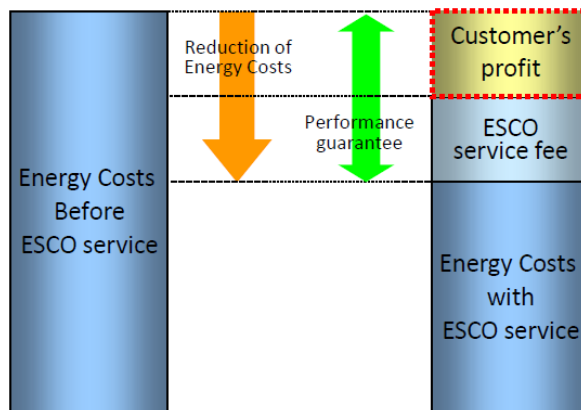


ESCO and EMS in Japan

(Energy Service Company & Energy Management System)

Advantages of ESCO scheme	
<p><u>(Performance Contract)</u> ESCOs guarantee energy cost reduction</p>	<p><u>(Pay from the Savings)</u> Investment cost is provided by ESCOs and the service fee is covered by the saved energy cost</p>



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Preface

JAESCO (Japan Association of Energy Service Companies) is the only association in Japan which promotes ESCO projects and Energy Management Systems (EMS).

It was established in October 1999 in order to conduct the following activities;

- (1) Policy related lobbying activities
- (2) PR and marketing of ESCO concept
- (3) Training the staff of member companies
- (4) Information
- (5) International cooperation
- (6) others

And in May 2016, JAESCO included EMS as its business territories. EMS includes;

- (1) Visualization of energy consumption
- (2) supporting optimal operation of facilities
- (3) energy service provider (ESP)
- (4) on site generation of electricity
- (5) Asset outsourcing of utility facilities

EMS is recognized as the advanced scheme of ESCOs and expected to play important roles to tackle various issues. JAESCO is pleased to support these challenging businesses of member companies.

Energy Audit

- Identify Energy Efficiency possibility
- Calculate saved energy & cost
- Estimate installation cost
- Calculate pay-back year



ESCO

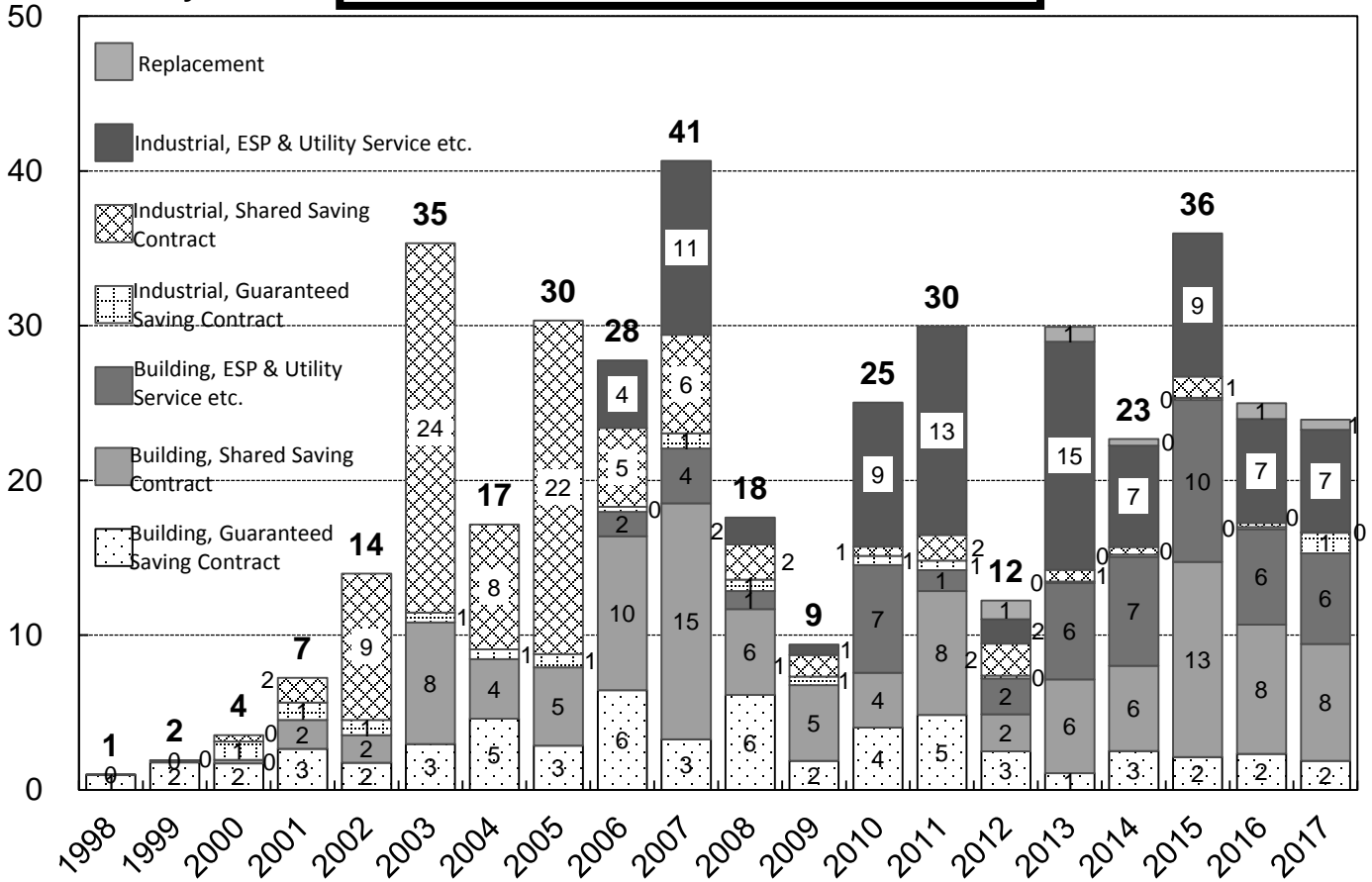
- Evaluate the credibility of customers
- Calculate long term payment plan of customers
- Design the Measurement & Verification Plan
- Design guarantee level of EE performance

