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# ESCO

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*Energy Services*

*Company* **HANDBOOK**

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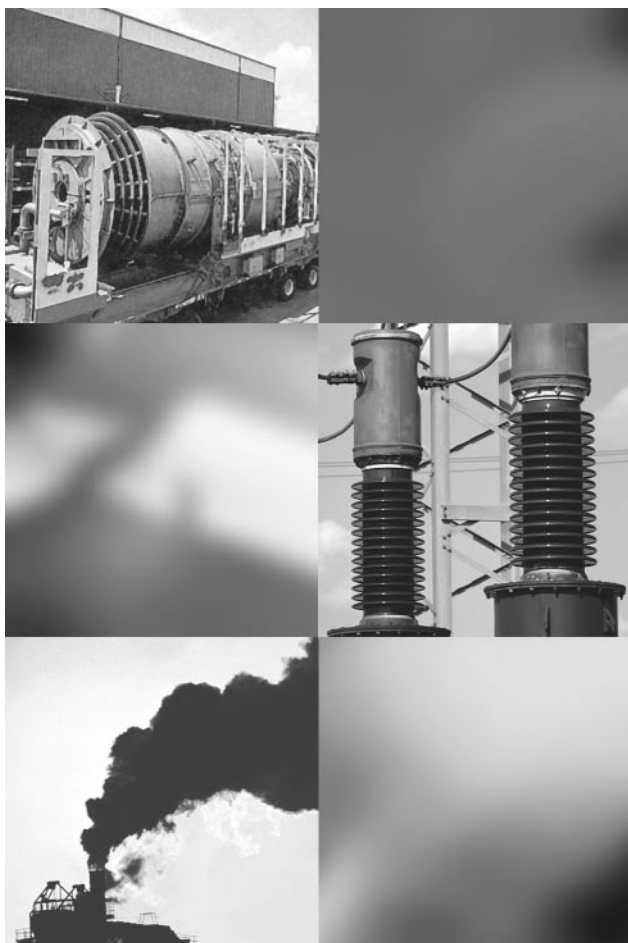
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*Energy Services  
Company* **HANDBOOK**

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*John M. Studebaker, Ph.D.*

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# DEDICATION

This publication is dedicated to Virginia for her encouragement and help in bringing it to completion.

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# ACRONYMS

<b>A</b>	Ampere
<b>ac</b>	alternating current
<b>ADP</b>	alternate delivery procedure
<b>AFUDC</b>	allowance for funds used during construction
<b>AGA</b>	American Gas Association
<b>ALJ</b>	administrative law judge
<b>AM/FM</b>	automated mapping/facilities management
<b>Amp</b>	Ampere
<b>APPA</b>	American Public Power Association
<b>ASCC</b>	Alaskan System Coordination Council
<b>ASCII</b>	American Standard Code of Information Interchange
<b>ASHRAE</b>	American Society of Heating, Refrigeration, and Air Conditioning Engineering
<b>BPA</b>	Bonneville Power Administration
<b>Btu</b>	British thermal unit
<b>CC</b>	control circuit
<b>Ccf</b>	100 cubic feet
<b>CfD</b>	contract for differences
<b>CFM</b>	cubic feet per minute
<b>CIAC</b>	contributions in aid of construction
<b>Co-op</b>	cooperative
<b>dc</b>	direct current
<b>Disco</b>	distribution utility
<b>DLC</b>	direct load control
<b>DOE</b>	Department of Energy
<b>DSM</b>	demand-side management
<b>Dth</b>	Dekatherm
<b>ECAR</b>	East Central Area Reliability Coordination Agreement
<b>ECEMP</b>	embedded costs exceeding market prices
<b>EEO</b>	equal employment opportunity
<b>EMF</b>	electro-magnetic field (effect)
<b>En banc</b>	oral argument before FERC commissioners

