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## Recent Work

### Title

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## **ESCO Market and Industry Trends: Updated Results from the NAESCO Database Project**

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Today's U.S. energy efficiency services industry is one of the most successful examples of private sector energy efficiency services in the world. Over thirty national and international Energy Services Companies (ESCOs) exist and hundreds of other smaller ESCOs and performance-based contractors have emerged to capitalize on the burgeoning market for building and equipment retrofits and energy management consulting. Despite this impressive growth, little empirical information is available on the actual market activity of this industry. Policymakers and investors lack documented information on overall industry performance, while customers could benefit from information that allows them to benchmark proposed projects relative to industry performance.

### ***New, expanded study available soon***

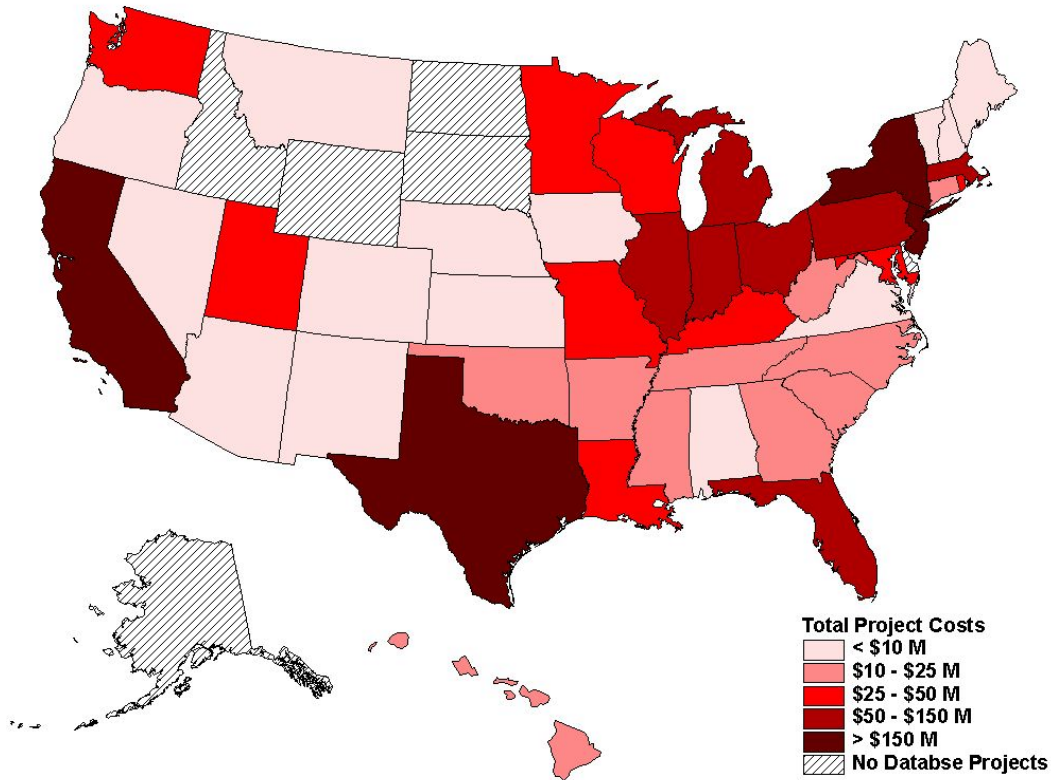
In November, 2001, Lawrence Berkeley National Laboratory and NAESCO will release a new study based on nearly 1500 case studies of energy efficiency projects -- the most comprehensive dataset of the energy efficiency services industry. These projects include more than \$2.6B of work completed by 51 companies. This new report updates an initial study by Goldman, et al, (2000). As shown in **Figure 1**, the database contains good geographic diversity of projects in the U.S., with strong representation from areas both with and without ratepayer-funded energy efficiency programs. The projects' dates of completion (1982-2001) also cover much of the history of this industry, allowing us to examine temporal trends. Funding for the database is provided by the Department of Energy through the Office of Power Technologies and the Rebuild America Program.

Our analysis of these projects helps shed light on some of the conventional wisdom regarding industry performance and evolution. We report key statistics about typical projects and industry trends that will aid state, federal, and international policymakers, and other investors interested in the development of a private sector energy efficiency services industry.

