  
Telephone \_\_\_\_\_ Fax \_\_\_\_\_
13. Financing contract/agreement with  
Contact Person \_\_\_\_\_ Title \_\_\_\_\_  
Telephone \_\_\_\_\_ Fax \_\_\_\_\_
14. Consulting Firm (Architect or Engineer) \_\_\_\_\_  
Contact Person \_\_\_\_\_ Title \_\_\_\_\_  
Telephone \_\_\_\_\_ Fax \_\_\_\_\_
15. Unit's Authorized Agent \_\_\_\_\_  
Title \_\_\_\_\_ Telephone \_\_\_\_\_ Fax \_\_\_\_\_

This application and supporting documents are deemed to be true and accurate to the best of my knowledge and belief.

\_\_\_\_\_  
Signature of Authorized Agent  
(As Designated by Board)

\_\_\_\_\_  
Date

**STATE OF NORTH CAROLINA  
DEPARTMENT OF STATE TREASURER**

State and Local Government Finance Division  
*and the Local Government Commission*  
325 North Salisbury Street, Raleigh, North Carolina 27603-1385

**GUARANTEED ENERGY SAVINGS CONTRACTS  
ESTIMATES OF PROJECT COSTS AND ENERGY SAVINGS**

Project Costs

Proposal Evaluation Costs	\$ _____
Design and Engineering	_____
Construction	_____
Installation	_____
Modification/Remodeling	_____
Maintenance	_____
Repairs	_____
Training	_____
Legal	_____
Other	_____
Total Estimated Project Costs as of _____ (date)	\$ _____
Total Financing Cost (Interest expense, administrative costs)	\$ _____
<b>Total Estimated Project Costs and Financing Cost</b>	<b>\$ _____</b>
<b>Total Estimated Energy Savings over Contract term</b>	<b>\$ _____</b>

I certify that these are the estimated project costs and energy savings projected by

\_\_\_\_\_ *qualified provider, selected by the local governmental unit.*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Title

(SEAL)

[FORM RESOLUTION]  
GUARANTEED ENERGY SAVINGS CONTRACTS

**RESOLUTION AUTHORIZING THE FILING OF AN APPLICATION FOR APPROVAL OF  
A GUARANTEED ENERGY SAVINGS CONTRACT AUTHORIZED BY NORTH CARO-  
LINA GENERAL STATUTE 143-64.17C**

WHEREAS, the [local government unit] of \_\_\_\_\_, North Carolina desires to enter into a Guaranteed Energy Savings Contract (the "Contract") to [install energy conservation measures] (the "Project") so as to reduce energy consumption and/or energy-related operating costs; and

WHEREAS, the [local government unit] desires to finance the Project by the use of an installment contract authorized under North Carolina General Statute 160A, Article 3, Section 20; and

WHEREAS, the term of the Contract does not exceed twelve years from the date of the installation and acceptance by the local government unit of the energy conservation measures provided under the Contract; and

WHEREAS, the energy savings resulting from the performance of the Contract will equal or exceed the total cost of the Contract pursuant to an evaluation performed by [a licensed architect or engineer] on behalf of [the local government unit]; and

WHEREAS, the energy conservation measures to be installed under the Contract are for an existing building; and

WHEREAS, findings of fact by this governing body must be presented to enable the North Carolina Local Government Commission to make its findings of fact set forth in North Carolina General Statute 159, Article 8, Section 151 prior to approval of the proposed contract;

NOW, THEREFORE BE IT RESOLVED that the [local government unit], meeting in [regular/special] session on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, make the following findings of fact:

1. The proposed Contract is necessary or expedient because [state facts supporting such conclusion].
2. The proposed Contract is preferable to a bond issue for the same purpose because [state the reasons and justifications for choosing the contract method of financing rather than a nonvoted general obligation bond issue or a voted general obligation bond issue].
3. The sums to fall due under the Contract are adequate and not excessive for the proposed purpose because the energy savings over the period of the Contract are guaranteed to equal or exceed the total costs of the improvements.
4. The [local government unit's] debt management procedures and policies are sound because [state facts supporting a conclusion that the debt management policies of the contracting unit have been carried out in strict compliance with the law, or provide assurances that debt management will hence forth be so carried out.]
5. An increase in taxes is not necessary since the guaranteed energy savings equal or exceed the sums to fall due under the Contract.

