



Best Practices

for

Energy Performance Contracting

**Montana Department of
Environmental Quality**

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1 Introduction

1.1 Overview

Title 90, chapter 4, part 11 of the Montana Code Annotated (MCA) presents requirements for energy performance contracting. DEQ is responsible for establishing and administering the energy performance contracting program. These Best Practices, together with guidelines, define the processes, expectations, and other factors of the Montana energy performance contracting program.

Best Practices are based on statute, model documents, state and federal programs, industry standards, and experience. DEQ has modified model documents, developed by the Department of Energy and the Energy Services Coalition, to comply with statute.

The information presented here is intended to help identify and mitigate risks associated with energy performance contracting. DEQ has developed a Virtual Assistant as a guide for the energy performance contracting process. The Virtual Assistant, guidelines, and model documents are available from DEQ's website at www.deq.mt.gov/Energy/EPC.

1.2 Terms and Acronyms

Energy performance contracting has specific terms and acronyms. 90-4-1102, MCA provides definitions of terms used in energy performance contracting. The following terms and acronyms are used:

AEE	Association of Energy Engineers
AHRI	Air Conditioning, Heating and Refrigeration Institute
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers
BCxA	Building Commissioning Association
DEQ	Department of Environmental Quality
Entity	Governmental entity as defined in statute
EPC	Energy performance contract as defined in statute
ESP	Energy service provider, also referred to as qualified energy service provider as defined in statute
FEMP	Federal Energy Management Program
IGA	Investment grade audit
IPMVP	International Performance Measurement and Verification Protocol
M&V	Measurement and verification as defined in statute
MCA	Montana Code Annotated
O&M	Operation and maintenance
RFP	Request for proposal
RFQ	Request for qualifications

1.3 What is Energy Performance Contracting?

Energy performance contracting is a cost-effective contract between a governmental entity and a qualified energy service provider (ESP) for implementation of one or more cost-saving measures and guarantee of cost savings.

Cost-effectiveness requires that the guaranteed cost savings meet or exceed:

- (a) any financing repayment obligation each year of the finance term;
- (b) the total project cost of the cost-saving measures divided by 20;
- (c) the total project cost of the cost-saving measures divided by the cost-weighted average useful life.

Ideally the savings from an EPC are sufficient to pay for the total project cost within the contract term. The success of EPC, and the differentiator from other facility improvement projects, is performance. To demonstrate performance, the ESP takes measurements before and after the project to determine the potential energy savings. The ESP then uses this information to guarantee the cost savings that will be used to pay for the project.

EPC has been used for over thirty years. Originally EPC was called shared savings in which a contractor would provide energy efficiency improvements with no upfront costs. The guaranteed savings would be shared between the owner and the contractor with the majority going to the contractor as payment for the improvements. Although this option remains in a few markets, most EPC is like other construction or renovation projects with two distinct characteristics – guaranteed savings and turnkey (single source) responsibility. The contractor (energy service provider) is paid during and at the completion of the project. The owner uses the savings to repay any financing or funding.

The claim has been “no upfront cost”, but “budget neutral” is becoming the more common term as final payment is often required at project completion. Capital reserves and other funds reduce financing and may improve the cash flow of the project.

EPC may not have an immediate effect on budgets, especially if financing is involved. It creates a shift in the budget to cover financing or other repayment costs. The greater benefit occurs after the project is paid off because all savings are retained by the owner.

EPC may provide other benefits, such as addressing deferred maintenance, through equipment replacement and envelope improvements.

For more information about EPC, check out DEQ’s website at <http://deq.mt.gov/Energy/EPC>.

2 Solicitation and Evaluation of Qualifications

At least every five years, DEQ issues a request for qualifications (RFQ) to energy service providers. The RFQ remains open throughout the five-year period permitting interested providers to submit qualifications at any time.

If DEQ determines a provider is qualified, it issues the base agreement to the provider. When the provider signs the agreement, DEQ will include the provider on the qualified list. DEQ publishes the list of qualified energy service providers on its website. The list expires with the next RFQ cycle or the end of the program.

2.1 Evaluation Criteria

Statute provides a list of criteria that DEQ must use to qualify the energy service provider. DEQ may establish other criteria to qualify a provider. DEQ will only list providers with demonstrated qualifications.

2.2 Criteria Specifics

In addition to the criteria specified in statute, DEQ uses the following criteria to qualify specialists of the energy service provider:

- Engineering – Montana registered professional engineer. Experience in design, engineering, installation, maintenance, and repairs is required. The engineer registered in Montana must sign and stamp construction documents and reports.
- Energy Engineer/Analyst – individual with experience and training in energy simulations and energy calculations. Preference is given to individuals certified by ASHRAE, AEE, or similar industry organizations.
- Energy Auditing – individual with experience and knowledge of building systems including envelope, HVAC, lighting, plant equipment, and other energy using systems. Preference is given to individuals certified by ASHRAE, AEE, or similar industry organizations.
- Commissioning – individual with experience in developing the commissioning plan, testing, troubleshooting, and other areas of commissioning. Preference is given to individuals certified by ASHRAE, AEE, BCxA, or similar industry organizations.
- Measurement and Verification – individual with experience in developing the M&V plan and completing the M&V reports. Preference is given to individuals certified by ASHRAE, AEE, or similar industry organizations.