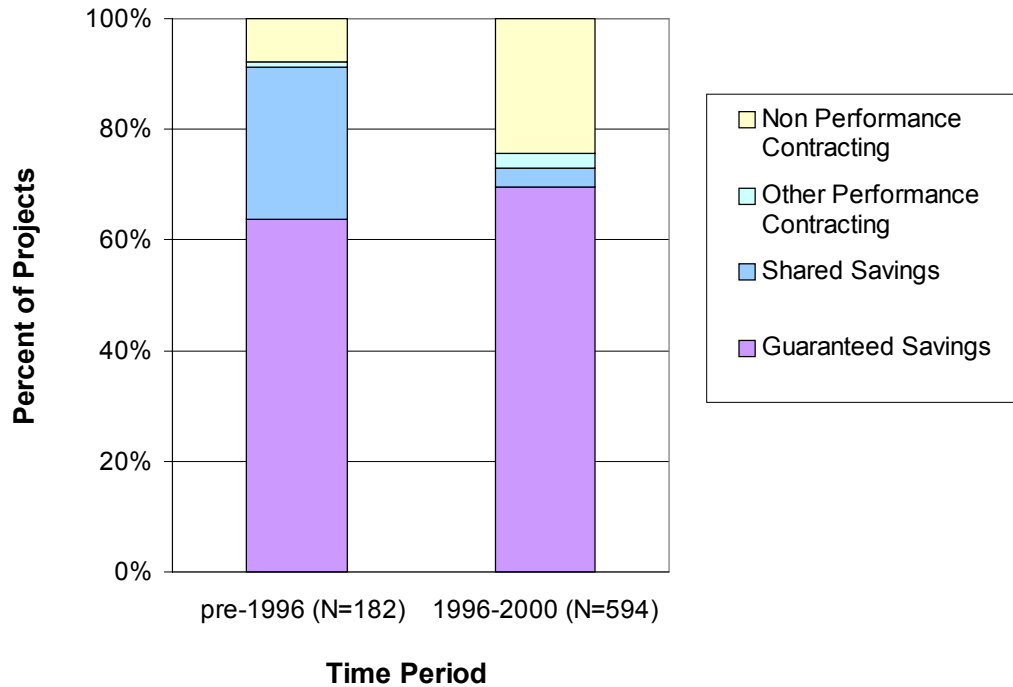
### ***A voluntary sample of NAESCO members and others***

NAESCO began gathering information on projects completed by their member companies 3-4 years ago. In the past year, LBNL has almost doubled the number of projects in this database; new projects come from recently accredited or reaccredited NAESCO members and from a number of public and private sources (e.g., state energy agencies). LBNL verified the information submitted from these sources through a peer review process and reference checks of a subset of projects.

ESCOs provided information on projects on a voluntary basis. Defining our target sample proved somewhat elusive, because the energy efficiency services industry itself and the performance contracting business of ESCOs are both evolving. In **Figure 2**, we illustrate the recent shift in importance of non-performance contracting even among NAESCO members. Non-performance contracts are 25% of database projects completed since 1996, as opposed to only 8% of projects completed in 1995 and earlier. To capture market trends as companies move



**Figure 1. ESCO activity by state**



**Figure 2. Performance contracting is a decreasing share of ESCO business**

away from the performance contracting development model, we focused our sample to include companies for whom performance contracting is a core part of their business.

### ***Market segment trends***

The database shows that the market activity of the energy efficiency services industry is heavily weighted towards projects in the institutional sector. Institutional market segments (federal government, state and local governments, K-12 schools, universities and colleges, health and hospitals, and public housing) account for 73% of the database projects, based on project costs. The importance of institutional clients to the industry has been increasing over time, as shown in **Figure 3**. Prior to 1996, private sector projects comprised 33% of all projects in the database, a fraction that has fallen to 25% in the last five years.

