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A comparative study of standard contract conditions for energy performance contracting in Australia, Canada and the United States¹

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***Const. L.J. 357 Introduction**

Energy performance contracting² (EPC) is a contracting model between building owners (the host) and energy service companies (ESCOs), where investments in energy conservation measures (ECMs) are paid for in relation to a contractually agreed level of energy efficiency improvement to be carried out in a facility. EPC is an all-in-one package, including identification of energy and/or water saving potential, design, construction, installation, as well as evaluation of actual performance of newly installed systems. To give assurance that the expected energy and/or water savings can be materialised, the ESCO will guarantee the host the amount of energy/water savings and compensate the loss if a shortfall of saving occurs.

EPC is increasingly being adopted in both developed and developing countries.³ In the 2000s, the World Bank launched the "Loan Guarantee Program" to further boost up the energy efficiency market in developing countries, such as China, Brazil and India,⁴ and EPC has been described by the European Commission as an important tool in the energy efficiency upgrading of public infrastructures.⁵ In the United States, the Federal government has also committed to enter into the ***Const. L.J. 358** energy savings performance contracts (ESPCs) and utility energy savings contracts (UESCs) worth up to USD 2 billion by the end of 2013.⁶

Unlike developing countries, developed countries with experience in the implementation of EPC have mostly developed standard forms of contract to enable their practitioners to administer projects with uniformity and hence familiarity, minimising the chances of disputes associated with the use of bespoke contracts. In general, there are two types of EPC contracts, namely, shared savings and guaranteed savings.⁷ In the former, the host will usually rely on the ESCO to design, finance and carry out the works, which are paid for based on the actual measured energy/water saving from a set of agreed baseline parameters for a defined period. In the latter, either a host finances the improvement works himself, or seek financing from a third party (e.g., financial institutions) and requires an ESCO to guarantee the energy/water savings. The ESCO earns a fee for the design and installation services if the guaranteed savings are achieved, failing which they have to compensate the host for the shortfalls. In both cases, the ESCO will conduct an "investment grade" energy audit or feasibility study before both parties commit themselves to an EPC contract. The precursor work may be paid for separately if the EPC contract does not go ahead. Otherwise, the auditing work will be subsumed into the EPC contract in most cases.

In this study, the differences between a typical construction contract and an EPC contract are first identified, highlighting the particular features of the latter, since it is assumed that most readers are familiar with the former. The contractual framework of an EPC contract is then analysed. As mentioned, developed countries have adopted EPC to an extent that standard forms of contracts have been separately established but subtle differences exist due to differences in legal systems and emphasis. Three such countries, namely Australia, Canada and the United States, have been chosen for comparison. Australia is a

common law jurisdiction, and Canada (with the exception of Quebec) follows the common law tradition, whilst the US law is based on the codified system. In their standard forms of EPC contracts, they all adopt the guarantee saving model, which makes direct comparison possible, enabling detail reflections on different treatments of common contractual issues.

Differences between EPC contracts and construction contracts

An EPC contract is not only a contract for the design and installation of energy improvement works implemented in accordance with client's requirements, but also a service contract where the ESCO provides a number of services to the host, including the ongoing performance monitoring of energy conservation measures (ECMs), project financing, operation (if required by the host), maintenance and staff training.⁸ Although the design and installation components bear resemblances to construction contracts, there are several features of EPC contracts which make them distinctively different. ***Const. L.J. 359**

First, an EPC contract is often a two-stage contract on existing facilities.⁹ Since the scope of retrofit work will not be fully determined until the detailed study of building energy use is conducted, the ESCO and host will first enter into the first stage service contract where the ESCO performs a detailed energy audit on the host's building, and drafts the project proposal including the scope of work, possible ECMs, the level of performance guarantee of proposed ECMs, contract sum, payment schedule and contract period. After the detailed study, an option is given to the host whether the second stage contract will be carried on or not. If the host decides not to enter into the second stage contract, the host is obliged to pay for the consultancy fee for the first stage work.

Second, provisions establishing and comparing the baseline performance with the expected performance of proposed ECMs are the unique provision for the EPC contract.¹⁰ The general principle of EPC projects is that energy improvement works are paid entirely through savings. To ensure that the newly installed ECMs will generate energy savings as expected, a savings guarantee is often made an obligation of the ESCO in the EPC contract. The ESCO is liable for compensation to the host when the actual savings are less than the guaranteed values. In comparison with construction contracts, the ESCO is not only responsible for the testing and commissioning after installation, but also guarantees the system performance and energy use without compromising occupants' comfort and business efficacy.

Third, project financing is another feature in EPC projects.¹¹ Unlike the construction project where the host provides upfront capital for implementation, EPC projects can be financed either by the ESCO or financial institutions. When the upfront capital is obtained through the financial institutions, a separate loan agreement is formed between the host and the financier. As such, the issues of collateral warranty and ownership of equipment become key points of negotiations during the pre-contract period.

Fourth, a deferred payment schedule is another main difference between EPC contracts and construction contracts. Since the payment to the ESCO is tied to actual savings being achieved during the post-retrofit stage, no interim payment will be made by the host for the work done by the ESCO during the construction stage. It is only when actual savings are measured in each measurement and verification (M&V) period (for the shared saving model) or the guaranteed saving is achieved (for the guarantee model) that the amount of saving will be shared between both parties at an agreed percentage or the fee payment will be made by the host. Therefore, the amount of each scheduled payment highly depends on the actual performance of newly installed ECMs.