<b>EPA</b>	Environmental Protection Agency
<b>EPRI</b>	Electric Power Research Institute
<b>ESCO</b>	energy/engineering service company(ies)
<b>EWG</b>	exempt wholesale generator
<b>FEMP</b>	Federal Energy Management Program
<b>FERC</b>	Federal Energy Regulatory Commission
<b>FDC</b>	fully distributed costs
<b>FRCC</b>	Florida Reliability Coordinating Council
<b>G&amp;T</b>	generation and transmission
<b>Genco</b>	generating company
<b>GW</b>	gigawatt
<b>GWh</b>	gigawatt-hour (one billion watt-hours)
<b>HDD</b>	heating degree day
<b>HID</b>	high intensity discharge
<b>HPS</b>	high pressure section
<b>HVAC</b>	heating, ventilation, and air conditioning
<b>IOU</b>	investor-owned utility
<b>IPP</b>	independent power producer
<b>IRP</b>	integrated resource planning
<b>ISDN</b>	integrated services digital network
<b>ISO</b>	independent system operator
<b>kbps</b>	kilobytes per second
<b>kV</b>	kilovolt (one thousand volts)
<b>kVA</b>	kilovolt-amperes
<b>kW</b>	kilowatt (one thousand watts)
<b>kWh</b>	kilowatt-hour
<b>LCUP</b>	least-cost utility planning
<b>LED</b>	light emitting diode
<b>LIHEAP</b>	low-income home energy assistance program
<b>LOA</b>	letter of agreement (chapter 8)
<b>LOA</b>	letter of authority (in Glossary)
<b>LOI</b>	letter of intent
<b>LOU</b>	letter of understanding
<b>MAAC</b>	Mid-Atlantic Area Council
<b>MAIN</b>	Mid-American Interconnected Network

<b>MAPP</b>	Mid-Continent Area Power Pool
<b>MBtu</b>	one thousand British thermal units
<b>Mcf</b>	one thousand cubic feet (natural gas measurement)
<b>MIS</b>	management information system
<b>MMBtu</b>	one million British thermal units
<b>MOA</b>	memorandum of agreement
<b>MOI</b>	memorandum of intent
<b>MOU</b>	memorandum of understanding
<b>M/V</b>	measurement/verification
<b>MW</b>	megawatt
<b>MWh</b>	megawatt-hour
<b>NARUC</b>	National Association of Regulatory Utility Commissioners
<b>NASUCA</b>	National Association of State Utility Consumer Advocates
<b>NEC</b>	national electric code
<b>NEMA</b>	National Electrical Manufacturers Association
<b>NERC</b>	North American Electric Reliability Council
<b>NESC</b>	National Electrical Safety Code
<b>NFPA</b>	National Fire Protection Association
<b>NOI</b>	notice of intent
<b>NOPR</b>	notice of proposed rulemaking
<b>NPCC</b>	Northeast Power Coordinating Council
<b>NRC</b>	Nuclear Regulatory Commission
<b>NRECA</b>	National Rural Electric Cooperative Association
<b>NRRI</b>	National Regulatory Research Institute
<b>NSI</b>	notice of soliciting information
<b>NUG</b>	non-utility generator
<b>O&amp;M</b>	overhead and maintenance
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PBR</b>	performance-based regulation
<b>P/E</b>	price/earnings ratio
<b>PMA</b> s	power marketing administrations
<b>POOLCO</b>	spot market power pool
<b>Pro se</b>	on a person's own behalf
<b>PTSM</b>	plant technology and safety management
<b>PUC</b>	public utility commission

<b>PUHCA</b>	Public Utility Holding Company Act
<b>PURPA</b>	Public Utility Regulatory Policies Act
<b>PV</b>	photovoltaic(s)
<b>QF</b>	qualifying facility
<b>R&amp;D</b>	research and development
<b>REA</b>	Rural Electrification Administration
<b>RFP</b>	request for proposal
<b>ROE</b>	return on equity
<b>ROR</b>	rate of return
<b>RTG</b>	regional transmission group
<b>RUS</b>	rural utilities service
<b>SEC</b>	Securities and Exchange Commission
<b>SERC</b>	Southeastern Electric Reliability Council
<b>SIC</b>	standard industrial classification
<b>SLC</b>	subscriber line charge
<b>SPP</b>	Southwest Power Pool
<b>TFP</b>	total factor productivity
<b>th</b>	therm (100,000 Btus)
<b>TOD</b>	time-of-day rates
<b>TOP</b>	take or pay
<b>TOU</b>	time-of-use rates
<b>Transco</b>	transmitting utility
<b>TVA</b>	Tennessee Valley Authority
<b>UL</b>	Underwriters Laboratory
<b>USDOE</b>	U.S. Department of Energy
<b>V</b>	volt
<b>VA</b>	voltampere
<b>VAV</b>	variable air volume
<b>VSD</b>	variable speed drive
<b>W</b>	Watt
<b>Wh</b>	Watt-hour
<b>WSCC</b>	Western Systems Coordinating Council