OR

The initial increase in taxes necessary to meet the sums to fall due under the proposed Contract will be \_\_\_\_\_ cents per \$100 valuation and is not deemed to be excessive. Given the guarantee of energy savings equaling or exceeding total costs, such an increase in taxes is expected to be recaptured over the term of the Contract.

6. The [*local government unit*] is not in default in any of its debt service obligations.
7. The attorney for [*local government unit*] has rendered an opinion that the proposed project is authorized by law and is a purpose for which public funds may be expended pursuant to the Constitution and laws of North Carolina.

NOW, THEREFORE, BE IT FURTHER RESOLVED that the [*Authorized representative*] is hereby authorized to act on behalf of [*the local government unit*] in filing an application with the North Carolina Local Government Commission for approval of the Project and the proposed Guaranteed Energy Savings Contract and other actions not inconsistent with this resolution.

***This resolution is effective upon its adoption this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.***

The motion to adopt this resolution was made by [*Commissioner*] \_\_\_\_\_, seconded by [*Commissioner*] \_\_\_\_\_, and passed by a vote of \_\_\_\_\_ to \_\_\_\_\_.

\_\_\_\_\_  
[*Chairman of Board of Education*]

ATTEST:

\_\_\_\_\_  
[*Clerk/Secretary*]

This is to certify that this is a true and accurate copy of Resolution \_\_\_\_\_, adopted by the [*local government unit*] Board of Education on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
[*Clerk/Secretary*]

\_\_\_\_\_  
Date

## [FORM RESOLUTION]

**RESOLUTION ACKNOWLEDGING THE EXECUTION AND DELIVERY BY THE  
 \_\_\_\_\_ COUNTY BOARD OF EDUCATION OF A  
 GUARANTEED ENERGY SAVINGS CONTRACT**

BE IT RESOLVED by the Board of Commissioners (the "Board") of the County of \_\_\_\_\_, North Carolina (the "County") as follows:

1. The Board hereby finds, determines and acknowledges that:

(a) the \_\_\_\_\_ County Board of Education (the "School Board") plans to enter into a \$\_\_\_\_\_ guaranteed energy savings contract pursuant to G.S. 143-64.17 et. seq. for the purpose of providing certain energy conservation measures authorized thereby (the "Project") so as to reduce energy consumption and/or energy-related operating costs;

(b) the School Board intends to finance the Project by entering into an installment contract (the "Contract") pursuant to G.S. 143-64.17C and G.S. 160A-20, as amended;

(c) the energy savings resulting from the Project are expected to equal or exceed the total costs payable under the Contract as shown in an evaluation performed by a [licensed architect or engineer] on behalf of the School Board;

(d) the payments under the Contract are not expected to require any additional appropriations to be made to the School Board nor any increase in taxes; and

(e) the Board does not intend to reduce appropriations to the School Board based upon a reduction of energy costs in a manner that would inhibit the ability of the School Board to make the payments under the Contract, provided that the County is not bound in any manner to appropriate funds to the School Board in amount sufficient for the School Board to make such payments.

2. Whereas, the Board of Commissioners has, pursuant to G.S. 115C-429(b), allocated part or all of its school capital outlay appropriation by purpose, function or project as defined in the uniform budget format, the Board, pursuant to G.S. 115C-433(b), also approves an amendment to the budget that increases expenditures from the capital outlay fund for the Project in the amount of \$\_\_\_\_\_.

(Insert paragraph #2 in the Resolution, only if required by G.S. 115C-433(b).)