2.3 Request for Qualifications

DEQ develops the RFQ using the criteria listed above and issues it through DEQ's Contracting Officer. DEQ has developed a checklist and comment form to verify that the provider meets all qualifications. The provider submits reports and plans to demonstrate the knowledge and qualifications of specialists.

2.4 Base Agreement

When a provider is identified as qualified, DEQ will issue the base agreement as required by statute. By signing the base agreement, the provider agrees to its responsibilities for the EPC program and its relationship with DEQ. The provider will be listed as a qualified energy service provider when DEQ receives the signed agreement. The base agreement is located on DEQ's website at <http://deq.mt.gov/Energy/EPC/EPC-Program-Documents>.

2.5 List of Qualified Energy Service Providers

DEQ maintains the list of qualified energy service providers on its website. This allows easy access for the Entity and others interested in EPC to find qualified providers for potential projects. The list is updated as necessary to include additional providers or to remove providers no longer qualified for the Montana EPC program. The base agreement is located on DEQ's website at <http://deq.mt.gov/Energy/EPC/energyperfcontractors>.

3 Technical Assistance

Technical assistance is the core of the Best Practices. All other Best Practices are related to technical assistance. Working with DEQ improves the success of an EPC project as DEQ seeks to provide objective, third party technical assistance. DEQ will provide assistance based on available resources.

Technical assistance starts when the Entity considers EPC for their facility. Assistance continues throughout the process until the project ends and the last M&V report is received. DEQ staff can assist the Entity over the phone, through email, or face-to-face.

3.1 Process

DEQ has established a linear process for the EPC program that the Entity and the ESP should follow. A simplified step-by-step process is:

- (1) Project Planning
- (2) ESP Selection (Solicitation and Selection)
- (3) Investment Grade Audit
- (4) Energy Performance Contract
- (5) Measurement and Verification (Project Performance)

Each step should be completed before initiating the next step. Within each step are other tasks, but the completion of each task is not required before proceeding to the next task. Each of these steps is presented further in separate Best Practices.

3.2 Documents

DEQ has developed model documents and templates that should be used throughout the EPC process. DEQ recommends the use of these documents between the Entity and the ESP. The Entity initiates the following documents:

- (1) Request for Proposal (RFP)
- (2) Investment Grade Audit Contract Template (IGA)
- (3) Energy Performance Contract Template (EPC)

The IGA and EPC contracts are negotiated by the Entity and the ESP. The EPC includes schedules that are developed by the ESP and included in the contract.

The Entity should be fully aware of issues that may arise if these documents deviate from the recommended outlines provided by DEQ. Issues may arise from defining project scope in the RFP (see **Best Practices 4** and **5**), quality and adherence to economic requirements in the IGA (**Best Practice 6**), and guarantees and responsibilities in the EPC (**Best Practice 8**). All model documents are available on DEQ's website at <http://deq.mt.gov/Energy/EPC/EPC-Program-Documents>.

3.3 Reports

The ESP is required to provide reports at various stages of the EPC process. DEQ will always (as resources allow) review some of the reports, while other reports are reviewed when requested. These reports include:

- (1) Investment Grade Audit Report (Entity; DEQ review by request)
- (2) EPC Project Proposal Summary (required by DEQ)
- (3) EPC Post-Installation Report (Entity; DEQ review by request)
- (4) EPC Commissioning Report (Entity; DEQ review by request)
- (5) EPC Project Summary Report (required by DEQ)
- (6) Annual M&V Report (required DEQ and Entity)

3.4 Reviews

The Entity may ask DEQ to review any EPC program document. Any review by DEQ will include communication with the Entity and the ESP as appropriate.

4 Project Planning

Energy performance contracting is not for every Entity or for every project. When considering EPC, the Entity should gather as much information as necessary to determine if EPC is appropriate. DEQ has developed several resources to assist the Entity with this task. DEQ is available to guide the Entity throughout the EPC process.

4.1 Know Your Facilities

As with any decision-making process or project, the more information one has the better. The following information should be gathered when considering EPC:

- Facilities – buildings and other energy and water infrastructure that are owned by the Entity. Leased property may be considered, but would require coordination with the lessor. Data should include:
 - building name and address
 - year built or approximate age of the building
 - building area
 - general construction information (e.g., walls, roof, windows, doors)
 - system types (e.g., heating, cooling, lighting, fans)
 - any additions, remodels, or renovations over the last 5 years; and
 - any other information available related to energy and water use.
- Operation – building type (e.g., school, office, shop) and building use (e.g., occupants, hours of operation, seasonal operation)
- Utilities – energy and water use and costs as well as providers. Utility data should be tabulated monthly and include units (e.g., kWh, therms, gallons), demand (kW), and other factors that may affect billing (e.g., kVAR and MDDQ) and costs for each commodity. Although 12 consecutive months of data will provide a snapshot of the use and cost, 36 months is recommended.
- Use and needs – assessment of future use, needs, renovation, expansion, etc. for each facility or campus. List any known deferred maintenance needs, possible expansion or demolition of facilities, problem areas (e.g., comfort, maintenance), and other factors that may affect energy or water use.

