

**Delaware Public and Institutional  
Energy Performance Contracting Program  
Guidebook ~ 2016**

Delaware  
Sustainable  
Energy Utility



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**Public and Institutional Performance Contracting Program Guidebook**  
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**I. Program History**

The Delaware Sustainable Energy Utility (SEU) was established by the State of Delaware in 2007 to promote, provide, and invest in energy efficiency services and renewable energy generation. Specifically, SEU was enabled to issue tax exempt bonds and enter into contracts with State Agencies under Title 29 Section 8059 (f)(2) and (g) for the purpose of financing Energy Saving Performance Contracts (ESPC) in accordance with The Energy Performance Contract Act (Title 29, Subchapter V of the Delaware Code). The DESEU operates its programs under the trade name "Energize Delaware".

The Energize Delaware Performance Contracting Program was developed to provide a mechanism through which energy conservation measures (ECMs) can be implemented in publicly owned facilities. The financing for this program is expected to be funded primarily through tax-exempt bonds, but direct loan may also be used under limited conditions. Because of this funding source, participants must be eligible to access this type of financing. For this program, publicly owned facilities include any state agency, authority, and political subdivisions of the State or local government, including counties, cities, local school districts, institutions of higher education, any state-supported institution, or a joint action agency composed of political subdivisions. Some larger non-profit institutional energy users may also be eligible, although further analysis of eligibility may be necessary.

Taxable bond financing and direct loans may be used in the future for potential participants who are not eligible for tax-exempt funding.

**II. Energy Service Company Pre-qualification**

As the initial step in the Performance Contracting process, the SEU issued a Request for Qualifications (RFQ) to a group of Energy Services Companies (ESCOs). An ESCO is a firm that identifies and oversees the installation of energy saving projects. In addition, the ESCO guarantees that the project's energy cost savings will be adequate to pay the project debt. The ESCOs responded to the RFQ by submitting a summary of their qualifications and experience, client references, examples of investment grade audits and their guaranteed energy savings portfolios. Review of the submissions has been conducted by the SEU, and ESCOs that met the qualifications have been included in an ESCO pool. ESCOs have been pre-qualified to participate in energy related projects at publicly owned facilities. The RFQ process is ongoing, and additional ESCOs are encouraged to respond. The ESCO listing is available on the Energize Delaware website <http://www.energizedelaware.org/Performance-Contracting-Program>.

In accordance with Delaware Code Title 29, Chapter 80, Subchapter II, Section 8059(k), the State or other publicly owned facilities (Agencies) may enter into performance contracts directly with SEU-qualified ESCOs. Also, performance contracts through the SEU's tax exempt financing do not constitute a public debt or tax supported obligation. The relevant Delaware Code citation is cited below:

(k) Contracts with the State or agencies. -- The State or any agency may enter into contracts with the SEU or a qualified provider (as defined in § 6972(5) of this title) for the purpose of acquiring, constructing, operating, or providing a project undertaken by an implementation contractor or qualified provider, including arrangements for paying the costs of such project, which costs may include debt service requirements of the SEU relating to that project. If the SEU procures an implementation contract in accordance with subsection (g) of this section, a contract between the SEU and the State or an agency that provides the benefit of the implementation contract to the State or agency may be entered into by the State or agency without additional competitive procurement.

No obligation of the State or an agency under an installment payment agreement, a guaranteed energy performance contract or any other agreement entered into in connection with a project under this Chapter 80 or Chapter 69 of this title shall constitute or create a debt of the State or agency. No such obligation of the State or an agency shall constitute a tax supported obligation or a bond or a note of the State as provided in Chapter 74 of this title.

### **III. SEU Notification and Letter of Intent**

Agencies must notify the SEU of their interest in the Performance Contracting Program. The SEU will provide information and guidance on the process. The Agency will be required to sign a Letter of Intent, which defines the responsibilities of the SEU, Agency, and ESCO. The Letter of Intent also contains the listing of pre-qualified ESCOs, Investment Grade Audit Agreement, and SEU Fees.

### **IV. SEU and Agency ESCO Procurement/Selection Process**

The selection of an ESCO can be accomplished under one of three methods:

- Direct ESCO Selection,
- Streamlined Qualifications Based ESCO Selection, and
- Comprehensive Request for Proposals (RFP) Based ESCO Selection.

(Please see a process flow diagram in Attachment #1). Under the first method, ESCOs can be selected directly by the Agency. An example would be where an established relationship or experience with a particular ESCO exists.

Under the second method, the ESCO is still selected using a streamlined process; however, review of qualifications from more than one ESCO are warranted/required by the Agency. Review of ESCO-supplied information and qualifications submitted under the pre-qualification process can be utilized to issue a Notice of Opportunity (NOO) to a selected pool of ESCO participants. The SEU maintains a listing of executive summaries from each ESCO's statement of qualifications. The NOO is issued to two or more ESCOs to determine their interest in the proposed project. Based on the response, ESCOs are short-listed to participate in an interview process, with the assistance of the SEU. Based on the results of the review and interview process, the ESCO that best meets the needs of the Agency is selected.

In accordance with State law, a formal procurement process is not required since ESCOs

have been pre-qualified by the SEU. However, in cases where an Agency may want to undertake a formal competitive process, the third method is utilized in which the Agency prepares and issues an RFP. The Agency RFP needs to comply with Title 29, section 69.61 and 69.62 and any other applicability state procurement regulations. Selection of the ESCO best qualified for the Agency's project is based on the evaluations of the RFP and the oral interview process.

