Disclaimer:
The State Energy Office of North Carolina would like to thank the National Energy Services Coalition for allowing the use of this resource for USI participants. A great deal of work went into compiling this information into a single location. As you go through this program and/or have additional questions, please contact Reid Conway reid.conway@ncdenr.gov.

GESPC-U Lesson #108:

The Investment Grade Audit: Kick-Starting the IGA Process

FYI: Terms and Acronyms can be found on the last page

Summary: We walk through the list of facility and system background information that Owners and ESCOs collect that allows an ESCO to begin the investment grade audit process.

To effectively begin the IGA process, the ESCO needs to collect a significant amount of information regarding the buildings and systems the owner wishes to include in the scope of the IGA analysis. Often, Owner's collect and share some preliminary information with the ESCOs, during the ESCO selection process. This would typically include the list of facilities and systems to be considered and at a minimum the total square footage of each of the buildings. This is the same information provided back in the RFP with the Facilities to be Analyzed but way more in-depth.

Now that an ESCO has been selected and an IGA contract has been executed the Owner and the ESCO begin working in partnership to collectively deliver the best project possible. Providing and verifying information, disclosing concerns or past challenges and issues, working together to make iterative decisions, availing staff for interviews, sharing perspectives and priorities -- all characteristics of good partnering that are the foundation of a successful project.

The guidance in the IGA contract specifies the owner as the source for the information that the ESCO requires to begin their analyses. To the best of their ability and as accurately as possible, the owner should provide various information to their ESCO about the buildings and systems in the scope of the IGA. But to be sure, as is also stated in the model contracts, it is then the ESCO's responsibility to confirm and verify all the information provided. So, as you read this, know that your facility maintenance staff will be heavily involved during this whole process. Who knows your buildings better?

Let's walk through a sample list of some of this pertinent information. Most of the information the ESCO needs seems straight forward and logical and should be accessible to the owner. The gross area, or square footage of each building is a good starting place. If this information is not readily available to the owner, a good resource is the insurance company policies which typically have this information on record. The size of a building not only provides the ESCO a preview of the potential time they may need to audit the building, but it will also be used in their calculation of multiple "per square foot" metrics. These will include at a minimum, energy and water use and cost per square foot. If the ESCO has done a good job with their RFP response, these key performance indicators will already be known. These simple analyses will allow an apples-to-apples comparison of the buildings. In an ideal world, if the owner's records can provide additional breakdown of areas of similar purpose and operational needs, like classrooms, hallways, gyms, auditoriums, cafeterias, or conference rooms and common spaces; it will be a plus for the ESCO's analysis process.

In addition to the building areas, information regarding building construction types, materials and timelines, the age of the buildings, and information about major additions or renovations, either completed or planned, will be important for the ESCO and to document

in the IGA. What sort of roof, how old is it, when is it expected to be replaced, what condition is it in? Are these single pane wooden windows, or double paned, energy efficient aluminum clad windows? And what about the doors, insulation, penetration sealing and fans? Don't miss the opportunity to add pictures to these descriptions, they can prove ever so helpful in capturing the preconstruction condition of the facilities and systems. Many of these were identified as part of the preliminary walk-thrus that were done as part of the RFP.

Additionally, what are the operating schedules and occupancy levels of the buildings and their energy consuming equipment? And remember, if those schedules and occupancy counts are different for different spaces, those details will be important. Ideally, building and equipment operating schedules are readily available through, perhaps, a central building automation system or equipment operation logs from which detailed information may be gleaned. If not available, then the ESCO will undertake the task of learning this information through their on-site visits and discussions with the owner and staff as well as with building occupants.

The owner and the building occupants should call attention to any issues in their spaces, such as comfort, or lighting issues. It is far more important than our words here can emphasize that existing issues be shared and documented and subsequently the parties can agree on how they will impact the project. The ESCO may need to perform detailed metering and monitoring of some equipment to provide the data needed for an accurate analysis. Beware, there is sometimes a temptation to shortcut some of these descriptions or processes – bluntly, this is not advisable.

There may also stand-alone systems such as exterior lighting upgrades for street lighting, parking lot, security or playing field lights. Water projects including irrigation system upgrades and other water projects.

As much information about these systems that can be provided by the owner will go a long way in assuring the ESCO best understand these systems.

Maintenance expenditures is another history that should be collected and provided. The purchasing or finance departments may have invoices or check records for maintenance services, parts replacements, or service contract costs on certain pieces of equipment. Many performance contracts include some level of maintenance cost reduction and perhaps rightfully so. These operational savings will need to specifically verify and approved by the owner. While new equipment and systems will have maintenance costs, they rarely meet or exceed those of old or failing systems. And so, as a part of equipment or systems upgrade, the operating and maintenance costs may be reduced. You might assume that in the first year there may be no maintenance costs, but this would be in error. This will never be the case. The efficiency of equipment and systems is predicated on the reliance that they will be maintained and by whom as prescribed in the contract.