EMS

- Visualization of energy and water consumption
- Continuous supervision and analysis of operation of equipments
- Conduct overall energy business as general contractor
- Take outsource of asset ownership

Trend of Market size of ESCO in Japan

(Billion yen)



Governmental policies to promote ESCO in Japan

M
E
T
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- April 2007 : published "Manual for local governments to introduce ESCO".
- April 2010 : revision of the energy conservation law and its ordinance.
"large energy consumers must consider the performance contract provided by ESCOs in order to improve energy efficiency."
- April 2014 : revision of the ordinance of energy conservation law
" large energy consumers must consider to introduce services of BEMS Aggregators and/or ESCOs to improve load leveling performance."

M
O
E

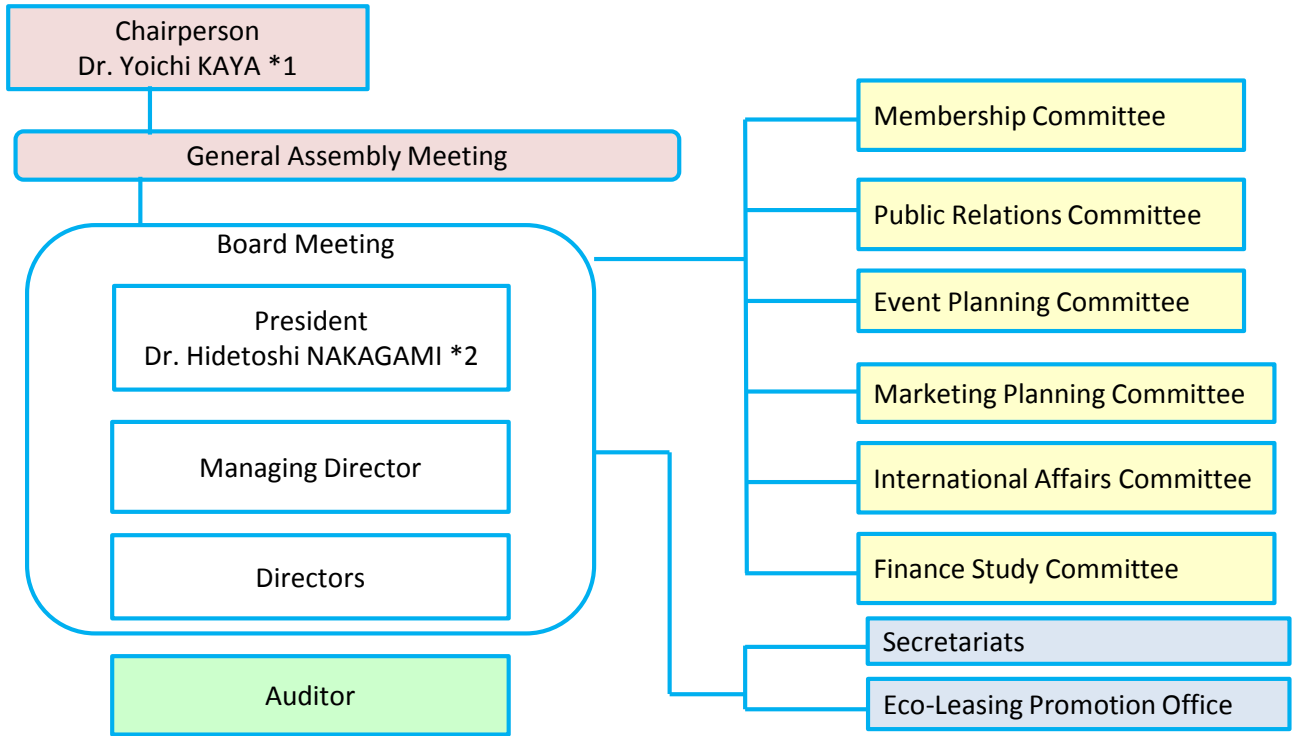
- December 2007 : law for procurement of environmentally conscious products
" Government and public organizations must consider to procure ESCO services for their buildings and facilities."
" ESCO service contract can be effective up to 10 years."