#### **V. Investment Grade Energy Audit Agreement**

After the ESCO procurement process, an Investment Grade Audit Agreement will be executed between the Agency and ESCO. This agreement authorizes the ESCO to conduct an IGA, and provides audit scope and report requirements, termination and compensation provisions, timeline for ESCO report submission, timeline for Agency start of Guaranteed Energy Savings Agreement (GESA) negotiation, and responsibilities of each party.

It is expected that the savings guarantee proposed in the IGA will result in 10% net savings annually to the Agency after all project financing and service fees are paid. The Agency will have the right to terminate the IGA agreement if the 10% net savings are not achieved.

#### **VI. Investment Grade Audit Report**

After signing the Investment Grade Audit Agreement, the ESCO will conduct the detailed audit of the facility. The IGA is conducted to analyze cost-effective Energy Conservation Measures (ECMs) for facility systems including, but not limited to, envelope, lighting, HVAC equipment, central steam, hot water and chilled water systems, domestic hot water and other water using systems, and building automation controls. Current utility rates will be used for the purpose of calculating energy and utility cost savings, and energy and utility cost escalation factors shall be agreed upon by the Agency and ESCO during the development of the IGA. A detailed presentation and analysis of current rate structures must be presented by the ESCO and used in the savings analysis, including a presentation and explanation of marginal rates to be used. Average rate calculations are not to be utilized. The IGA results in a two-volume Audit Report, the contents of which are detailed in the IGA Agreement. This includes (but is not limited to) basic information below as well as the required schedules and information listed in the Investment Grade Energy Audit Agreement.

- General Information/Facility Description/Baseline: facility name, description, baseline information (energy use indices, square footage, utility use/rates/marginal costs, weather normalized utility baselines, Energy Star score, existing equipment inventory, sequences of equipment operation, hours of operation, etc.);
- Project Summary: energy and cost savings (energy and operational) expected from the ECMs and O&M recommendations, maximum guaranteed project cost (including engineering and design, permits, materials, construction, commissioning, ESCO fees, financing fees, measurement and verification fees, etc.), savings guarantee, project cash flow over the term of the project financing, including any capital infusion, financing expenses, commissioning and M&V costs;
- For each ECM proposed for installation: baseline conditions, proposed conditions,

energy savings calculations, environmental costs/benefits, quantities, specifications, warranties, commissioning requirements, and method of M&V; ECM Summary Table (in specified eProject Builder format – see Attachment #2);

- For ECMs analyzed but not proposed for installation: baseline conditions, proposed conditions and reasons why not recommended;
- ECMs proposed/analyzed but not chosen by the Agency;
- Improvements to operations and maintenance (O&M) practices for existing equipment;
- Detailed project specific M&V Plan;
- Detailed project completion schedule;
- Definition of comfort conditions to be maintained at the facility;
- Identification of the services and associated costs for the ESCO during the course of the project, including, but not limited to, engineering, construction management, commissioning, preparation of O&M procedures, training of facility personnel, equipment start-up, HVAC testing, adjusting and balancing (TAB), functional performance testing, warranty services, and equipment maintenance; and
- The nature and extent of work and equipment that the ESCO will receive from other firms under subcontract.

Agency in-house labor, deferred maintenance cost or offset of future capital cost, material savings, or any other operational savings shall not be included in cost savings. The maximum guaranteed construction cost represents project design, construction, ESCO's construction and project administration, system commissioning, bidding, bonding, overhead and profit, permits, taxes, training, cost and saving guarantees, and other costs that may be agreed to by the ESCO and the Agency, such as an Owner controlled contingency fund to cover unforeseen repairs that are not the ESCO's responsibility. Documentation of any agreed upon list of approved subcontractors to be used for the Project to be included in Schedule E. Project costs and Construction Price are to be provided in the format shown in Schedule F.

The Agency's cash flow, including savings, cost of measurement and verification services, other annual services, and loan repayments, should deliver 10% net savings to the agency based on guaranteed savings. Project cash flow is to be provided in the format shown in Schedule J.

The ESCO is also required to report the number of personnel to be employed on the project as a result of the full implementation of the Energy Savings performance Contract. For each Project, the ESCO is required to provide a process and mechanism for the tracking of "hours" for direct jobs to the ESCO, including technical, engineering, and management personnel and for subcontractor jobs for the installation of equipment and other services. Subcontractors will be categorized into "in state" and "out of state" contractors. This hour/job tracking data is to be reported to DESEU. Initial projections of anticipated hours to be supplied to DESEU prior to signing of the GESA. Actual reports to be supplied to DESEU during construction and at final project completion.

As stated in the IGA Agreement, the ESCO is to submit interim deliverables for

components of the IGA to the Agency for review and discussion: the Preliminary Audit and Baseline and the Interim Audit/Preliminary ECM discussion and economics. Please see Section VIII for more information regarding these submissions.

## **VII. Measurement & Verification (M&V)**

Measurement and Verification (M&V) is an inherent part of any Energy Savings Performance Contract. The project specific M&V Plan established in the GESA (Schedule I) contains the contractual definition of how savings will be determined and verified for the project after installation of the ECMs. While this is a key requirement for a performance contract where the ESCO must prove that the Guaranteed Savings has been met, there are also considerations and benefits that the Agency should consider when collaborating with the ESCO on the M&V Plan. These consideration/benefits could include items such as Agency energy or metering reporting requirements; budget forecasting; data collection and acquisition systems for ongoing monitoring, evaluation and troubleshooting (continuous commissioning) for Facilities, operations and maintenance departments; cost/energy allocations between facility end users/tenants and overall improved data analytics and reporting for Agency management down to day to day maintenance staff. Therefore, the Agency should consider and develop their desired goals and requirements for the M&V program and discuss these with the ESCO.