3. This resolution shall take effect upon its passage.

[SEAL]

\_\_\_\_\_  
 Chairman, Board of Commissioners  
 of the County of \_\_\_\_\_

I DO HEREBY CERTIFY that this is a true and correct copy of the resolution duly adopted by the Board of Commissioners of the County of \_\_\_\_\_ at a [regular/special] meeting held on \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Clerk to the Board

Appendix C:  
North Carolina Enabling Legislation

**Enabling Legislation**

State of North Carolina Statutes

Article 3B.

Energy Conservation in Public Facilities

Part 1. Energy Policy and Life-Cycle Cost Analysis

Part 2. Guaranteed Energy Savings Contracts for Governmental Units.

And

GENERAL ASSEMBLY OF NORTH CAROLINA, SESSION 2005,  
SENATE BILL 402  
RATIFIED BILL July 19, 2006

## “Article 3B.

## Energy Conservation of Energy, Water, and Other Utilities in Public Government Facilities”

**§ 143-64.17. Definitions.**

As used in this Part:

- (1) "Energy conservation measure" means a facility or meter alteration, training, or services related to the operation of the facility or meter, when the alteration, training, or services provide anticipated energy savings or capture lost revenue. Energy conservation measure includes any of the following:
  - a. Insulation of the building structure and systems within the building.
  - b. Storm windows or doors, caulking, weatherstripping, multiglazed windows or doors, heat-absorbing or heat-reflective glazed or coated window or door systems, additional glazing, reductions in glass area, or other window or door system modifications that reduce energy consumption.
  - c. Automatic energy control systems.
  - d. Heating, ventilating, or air-conditioning system modifications or replacements.
  - e. Replacement or modification of lighting fixtures to increase the energy efficiency of a lighting system without increasing the overall illumination of a facility, unless an increase in illumination is necessary to conform to the applicable State or local building code or is required by the light system after the proposed modifications are made.
  - f. Energy recovery systems.
  - g. Cogeneration systems that produce steam or forms of energy such as heat, as well as electricity, for use primarily within a building or complex of buildings.
  - h. Repealed by Session Laws 2006-190, s. 2, effective August 3, 2006, and applicable to contracts entered into or renewed on or after that date.
  - i. Faucets with automatic or metered shut-off valves, leak detection equipment, water meters, water recycling equipment, and wastewater recovery systems.
  - j. Other energy conservation measures that conserve energy, water, or other utilities.
- (2) "Energy savings" means a measured reduction in fuel costs, energy costs, water costs, stormwater fees, other utility costs, or operating costs, including environmental discharge fees, water and sewer maintenance fees, and increased meter accuracy, created from the implementation of one or more energy conservation measures when compared with an established baseline of previous costs, including captured lost revenues, developed by the governmental unit.
- (2a) "Governmental unit" means either a local governmental unit or a State governmental unit.

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- (3) "Guaranteed energy savings contract" means a contract for the evaluation, recommendation, or implementation of energy conservation measures, including the design and installation of equipment or the repair or replacement of existing equipment or meters, in which all payments, except obligations on termination of the contract before its expiration, are to be made over time, and in which energy savings are guaranteed to exceed costs.
  - (4) "Local governmental unit" means any board or governing body of a political subdivision of the State, including any board of a community college, any school board, or an agency, commission, or authority of a political subdivision of the State.
  - (5) "Qualified provider" means a person or business experienced in the design, implementation, and installation of energy conservation measures.
  - (6) "Request for proposals" means a negotiated procurement initiated by a governmental unit by way of a published notice that includes the following:
    - a. The name and address of the governmental unit.
    - b. The name, address, title, and telephone number of a contact person in the governmental unit.
    - c. Notice indicating that the governmental unit is requesting qualified providers to propose energy conservation measures through a guaranteed energy savings contract.
    - d. The date, time, and place where proposals must be received.
    - e. The evaluation criteria for assessing the proposals.
    - f. A statement reserving the right of the governmental unit to reject any or all the proposals.
    - g. Any other stipulations and clarifications the governmental unit may require.
  - (7) "State governmental unit" means the State or a department, an agency, a board, or a commission of the State, including the Board of Governors of The University of North Carolina and its constituent institutions. (1993 (Reg. Sess., 1994), c. 775, s. 3; 1995, c. 295, s. 1; 1999-235, ss. 1, 2; 2002-161, s. 2; 2006-190, s. 2.)