MLIT

- May 2014 : second revision of manual for public buildings to introduce ESCOs

About the Association

Structure of JAESCO



*1: Professor Emeritus of Tokyo University

*2: Chairman of Jyukankyo Research Institute (JYURI)

Members of JAESCO

- Regular Members ----- 31 companies
- Supporting Members ----- 45 companies
- Friends of JAESCO ----- 20 individuals
- Special Members ----- as the followings

Dr. Yoichi KAYA (Professor Emeritus of Tokyo University)
Jyukankyo Research Institute (JYURI)
Energy Conservation Center of Japan (ECCJ)
Daiichi Sogo Legal Office
Development Bank of Japan (DBJ)
National Institute of Advanced Industrial Science & Technology (AIST)
Dr. Shuzo MURAKAMI (Professor Emeritus of Tokyo University)
Dr. Takao KASHIWAGI (Professor Emeritus of Tokyo Institute of Technology)
Dr. Yasunori AKASHI (Professor of Tokyo University)

ESCO and Energy Management Markets Trends

October 2019

Japan Association of Energy Service Companies

1 Study Objectives and Overview

The objectives of this study are:

- To survey ESCO and Energy Management market trends
- To gather information on the activities of JAESCO member companies
- To collect and organize data for the dissemination of information regarding ESCO and Energy Management projects

We e-mailed a questionnaire to 84 JAESCO member companies and 166 non-JAESCO member companies. Table 1 shows the number of responses. We have analyzed 45 companies which answered their ESCO and Energy Management track records.

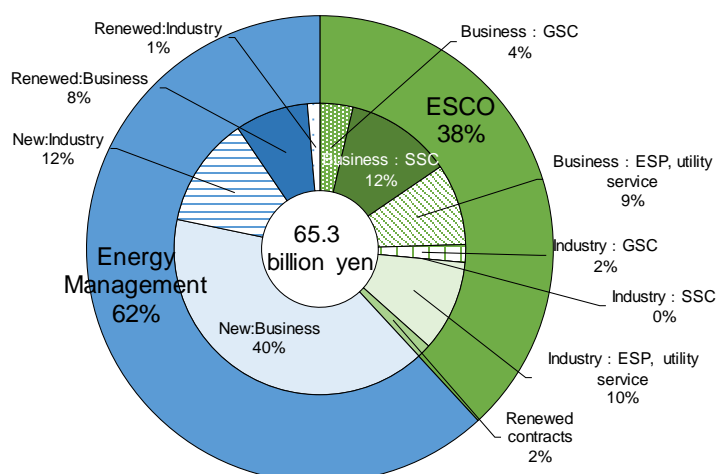
Table 1 Number of responses

	No. of companies	No. of responses ¹⁾	No. of analysis target companies
JAESCO member companies	84	84 (100% response rate)	25
Non-JAESCO member companies	166	31 (18.7% response rate)	20

1) Including companies with “no track records.”

2 Contract Amount and Sales Revenue of ESCO and Energy Management

The sum of the contract amount and the sales revenue in 2017 was 65.3 billion yen, of which ESCO and Energy Management accounted for 24.9 billion yen (38%) and 40.4 billion yen (62%) respectively (shown in Figure 1). Energy Service Provider (ESP) and utility services in the industry and business sectors, and Shared Savings Contracts (SSC) in the business sector accounted for a large portion of ESCO in terms of contract amount. As for Energy Management, sales revenue for new contracts in the business sector was the highest. Sales revenue for renewed ongoing contracts was relatively small compared to new contracts in both the business and industrial sectors. It is noted that since Energy Management could not be separated from the total contract amount, the sales revenue of Energy Management does not include new buildings.