M&V of savings is a process – not a task that is executed at the end of the project construction. The M&V process begins at project inception with the start of the IGA project development process. Since the site specific M&V Plan defines how savings will be defined and verified to prove the Guarantee has been met, the M&V Plan is a core contractual document for the PC project. To ensure success of the project, the Agency must be comfortable that the M&V Plan meets their goals and they understand and agree with the proposed savings verification process.

Savings cannot be directly measured since savings represent the absence of energy consumption or demand. Therefore, savings must be determined and verified by comparing measured energy consumption or demand before and after implementation of a project/ECM, making appropriate adjustments for changes in conditions. The basic definition of verified savings is shown below:

$$\text{Savings} = (\text{Baseline Period Energy} - \text{Reporting Period Energy}) \pm \text{Routine Adjustments} \pm \text{Non-Routine Adjustments}$$

When should M&V planning start?

As soon as possible when the ESCO has a conceptual list of ECMs or ECM technology categories for the project, an M&V approach needs to be developed and submitted to the Agency for discussion. It is required that ESCOs and Agencies follow the International Performance Measurement and Verification Protocol (IPMVP) as the basis for their development of M&V approaches and plans. These protocols are the 'gold standard' for M&V in the ESPC industry today. This M&V approach or draft M&V Plan should include, for each facility and potential ECM/ECM types, the IPMVP M&V Option proposed.

The IPMVP Options can be categorized as ECM Isolation approaches (Option A: Key

Parameter Measurement or Option B: All Parameter Measurement) or Whole Facility approaches (Option C: Whole Facility or Option D: Calibrated Simulation). It is recommended that the Agency and ESCO use the M&V Option Selection Process Diagram (included as Attachment #3) as well as the R, R & P Checklist (included as Attachment #4) as M&V planning tools. The R, R & P Checklist is intended to assist the Agency and the ESCO in discussing the many variables that can impact savings and to understand the various associated risks and how to best assign responsibilities for these for the Agency specific project and project specific M&V plan. These tools and discussions will help determine the pros and cons of the various M&V options and to agree on the best approach for the parties, that meets the Agency goals, with acceptable uncertainty and reasonable costs for the M&V program.

Submission of the draft M&V approach/Plan early in the IGA development process facilitates:

- A collaborative process between the ESCO and the Agency for the M&V Plan development; discussion of site specific issues and potential challenges to consider in the selection of M&V options.
- Discussion and agreement on the factors that can affect the savings (financial, operational, and performance), identification of the risks, and allocation of responsibilities of each to the ESCO, the Agency or neither.
- Definition and discussion of Baseline activities that must be conducted during the IGA development process and which may vary based on the M&V option path chosen. ESCO and Agency to discuss and agree on baseline measurement and data collection plan.

The ESCO is to provide an M&V Plan and process that is adherent with the IPMVP with any exceptions noted, discussed and agreed to with the Agency. For Retrofit Isolation M&V Options, consider the following guidelines.

#### Option A

If an Option A Key Parameter Measurement M&V option is proposed for lighting upgrade and/or water conservation ECMs, it is recommended that IPMVP/FEMP standard M&V plans be developed based on Baseline and Post-Installation statistical sampling plans for fixture measurement (key parameter measurement).

#### Option B

Option B should be utilized wherever possible and practical based on metering situations. Option B should be evaluated in particular for central utility plant upgrades (chilled water plants, boiler plants), cogeneration plants, renewable generation systems, etc. where energy streams can be more practically measured.

For whole facility based M&V plans, consider the following:

#### Option C

Where Option C methods are chosen, it should be clear that this is a whole facility approach where ECM specific savings will not be verified. Option C requires valid

historical baseline utility data (24-36 months or monthly utility data) as well as valid correlation of utility use to defined independent variables (weather, etc.).

The resulting baseline mathematical regression equations must be documented in the M&V Plan for approval by the Agency.

Option C can only be used where savings are projected to be significant (greater than 10-15%) compared to the meter which is used as the basis. Another critical component of an Option C approach is the proper definition and documentation of static factors which become the basis for any non-routine adjustments. (Independent variables which are defined as part of the mathematic regression modeling for an Option C baseline become the "routine adjustments". Static baseline factors, such as operating hours, occupancy, and space use, become the basis for non-routine adjustments, if these factors do in fact change from baseline conditions.) These non-routine adjustments are one of the biggest challenges for Option C; therefore, it is very important that baseline static factors be detailed and documented in the M&V Plan.

In addition, how the static factors will be tracked throughout the performance period must be defined along with the responsibilities of both parties. Finally, the methods for applying non-routine adjustments must be presented in the M&V Plan. During the performance period, any non-routine adjustment must be presented, discussed and agreed to with the Agency before incorporation into verified energy savings M&V reporting.

#### Option D

Option D Calibrated Simulation depends inherently on the execution by skilled energy engineers performing the detailed simulation models. The baseline simulation model must accurately depict the current baseline operation of the facility (capturing the non-optimum characteristics) as well as the projected ECM operation. For both baseline and post-installation model calibration, measurement, and monitoring of subsystems such as HVAC, major electrical must be part of the calibration process. For Option D, post-installation calibration must be performed during the reporting period for at least 2 – 3 years. After this period, the method could be converted to an Option C type method, monitoring the sustained performance of the facility, but this would have to be defined and detailed in the M&V Plan.

For all M&V Options, the ESCO must discuss and explain the proposed savings methodology as "avoided cost savings" or "normalized savings". For avoided cost savings, both terms of the savings equation (Baseline and Reporting Period) are presented under the Reporting period conditions. If savings are to be verified as normalized savings, both terms presented under "normal" period conditions (such as 30 year average or normal weather data).