### ***The cost of energy savings***

We also found that typical project investment is higher in institutional as compared to private sectors. This relationship holds true even when the project costs are normalized for floor area; the median value for investment intensity (\$/ft<sup>2</sup>) is 1.7 times greater in institutional than in private sectors. Although the initial capital costs are higher, institutional sector projects in the database typically spent less for their energy savings than private sector projects. The median investment per energy (BTU) saved, shown in **Figure 4**, was greater in the private sector than for each of the institutional market segments. However, there was more extreme variation in institutional projects, with the maximum value of investment per BTU saved far exceeding that of the private sector.

### ***Upcoming in the November report***

In the upcoming report, we give a more thorough picture of the typical characteristics of the industry and projects in individual market segments. We also present a detailed analysis on energy savings and project economics and discuss the role of enabling policies in encouraging a domestic energy efficiency market. Finally, we track the overall size and growth of the energy efficiency services industry over the last ten years.

A preview of our analysis includes the following five sections:

- **Project Characteristics** – We describe the key features of projects, review typical project characteristics (facility types and size, key energy conservation measures, project costs, contract structure and conditions), and compare these characteristics by market segment, temporally, geographically, and by type of retrofit.
- **Energy Savings** – We examine what energy savings have been delivered, in particular average annual savings, percent of savings over baseline, and demand savings; the relationship between predicted versus actual and guaranteed savings; and persistence of savings over time in individual projects.
- **Economic Analysis** – We analyze the economic benefits and costs of ESCO projects by calculating the present value of savings, net benefits, and simple payback time.
- **Role of Enabling Policies** – We discuss leveraging provided by ratepayer-funded energy efficiency programs and the impact of state legislation or procurement rules that enable performance contracting in various types of public institutions and state energy program offices.

- Aggregate ESCO Industry Activity – We estimate size of the ESCO industry, how the industry has grown over the last decade, and how representative the database projects are of overall industry activity.

### ***A coordinated effort***

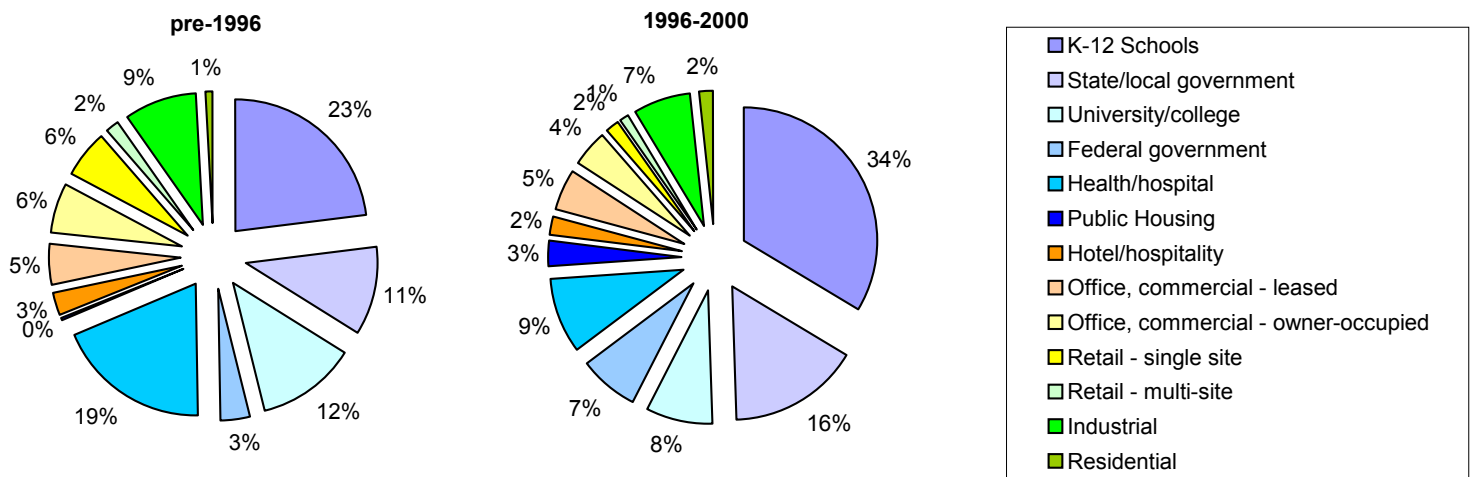
This effort to create a comprehensive dataset of the energy efficiency services market is only possible because of the great cooperation of many NAESCO member companies and others involved in this industry. Standardization and sharing of project information will prove valuable in demonstrating the economic and environmental benefits of the industry. It will also be an important tool for evaluating the potential for future market growth and determining the most effective way to shape that development.

