



## The Second U.S.-China Energy Efficiency Forum

# U.S. Energy Service Company (ESCO) Industry and Market Trends

**Charles Goldman**

Deputy Dept Head

Energy Analysis Department

Lawrence Berkeley National Laboratory

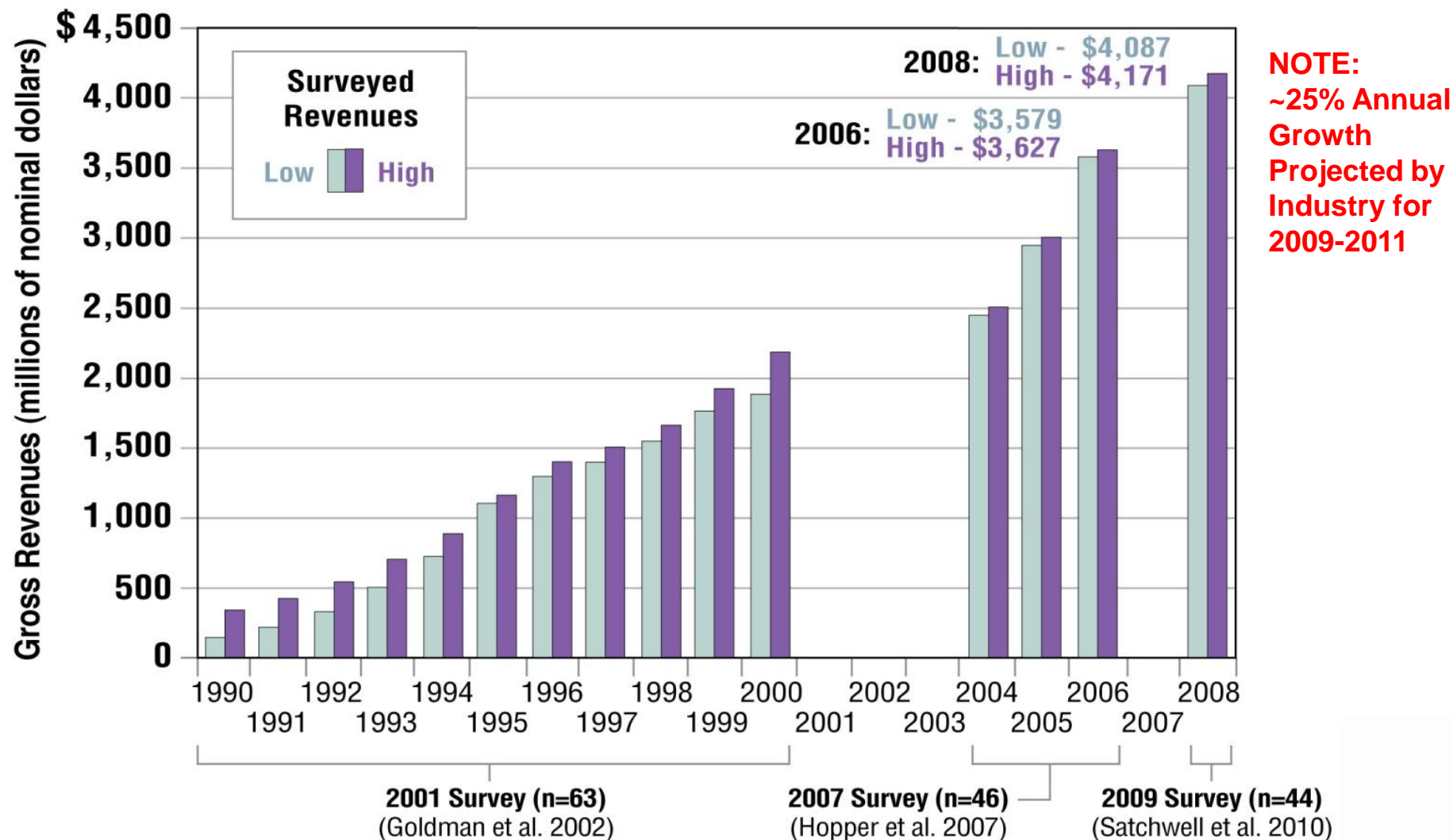


# Definition of U.S. ESCO

- **Project developer in business of improving *end-use energy efficiency*:**
  - Combine engineering expertise with financial services to extract untapped potential for energy efficiency
  - Integrates broad range of services: project identification, engineering & design, financing, construction, M&V of savings, maintenance, and billing
- **Performance contracting: ESCO's compensation is tied to project's performance**
- **Product and Service Strategies**
  - full range of energy efficiency services
  - energy and facility management services
  - build/own/operate major energy facilities (cogeneration, onsite renewables)