All this to say, the importance of establishing a baseline cost of operation and maintenance on the buildings and the equipment that is going to be affected is essential to be able to prove the reduction in Operation and Maintenance costs. Remember that any operational savings is not in the utility budget, and so allowing for operational savings this must be budgeted from a separate account. Think of it this way, the owner will need to move funds out of the operational budget over into the account used to repay the loan for the performance contract. Most operational budgets are underfunded, so any reduction of funds needs to be carefully considered and understood.

Another potential positive outcome of having an ESCO review the maintenance records is reviewing existing service contracts – a

common refrain often heard is an owner saying, “we haven’t seen that maintenance contractor here in three years, yet we still get a six-month invoice for service that they claim was provided to our facility”. Discovering those type of situations is instant cost savings.

What is discovered in the process of a quality audit is always quite telling. Discovering and documenting things that don’t work, or have been limping along working poorly, literally held together by baling wire and duct tape, become ever evident when an ESCO is tasked with identifying the working status and condition of a scope of work while looking for comprehensive ways to improve.

The results of this work assembling this abundance of information may be the only time that an accurate and complete picture of the pre-construction state of the buildings and systems can be captured. The temptation may be great to shortchange this effort, but the regret of that decision could last for decades. For sure, the collection of detailed background, status, maintenance, and service, even occupant complaint information is real work. But no matter how broad or narrow the scope of work may be -- this level of detail is essential to document and result in an accurate assessment and analysis for the IGA.

A few quick examples prove this point rather well.

- After a quick interview or two, the resultant IGA description of when facilities are used, and their occupancy reads 1470 people occupy these facilities for 2376 hours per year. This reflects a year of the 8 to 5 workdays. This sort of generalization across each day, each month for all spaces defeats the ability to really understand the operations and usage of the facilities. From this sort of summary, there is no way to align when or how many people were in part or all the facilities to contrast with post construction or future performance years of the project. What is

really needed is more like the working or attendance schedules of those occupants, per facility, which may be different for different people for different areas of each facility, the days they normally worked, the holidays they took, when the cleaning crews arrived and when they left. With COVID this is even more critical.

- Imagine reading a report that covers 12 different facilities and seeing a little chart about Standards of Comfort (that's how things like light levels, fresh air requirements, space temperature and humidity are typically defined) that summarizes, these facilities are operated with a winter and summer set point temperature as follows respectively. There are so many things wrong about this. For one, yes engineers typically must know set point temperatures to manage the math of estimating consumption and projected savings, but for many facilities, the temperature in the space is far more important to the occupants and their working or learning comfort than the set point on a thermometer or control system device. And to think that the space temperature is the same throughout an entire facility is hard to imagine. What is really needed is the space temperature and humidity ranges that the Owner and occupants agree reflect reality of what they've been living with in each functional space or area, in each building, with some typical number of occupants, during all seasons.

Recognizing the level of granular detail needed for various workspaces that have different purposes really becomes the science of a study in the end.

This is the preface of the text of how to construct an IGA -- where the owner will do their due diligence to collect all these attributes of information about their facilities and share them with the ESCO to

validate and confirm each and every one, so the final report shares the preconstruction status and conditions with folks approving the performance contract. But also provides a historical record for the people who may be in those roles five, ten, twenty years down the road.

Once you feel comfortable with the information above, please scroll down and complete the quiz below. Email your answers to Reid Conway at reid.conway@ncdenr.gov. If you have additional questions, feel free to include them as well.

Lesson 7 Quiz

1. Why is the role of the Owner at the beginning of the IGA?
2. What is the role of the ESCO at the beginning of the IGA?
3. Where can I go to find out the square footage of a building?
4. Why does the owner need to be careful about agreeing to operational savings?
5. What is operational saving?
6. Why is level of detail important to a PC project?

Terms and Acronyms

3rd Party	3rd Party Engineer
COS	Council of State
DOA	NC Department of Administration
DPI	NC Department of Public Instruction
ECM	Energy Conservation Measure
ESA	Energy Services Agreement
ESC	Energy Services Coalition
ESCO	Energy Service Company could be interchangeable with QP
ESPC	Energy Saving Performance Contracting
GEPC	Guaranteed Energy Performance Contracting
GESPC	Guaranteed Energy Saving Performance Contracting
GS	General Statute
GU	Governmental Unit
IGA	Investment Grade Audit
IPMVP	International Performance Measurement and Verification Protocol
LGC	Local Government Commission (Housed in the Treasurer's Office)
LGU	Local Governmental Unit
M and V	Measurement and Verification
OR	Owner's Representative
OSBM	NC Office of State Budget and Management
PC	Performance Contracting
Pre-Bid	Meeting held prior to the bid opening
QP	Qualified Provider could be interchangeable with ESCO
QR	Qualified Reviewer
RFP	Request for Proposal
SEO	State Energy Office
UNC	Refers to the UNC System
USI	Utility Savings Initiative