During the Reporting Period or Savings Year, the ESCO must, at least annually, inspect the ECMs and report findings in the Annual Statement for the Agency. It is recommended that more frequent inspections be considered, such as Quarterly, taking into account the complexity of the ECMs, the M&V options selected, O&M responsibilities, as well as the associated benefits and costs. This needs to be discussed between the Agency and the

ESCO, based on the specifics of each project, the nature of the ECMs, the M&V methods to be utilized and the economics and cashflow of the project.

The costs for M&V should be appropriate for the size of the project and annual guaranteed savings and should also be proportional to the value of the benefits as well as the uncertainty. In general, lower levels of uncertainty will result in higher costs. It should be understood that any savings verification program will have an element of uncertainty so the goal is to understand the components of the uncertainty and focus effort and cost on reducing those components of uncertainty that have the highest level of impact on the performance of the ECM and savings. Often this involves making the decisions on which parameters to measure and which parameters may be estimated, based on sound methodologies. Per IPMVP, in general, the M&V costs should be less than 10% of the average annual savings. For the DOE Federal ESPC Program, historical costs for M&V have been in the 2 – 5% of annual savings range, with an overall average of 3%. These are overall high level guidelines on M&V costs, but each M&V Plan needs to determine that project specific tradeoff level between acceptable uncertainty and costs while meeting Agency goals.

As stated above, the initial M&V approach/plan should be submitted as early as possible in the IGA development, but no later than with the Preliminary Audit/Baseline submission. After initial review, discussion, and comment resolution, the M&V Plan will continue to be refined with periodic updates such as at the Interim Audit/Preliminary ECM submission, as well as the final M&V Plan draft submitted with the draft IGA Report. The proposed outline or content for the M&V Plan is provided in Schedule I guidance, as well as attached at the end of this document (see Attachment #5).

The goal is to ensure that the final M&V Plan is well-defined, addresses the risks and responsibilities fairly between the ESCO and the Agency, and meets the Agency's goals for performance and savings verification reporting while balancing costs and uncertainty. Overall, a successful M&V Plan will be one that the Agency understands and is comfortable with.

### **VIII. Investment Grade Audit Report Review**

The Agency and the SEU (possibly with the assistance of third-party engineers/ Independent Owners Representatives (IOR)) thoroughly review the proposed ECM technical scopes, energy savings calculations and supporting documentation, and verify the information and savings contained within the Audit Report are reasonable and technically sound. The finalized Investment Grade Audit Report is the basis for negotiation of the scope of work and ESCO services under the Guaranteed Energy Savings Agreement.

As described above and in the IGA Agreement, the ESCO is to submit interim deliverables during the IGA development process to facilitate communication and agreement between the ESCO and Agency at key development milestones, enabling a more productive development for all parties and resulting in a draft final IGA report that will not require substantial rework or lost opportunities. The review process for these interim deliverables will be between the Agency and the ESCO, with reasonable response

periods mutually established to facilitate an efficient development process. The following is a brief discussion of these interim deliverables.

#### 1<sup>st</sup> submission – Preliminary Audit Report and Baseline Results

The main intention for this submission is for the ESCO to present the definition and documentation of the Baseline to achieve agreement on the baseline development for the project. Discussion and agreement on the Baseline will facilitate further IGA and ECM development and savings calculation process. Documentation for this submission will include the following:

- Documentation and presentation of project facility Baseline for Agency review and agreement.
- Confirmation that the baseline and documentation accurately depicts the current facility systems and operation.
- Historic utility analysis including weather normalized baseline; utility rate structure analysis, and marginal rate definitions. Selection of representative baseline period.
- Draft M&V approach.
- Consistency between M&V approach baseline activities.
- Facility site data and results of measurement plan to support baseline values and foundation for ECM calculations.

Again, the goal is to resolve any Baseline issues early in the development process to facilitate an efficient ECM development and calculation process. It is recommended that the ESCO present this baseline submission utilizing the appropriate sections of the IGA report to reduce and minimize any rework for the final IGA report production. This includes Volume 1 draft Schedules B, G, I; Volume 2 Executive Summary and Facility Description/Utility Baseline descriptions.

#### 2<sup>nd</sup> submission – Interim Audit Report/ECM discussion and Preliminary Economics

The purpose of this second submission is for the ESCO to present the refined list of recommended ECMs to be developed for the project along with preliminary scope, costs, and savings for discussion with the Agency. This submission will include:

- ECMs recommended by the ESCO for inclusion in the project, including discussion of any not recommended. Should include brief description of ECM intent and scope for review and clarity for the Agency.
- The project preliminary cash flow analysis (per Schedule N format) under two utility rate escalation scenarios: (1) zero % escalation and (2) EIA/NIST project escalations for each fuel (maximum escalation scenario.) ESCOs to use the default inflation rate. The DOE Federal Energy Management Program (FEMP) publishes an Energy Escalation Rate Calculator (EERC) which can be used to calculate the EIA/NIST escalations for site specific conditions. <http://energy.gov/eere/femp/energy-escalation-rate-calculator-download>.
- Draft ECM Summary table (per attached format). This format is part of the DOE eProjectBuilder (ePB) system and is the format to be utilized. This will facilitate the potential utilization of the ePB electronic documentation and tracking system for DESEU projects in the future.

Based on the review and discussions of this submission, the Agency should be able to provide guidance to the ESCO regarding the ECMs chosen for further development.

Since the economics are still preliminary at this stage, it is not recommended to remove any ECMs based purely on individual economics; however, the Agency should remove any ECMs that the Agency is certain will not be included in the final project. The overall goal is to verify the list of ECMs for final development by the ESCO; determine escalation option for Agency selection; understand options for balancing project term through discussion and understanding of the project preliminary cash flow; determine ECM scope and bundle selection; determine level of Annual services to be included, etc.