Whilst post-contract changes in a construction contract are mostly made by clients, changes to an EPC contract are sometimes entailed by unexpected weather conditions and occupants' behaviors in their use of the buildings. Change of ownership of the subject premises may also pose problems affecting the ***Const. L.J. 360** continuation of EPC contracts. Assignment of payment rights (to financiers) and obligations (to new owners) is more complicated than construction contracts.

Apart from the usual defects liability period which is associated with a construction contract, an EPC contract entails regular maintenance and long term monitoring of the energy (and/or water) performance of the ECM. The payback periods for both the host and the ESCO often range from several to ten years. Hence, the relationship between the host and the ESCO after completion lasts longer than a traditional construction contract.

It is often said that trust between contracting parties will improve project outcomes.¹² It is even more apt to say that long term trust is of paramount importance for parties entering into an EPC contract. Indeed, lack of trust remains one of the most difficult hurdles which the ESCO industry has to overcome to develop a more vibrant EPC market for the much needed energy retrofitting works in our quest against climate change and strive for sustainability.

Contractual framework of EPC contracts

Two alternative ways can be used for procuring building energy retrofits under an EPC package.¹³ A host with the intention of implementing energy improvement works may issue a Request for Proposals (RFP) or a Request for Qualifications (RFQ) and invite ESCOs to respond to the request. In the documents of RFP, all the requirements including the scope of work, the expected level of energy saving, as well as the key contract terms, are set out. A high degree of flexibility in relation to the proposed retrofit works is given to the ESCO for fulfilling the host's intention of reducing energy use. Regarding the RFQ, the host would request for the ESCO's qualifications, including technical experience and financial standing, for evaluation of suitability. The alternative is for the ESCO to take the initiative to submit a proposal to the host after obtaining preliminary information on building energy use and system conditions.

In any of the above situations, a selected ESCO would perform an energy audit after negotiation to identify the scope of detail and amount of possible energy savings, together with the means of project financing if the said works are implemented. At this stage, the host is to decide whether the proposed energy improvement works will be implemented or not. The cost of the energy audit can be subsumed in the works when the host decides to execute the EPC contract. If after the energy audit, the host decides not to proceed with the EPC, the ESCO may seek reimbursement for the cost of the audit or, if agreed at the beginning, bear the entire audit cost, or share it with the owner.

If the host relies on the ESCO for project financing, the latter may recoup outlays through agreed sharing of energy savings, which depends on the new equipment performance. If the host or a third party finances the works, the ESCO will have to guarantee the energy saving. The latter arrangement is more common in practice and hence most standard contracts have been drawn up accordingly.

Upon signing an EPC contract, the ESCO would proceed to prepare a detailed design, place an order for materials and equipment, and carry out installation with **Const. L.J. 361* or without sub-contracting to completion. The performance guarantee on the installed ECMs usually commences when the acceptance certificate is issued by the host. The host is often required to operate the equipment in accordance with the ESCO's technical instructions, and the ESCO is responsible for the maintenance work solely on the retrofitted equipment. During the contract period, the ESCO would conduct the M&V work with the host's staff periodically, and payments to the ESCO would be made by the host when the actual energy savings exceed the guaranteed savings. The title of the equipment and associated obligations on system maintenance would be eventually transferred to the host upon the expiration of the contract period. This marks the complete procurement cycle of an EPC project.

Since EPC projects embrace the elements of design, construction and installation work, the contractual framework of EPC contracts also consist of some features similar to construction contracts, such as definitions of work scope, contract period and roles of parties, together with liquidated damages, design liability and termination clauses. Some elements of EPC contracts are unique, including delineations of the

rights and obligations for energy audit, establishment of baselines, design and installation of energy saving measures, performance guarantee, measurement and verification, staff training, operation and maintenance. Payment terms, change mechanisms and dispute resolution procedures are also important elements in typical EPC contracts. In the rest of this paper, the essential provisions in EPC contracts are discussed, and direct comparisons of those provisions between four standard forms of EPC contracts being adopted in developed countries embracing EPC are made. Key differences are highlighted to reflect varying treatments of common contractual issues in EPC projects.

Standard forms of EPC contract

In this study, four standard forms of EPC contract based on the guarantee saving model, as developed either by government, relevant associations or councils are compared. They were compiled to instil uniformity in practice and promote wider application of EPC in their domestic markets, including:

Australia—Standard Energy Performance Contract (SEPC), developed by the Energy Efficiency Council;

Canada—Model Energy Management Service Contract (EMSC) (first-out style contract), developed by the Federal Building Initiative;

the US—Energy Services Performance Contract, developed by the Building Owners and Managers Association (BOMA); and

the US—Federal Energy Management Program: Energy Savings Performance Contracts (ESPCs).

It happens that, in the UK, energy management contracting is on the rise recently but no standard form has been developed yet at the time of writing.

The background and purpose of each standard form of EPC contract to be discussed are described as follows: ***Const. L.J. 362**

Australia—Standard Energy Performance Contract, developed by the Energy Efficiency Council¹⁴

The Energy Efficiency Council, a former Australasian Energy Performance Contracting Alliance (AEPCA), was formed in 2009. The council, aiming to build the energy efficiency market, developed a set of standard documents, namely the Standard Detailed Facility Study Agreement and the Standard Energy Performance Contract, for local use. These documents have been reviewed and endorsed by market stakeholders, including the ESCO industry, relevant Commonwealth government departments and state government departments, as well as public and private sector facility owners and operators. A Best Practice Guide was published, aiming to better inform facility owners of the application of the national standard EPC contract with commentaries. The guide is freely downloadable and the contract is available for purchase.