This data will be used to develop the request for qualifications and the IGA contract.

4.2 Define Goals

The Entity should define its goals or expectations for EPC. Goals may include:

- Financial goals or requirements
- Energy targets
- Comfort issues
- Equipment upgrades or replacement

The primary goal to define is the financial goal or requirement. Each Entity and each facility or building may have different financial requirements. Some Entities use return on investment or simple payback to define the financial requirement. An EPC is limited to 20 years, the cost-weighted average useful life of the cost-saving measures, or the finance term, whichever is shortest. The Entity should define its financial goal with this limit in mind.

When setting the financial requirement, the Entity should consider available capital that could be applied to the project. These funds may allow for a larger project, or a better return on financing, by reducing the financed amount.

The financial requirement may be included in the RFP and should be included in the IGA contract. This ensures that the potential project stays within the financial abilities of the Entity.

Goals may also include cost-saving measures. The Entity may have some specific needs that they want addressed. These cost-saving measures may be included in the RFP, but the Entity should not limit the project scope to this list.

4.3 Explore Financing

When energy performance contracting started, the ESP provided financing with no upfront costs for the Entity. Most of the savings went to the ESP to pay for the project. Although some ESPs still offer this financing, most EPC projects are paid for through Entity funds and financing. The Entity keeps the guaranteed cost savings to repay financing and potentially restore funds invested in the project.

The Entity should explore all funding and financing options. Refer to **Best Practice 11 Funding and Financing** for more information.

4.4 Define Scope

After reviewing the facility information, goals, and financing, the Entity defines the potential scope for an EPC. The scope is the list of facilities that could be included in the EPC.

When the Entity has more than one facility, two or more lists may be developed. The first list would include all candidate facilities that the Entity would consider for EPC. This list could be developed based on facility needs or opportunities for cost savings. The second list would be a subset of the first. This list could be based on the specific needs of the Entity, such as facility type, location, available capital and potential financing, deferred maintenance issues, or other factors specific to the Entity. Additional lists could be generated in a similar manner, depending on the number, type, and location of facilities for the Entity.

If a facility is not identified in the original RFP, it may not be added later without issuing a new RFP.

4.5 Project Planning Summary

Energy performance contracting is most frequently used with larger facilities, although some ESPs will provide services for smaller facilities. Few projects under \$150,000 will be considered. The typical savings for an EPC is 15-25% of the existing utility cost. This means that, for the \$150,000 project, utility costs should be at least \$40,000 annually (\$20,000 if sufficient capital funds exist) to consider EPC as an option. For more information, review the publication on the DEQ website: http://deq.mt.gov/Portals/112/Energy/Energy%20Performance%20Contracting/Documents/EPC_RIGHT_FOR_ME.pdf.

If the potential benefit of an EPC is not sufficient, an Entity could consider working with another nearby Entity to improve the possibility for EPC. If the potential benefit of an individual EPC is not sufficient and an Entity is unable to partner with another Entity, they should seek other options for improvements.

If the decision is made to proceed, the Entity should assign key personnel for the project, including:

- facilities (operations and assistance to the ESP),
- management (overall project coordination and management),
- finance (budgeting and financing); and
- legal (contracting).

5 Solicitation and Selection

The Entity is required to solicit proposals from at least three qualified providers.

5.1 Owner's Representative

Most Entities do not have experienced staff or resources available to manage an EPC project. DEQ has online and technical resources to help the Entity, but not the staffing resources for all aspects of EPC. For larger projects (e.g., over \$2 million), the Entity may engage the services of an owner's representative that is experienced in all phases of EPC. Services provided by the owner's representative may include:

- review proposals
- help negotiate contracts
- review the IGA report, EPC contract, and M&V plan
- manage project implementation
- witness commissioning activities
- review M&V reports
- help negotiate shortfalls

Services depend on the qualifications of the representative and the needs of the Entity. The cost of the representative may be paid directly by the Entity, or financed as part of the EPC.

5.2 Request for Proposal

DEQ has developed a model RFP document. The Entity develops the RFP using the information gathered through project planning and inserts specific information from planning to complete the content of the RFP. The Entity should have their legal team review the RFP. The model RFP document (i.e., template) is on the DEQ website at: <https://deq.mt.gov/Energy/EPC/EPC-Program-Documents>.