When ready, the ESCO will then submit the final IGA report (complete Volumes I and 2), incorporating all comments from the first two submissions and associated reviews, for final Agency review.

If the Agency is unable or chooses not to proceed with the GESA, the Agency is responsible for the cost of the IGA. If the agency decides to proceed with the project, the cost of the may be included in the project financing and amortized over the project term.

#### **IX. Guaranteed Energy Savings, Installment Payment, Program and Agency Agreements**

The Agency executes the Guaranteed Energy Savings Agreement with the ESCO. The Guaranteed Energy Savings Agreement includes all terms and conditions required to execute the project between the Agency and ESCO. It also includes the Guaranteed Completion Date (Schedule C) which determines the date when project Installment payments begin, per the Installment Payment Agreement. The Installment Payment Agreement, executed between the Agency and SEU, represents payments to be made by the Agency to the SEU for repayment of the bond financing for the Project.

The SEU executes the Program Agreement with the ESCO and the Agency. The Program Agreement requires the SEU to make construction progress payments based on the construction price to the ESCO.

The SEU executes the Agency Agreement with the Agency and OMB. The Agency Agreement represents the Agency's consent to the assignment of payment from the ESCO to the SEU under the Program Agreement, and acknowledges that remedy for non-performance by the ESCO lies against the ESCO and does not constitute a defense to payments assigned to the SEU.

#### **X. Bond Issue**

Projects from various Agencies will be grouped together for the bond issuance. Once sufficient project dollar volume has been aggregated, the bond issuance process will begin. Since the tax exempt financing is secured through the GESAs, signed agreements will be necessary in order for an Agency to participate in bond financing.

#### **XI. Direct Loan**

The SEU has an active Direct Loan program for the purpose of financing ESPC's for organizations that cannot participate in a SEU tax exempt bond issue by virtue of their corporate status or credit rating. However, the Direct Loan funds can be used in support of a tax exempt bond issue in the form of a bridge loan. Direct Loan funds can also be used by state agencies and school districts when their proposed ESPC when tax exempt

bond issue is not being contemplated or will not be available at the time financing is needed.

## **XII. Project Construction**

In order to ensure that Project intent is successfully carried through from Project development to design and construction, it is highly recommended that the ESCO have personnel familiar with the IGA ECM development details working on the design and construction team. It is critical that the knowledge and understanding of the project and ECM details be fully understood by all ESCO team members. During the design process, the ESCO is to commence the commissioning services, including the development and submission to the Agency of the detailed Commissioning (Cx) Plan and the creation of the Cx Team, for Agency review. When the project design is completed and reviewed by the Agency, the ESCO will select sub-contractors and vendors with the assistance of the Agency and SEU as needed. Agencies may establish preferences with the ESCO for contractors and vendors as documented in Schedule E. ESCOs are expected to manage the selection process to ensure appropriate quality and pricing.

The commissioning process is to continue throughout project construction, based on coordinated schedules, and will include associated status meetings, submission of documents for Agency review (Issues logs, checklists, functional performance tests, etc.), and coordination for Agency witnessing of Cx activities. The ESCO is also to submit a schedule to the Agency early in the construction process which details a proposed schedule for all M&V activities to occur during construction and/or post-installation. Often, post-installation M&V activities are closely related or concurrent with Cx activities, so the ESCO is to clearly delineate these with the Agency for proper scheduling, as well as arranging for Agency witnessing activities.

For the project construction, the ESCO has provided a construction schedule which includes a Guaranteed Completion Date, as documented in Schedule C of the GESA. The Guaranteed Completion Date is the date that the Installment Payments begin, per the Installation Payment Agreement, and is also the commencement of the Guaranteed Savings period by the ESCO, which is also known as the Savings Year. When ECM construction is complete, the ESCO will issue Unit Completion Certificates (GESA Exhibit 11) for ECMs that are complete prior to whole project completion (e.g., lighting upgrades are usually completed within the first 3-4 months of construction, while it may take 12 months for HVAC measures to be completed). When an ECM or Unit Completion Certificate is signed, construction period savings can start to accrue. The ESCO is to document the construction period savings and provide this information to the Agency during the agreed upon timing during Construction. The final construction period savings are to be documented in the Construction Period Savings Statement. When all ECMs are completed, the ESCO will issue a Final Completion Certification (GESA Exhibit 12). This document is the formal written notification to the SEU and the Agency that the ESCO has completed installation and commissioning of ESCO equipment and/or provided ESCO services as outlined in the GESA. The Agency will have inspected the project and accepted resolution of any outstanding punchlist items prior to this notice. The ESCO confirms through the Final Completion Certification that they have inspected the project and that it is complete, that all previously identified "incomplete work items" have been

fulfilled, and that the project is providing cost savings sufficient to repay the investment. Acceptance of the Final Completion Certification by the Agency constitutes the date of completion of the construction period and the commencement of the Operating Period for the project and the term of the GSA.