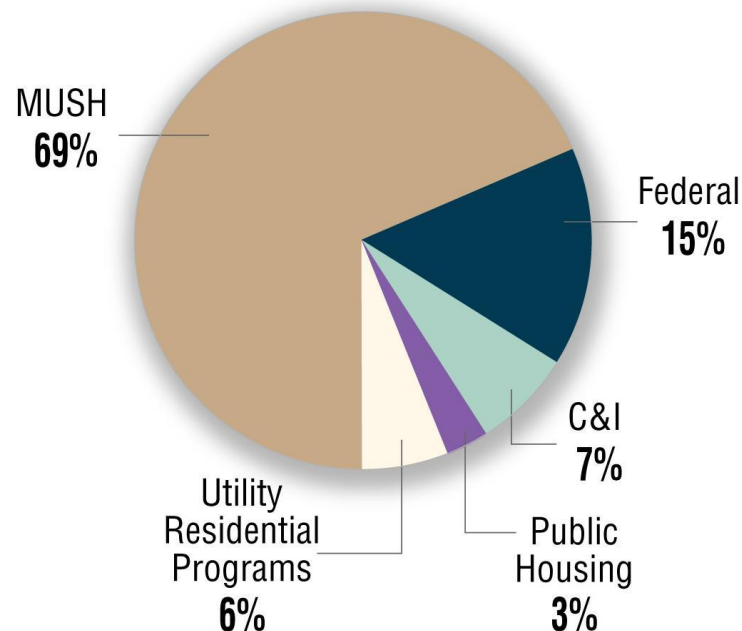
# Estimated Size of U.S. ESCO Industry





# ESCO Market Activity: Industry Revenues by Market Segment

**2008 Revenues (n=29)**

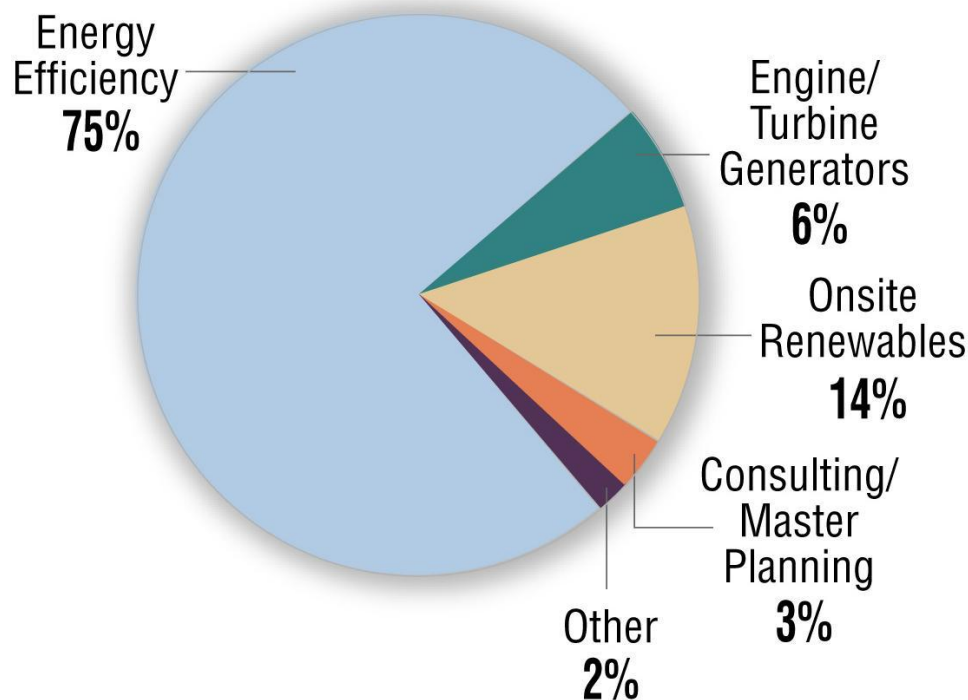


- Municipal/state govt, K-12 schools, university/colleges and hospitals (MUSH) account for 69% of ESCO industry activity in 2008 (~\$2.8 billion)



# ESCO Market Activity: Industry Revenues by Project/Technology type

**2008 Revenues (n=29)**



- Energy efficiency projects account for \$3B and onsite generation & renewables account for 20% (~\$800 million) of ESCO industry revenues



# LBNL/NAESCO Database of ESCO Projects

## ■ ***Project Objectives***

- Track ESCO industry performance and evolution over time
- Examine trends in savings, investment levels, market penetration of EE technologies, and customer preferences