### **Acknowledgements**

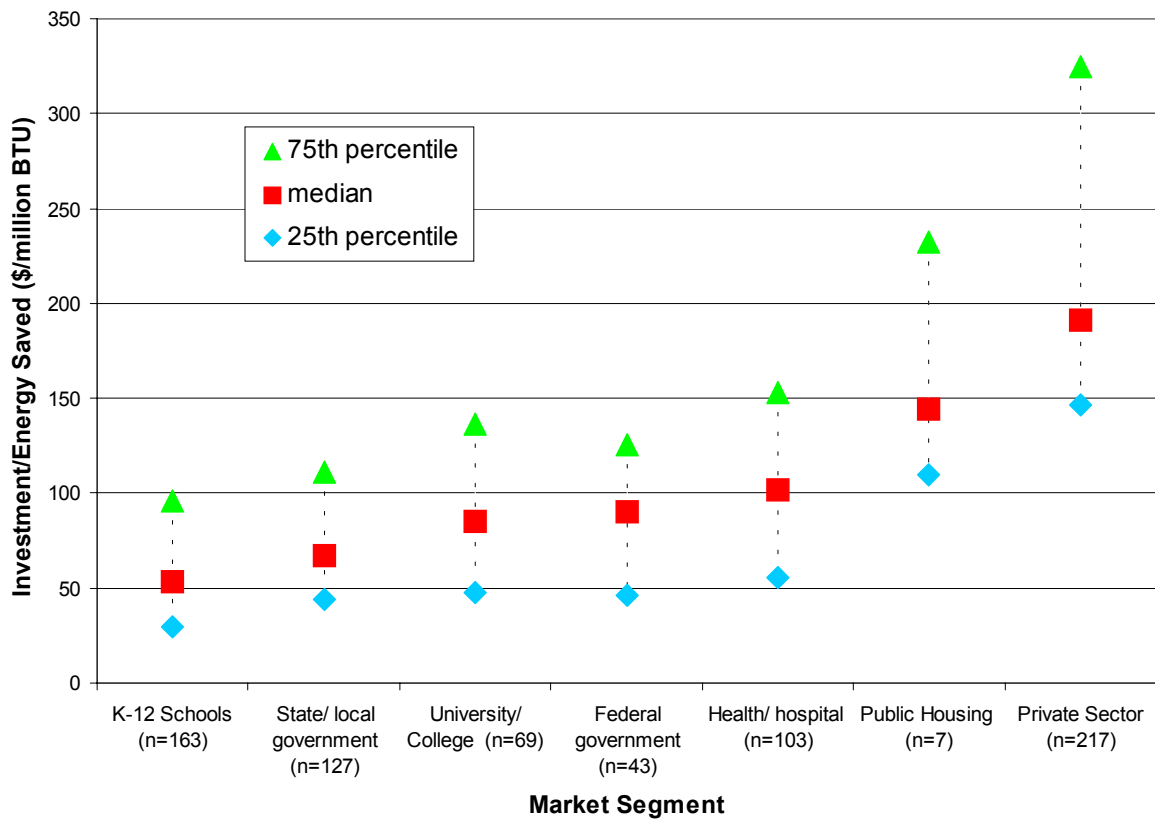
We would like to thank the many contributors to this research effort. Numerous ESCOs and state agencies spent many hours submitting and reviewing project information. We also received much advice and information from a several individuals, in particular Dave Birr, Don Gilligan, Patti Donahue, Terry Singer, and Dave Dayton.

### **References**

Goldman, C.A., P. Juergens, M. Fowlie, J. Osborn, K. Kawamoto, T. Singer. 2000. *Historical performance of the U.S. ESCO industry: Results from the NAESCO project database*. ACEEE. August.



**Figure 3. Market segment trends over time for ESCO projects**



**Figure 4. Median cost of energy savings in each market segment**