# INTRODUCTION

## *ESCO SERVICES—AN OVERVIEW*

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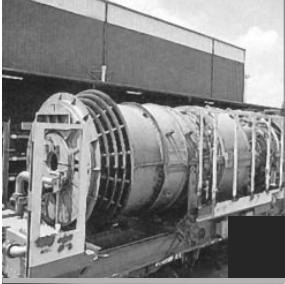
The intent, purpose, and hopefully, result of this publication are to explain what ESCOs (energy/engineering services companies) are, how they are evolving, and how they can benefit any utility user (electricity and natural gas).

This publication is structured from my actual experiences (good and bad) in working with various ESCO companies. As deregulation in both electricity and natural gas evolves, most retail customers will become involved in the direct purchase of these commodities, whether they want to or not.

Especially in electricity, savings on commodity will only be disillusioning to many retail customers in many cases. Most deregulated electricity agreements include both electricity commodity purchase as well as energy/engineering services to increase total cost reduction opportunities. In these types of arrangements, ESCOs in one form or another are generally entities that the retail customer will partner with to accomplish the cost reductions.

In this publication I will explain what ESCOs are, how to select the ESCO that is a “best fit” for you, and what you want to accomplish. As you read this publication, remember this—there is no magic formula for working with ESCOs. Ninety percent of the success of your relationship with any ESCO is your ability to select, quantify, contract with, and measure the results you expect to accomplish.

Technically, ESCOs cannot do anything for you that you cannot do yourself. They can provide the expertise to organize, implement, and finance projects that you may not have the time, knowledge, or financial wherewithal to complete. The choice is yours to make—the right decision is the one that best fits your needs.



# SECTION 1

## *ESCOs—Their Past, Present, and Future*





# CHAPTER 1

## *ESCOs—A Brief History and Overview*

### *ESCOs—THE PAST*

---

First I need to provide my definition of an ESCO. *ESCO*, as used and referred to in this publication, will stand for *energy/engineering services company*. Typically these types of companies assist utility users, both electricity and natural gas, in the reduction of their overall utility costs.

The companies that do this type of work have been in business for many years, probably at least 50–75 years. Initially there was no term “ESCO”, but the functions that were performed were the same type as are currently done by ESCOs.

One of the main things, in my opinion, that separates ESCOs from the typical contractor/subcontractor company is in the financial aspects for funding customer projects.

ESCOs typically offer full financing packages for customer-energy cost-reduction projects. This financing option can be a real incentive for a customer to proceed with a project that probably otherwise would not have been undertaken.

## *ESCOs—Now*

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In my opinion, there are at least two very different types of energy services companies currently doing the same general types of business.

**Unregulated energy/engineering marketing affiliate of for-profit utilities (both electricity and natural gas).** These companies, to some extent, have been around for many years, but without the name ESCO. Before the advent of deregulation and its underlying threat of competition, these companies had generally, as their predominate thrust, demand-side cost-reduction strategies. They assisted the parent-regulated utility in its administration of regulatory agency-approved/mandated, demand-side energy cost-reduction programs. These programs did, and to some extent still do exist, and if properly utilized, can be of great value to a utility user.

**Energy/engineering services company not a deregulated affiliate of a for-profit utility.** This type of company can be very large or very small, local or national in scope, all encompassing, or limited in its range of services. The majority of all ESCOs actively involved in project work would probably be (numerically) in this No. 2 class.

It is very important that every energy user understand—

- What are ESCOs?
- How do they work?
- What are they especially good at?
- How can a good one be selected?
- How can a contract be established with them?