Project scope is a key factor to define in the RFP. The RFP should identify the facilities and limit references to potential cost-saving measures. The IGA that results from this RFP should be comprehensive, examining all feasible cost-saving measures.

The Entity should define the scope based on the work done in Project Planning and aim to keep the overall scope broad, as in all facilities. Then identify the facilities to include in the initial phase. If a facility is not identified in the original RFP, it may not be added later without issuing a new RFP. An ESP is more likely interested in larger projects with long-term relationships than smaller projects.

The RFP should include the financial or economic requirements for the potential project as determined in the planning phase.

The RFP should reference any pre-proposal meetings or walk-throughs of the facility and whether these are mandatory.

The RFP may refer to a two-step process in which a short list is developed. A short-listed ESP may be asked to conduct a preliminary assessment providing an overview of the potential benefits based on a walk-through, review of utility bills, and other available information. This assessment is not intended to cover all potential cost-saving measures, nor does it determine the cost or savings of the measures. The main purpose is to provide some differentiation between ESPs, to provide the Entity with potential cost-saving measures, and to confirm that EPC is appropriate.

The RFP does not request a bid or price since the actual project is not fully defined at this point. Instead of a bid, the RFP should include the cost and pricing tool (or similar form) as provided by DEQ. This provides the Entity with a means to compare pricing strategies of competing proposals. DEQ recommends that this pricing strategy remain consistent throughout the EPC process.

The Entity may issue public notice of the RFP through normal advertising for construction or service projects. To provide more competition, DEQ encourages the Entity to solicit proposals from all ESPs on the qualified list.

5.3 Selection

The Entity assembles a team to evaluate proposals from the ESPs. This team may establish a short list to interview. Following the interviews, the team may submit recommendations to management, or select the most qualified ESP.

Negotiations begin with the ESP selected as most qualified. These negotiations should focus on services provided to conduct the investment grade audit and may include general provisions for services rendered through the EPC. If negotiations cannot be completed to the acceptance of both parties, then negotiations should cease and negotiations begin with the next most qualified ESP.

The Entity may terminate the selection process at any time. Options include issuing a new RFP or considering alternative methods to address the possible work.

6 Investment Grade Audit

The IGA is a primary document for the EPC process. DEQ has provided an IGA contract template to use located at <http://deq.mt.gov/Energy/EPC/EPC-Program-Documents>. The template has provisions that define the expectations, actions, responsibilities, and protections of each party.

The Entity should initiate the IGA using the contract template. If the ESP provides the contract, the Entity is encouraged to compare the contract with the template. Be sure to understand the elements of the contract and the scope of work.

The Entity should provide the contract to their legal team prior to signing the contract. DEQ staff are available to help the Entity with the technical aspects of the contract.

The IGA contract template includes some highlighted text to modify for the specific project and Entity. Several articles of the contract are presented to draw attention to specific issues that may affect the success of an EPC project.

6.1 Contract Amount

The contract amount is negotiated between the ESP and the Entity. The contract amount is the maximum amount that the ESP may charge for the audit based on the Scope of Work. This amount may be reduced if the ESP does not audit or evaluate a facility that was included in the scope of work.

Article 4 of the contract template provides information on payments to the ESP. The second paragraph includes a clause allowing the contract to be terminated if the ESP cannot meet the Entity's financial or economic requirement. The third paragraph relates to the payment for the IGA, whether directly to the ESP or included in the financing of the EPC. The fourth paragraph establishes that all drawings and documents relative to the Entity's project created during the IGA period are the property of the Entity.

The ESP may only bill for work identified in the contract. Expenses prior to signing the contract or after the IGA is completed may not be billed to the Entity.

6.2 Scope of Work

The Scope of Work (Attachment A of the contract template) defines the process for the IGA and the requirements of the subsequent report. Details may be negotiated with the ESP, but most of the content should remain in the contract to ensure a quality product.

The economic criteria of the project should be defined. The criteria were defined during the planning stage, but may be refined in the IGA contract negotiations.

Section 2, Process, should include the steps listed in this section. This provides an avenue of communication throughout the IGA process.

Section 3 reiterates some of the statute requirements for EPC and includes some guidelines developed by DEQ.

Sections 4, 5, and 6 are directly related to the audit process and report. The audit process is presented in stages to accommodate communication between the Entity and the ESP as tasks are completed. Either party may determine if an EPC will meet the Entity's requirements.

The investment grade audit and report should include all supporting documentation. Often the Entity is only interested in the bottom line – the project cost and the guaranteed savings. Equally important are the measurements, assumptions, and calculations used to determine these savings.

The audit should be thorough with measurements of equipment, interviews with staff regarding operation and issues of the facility, review and reconciliation of utility data, and other factors identified in section 4. Energy models and calculations should be based on this information and reconciled with utility data. The IGA report should include:

- baseline descriptions of the facility,
- occupancy and equipment schedules,
- systems, operation, and conditions,
- deficiencies or inefficiencies,
- monthly utility data, and
- other factors affecting facility utilities.