Canada—Federal Buildings Initiative: Energy Management Services Contracts (EMSC)¹⁵

Natural Resources Canada's Office of Energy Efficiency launched the Federal Building Initiative (FBI) in 1995, and it is still a voluntary program that provides federal agencies with a set of services and products, such as opportunity assessments, a list of pre-qualified ESCOs, and consultation for energy efficiency retrofitting projects. A model of performance contracting documents was developed in 1995 to facilitate the use of EPC to upgrade the buildings owned or managed by the Government of Canada. As in 2013, more than 80 retrofit projects using EPC contracts were conducted and these projects are estimated to generate over CAD 43 million in annual energy cost savings and achieved on average an energy saving of 15–20 per cent.¹⁶

The model form of contract is available from FBI's website. Some sections are outdated, for example, the M&V methods, but a recent Guide to Federal Buildings (*"Her Majesty the Queen in Right of Canada", 2013*) has been published,¹⁷ though not intended as a companion volume of the standard form.

The United States—Energy Services Performance Contract, developed by the Building Owners and Managers Association (BOMA)¹⁸

With the collaboration of major real estate companies and ESCOs in the US, BOMA, an over 100-year-old real estate association, has developed a set of EPC contract templates for standardising the contractual terms and conditions for the private sector, since non-standardisation of EPC contract is one of the barriers***Const. L.J. 363** inhibiting the wider use of EPC in the US. In order to avoid bias, a partnership with the Clinton Climate Initiative (CCI) serving as a liaison body between building owners, ESCOs, operators and financial partners is established in the process of developing this standard form.¹⁹ This set of EPC documents, named as a "Tool Kit", includes all the necessary documents, such as RFQ and RFP templates, an Investment Grade Audit contract template, and the BOMA EPC contract, as well as an overview of the process, aiming to facilitate the process of project development and contract negotiation. This Tool Kit is intended for private sector use, especially for those building owners or real estate professionals who have little understanding of EPC projects.

The United States—Federal Energy Management Program: Energy Savings Performance Contract (ESPC)²⁰

The development of ESPC is aimed at implementing energy improvement projects in Federal buildings of the US without the need for up-front capital cost and special Congressional appropriations. The contract was first developed by the Department of Energy (DOE) in 1998, and has gone through several modifications to the latest November 2012 version. The contract has been authorised by statute, the Energy Independence and Security Act of 2007, as a standard form of EPC contract for Federal agencies to upgrade their facilities.²¹ The law also eliminates the public procurement and financing barriers, by cancelling advance Congressional reporting requirement and increasing ESPC funding flexibility. A particular feature of this standard form is that it is meant to be used as a term contract without definite quantity, since individual Task Orders are issued for ESCO selection to suit individual projects under an umbrella arrangement lasting for five years (but contract obligations can last for a maximum of 25 years).

Comparisons of contractual issues

Savings guarantee

Savings guarantee on the implementation of new ECMs is a common feature of the contracts under comparison. By stipulating the contractual obligation, the risks of non-performance of newly installed system and equipment are borne by the ESCO. However, the scope of guarantee varies from contract to contract. Some contracts may include the guarantee of energy cost and water cost savings, while other contracts such as the SEPC and ESPC contracts allow an additional provision on the guarantee of operational and maintenance (O&M) cost savings. Although it is more equitable to include the O&M cost savings as a part of total cost savings by the ESCO, in practice, it is difficult for the contracting parties to quantify and agree on the actual maintenance cost savings resulting from the new ECMs.***Const. L.J. 364**

Savings shortfall and excess savings

To ensure the fulfillment of contractual obligations through the ESCO's guarantee of actual cost savings, the host is entitled to claim compensations from the ESCO in case a shortfall in savings occurs during each M&V period, which could be in a month, quarter or year. The shortfall amount is calculated based on the differences between the actual and guaranteed savings with due consideration of adjustment factors entailed by changes. The payment to the host is often made by either actual payment from the ESCO or deduction from the scheduled payment.

In some circumstances where the actual savings exceed the guaranteed savings, some contracts (e.g., US' BOMA) allows the excess amounts to be used to reduce the ESCO's liability for any shortfall in the coming guarantee periods, but only up to the amount of the excess. For other contracts (e.g., SEPC in Australia and EMSC in Canada), an incentive is given to the ESCO to encourage them to surpass the requirement of

guaranteed savings, in that the excess savings are given to them. In the EMSC contract, there is even a provision for the reduction in the guarantee period when the total project costs have been fully covered through savings.

Performance guarantee commencement date

In general, the date of the acceptance certificate marks the date of the performance guarantee commencement since the newly installed ECMs are put into operation and generating energy savings. However, in some circumstances where time for commissioning is necessary in order to optimise system performance and thereby maximise energy savings, the ESCO may request for the staged commencement of the performance guarantee, or revise the commencement date for minimising the risks of improper system operation due to the transition period of installation. Therefore, in the SEPC and EMSC contract, the provision is given for the change of commencement date with the host's concurrence. In the BOMA and ESPC contracts in the US, no provision is made for the changes of performance guarantee commencement date, implying that the ESCO bears the risks of financial loss when the system performance is not operated as expected. It is also noted in both forms that a delay of the construction and installation phase will not necessarily postpone the date of performance guarantee commencement, posing further risk to the ESCO.