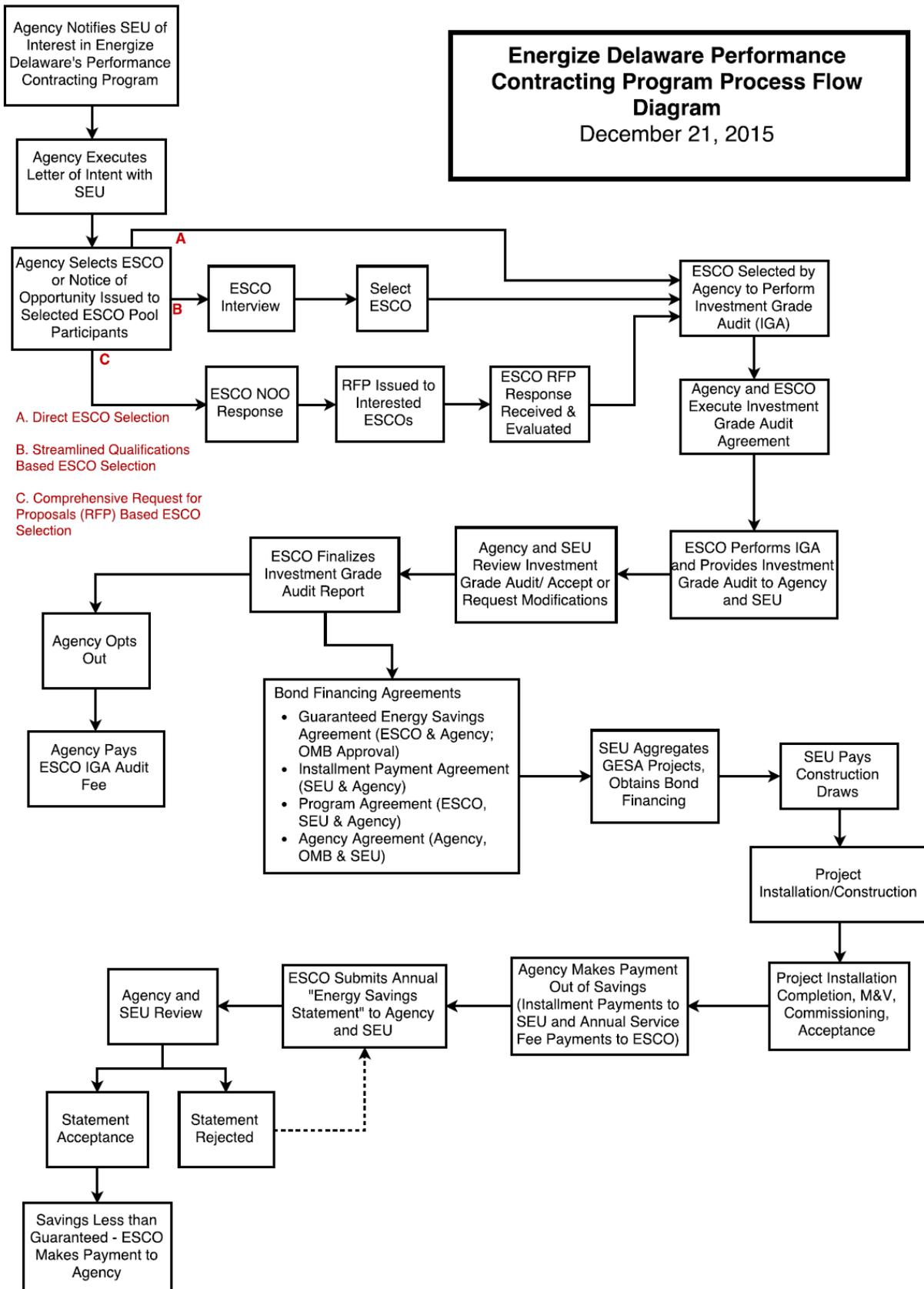
### **XIII. M&V Reporting and Annual Statements**

The ESCO will provide measurement and verification services per the contractual M&V Plan. M&V services are used to verify that energy or other utility savings are indeed being achieved and that the ESCO is delivering the Guaranteed Savings.

For each savings year, the ESCO is responsible for providing an Annual Energy Savings Statement for the project, complete with relevant calculations and supporting documentation. Quarterly reporting may be provided if agreed to between the Agency and the ESCO, with requirements defined in the project M&V Plan. Quarterly reporting would typically be focused on ensuring that the ECMs are operating as predicted and have the potential to perform, while the Annual Statements provide the documentation of the verified savings meeting or exceeding the Guaranteed Savings. In addition to documenting the verified savings for the project, the ESCO M&V activities are to include review and reporting to verify that proper O&M activities for the ECMs are occurring to help ensure the ECMs remain operational and continue to have the ability to perform and generate savings.

The Agency is required to either accept the Annual Statement (and request guaranteed savings shortfall payment, if any is due) or reject the statement noting objections. If the statement is rejected, the ESCO shall re-compute the Savings to satisfy the Agency, or give notice of dispute, which will be resolved based on GESA terms and conditions.