Utilities, equipment, and measurements from the audit should be summarized in tables.

Baseline information is used to account for any changes that may occur during the performance period and any baseline adjustments. These items will help support the savings calculations.

The savings calculations should be provided showing methodology and values. Where energy modeling is used, the input and output reports should be provided. Although the report may become rather large, the information is critical in evaluating if the project is viable.

Not only is this information necessary for the reviewer to ensure that the savings are reasonable, it also establishes some parameters for measurement and verification if the project moves on to an EPC.

Section 7 provides the process and information required for an EPC project proposal.

6.3 Savings Calculations

Guaranteed cost savings are defined as “a guaranteed annual measurable monetary reduction in utility and operation and maintenance costs for each year of a guarantee period resulting from cost-saving measures.” Guaranteed savings cannot be “agreed upon” or stipulated. They must be measured if guaranteed.

The guaranteed cost savings for utilities must be calculated using mutually agreed on baseline utility rates in use at the time of the IGA. The guaranteed cost savings for operation and maintenance cost savings must be calculated using mutually agreed on baseline operation and maintenance costs at the time of the IGA.

Documentation of assumptions is critical for baseline development. After a cost-saving measure has been implemented, it is impossible to go back and reevaluate the baseline. Therefore, it is important to document and define the baseline conditions. If a condition or assumption is not documented or defined, as included in the IGA report and EPC, then it cannot be part of a savings calculation or baseline adjustment.

Estimated parameters (values) will affect savings throughout the term of the EPC. All estimates should be based on reliable, documentable sources and should be known with a high degree of confidence. Sources of information for such estimations include the following (in decreasing order of preference):

- Models derived from measurements and monitoring
- Manufacturers’ data or standard tables
- Manufacturers’ curves, such as pump, fan, and chiller performance curves
- Industry-accepted performance curves, such as standards published by ANSI, AHRI, and ASHRAE
- Typical meteorological year (TMY) weather data appropriate for the location
- Observations of building or occupant behavior
- Facility operation and maintenance logs

Estimated parameters should not come from the following:

- Undocumented assumptions or rules of thumb
- Proprietary black box algorithms or other undocumented software
- Handshake agreements with no supporting documentation
- Guesses at operating parameters
- Equations that do not make mathematical sense or are derived from questionable data

Estimated parameters often become stipulated values in the EPC and the M&V phase of the project. This could affect the risk for both the Entity and the ESP.

The savings calculations should include methodology and values. If energy modeling is used, the input and output should be provided.

Calculations should reflect monthly savings where feasible to account for seasonal operation and weather patterns. This is especially true for schools where use during the summer months is significantly different than the school year. Schools often have projected savings (especially demand savings) exceeding summer baseline use.

The Entity should review the schedules, control setpoints, and other factors that the ESP may include in the savings calculations. These values should be identified in the cost-saving measure and are usually listed in the EPC under standards of comfort or a similar heading.

For example, schools are often listed as occupied weekdays from 7 am to 3 pm and unoccupied all other hours. After hour activities, such as afterschool programs, gym or auditorium use, and custodial activities, are often not included in the occupied hours. The ESP may then deduct energy use related to such activities from the guaranteed cost savings. The EPC and the M&V plan should indicate the methodology used to make the adjustments.

7 Project Development

Project development is the interim period between the completion of the IGA and the signing of the EPC. During this period, the Entity works with the ESP (and DEQ as needed) to determine if an EPC is appropriate, what measures to include, and how to pay for it. Since the EPC must be based on an IGA, project development requires the completed IGA report.

7.1 Investment Grade Audit Review

The Entity reviews the IGA report and cost-saving measures for the EPC. The Entity should be aware of time and disruption involved with the potential project and make plans to mitigate these issues.

7.2 Project Scope

The Entity develops the project scope by selecting the facilities and cost-saving measures to be included in the project. The Entity may identify additional facilities and measures if funding for these items becomes available.

7.3 Funding and Financing

Funding and financing plans were started in the planning process. At the EPC stage, the Entity finalizes the funding and financing plan by securing the funds, preferably before signing the contract. The ESP should assist the Entity in securing the financing.

Available capital, grants, and utility incentives are often used to reduce the financed amount of the project. Bonds, conventional loans, lease-purchase agreements, and certain types of internal funds may be used to finance an EPC project. Guaranteed cost savings are required to meet or exceed any financing repayment obligation.

7.4 Measurement and Verification

Measurement and verification (M&V) is the process that ensures that the guaranteed cost savings are realized. Guaranteed savings must be measured. Savings that are stipulated or agreed upon should not be included as though they are guaranteed. There are four options of M&V based on the International Performance Measurement and Verification Protocol (IPMVP). The level of measurement for each option results in variations of cost and reliability of the verified savings. See Best Practice **10 Project Performance** for more information.