Contract period and performance guarantee period

Unlike the traditional retrofit project where the contract is completed upon the issue of the certificate of completion, the contract period in an EPC project is longer than the completion of construction and installation work, as mentioned earlier. This period is often fixed, but in certain circumstances it may be adjusted, for example, when significant deviations from baseline conditions in building operation and usage occur. To avoid ambiguity in the actual contract period, the provision of limiting such a period (e.g. not exceeding eight years) is put in certain standard forms. In the EMSC contract, an alternative is given to both contracting parties that the contract may be completed earlier than the original expiry date of performance guarantee when the actual savings have fully covered the total project costs, providing an incentive for the ESCO to achieve savings faster. ****Const. L.J. 365***

Additional Energy Conservation Measures (ECM)

Since the newly installed ECMs may not be implemented successfully and generate energy savings as guaranteed due to improper system design and operation, this will lead to the compensation of such shortfalls to the host by the ESCO, but this is not the primary intention of EPC contracts. Hence, a leeway is given to the ESCO that a change, replacement, removal, alteration, installation of additional equipment or revision of operation procedures may be allowed with the prior written approval of the host, provided that the ESCO pays the additional costs in full.

In the SECP contract, the protection is given to the ESCO to avoid the host rejecting any change even when the costs of the changes are borne by the ESCO and yet such additional work is reasonable to be installed in order to achieve more energy savings. Similarly, in the BOMA contract, a provision is made for the evidence of proof for such remedial measures to be given by the ESCO in order to achieve the guaranteed annual saving amount.

Payment

In general, the payment terms and schedules are negotiated by the contracting parties as provided in standard forms of EPC contracts. As for the suite of EPC contracts being studied, the host pays the ESCO in accordance with agreed realised savings. The differences among the contracts lie in the commencement day of such payments. For example, in the BOMA and SEPC contracts, construction progress payments are made to the ESCO periodically based on the percentage completion of ECMs, while in the ESPC and EMSC contracts, no payment is required to begin until all required equipment is installed and functioning properly. These different arrangements may induce different cash flow patterns.

In the BOMA contract, the payment is sub-divided into two tranches, namely, installation period progress payment and performance tracking services payments. This is unique in the sense that ESCO is also paid for the task of monitoring equipment performance on a regular basis. For the sake of convenience, some contracts like the EMSC contract stipulate the monthly payment amount equal to one-twelfth of the estimated annual energy savings, subject to adjustment of the actual amount, either increasing or decreasing, depending on whether the actual energy savings exceed or fall behind the guaranteed level.

Financing

The contract terms in respect of project financing depend on the method of financing for project implementation. Self-financing and third party financing are two common types of financing approach in EPC projects.²² With the former, upfront capital is paid by the host, with the ESCO's guarantee on the actual energy savings for the proposed ECMs. With the latter, the ESCO or the host may obtain a loan from a third party financial institution. In practice, the project financing contract between the borrower and the financial institution is a separate contract***Const. L.J. 366** from the EPC contract. The guarantee from the ESCO is instrumental to the financing contract since it gives confidence to the lender that the loan will be repaid out of the saving made. In the BOMA contract, an escrow clause is provided for the contracting parties as a way to effect direct payment to the ESCO in respect of performance of contract works.

Some financial incentive schemes launched by the US State or local government are available to encourage hosts on the wider use of energy efficient systems and equipment,²³ and in the EPSC contract, a provision is stated that the ESCO is responsible for utilising any applicable funding and tax incentives for the implementation of ESPC projects.

Design liability

Under common law, the distinction between "reasonable skill and care" and "fitness for purpose" has been made clear in terms of design liability via precedent cases. In essence, it has been established that "fitness for purpose" is a more stringent requirement than "reasonable skill and care". This distinction has found its way into contracts under common law jurisdictions. Hence, the Australian SEPC contract has included a clause stating that ESCO shall conduct ECMs with due care and skill, whilst giving a warranty that the equipment shall be "fit for its intended purpose". However, it is unclear why the commentary on the standard contract in the published Guide²⁴ states that

"the ESCO may produce a list of equipment to be installed that admirably achieves this aim [i.e., achieves a guaranteed level of energy savings over the list of the contract], but that does not necessarily fulfill the 'fit-for-purpose' test".

and that it is the host's responsibility to assure that the equipment proposed by the ESCO meets his site requirements, assuming that the intended purpose of the host is made clear to the ESCO.

In the Canadian EMSC form, the ESCO has the obligation to "design, engineer, acquire, install and commission all equipment and systems with complete responsibilities as would be assumed by a general contractor". Whilst this stipulation has the effect of "reasonable skill and care", it is unclear if that would carry a connotation of a lesser design responsibility compared with that of an independent designer, since a general contractor would not normally carry design responsibility except in a Design and Build situation, which is what an EPC contract covers.

The American standard forms are less explicit in this regard and generally state that the host "at all times relies upon the ESCO's skill, knowledge, professional training and experience" in preparing the design (BOMA) and that "the installed ECMs shall comply with the standard of services required for facilities as specified" (ESPC).***Const. L.J. 367**

Ownership of equipment

In relation to the issues of ownership of equipment, the general principle adopted by many standard forms is that ownership depends on who bears the capital costs of equipment at a particular stage in question. In practice, it is rather common that the ESCO first owns the equipment and its title will be transferred to the host upon payment in full for each respective item of equipment.

However, several issues involving equipment ownership may be a concern when a contract is terminated. When the contract is terminated after the installation stage, it is impossible to restore the parties back to the situation before the contract is entered into. Thus, the host may be left with the burden of payments to the ESCO for the unpaid cost of equipment resulting from such a termination, unless the ESCO is at fault.