# Attachment #1



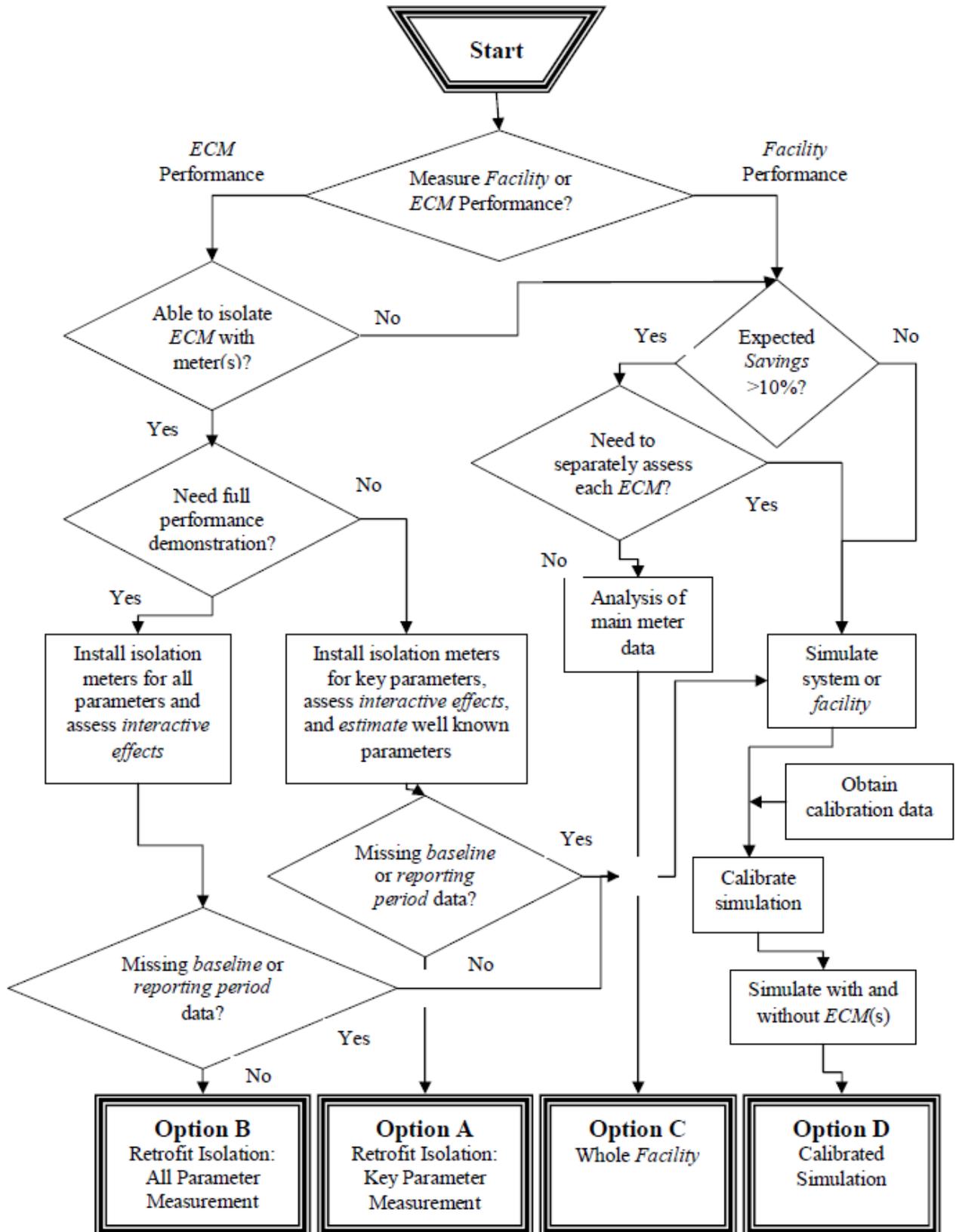
## Attachment #2

### ECM Summary Table – Sample eProject Builder (ePB) based template

ECM SUMMARY TABLE																	
FIRST YEAR ESTIMATED COST SAVINGS BY ENERGY CONSERVATION MEASURE																	
ECM			b1	b2	c1	c2	d1	d2	e1	e2	f = b1+d1+e1	g = b2+c2+d2+e2	h	i	j = g+i	k	l = k/j
ECM Number	Short Description	M&V Option	Electric energy savings	Electric energy savings	Electric demand savings	Electric demand savings	Natural gas savings	Natural gas savings	Other fuel savings	Other fuel savings	Total energy savings	Total energy cost savings	Water savings	Water savings	Estimated annual cost savings	Implementation price	Simple Payback
			(kWh/yr)	(\$/yr)	(kW/mo)	(\$/yr)	(MMBtu/yr)	(\$/yr)	(MMBtu/yr)	(\$/yr)	(MMBtu/yr)	(\$/yr)	(MMBtu/yr)	(\$/yr)	(Kgal/yr)	(\$/yr)	(\$/yr)
	IGA Development										-	\$0			\$0	\$0	
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<b>TOTALS:</b>			-	\$0	-	\$0	-	\$0	-	\$0	-	\$0	-	\$0	\$0	\$0	
<b>IMPORTANT INFORMATION:</b>																	
(1) Energy conversion factors for MMBtu: MMBtu=10 <sup>6</sup> Btu; Electricity — 0.003413 MMBtu/kWh; Natural Gas — 0.1 MMBtu/therm ; #2 Oil — 0.128 MMBtu/gal. (2) At least one of the savings is required to compute the contract term (3) All estimated cost savings numbers reported in this schedule are assumed to have already incorporated the "Implementation start through first year" escalation rates reported in the Annual Escalation Rates schedule.																	

### Attachment #3

#### M&V Option Selection Process Diagram (simplified) (from IPMVP Volume I, 2012)



## Attachment #4

### RISK, RESPONSIBILITY AND PERFORMANCE CHECKLIST

(R, R & P Checklist)

M&V Planning Tool

RESPONSIBILITY/DESCRIPTION	Discussed (Y/N)	Notes
<b>1. Financial</b>		
<p><b>a. Construction costs:</b> The contractor is responsible for determining construction costs and defining a budget. In a fixed-price design/build contract, the agency assumes little responsibility for cost overruns. However, if construction estimates are significantly greater than originally assumed, the contractor may find that the project or measure is no longer viable and drop it before contract award. In any design/build contract, the agency loses some design control. <b>Discuss and clarify the design standards and the design approval process (including changes) and how costs will be reviewed.</b></p>		
<p><b>b. Utility Prices and Escalation Rates:</b> Since neither party has significant control over actual utility prices, Agency and ESCO to agree on both the prices to be used for savings calculations (ie current or base rates) as well as if any annual escalation rates will be applied to those base rates and agreed to throughout the term. <b>Discuss and review the project cashflow information under the zero escalation and the NIST/EIA escalation scenarios. Agency to determine the escalation to be used based on their project specific situation.</b></p>		
<p><b>c. M&amp;V confidence:</b> The agency assumes the responsibility to determine the confidence that it desires to have in the M&amp;V program and energy savings determinations. The desired confidence will be reflected in the resources required for the M&amp;V program, and the ESCO must consider the requirement prior to submittal of the final IGA report and M&amp;V Plan. <b>Discuss and clarify how project savings are being verified (e.g., equipment performance, operational factors, energy use) and the impact on M&amp;V costs.</b></p>		
<p><b>d. Delays:</b> Both the contractor and the agency can cause delays. Failure to implement a viable project in a timely manner costs the agency in the form of lost savings, and can add cost to the project (e.g., construction interest, re-mobilization). <b>Discuss and clarify schedule and how delays will be handled.</b></p>		
<b>2. Operational</b>		