7.5 Contingency

Contingency is a predetermined amount or percentage of the contract held for unpredictable changes in the contract. A contingency may account for errors and omissions in the construction documents, modify or change the scope of the project, or pay for addressing unknown conditions. If contingency is not identified, the project cost could increase significantly through change orders and other actions. Spending contingency funds should require Entity approval. Asbestos and removal of other hazardous materials is often a contingency in an EPC.

8 Energy Performance Contract

DEQ has developed a template for the energy performance contract located at <http://deq.mt.gov/Energy/EPC/EPC-Program-Documents>. The use of this template is recommended but not mandatory. The template consists of three separate documents as described below.

The Entity should initiate the contract using the template. If the ESP provides the contract, the Entity is encouraged to compare the contract with the template. Be sure to understand the elements of the contract and the scope of work. The Entity's legal representative should review the contract for specific Entity requirements.

8.1 Energy Performance Contract Template

The contract template has the basic structure of a contract divided into four general sections:

- Payments and Schedules which includes the cost of the project and defines the effective date, contract term, guarantee, and funding;
- Audit and Construction which includes utility records, permitting, construction schedule, commissioning, warranties, comfort, and environmental concerns;
- Post-Construction which includes duties and responsibilities of the ESP and the Entity for installed measures and reporting requirements;
- Administration which includes ownership rights, insurance requirements, default conditions, and other legal issues of the contract.

8.2 EPC Schedules Template

The EPC schedules template is more for organizing the content for schedules. The ESP provides much of the information specific to the project using the format of the schedules. Each schedule should be included in the contract. The schedules, divided into four major categories and two lesser categories, include:

- Savings guarantee – presents baseline consumption and guaranteed savings and defines measurement and verification methodology and reporting procedures;
- Payments schedule – identifies the project financials: project cost, payment schedule, funding sources, contingencies, and other items related to the financial aspects of the project;
- Design and construction – presents the scope of work including existing conditions, equipment inventory, equipment to be installed, and schedule;
- Project closeout and post-construction – covers systems startup and commissioning activities and maintenance responsibilities.
- Administration or alternative dispute resolution procedures; and
- Optional schedules – may include service contracts, energy savings projections, facility changes checklist, and capital improvements that may affect savings.

The savings guarantee is critical toward the performance requirements of the EPC. The guarantee should include both the units saved and the dollars associated with the savings. The guarantee includes the baseline rates and may include escalated or contractual rates. However, the use of the escalated or contractual rates are treated as part of the guarantee. Actual rates for each reporting period will prevail when determining the verified savings, unless the actual rate is less than the baseline rate.

The schedules for M&V and commissioning are also provided as separate dynamic documents. This allows the ESP to update the plans and reports throughout the implementation and performance periods without affecting the contract. These schedules become referenced attachments (i.e., schedules) of the contract.

8.3 EPC Exhibits Template

Exhibits include any bonding certificates, warranties, and the Certificates of Acceptance. Optional exhibits may be included depending on the project and the Entity's requirements.

8.4 Other EPC Items

The Cost and Pricing Tool is included with the EPC as a continuation of the tool used throughout the EPC process. The ESP will complete the required information, including the final cost data. This provides the Entity with documentation of the overall project costs and markups that should be consistent with the initial RFP.

The Entity has some input to the contract negotiations regarding equipment, manufacturers, and subcontractors. It should be clear that these may affect the project cost. The Entity should consider quality, relationships, and cost when negotiating these factors.

9 Project Implementation

The project implementation phase begins when the design is complete and approved by the Entity, often through a signed notice to proceed. The Entity should be engaged throughout this phase to ensure that all aspects of the project are completed to their satisfaction.

9.1 Implementation of Cost-saving Measures

The ESP, together with its subcontractors, implements the cost-saving measures according to the contract. The Entity provides access to its facilities and other items as specified in the contract. The Entity should monitor the progress of the work.

Open book pricing is recommended, particularly for projects that are based on a guaranteed maximum price. This permits the Entity to review all costs associated with their EPC project. With open book pricing, the Entity can verify that the ESP is not charging more than is permitted under the contract, including hourly rates, markups, overhead, and profit. These items are defined when using the cost and pricing tool in the contracts.

The ESP will schedule payments during the implementation process. Invoices should reflect the work completed and equipment received and installed. Pay schedules should also be included showing hours and pay rates for labor. These should be compared to information provided in the EPC contract. Since EPC is a public works project, the prevailing wage rate laws apply.

Change orders and other modifications to the EPC may occur when implementing cost-saving measures. The Entity controls the contingency funds and should provide written authorization for verified expenditures.

9.2 Commissioning

Commissioning is a process, often starting in design, that provides quality control through inspection and testing. The desired result of commissioning is the systems operate as intended to meet the Entity's needs through the inspection and testing of all system components. Commissioning guidelines may be found on DEQ's website at http://deq.mt.gov/Portals/112/Energy/Energy%20Performance%20Contracting/Documents/EP_CX.pdf

The Entity should have a qualified person, independent of the ESP, review the commissioning plan, witness the inspections (often called pre-functional testing or installation verification), and witness the functional testing. Functional testing is more than system startup. It verifies that the system and its components function as designed through all areas of operation and control.