Because of their ability to provide long-term financing, ESCOs are important today and will probably be more important in the future in energy cost reduction services for those customers that cannot, or choose not, to finance their own projects. If you know ESCOs and how to make them work for you, you will be well on the way to reducing your overall energy costs.

## ***ESCOs—THE FUTURE***

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What will happen in the future is really anyone's guess, but following are a few popular theories as to how the ESCO scenario will evolve.

### **For-profit utility-affiliated ESCOs**

This class of ESCOs will become the predominate providers of services. This theory says because of deregulatory profit pressures on for-profit utilities, their deregulated affiliates will have to supplement the regulated utility profit shortfall—making this type of ESCO more competitive. Because of their financial clout, this will drive many independent ESCOs out of business.

### **Independent non-utility affiliated ESCOs**

These types of ESCOs are projected by some to diminish in both number as well as overall percent of typical types of ESCO business done. Currently, for-profit utility-affiliated ESCOs seem to be aggressively promoting their abilities to retail utility customers that have the opportunity to retail wheel electricity.

Also, to some extent, these same utilities are subsidizing ESCO efforts—allowing them to be very competitive in pricing as well as project payback terms. To counter this competition, non-utility affiliated ESCOs are combining into larger companies. In this writer's opinion, where these two types of ESCOs ultimately end up is anyone's guess.

To a customer considering the use of any type of ESCO, the following items are, or should be, of more concern than the type of ESCO utilized. Each of the following items is very important to a successful ESCO/customer relationship. The following items are not listed necessarily in the sequence of importance or priority:

- ESCO experience in types of projects required by customer
- ESCO contract terms, project interest rates, similar project completion results, etc.
- Face-to-face relationships between the customer and ESCO representatives
- Conformity in general with the contracting process described in this publication

## *SYNOPSIS*

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What the entities are called, or if they are or are not part of the regulated for-profit utilities, is really of little consequence. The main things to consider from a customer's standpoint are:

- Do they have experience?
- Are they reliable?
- How do I interface with their representative?
- Am I satisfied with the savings that result from contracting with them?

Remember this—if your requirement is to always get the cheapest price, you will probably never do any deal since you will not be certain the deal you have is the absolute best that can be had. However, if your requirement is for fair documentable savings with a minimum or no up-front expenditure of your dollars, ESCOs—whether utility affiliated or not—cannot be overlooked.

In this writer's actual experience with both utility-affiliated and non-utility affiliated ESCOs, the type of ESCO is of little consequence. What is of paramount importance is the selection and contracting skills the customer possesses.

This publication will provide step-by-step procedures that, if followed, will produce a fair arrangement for both the customer and the selected ESCO. Do not forget that in any contractual arrangement, the negotiation skills of

both parties determine who receives the most benefit from the contract. Remember: You will not get what you do not ask for.

In this writer's actual experience, almost anything in an ESCO contract is open to negotiation under the right conditions. If a contract is used to unnecessarily encumber either party rather than to enhance the agreement process, immediately seek another ESCO with which to deal.

I cannot overemphasize the importance of knowing what to ask and what to expect in any contract negotiation process, not only in ESCO arrangements but also in any arrangement that requires a contract. If done properly, the contract process, as well as actually working with the ESCO, can be a very rewarding experience for both parties. However, if done improperly, the experience will be a disaster for both parties.

In the following chapters, we will discuss the actual procedures when working with ESCOs, whether utility affiliated or not. The steps that will be outlined and discussed may seem overly complex, and the time required to do the process may seem inordinately long. In this age of quick and easy fixes—I wish I could say the process of ESCO contracting was both quick and easy, but the truth is, it is not. This process is truly one where you get what you negotiate for.

What I relate to you, the reader of this publication, is what I know works. Are there other processes that can be followed? Perhaps. Anytime you are contracting or partnering with a company for up to 7–10 years, the rule is, the better you do the up-front preparation, the better your chance for long-term success. The sequential steps that will be outlined in this publication are listed in the table of contents.

Although this process may seem very complicated, in actual practice it is rather simple and follows methodical sequences of events to arrive at a logical conclusion. This benefits the customer as well as the ESCO. If the process is taken one step at a time, it will not seem so complex.