**§ 143-64.17A. Solicitation of guaranteed energy savings contracts.**

(a) Before entering into a guaranteed energy savings contract, a governmental unit shall issue a request for proposals. Notice of the request shall be published at least 15 days in advance of the time specified for opening of the proposals in at least one newspaper of general circulation in the geographic area for which the local governmental unit is responsible or, in the case of a State governmental unit, in which the facility or facilities are located. No guaranteed energy savings contract shall be awarded by any governmental unit unless at least two proposals have been received from qualified providers. Provided that if after the publication of the notice of the request for proposals, fewer than two proposals have been received from qualified providers, the governmental unit shall again publish notice of the request and if as a result of the second notice, one or more proposals by qualified providers are received, the governmental unit may then open the proposals and select a qualified provider even if only one proposal is received.

(b) The governmental unit shall evaluate a sealed proposal from any qualified provider.

Proposals shall contain estimates of all costs of installation, modification, or remodeling, including costs of design, engineering, installation, maintenance, repairs, debt service, and estimates of energy savings.

(c) In the case of a local governmental unit, proposals received pursuant to this section shall be opened by a member or an employee of the governing body of the local governmental unit at a public opening at which the contents of the proposals shall be announced and recorded in the minutes of the governing body. Proposals shall be evaluated for the local governmental unit by a licensed architect or engineer on the basis of:

- (1) The information required in subsection (b) of this section; and
- (2) The criteria stated in the request for proposals.

The local governmental unit may require a qualified provider to include in calculating the cost of a proposal for a guaranteed energy savings contract any reasonable fee payable by the local governmental unit for evaluation of the proposal by a licensed architect or professional engineer not employed as a member of the staff of the local governmental unit or the qualified provider.

(c1) In the case of a State governmental unit, proposals received pursuant to this section shall be opened by a member or an employee of the State governmental unit at a public opening and the contents of the proposals shall be announced at this opening. Proposals shall be evaluated for the State governmental unit by a licensed architect or engineer who is either privately retained, employed with the Department of Administration, or employed as a member of the staff of the State governmental unit. The proposal shall be evaluated on the basis of the information required in subsection (b) of this section and the criteria stated in the request for proposals.

The State governmental unit shall require a qualified provider to include in calculating the cost of a proposal for a guaranteed energy savings contract any reasonable fee payable by the State governmental unit for evaluation of the proposal by a licensed architect or professional engineer not employed as a member of the staff of the State governmental unit or the qualified provider. The Department of Administration may charge the State governmental unit a reasonable fee for the evaluation of the proposal if the Department's services are used for the evaluation and the cost paid by the State governmental unit to the Department of Administration shall be calculated in the cost of the proposal under this subsection.

(d) The governmental unit shall select the qualified provider that it determines to best meet the needs of the governmental unit by evaluating all of the following:

- (1) Prices offered.
- (2) Proposed costs of construction, financing, maintenance, and training.
- (3) Quality of the products proposed.
- (4) Amount of energy savings.
- (5) General reputation and performance capabilities of the qualified providers.
- (6) Substantial conformity with the specifications and other conditions set forth in the request for proposals.
- (7) Time specified in the proposals for the performance of the contract.
- (8) Any other factors the governmental unit deems necessary, which factors shall be made a matter of record.

(e) Nothing in this section shall limit the authority of governmental units as set forth in Article 3D of this Chapter. (1993 (Reg. Sess., 1994), c. 775, s. 3; 2002-161, s. 3.)

### **§ 143-64.17B. Guaranteed energy savings contracts.**

(a) A governmental unit may enter into a guaranteed energy savings contract with a qualified provider if all of the following apply:

- (1) The term of the contract does not exceed 20 years from the date of the installation and acceptance by the governmental unit of the energy conservation measures provided for under the contract.
- (2) The governmental unit finds that the energy savings resulting from the performance of the contract will equal or exceed the total cost of the contract.
- (3) The energy conservation measures to be installed under the contract are for an existing building or utility system.