9.3 Training

Training is often included with commissioning, but may be provided separately. It is essential that the appropriate Entity staff receive training in the operation, maintenance,

control, and intent of the installed equipment. Training may be recorded to provide the Entity a resource for training personnel in the future.

9.4 Project Closeout

Project closeout for an EPC is like a construction or renovation project, but has additional requirements. Substantial completion may be part of an EPC, but this is neither the point that the Entity assumes that the work is complete nor the time that the guarantee period begins.

The project is not complete until the Entity completes the EPC checklist and issues the Certificate of Acceptance for the Installed Work (see documents on DEQ's website). The guarantee period begins with this Certificate of Acceptance.

The ESP provides a post-installation report including any adjustments to the guaranteed savings based on changes to the work completed for the project.

9.5 Other Services

The ESP may offer other services in an EPC, including:

- maintenance of installed equipment,
- training to keep Entity staff current on system operation, and
- monitoring of system and equipment operation.

Each of these are intended to maintain or improve the savings, thereby ensuring the Entity and the ESP that the guaranteed savings are more likely to be realized. The costs associated with these services should be included in the EPC.

Other services, such as maintenance contracts, may be offered by the ESP. These services should be provided under a separate contract.

10 Project Performance

The success of EPC, and the differentiator from other facility improvement projects, is performance. The measures implemented in an EPC must produce savings to ensure that the project is cost-effective. Performance is determined through measurement and verification (M&V). Documents for M&V are provided at <http://deq.mt.gov/Energy/EPC/EPC-Program-Documents>

10.1 Monitor Project Performance

Monitoring project performance is different from measuring performance. Monitoring is usually done by the ESP, either remotely or by periodic site visits to see that the installed cost-saving measures are operating as intended. The Entity may also monitor performance by reviewing the utility bills for any noticeable reduction in utility use and cost. The Entity provides the ESP copies of the utility bills per contract requirements.

10.2 Measurement and Verification

Key concepts of measurement and verification (M&V) should be clearly understood. Energy use (and other components of guaranteed savings) is measured and analyzed to determine (verify) the savings. Energy savings are expressed as:

$$\text{Energy Savings} = \text{Baseline energy use} - \text{Reporting period energy use} \pm \text{Adjustments}$$

The adjustments and the calculation methodology for adjustments must be clearly defined in the M&V plan.

The IPMVP (the standard for M&V) has six fundamental principles to include in the M&V process. These principles are:

Accurate – M&V reports should be as accurate as the M&V budget will allow.

Complete – Reporting energy savings should consider all effects of a project. M&V activities should use measurements to quantify the significant effects, while other effects may be estimated.

Conservative – Where judgements are made about uncertain quantities, M&V procedures should be designed to under-estimate savings.

Consistent – Reporting a project's energy effectiveness should be consistent between:

- different types of energy efficiency projects;
- different energy management professionals for any one project;
- different periods of time for the same project; and
- energy efficiency projects and energy supply projects.

“Consistent” does not mean “identical”.

Relevant – Determination of savings should measure the performance parameters of concern, or least well known, while other less critical or predictable parameters may be estimated.

Transparent – All M&V activities should be clearly and fully disclosed in the M&V plan and M&V reports.

In an IGA report, the ESP identifies the IPMVP option it intends to use for each cost-saving measure (Option A or B) or the whole building (Option C or D). The ESP should also follow the FEMP M&V Guidelines: Measurement and Verification for Performance-Based Contracts, which is a more concise standard based on the IPMVP.

Baseline information, including assumptions, should be fully documented and included in the IGA report, EPC, M&V plan, and post-installation report. The ESP measures key parameters before and after the implementation of the cost-saving measure. When using the IPMVP Option A, the ESP identifies and documents the sources of the values used. Values may be stipulated only with the written consent of the Entity. When using the IPMVP Option B, C, or D, the ESP conducts short-term or continuous field measurement to document both the baseline and post-implementation conditions.

The ESP should include a M&V plan that complies with the IPMVP using the FEMP M&V Guidelines. Between execution of the EPC and issuance of the Certificate of Acceptance of Installed Equipment, the ESP may modify the M&V plan only with the written consent of the Entity.

During the guarantee period, the ESP should follow the M&V plan. The M&V plan should not be modified without the written approval of the Entity. Any modification must be based on measurable or documented factors within the M&V plan such as a change in use or occupancy.

The M&V plan and M&V reports provide guaranteed and verified savings in units and dollars. The guaranteed cost savings are based on the baseline rate and may include cost savings attributable to escalation. The verified cost savings are based on the actual utility rates in effect for the period of the M&V report. Using the escalated or contract rates, if they exceed the baseline rate, is not permitted for verified savings. Although the ESP may not guarantee escalation rates, cost savings attributable to escalation rates are included in the guaranteed cost savings when considering a shortfall.