<p><b>a. Operating hours:</b> The agency generally has control over operating hours. Increases and decreases in operating hours can show up as increases or decreases in “savings” depending on the M&amp;V method (e.g., operating hours multiplied by improved efficiency of equipment vs. whole-building/utility bill analysis). <b>Discuss and clarify whether operating hours are to be measured or stipulated and what the impact will be if they change.</b> If the operating hours are stipulated, the baseline should be carefully documented and agreed to by both parties.</p>		
<p><b>b. Load:</b> Equipment loads can change over time. The agency generally has control over hours of operation, conditioned floor area, intensity of use (e.g., changes in occupancy or level of automation). Changes in load can show up as increases or decreases in “savings” depending on the M&amp;V method. <b>Discuss and clarify whether equipment loads are to be measured or stipulated and what the impact will be if they change.</b> If the equipment loads are stipulated, the baseline should be carefully documented and agreed to by both parties.</p>		
<p><b>c. Weather:</b> A number of energy efficiency measures are affected by weather. Neither the contractor nor the agency has control over the weather. Contractor to present weather normalization results for historical baseline for Agency review. Should the agency agree to accept risk for weather fluctuations, it shall be contingent upon aggregate payments not exceeding aggregate savings. <b>Discuss and clearly specify how weather corrections will be performed.</b></p>		
<p><b>d. User participation:</b> Many energy conservation measures require user participation to generate savings (e.g., control settings). The savings can be variable and the contractor may be unwilling to invest in these measures. <b>Discuss and clarify what degree of user participation is needed and utilize monitoring and training to mitigate risk.</b> If performance is stipulated, document and review assumptions carefully and consider M&amp;V to confirm the capacity to save (e.g., confirm that the controls are functioning properly).</p>		
<p><b>3. Performance</b></p>		
<p><b>a. Equipment performance:</b> The contractor has control over the selection of equipment and is responsible for its proper installation, commissioning, and performance. The contractor has responsibility to demonstrate that the new improvements meet expected performance levels including specified equipment capacity, standards of service, and efficiency. <b>Discuss and clarify who is responsible for initial and long-term performance, how it will be verified, and what will be done if performance does not meet expectations.</b></p>		
<p><b>b. Operations:</b> Performance of the day-to-day operations activities is negotiable and can impact performance. However, the contractor bears the ultimate risk regardless of which party performs the activity. <b>Discuss and clarify which party will perform equipment operations, the</b></p>		

<p><b>implications of equipment control, how changes in operating procedures will be handled, and how proper operations will be assured.</b></p>		
<p><b>c. Preventive Maintenance:</b> Performance of day-to-day maintenance activities is negotiable and can impact performance. However, the contractor bears the ultimate risk regardless of which party performs the activity. <b>Discuss and clarify how long-term preventive maintenance will be assured, especially if the party responsible for long-term performance is not responsible for maintenance (e.g., contractor provides maintenance checklist and reporting frequency). Clarify who is responsible for performing long-term preventive maintenance to maintain operational performance throughout the contract term. Clarify what will be done if inadequate preventive maintenance impacts performance.</b></p>		
<p><b>d. Equipment Repair and Replacement:</b> Performance of day-to-day repair and replacement of contractor-installed equipment is negotiable, however it is often tied to project performance. The contractor bears the ultimate risk regardless of which party performs the activity. <b>Discuss and clarify who is responsible for performing replacement of failed components or equipment replacement throughout the term of the contract.</b> Specifically address potential impacts on performance due to equipment failure. Specify expected equipment life and warranties for all installed equipment. Discuss replacement responsibility when equipment life is shorter than the term of the contract.</p>		

NOTE: The above items to be discussed and negotiated between the agency and the contractor as part of the M&V planning and review process – to start early in the IGA development process. This document is to be used as a tool, to be updated as applicable during the M&V plan development process. Summary/notes are recommended to be recorded based on discussions however the final agreement on these topics must be reflected and documented in the project specific M&V plan for the project contract (Schedule I) before signing of the GSA.

## **Attachment #5**

### **M&V Plan – Outline**

#### Executive Summary/M&V Overview & Proposed Savings

- ECM Summary Table – Proposed Savings
- M&V Plan Summary
- Utility Rates; Base Rates and agreed to escalation
- Schedule and Reporting for M&V Activities; Annual Energy Savings Statement (at a minimum)
- Construction Period Savings/Reporting
- Rebates/Incentives
- Agency Witnessing

#### ECM Specific M&V Plans

- ECM Summary; scope; how savings generated (ECM intent)
- M&V Option (per IPMVP)
- Baseline Development Activities; Baseline data and analyses performed; static factors; Routine and non-Routine Baseline adjustments proposed
- Proposed Savings Calculation Methods
- Post-Installation M&V Activities; describe intent; key variables; data to be collected; analysis to be performed
- Performance Period M&V Activities; describe intent; key variables; data to be collected; analysis to be performed
- O&M Reporting