(b) Before entering into a guaranteed energy savings contract, the governmental unit shall provide published notice of the time and place or of the meeting at which it proposes to award the contract, the names of the parties to the proposed contract, and the contract's purpose. The notice must be published at least 15 days before the date of the proposed award or meeting.

(c) A qualified provider entering into a guaranteed energy savings contract under this Part shall provide security to the governmental unit in the form acceptable to the Office of the State Treasurer and in an amount equal to one hundred percent (100%) of the total cost of the guaranteed energy savings contract to assure the provider's faithful performance. Any bonds required by this subsection shall be subject to the provisions of Article 3 of Chapter 44A of the General Statutes. If the savings resulting from a guaranteed energy savings contract are not as great as projected under the contract and all required shortfall payments to the governmental unit have not been made, the governmental unit may terminate the contract without incurring any additional obligation to the qualified provider.

(d) As used in this section, "total cost" shall include, but not be limited to, costs of construction, costs of financing, and costs of maintenance and training during the term of the contract. "Total cost" does not include any obligations on termination of the contract before its expiration, provided that those obligations are disclosed when the contract is executed.

(e) A guaranteed energy savings contract may not require the governmental unit to purchase a maintenance contract or other maintenance agreement from the qualified provider who installs energy conservation measures under the contract if the unit of government takes appropriate action to budget for its own forces or another provider to maintain new systems installed and existing systems affected by the guaranteed energy savings contract.

(f) In the case of a State governmental unit, a qualified provider shall, when feasible, after the acceptance of the proposal of the qualified provider by the State governmental unit, conduct an investment grade audit. If the results of the audit are not within ten percent (10%) of both the guaranteed savings contained in the proposal and the total proposal amount, either the State governmental unit or the qualified provider may terminate the project without incurring any additional obligation to the other party. However, if the State governmental unit terminates the project after the audit is conducted and the results of the audit are within ten percent (10%) of both the guaranteed savings contained in the proposal and the total proposal amount, the State governmental unit shall reimburse the qualified provider the reasonable cost incurred in conducting the audit, and the results of the audit shall become the property of the State governmental unit.

(g) In the case of a State governmental unit, a qualified provider shall provide an annual reconciliation statement based upon the results of the measurement and verification review. The

statement shall disclose any shortfalls or surplus between guaranteed energy and operational savings specified in the guaranteed energy savings contract and actual, not stipulated, energy and operational savings incurred during a given guarantee year. The guarantee year shall consist of a 12-month term commencing from the time that the energy conservation measures become fully operational. A qualified provider shall pay the State governmental unit any shortfall in the guaranteed energy and operational savings after the total year savings have been determined. A surplus in any one year shall not be carried forward or applied to a shortfall in any other year. (1993 (Reg. Sess., 1994), c. 775, s. 3; 1995, c. 295, s. 2; 1999-235, s. 3; 2002-161, s. 4; 2003-138, s. 1; 2006-190, s. 3.)

**§ 143-64.17C:** Repealed by Session Laws 2002, ch. 161, s. 5, effective January 1, 2003, and applicable to contracts entered into on or after that date.

**§ 143-64.17D. Contract continuance.**

A guaranteed energy savings contract may extend beyond the fiscal year in which it becomes effective. Such a contract shall stipulate that it does not constitute a direct or indirect pledge of the taxing power or full faith and credit of any governmental unit. (1993 (Reg. Sess., 1994), c. 775, s. 3; 2002-161, s. 6.)

**§ 143-64.17E. Payments under contract.**

A local governmental unit may use any funds, whether operating or capital, that are not otherwise restricted by law for the payment of a guaranteed energy savings contract. State appropriations to any local governmental unit shall not be reduced as a result of energy savings occurring as a result of a guaranteed energy savings contract. (1993 (Reg. Sess., 1994), c. 775, s. 3.)