- 1) SSC: Shared Savings Contracts, GSC: Guaranteed Savings Contract, ESP: Energy Service Provider
- 2) Excluding the sales revenue from new buildings in Energy Management.

Figure 1 The contract amount and sales revenue of ESCO and Energy Management in 2017

3 Number of signed contracts for ESCO and Energy Management

Figure 2 presents the number of signed contracts for ESCO and Energy Management in 2017. Out of a total of 7,145 contracts, 7,058 were Energy Management (99%), and 87 were ESCO (1%). The majority of ESCO was Guaranteed Savings Contracts (GSC) and SSC in the business sector. There were 4,253 renewed contracts (60%) and 2,372 new contracts (34%) in the business sector, and 227 new contracts (3%) and 206 renewed contracts (3%) in the industrial sector for Energy Management.

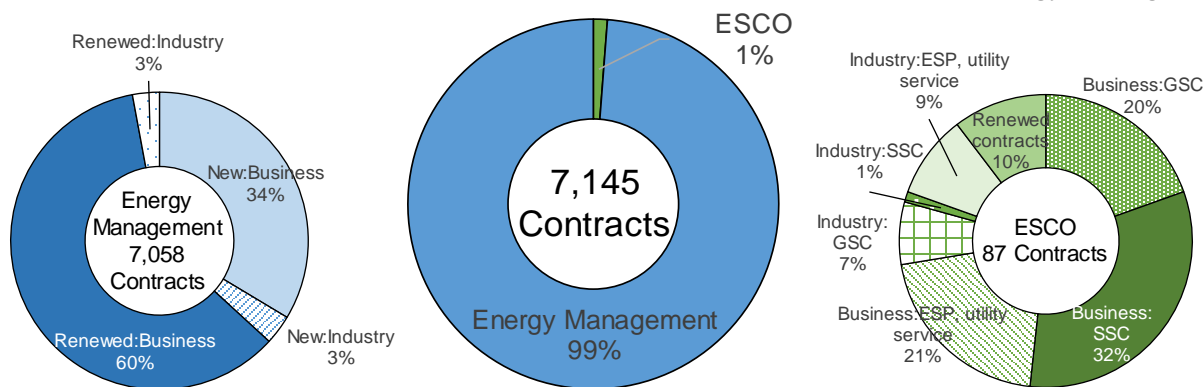


Figure 2 Number of signed contracts for ESCO and Energy Management

- 1) SSC: Shared Savings Contract, GSC: Guaranteed Saving Contract. ESP: Energy Service Provider
- 2) Excluding 289 contracts which represent the number of signed contracts for new buildings in Energy Management.

4 Unit Contract Amount of ESCO and Energy Management

Unit contract amount of ESCO and Energy Management (Table 2) differed substantially. For ESCO, minimum amount was SSC in the industrial sector with 42.00 million yen/contract, and maximum was ESP and utility services in the business sector with 825.85 million yen/contract. For Energy Management, on the other hand, maximum amount was the new contracts in the industrial sector with 35.39 million yen/contract. ESP and utility services for ESCO are both large scale in the business and industrial sectors, with 326.03 million yen/contract and 825.85 million yen/contract respectively. As for Energy Management, the new contracts for the business sector were 11.04 million yen/contract, and the new contracts for industrial sector were 35.39 million yen/contract. Meanwhile, renewed contracts for Energy Management were substantially smaller with 1.25 million yen/contract for the business sector and 4.31 million yen/contract for

the industrial sector.

Table 2 Unit contract amount of ESCO and Energy Management (in million yen/contract)

		Contract Amount	
ESCO	Business sector	GSC	139.13
		SSC	274.17
		ESP, utility service	326.03
	Industrial sector	GSC	221.20
		SSC	42.00
		ESP, utility service	825.85
Renewed contracts		84.65	
Energy Management	New	Business	11.04
		Industrial	35.39
	Renewed	Business	1.25
		Industrial	4.31

- 1) SSC: Shared Savings Contract, GSC: Guaranteed Savings Contract, ESP: Energy Service Provider
- 2) Excluding the sales revenue from new buildings in Energy Management

This survey was conducted with the support and cooperation of the Ministry of Economy, Trade and Industry and Sustainable open Innovation Initiative.