Performance and payment bonds

Similar to the construction projects, the provisions of clauses in relation to the purchase of performance and payment bonds are made to ensure the performance of contractual obligations to the host and timely payment for labour and materials by the ESCO respectively. Generally, the performance bond shall be in a sum equal to a certain percentage of the total amount of the contract sum as contained in the ESPC and BOMA contracts. In some circumstances, the host is entitled to call a certain amount of performance bond in case a shortfall in savings occurs.

Operation and maintenance (O&M)

The general principle is that the ESCO is responsible for maintenance work, including all works and costs associated with periodic equipment inspections, tests, calibrations, preventive maintenance tasks and corrective maintenance actions. However, the host may not necessarily appoint the ESCO to manage the O&M services in the retrofitted building. When the engagement of a third party or self-service for O&M is arranged, the responsibilities for proper system O&M are placed on the host to ensure that any non-performance of guaranteed saving is not due to inappropriate operation of the installed systems or poor quality of maintenance work. To protect the interest of ESCO, a provision is usually given to the host that all the ECMs are operated in accordance with the O&M work procedures provided by the ESCO. Any failure or non-compliance with the agreed procedures may result in consequential financial loss, for which the ESCO may reduce his liability for non-performance of guaranteed savings.

Risk of changes

During the post-installation period, it is rather common that the baseline conditions vary from time to time due to changes in building operation, level of occupancy, use of premises to suit the latest building development, etc. Those risks of change are usually catered for by the provision of a baseline adjustment mechanism clause in many standard forms. The host bears the responsibility of notifying the ESCO of the details of any significant change which may result in a change in energy consumption, and the ESCO will determine the effect on the energy baseline of *Const. L.J. 368* any change notified by the host. The various approaches adopted by the standard forms to deal with the risk of changes are depicted in Table 1, below.

Table 1: A comparison between four standard forms of EPC contracts (all are based on the Guaranteed Saving Model)

	Australian Standard Energy Performance Contract (SEPC)	Canada's Federal Buildings Initiative: Energy Management Service	US' BOMA Energy Services Performance Contract (BOMA)	US' Federal Energy Management Program: Energy Savings Performance
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Scope of contract application	Private buildings in Australia	Contracts (EMSC)	Private buildings in the US	Contracts (ESPC)
		Federal buildings in Canada		Federal buildings in the US
Contract sum designation	Lump sum contract	Lump sum contract in a first-out style (i.e., the contract will expire when the project cost is expended or the "payback period" is reached, whichever is earlier)	Lump sum contract	Indefinite delivery/indefinite quantity (IDIQ), similar to a term contract
Scope of cost savings	<p>It includes</p> <ul style="list-style-type: none"> • cost savings in energy consumption; and • any agreed operational costs savings <p>(Clause 7.4)</p>	<p>It includes</p> <ul style="list-style-type: none"> • cost savings in energy consumption; and • any agreed operational costs savings <p>(Clause 1.12, Appendix A)</p>	<p>It includes</p> <ul style="list-style-type: none"> • cost savings in energy and water consumption and associated utility costs (if applicable); and • non-measured savings (not related to energy) <p>(Schedule C, Section I-D)</p>	<p>It includes</p> <ul style="list-style-type: none"> • cost savings in energy and water consumption and associated utility costs (if applicable); and • cost savings in energy and water-related operations (if applicable) as well as maintenance costs <p>(Section C.1)</p>
Savings shortfall	<p>If the guaranteed cost savings are not achieved <i>in any guarantee year</i>, the ESCO shall pay the host the amount of the shortfall.</p> <p>(Clause 7.5)</p>	<p>If the guaranteed cost savings are not achieved <i>in any month</i>, the ESCO shall pay the host the amount of the shortfall.</p> <p>(Clause 23.4, 23.6)</p>	<p>Same as SEPC in Australia.</p> <p>(Schedule B, Section II)</p>	<p>If the guaranteed cost savings are not achieved <i>in the guarantee period</i>, the host shall adjust the payment in subsequent periods to reflect the lower performance level in the current year.</p>

				When the ECM performance level is restored, the host will adjust the payment schedule accordingly. (Clause G.5)
Excess savings	When the actual savings in energy use and operational costs exceed the guaranteed cost savings in any guarantee year, the host shall reimburse the ESCO for the payment up to the amount of the excess. (Clause 7.6)	If the actual savings exceed the guaranteed savings in any month, the host shall reimburse the ESCO for the payment up to the amount of the excess. (Clause 23.4, 23.7)	When the actual savings in energy use and operational costs exceed the guaranteed savings in any guarantee year, the excess amount may be used to offset the ESCO's liability for any future shortfall. (Schedule B, Section VI)	No relevant provision* Const. L.J. 369 .
Performance guarantee commencement date (PGCD)	The issue date of the acceptance certificate shall be the date of the performance guarantee commencement. The change of commencement date is not allowed unless the host agrees in writing with signed returns, or the ESCO nominate a revised date prior to commencement of installation of the ECMs.	The performance guarantee commencement date is the date on which the host's representative delivers written notice of no objection to the entire project. The commencement date may be extended with the approval of the host's representative. (Clause 14)	The performance guarantee commencement date is the first day of the first utility billing period following the earlier to occur of: • the month in which Final Acceptance of the entire project; or • the Final Acceptance Date set forth in Section 1.4 of the Contract	The performance guarantee commencement date is stated in the attachment document. No relevant clause is mentioned about the change of PGCD. (Attachment J-9)