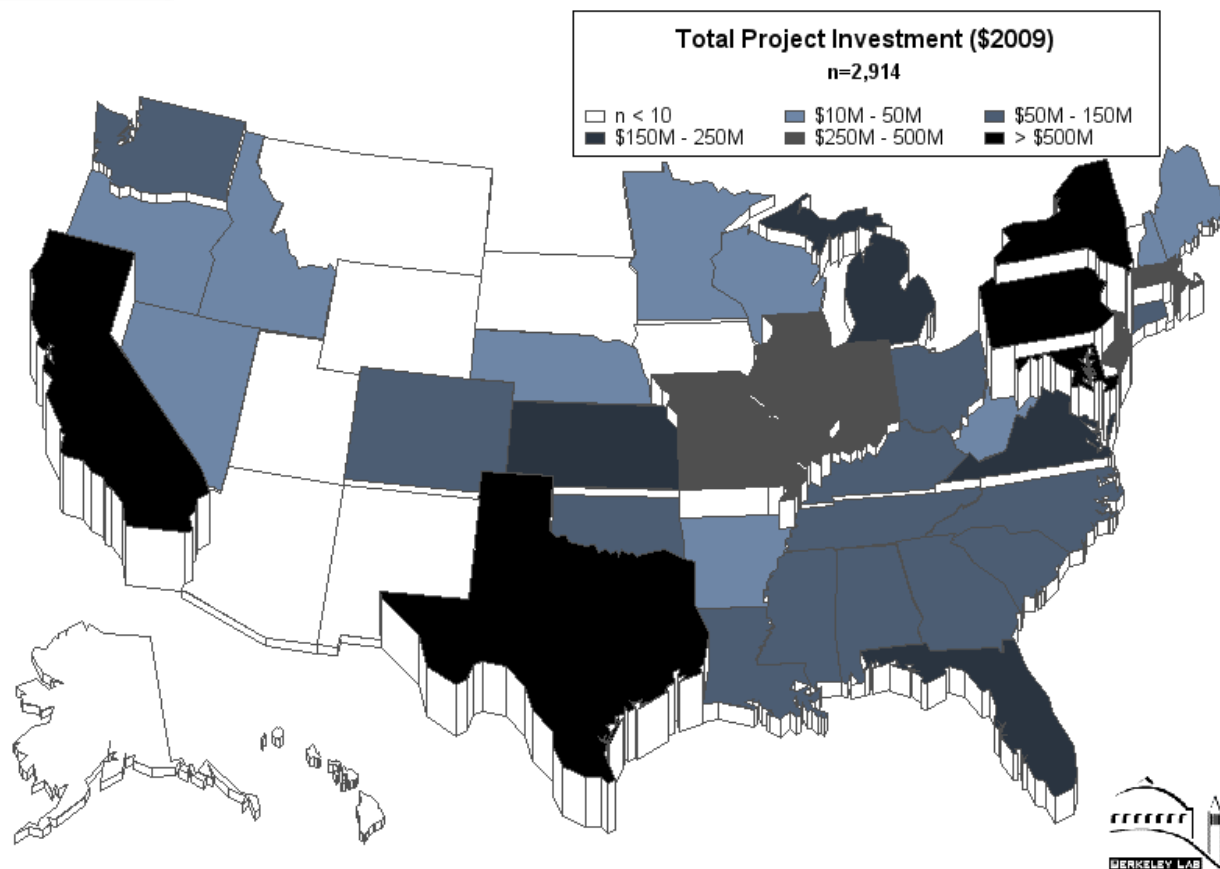
## ■ ***Approach***

- NAESCO/LBNL partnership with voluntary participation from industry and government agencies
- Project data primarily from NAESCO accreditation process
- Information verified through peer review and reference checks
- ~3,300 ESCO projects in 49 states representing over \$8B in total investment (or about 20% of the total ESCO industry activity)