10.3 Shortfalls in Performance

Statute provides required actions if an EPC project fails to perform as guaranteed. If the guaranteed cost savings are not achieved during any year in the initial monitoring period (minimum of three years), then the ESP must pay for all M&V reports until the guaranteed cost savings are achieved in a term of consecutive years equal to the initial monitoring period. The cost of M&V should be presented for each year of the initial monitoring period.

Furthermore, the guaranteed cost savings are based on the baseline rate plus any cost savings attributable to escalation. The verified cost savings are based on the actual utility rates in effect for the year of the M&V report. If the verified cost savings is less than the guaranteed cost savings (including escalation), then the difference is the shortfall and shall be payable to the Entity.

11 Funding and Financing

For clarity, funding (or funds) is money from sources that does not require repayment. Financing is money from sources that require repayment. Funding and financing an EPC project is the responsibility of the Entity. However, the ESP should assist the Entity in securing the financing through their experience with financing EPC projects and their technical knowledge of the project and savings guarantee.

Funds that do not require repayment include grants, capital reserves, and utility incentives. Proceeds from bonds, including excess amounts, do not qualify due to the repayment obligation.

Tax credits could be considered as funding and may apply to some projects. Tax credits are often negotiated as a shared offset from the total project cost. Most Federal tax credits were eliminated by the Tax Cuts and Jobs Act of 2017.

Financing may come from sources including:

- bonds
- loans from the Board of Investments
- commercial loans from banks or other financial institutions
- independent third parties
- lease-purchase agreements
- the ESP

Note that school districts must first issue a notice to the Board of Investments as the board has right to first refusal. If the board chooses not to provide the financing, then the school district may seek financing from other sources.

Financing options should be reviewed closely. Fees and interest can have a significant effect on the cost-effectiveness of the project as these costs are included in the total project cost.

Funding may be used to reduce the amount required to finance the project. Funding may also pay ongoing expenses after the EPC, such as O&M and M&V. Funding could be up to 100% of the total project cost. However, the EPC must be cost-effective.

Financing agreements should include a statement that restricts collectability. Payment obligations of the Entity for an EPC are not general obligations and are collectible only from guaranteed cost savings and other revenue, if any, pledged in the EPC.

12 Expanding Scope

Expanding scope (or scope of work) refers to the addition of facilities or buildings to the Entity's EPC program. When an Entity has multiple facilities or buildings, they may choose to proceed with EPC in phases. This allows them to understand how EPC works and build a relationship with the ESP. Phasing may also help the Entity manage their resources better.

Expanding scope may occur at three points of the EPC process. The first is in the RFP where the Entity defines the project scope based on a list of facilities. The second is during the IGA, when the Entity may choose to add facilities under an amended IGA contract. The third is in the EPC where the Entity selects the cost-saving measures for the project.

12.1 Expanding Scope of the RFP

Much of the discussion for expanding the scope of the RFP is presented in Best Practice sections **4.4 Define Scope** and **5.2 Request for Proposal**. To reiterate, in developing the scope of the RFP, the Entity should list the "maximum" scope that it would consider under EPC and provide a list of facilities to be included as the initial scope. By doing so, the Entity may add other facilities from the "maximum" list without issuing another RFP.

The RFP should not limit the cost-saving measures to be considered, such as lighting, or boiler replacement. The RFP may list these measures, but should provide the opportunity to explore other measures as well. An RFP that is limited in scope will reduce competition among ESPs and options for combining cost-saving measures thereby reducing the overall benefit to the Entity.

12.2 Expanding Scope of the EPC

The scope of the EPC is negotiated between the Entity and the ESP based on the results of the IGA. The only measures that should be included in the EPC are cost-saving measures identified and evaluated in the IGA report. If the Entity did not select all cost-saving measures evaluated in the IGA report, it may expand the scope later to include other measures from the IGA report. However, this expanded scope must continue to be cost-effective.

13 Items that are not Cost-Saving Measures

As defined, an energy performance contract is for implementing one or more cost-saving measures with a guarantee of cost savings. Measures that do not provide measurable utility savings or O&M savings are not permitted.

DEQ will consider measures that are directly related to a cost-saving measure, such as modifications necessary to provide access to or shelter for equipment. The cost of these measures must be included in determining the cost-effectiveness of the EPC.

If the Entity is seeking an improvement that is not energy or water related, DEQ recommends a more appropriate procurement method. Measures, such as paint, flooring, and furniture, are not part of an EPC.

Other items that do not belong in an EPC include:

- New construction, unless directly related to a cost-saving measure
- Adding heating or cooling to spaces that previously were without heating or cooling
- Adding a swimming pool, kitchen, or other item that increases utility or operating costs
 - Exception would be for additional lighting where the lighting is necessary for safety or security and is included as part of a lighting cost-saving measure.

Each of these items should use other procurement methods.