<p>Performance Guarantee Year and Guarantee period</p>	<p>(Clause 4.3)</p> <p>The performance guarantee year is a complete year, starting from the PGCD.</p> <p>The guarantee period is fixed as agreed.</p> <p>(Clause 7.1; Schedule 1, item 5)</p>	<p>The performance guarantee year is a complete year, starting from the PGCD.</p> <p>The "payback period" can be shortened when the total project costs have been fully paid or extended when the ESCO experiences additional costs, loss of utility incentive or loss of other cost savings but no more than 8 years.</p> <p>(Clause 23.3, 29, 36.2)</p>	<p>(Schedule B; Section 1; Clause 1.4)</p> <p>The performance guarantee year is a complete year, starting from the PGCD.</p> <p>An alternative is given that for budgeting purposes, the host can seek to align the performance guarantee year with the calendar year.</p> <p>The guarantee period is fixed as agreed.</p> <p>(Schedule B, Section I; Section III)</p>	<p>The performance guarantee year and guarantee period are fixed as agreed.</p> <p>The contract period may be for a term up to 25years.</p> <p>(Section F3)</p>
<p>Installation period savings</p>	<p>No installation saving is included in the overall energy savings.</p>	<p>No installation saving is included in the overall energy savings.</p>	<p>An option is available for including installation period savings, and such savings can either belong exclusively to the ESCO or be shared in accordance with the agreement.</p> <p>(Clause 2.2)</p>	<p>No installation saving is included in the overall energy savings. *Const. L.J. 370</p>
<p>Additional ECMs</p>	<p>Similar to the BOMA contract in the US. However, the host may also allow and pay for changes which</p>	<p>No relevant provision.</p>	<p>Subject to the host's written approval, the ESCO shall have the right to modify or replace</p>	<p>Similar to the BOMA contract, but the period of implementation may count afresh</p>

	<p>are reasonable as compared with the energy savings achievable by the change. (Clause 3.1, 3.2)</p>		<p>any of the ECMS or install additional ECMS, provided that any costs incurred due to such modifications or additions shall be the sole responsibility of the ESCO. The host shall not unreasonably withhold or delay such actions. (Schedule VII)</p>	<p>from the modified ECM installation. (Attachment G-2 and J-2)</p>
<p>Payment</p>	<p>Progress claims are payable by the host based on the ESCO's invoice for achievement of benchmarks (i.e., milestones) listed in the timetable of the specifications. (Clause 2.7)</p>	<p>The host shall pay each month to the ESCO a sum equal to one twelfth of the estimated annual energy savings upon completion of installation until the total project cost has been fully paid or until the payback period ends, whichever occurs first. (Clause 23.3)</p>	<p>During the installation period, payments to the ESCO for the work performed should be made, and the total shall constitute the contract sum. Four options of payment method are available, including</p> <ul style="list-style-type: none"> • construction progress payments (based on a Schedule of Values, either submitted shortly after work commencement or attached to the contract); • share of installation period savings; or • through an escrow agent due 	<p>The frequency of payments, including any partial payments, from the host to the ESCO will be negotiable. (Clause G.4) *Const. L.J. 371</p>

<p>Financing</p>	<p>No relevant provision, although the accompanying Guide mentions several approaches of financing EPC contracts.</p>	<p>The ESCO is responsible to finance the total project cost either directly, or by arranging with a third party financial institution. (Clause 22)</p>	<p>to a financing arrangement. During the guarantee period, "performance tracking service" payments are also paid to the ESCO based on a schedule. (Clause 10.1; Schedule E, Section I; Section II)</p>	<p>The host is not liable to provide any financing for the project, and the ESCO may solicit and select financing offers through a competitive selection process. The host will consider the assignment of payments due for the works to protect a financier upon the ESCO's request. (Section H7, H9)</p>
<p>Design liability/responsibility</p>	<p>ESCO conducts ECM installation with due care and skill. Equipment shall be fit for its intended purpose. (Clause 2.4, 10.2)</p>	<p>ESCO to design, engineer, acquire, install & commission all equipment and systems with complete responsibility as would be assumed by a general contractor.</p>	<p>Customer relies heavily upon ESCO's skill, knowledge, professional training and experience in preparing any plan, drawing, specification or other document.</p>	<p>All the installed ECMs shall comply with the provision of services required for facilities as specified in each Task Order. (Section C3 and Clause 5.2))</p>

	(Note: see text on remark)	(Clause 7.0)	The skill, knowledge, etc., should be reasonably required for similar projects. (Clause 4.2, 4.3)	
Ownership of equipment	The title of equipment shall transfer to the host when the full payment of equipment is made. (the transfer of equipment titles is not necessarily at the end of the contract period) (Clause 4.4)	The ESCO or a financial institution that has provided financing for the ECMs may not retain title to any equipment purchased and installed as part of the ECM as security for the financing. (Clause 30)	When the host has discharged payment of the works to the ESCO, the latter cannot voluntarily file liens against the host. (Clause 10.7)	Title to all equipment installed by the ESCO can be vested in the host, ESCO, or a third party, subject to the host's approval. The benefit of government financial incentives (e.g., tax credits) is *Const. L.J. 372 part of the consideration for allocation of ownership of the works to ESCO or a third party. (Clause H2)
Performance and guarantee bonds	No relevant provision.	Performance bond and a labour and materials payment bond, each in the amount of at least 50% of the total project cost during the Installation Period. (Clause 53.1)	Performance and payment bond shall be in an amount equal to the Contract Sum during the Installation Period. (Clause 4.12)	Performance bond shall be in an amount equal to 100% of the total bonded amount for all ECMs. Payment bond shall comply with Schedule TO-2 Bonded Amount. (Clause H8.2)
Operational Responsibility	The host shall comply with the	The host shall operate the	The host is required to	The host shall comply with the