**§ 143-64.17F. State agencies to use contracts when feasible; rules; recommendations.**

(a) State governmental units shall evaluate the use of guaranteed energy savings contracts in reducing energy costs and may use those contracts when feasible and practical.

(b) The Department of Administration, through the State Energy Office, shall adopt rules for: (i) agency evaluation of guaranteed energy savings contracts; (ii) establishing time periods for consideration of guaranteed energy savings contracts by the Office of State Budget and Management, the Office of the State Treasurer, and the Council of State, and (iii) setting measurements and verification criteria, including review, audit, and precertification. Prior to adopting any rules pursuant to this section, the Department shall consult with and obtain approval of those rules from the State Treasurer.

(c) The Department of Administration, through the State Energy Office, may provide to the Council of State its recommendations concerning any energy savings contracts being considered. (2002-161, s. 7; 2003-138, s. 2.)

**§ 143-64.17G. Report on guaranteed energy savings contracts entered into by local governmental units.**

A local governmental unit that enters into a guaranteed energy savings contract must report the contract and the terms of the contract to the Local Government Commission. The Commission shall compile the information and report it biennially to the Joint Commission on Governmental Operations. In compiling the information, the Local Government Commission

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shall include information on the energy savings expected to be realized from a contract and, with the assistance of the Office of State Construction, shall evaluate whether expected savings have in fact been realized. (1993 (Reg. Sess., 1994), c. 775, s. 9; 2006-190, s. 4.)

**§ 143-64.17H. Report on guaranteed energy savings contracts entered into by State governmental units.**

A State governmental unit that enters into a guaranteed energy savings contract must report the contract and the terms of the contract to the State Energy Office of the Department of Administration within 30 days of the date the contract is entered into. In addition, within 60 days after each annual anniversary date of a guaranteed energy savings contract, the State governmental unit must report the status of the contract to the State Energy Office, including any details required by the State Energy Office. The State Energy Office shall compile the information for each fiscal year and report it to the Joint Legislative Commission on Governmental Operations and to the Local Government Commission annually by December 1. In compiling the information, the State Energy Office shall include information on the energy savings expected to be realized from a contract and shall evaluate whether expected savings have in fact been realized. (2002-161, s. 8; 2006-190, s. 5.)

**§ 143-64.17I. Installment and lease purchase contracts.**

A local governmental unit may provide for the acquisition, installation, or maintenance of energy conservation measures acquired pursuant to this Part by installment or lease purchase contracts in accordance with and subject to the provisions of G.S. 160A-20 and G.S. 160A-19, as applicable. (2002-161, s. 8.)

**§ 143-64.17J. Financing by State governmental units.**

State governmental units may finance the acquisition, installation, or maintenance of energy conservation measures acquired pursuant to this Part in the manner and to the extent set forth in Article 8 of Chapter 142 of the General Statutes or as otherwise authorized by law. (2002-161, s. 8.)

**§ 143-64.17K. Inspection and compliance certification for State governmental units.**

The provisions of G.S. 143-341(3) shall not apply to any energy conservation measure for State governmental units provided pursuant to this Part, except as specifically set forth in this section. Except as otherwise exempt under G.S. 116-31.11, the following shall apply to all energy conservation measures provided to State governmental units pursuant to this Part:

- (1) The provisions of G.S. 133-1.1.
- (2) Inspection and certification by:
  - a. The applicable local building inspector under Part 4 of Article 18 of Chapter 153A of the General Statutes or Part 5 of Article 19 of Chapter 160A of the General Statutes; or
  - b. At the election of the State governmental unit, the Department of Administration under G.S. 143-341(3)d.

The cost of compliance with this section may be included in the cost of the project in accordance with G.S. 143-64.17A(c1) and may be included in the cost financed under Article 8 of Chapter 142 of the General Statutes. (2002-161, s. 8.)

**§§ 143-64.17L through 143-64.19. Reserved for future codification purposes.**