	<p>operational procedures laid down by the ESCO for any ECMs</p> <p>The ESCO will not be liable to the host for a shortfall of energy saving when such shortfall is due to operational deficiency arranged by the host.</p> <p>(Clause 8.4;8.5)</p>	<p>improvements during the post-installation period in accordance with the ESCO's prescriptions and promptly provide the ESCO with the information it requires relevant to the operation of the improvements, including</p> <ul style="list-style-type: none"> • results of preventive maintenance; • irregularities in energy consumption; and • results of inspections or tests. <p>(Clause 17)</p>	<p>provide electronic means of access to allow the ESCO continuous remote access to performance tracking monitoring systems for performing and completing the Contract Services.</p> <p>(Clause 3.4)</p>	<p>operational procedures laid down by the ESCO for any ECMs.</p> <p>The ESCO shall conduct periodic inspections to determine the host's compliance with operational procedures.</p> <p>(Clause C6.1)</p>
Maintenance	<p>The maintenance work may be arranged by the ESCO, a third-party, or the host itself.</p> <p>(Clause 5)</p>	<p>The ESCO shall provide to the host the instruction and training that is necessary to ensure the proper operation and maintenance of the ECMs.</p> <p>The host is required to perform the regular maintenance work.</p> <p>(Clause 16, 17)</p>	<p>Similar to the EMSC contract in Canada.</p> <p>The host is required to perform the regular maintenance work in accordance with Schedule G.</p> <p>(Clause 4.13, Schedule F)</p>	<p>The ESCO shall be responsible for the repair and preventative maintenance of all installed ECMs.</p> <p>(Clause C8.1)</p> <p>*Const. L.J. 373</p>
Dealing with risk of changes (M&V)	<p>The host should inform the ESCO of details on any</p>	<p>The baseline energy consumption and</p>	<p>The causes for adjustment to the energy savings</p>	<p>Risk of changes is negotiated by</p>

	<p>significant change in any of the stated factors, resulting in a change in energy use.</p> <p>Upon the host's approval, the ESCO may adjust the energy baseline or the amount of guaranteed energy savings. If both parties disagree on the changes, a dispute resolution process will be invoked.</p> <p>(Clause 8)</p>	<p>demand shall remain constant except in the following circumstances</p> <ul style="list-style-type: none"> • a change in the use of the facilities; • a change in the occupancy rate of facilities; • a modification to or enlargement of the facilities; • implementation of new standards; or • an increase in the interest rate used in calculating any financing charges <p>(Clause 28)</p>	<p>calculation is set forth in Schedule C.</p> <p>The schedule lays down the responsibility and action to be taken when certain circumstances happen, for example, change in occupancy and occupancy hour, abandonment of an existing site.</p> <p>(Schedule B &C)</p>	<p>both contracting parties.</p> <p>The performance risk and responsibility matrix lists out the ESCO's approach to deal with possible changes (e.g. change of operating hours, load, weather, etc.) at the time of awarding a specific Task Order.</p> <p>(Attachment J-7)</p>
<p>Assignment</p>	<p>Without the prior written consent of another party, no contracting party may assign or transfer its right to others.</p> <p>Reasonable consent should be given when:</p> <ul style="list-style-type: none"> • The ESCO assigns its rights to its wholly owned subsidiary or that of the ESCO's parent company, or wishes to assign its rights to receive payment to his lender. 	<p>No provision on assignment by the host (presumably due to the public sector nature of host).</p> <p>Except for purposes of financing the improvement works, the ESCO may not assign the contract, either fully or in part, without the written consent of the host; such consent should not be</p>	<p>Without the prior written consent of the host, the ESCO shall not assign the contract.</p> <p>The host may assign this contract to his affiliate or a lender for collateral purposes.</p> <p>This contract shall be binding upon, and the benefits belong to, the successors and permitted</p>	<p>No provision on assignment by the host (presumably due to the public sector nature of host). *Const. L.J. 374</p>

	<ul style="list-style-type: none"> The transferee enters into an agreement in substantially identical terms to the contract and such transferee is of at least equal financial standing as the host. <p>(Clause 18)</p>	<p>unreasonably withheld.</p> <p>(Clause 47)</p>	<p>assigns of the parties.</p> <p>(Clause 14)</p>	
Termination upon default	<p>Either party may terminate the contract in the event of default by any contracting party, e.g., due to non-payment, etc.</p> <p><i>Termination by ESCO:</i> If the host sells, transfers or assigns their interest, the ESCO will use its best endeavors to enable this contract to be novated to the purchaser or assignee of that interest.</p> <p>However, it is not necessary for the ESCO to enter into a novation of the contract, and the ESCO may exercise the right of contract termination upon notice of an assignment.</p> <p>(Clause 16.1, 16.2)</p>	<p><i>Termination by Host:</i> No provision is given for the host to terminate the contract. When the ESCO is in default under the contract, the host is entitled to reduce the payment by an amount equal to all costs as a result of ESCO's default.</p> <p><i>Termination by ESCO:</i> No provision is made for the ESCO to terminate the contract. In the event of the host's default, such as non-compliance with conditions of the contract, only the compensation of the outstanding costs would be made to the ESCO.</p> <p>(Clause 33 and 35)</p>	<p><i>Termination by Host:</i> The host may terminate the contract when the ESCO fails to perform a provision as stipulated in the contract.</p> <p><i>Termination by ESCO:</i> The ESCO may terminate the contract when the host fails to make payments to the ESCO after a stated period.</p> <p>(Clause 13.1,13.4)</p>	<p><i>Termination by Host:</i> The host may terminate the contract in accordance with the relevant incorporation of Federal Acquisition Regulations in respect of Contract Termination — Debarment.</p> <p>(Part II Contract Clause deems incorporation of 48 CFR 52.222-12 Contract Termination — Debarment)</p> <p><i>Termination by ESCO:</i> No relevant clause is provided for the termination of contract by the ESCO.</p>

Termination without default (Termination for convenience)	No relevant provision.	The host may terminate the contract by acquiring all the ECMs for the termination value set forth in Appendix E, at any time after the first anniversary of the Commencement Date and prior to the expiry of the Contract. (Clause 15)	The host may terminate the contract in whole or in part, at any time. The host shall pay the ESCO a portion of the Contract Sum for Performance Tracking Services. (Clause 13.3)	The host may terminate the contract in whole or in part, if the contracting officer determines that a termination is in the host's interest. (Part II Contract Clause deems incorporation of 48 CFR 52.249-2 Termination for the Convenience of the Government (Fixed — Price))
Dispute Resolution before litigation	Unsettled dispute may be referred to Expert Determination. (Clause 17)	Disputes shall be settled by arbitration. (Clause 38)	Unsettled disputes shall be referred to arbitration. (Clause 7)	Dispute resolution will be settled in accordance with an agreed plan in the M&V attachment. (Attachment J-8) *Const. L.J. 375

Common in the standard forms, the adjustment mechanism is negotiated as and when the need arises. The ambiguity in the actual adjustment procedures may be reduced by the provision of reference to the well-known M&V guidelines in a contract (e.g., *International Performance Measurement and Verification Protocol*).²⁵ If the parties envisage certain changes to the contract, they may enter into a supplementary agreement to provide certainty of procedures.

Assignment of the contract

An assignment is permissible when prior written consent is given by either contracting party to assign its rights and obligations to a transferee. Sometimes, due to the protection of its own interest, prior written consensus is difficult to be reached. In the SEPC contract, a provision is made that such consent shall not be unreasonably withheld and not to be withheld at all if the transferee is going to enter into an agreement in substantially identical terms to the original agreement and the ESCO determines that such transferee is of at least equal financial standing as the original host.

In the BOMA contract, the host's assignment is allowable without prior ESCO's consent when the host wishes to assign to any purchaser of the Site, to a lender for collateral purposes, or to an entity wholly owned or controlled by the same owners of the host. In other words, the contract is still binding when the ownership of facilities is transferred to another party through property transactions. It is noted that no

provision regarding assignment of the host's rights and obligations is made in the public contract forms due to the presumed perpetual status of public agencies.

Termination

Similar to the construction contracts, the clause regarding termination by default is stipulated in EPC contracts. The common events of default in EPC projects, such as non-payment, often occur during the post-retrofit period. The provision of termination by default is also given to the ESCO. For example, in the SEPC contract, the ESCO will not be obliged to enter into novation of the contract, and may terminate the contract when the host's interest is sold, transferred or assigned to another party.

It is worth noting that the provision of termination for convenience is put in certain standard forms, implying that the host may exercise its contractual right to terminate any portion or the whole EPC contract at any time. This provision, therefore, allows recovery of normal engineering contract by termination of the post-retrofit period, due to the unforeseeable changes, once the construction and installation of said ECMs are completed with the certification of acceptance.

Dispute resolution

During the contract period, it is not uncommon to have disputes in relation to baseline adjustment, energy savings calculation, and the quality of measurement data, in particular under circumstances where the current conditions change significantly from the agreed baseline conditions. Thus, in many standard forms, ****Const. L.J. 376*** a dispute resolution mechanism is stated, and arbitration is often a penultimate device for resolving disputes before litigation. The Australian form relies on binding expert determination for amounts of dispute at or below AUD 500,000, and arbitration above that value. Litigation is possible for urgent relief (such as to stop any violation of intellectual property rights), or when arbitration fails to settle the dispute.

Conclusion

Overall, an EPC contract is a combination of design, installation and service contracts. The key focus of EPC contracts is not only put on these elements, but also on the actual performance of installed ECMs as well as its operation and maintenance. In order to execute energy retrofitting works whereby the capital costs would be eventually paid through actual savings achieved by the ECMs, provisions such as saving guarantee, ownership of equipment, payment schedule, and obligation of O&M are crucial in EPC contracts.

In principle, an ESCO bears almost all of the performance risks associated with the installation of new ECMs by offering a guarantee on the actual cost savings of the proposed ECMs. However, as EPC contracts often last more than three years, unforeseeable changes which significantly affect the energy use in buildings, such as changes in building operation and level of occupancy, are not uncommon. Therefore, special attention should be paid on the baseline adjustment clause in order to avoid disputes.

The comparisons among the EPC standard forms being studied show that although a common framework is prevalent, there can be varied treatments of particular contractual issues in EPC projects, such as saving shortfall, excess savings, additional ECMs as well as dealing with changes. Both contracting parties should clearly understand their contractual obligations and risks during the stage of contract negotiation. In addition, the standard forms of EPC contracts only lay down the stereotyped clauses in typical EPC projects. However, each EPC project is unique in that the retrofit measures would be implemented based on the actual building conditions and specific operational patterns. Therefore, careful fine-tuning is still necessary to suit the particular case of each individual EPC project.

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