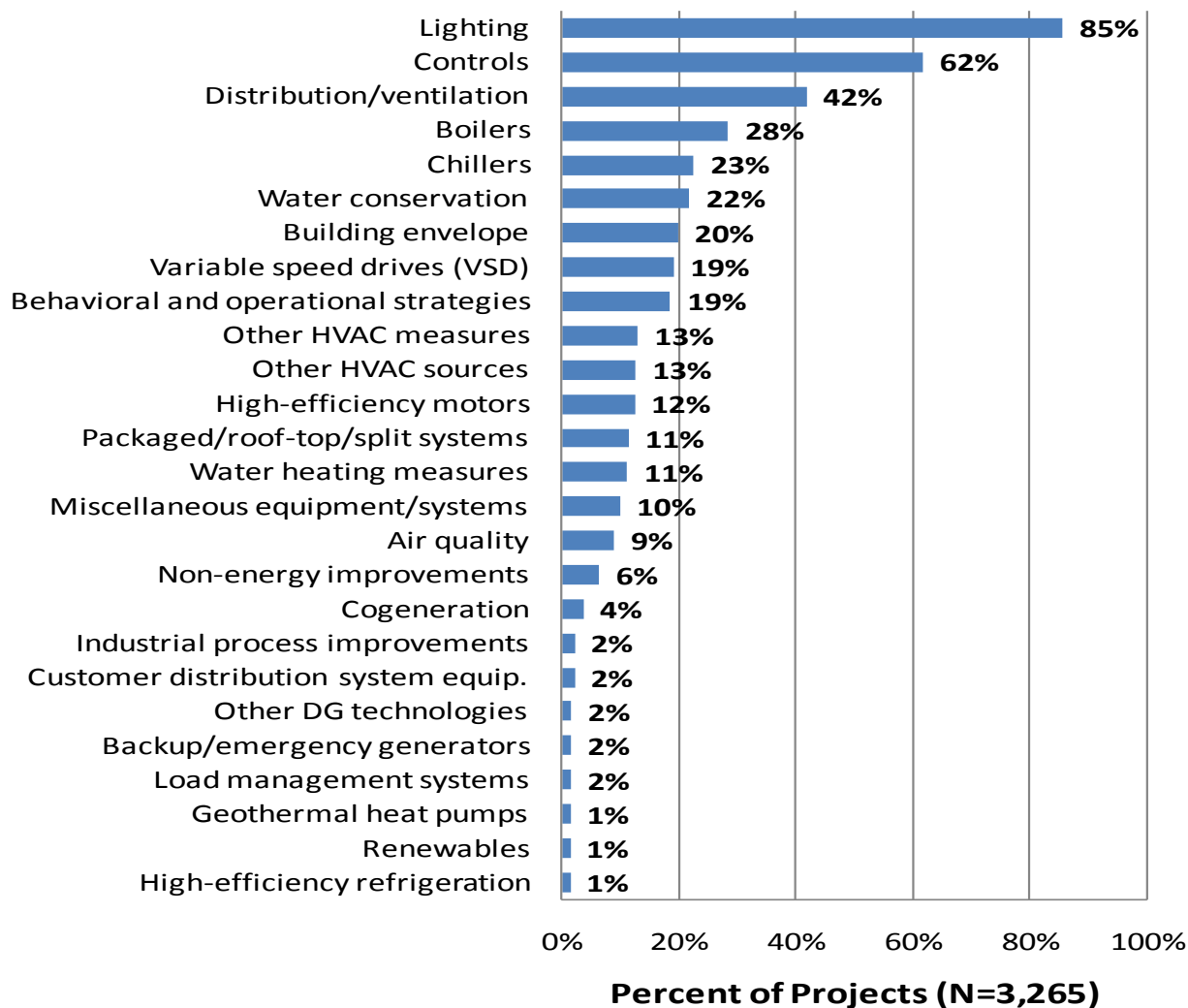
# Project Investment Levels by State

- ESCO project investments tend to be concentrated in heavily populated states that have supportive enabling policies...





# Measures Installed in ESCO Projects



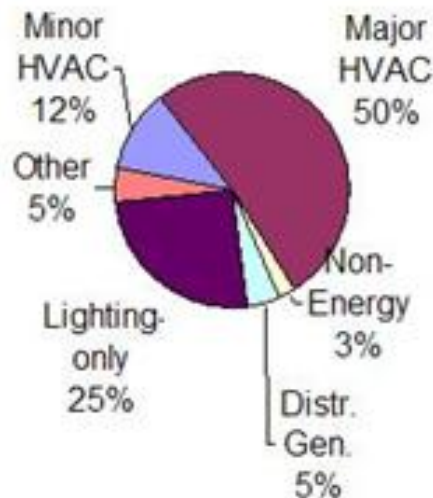
- Lighting and HVAC controls are the most commonly installed measures
- Growing importance of onsite generation and renewables—but starting from a small base



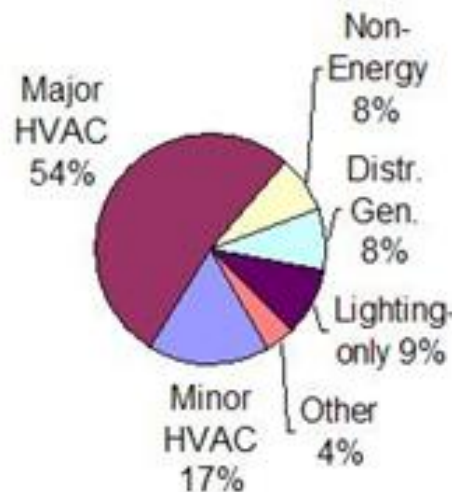
# Market Penetration of EE Retrofit Strategies

- We classify each project by defining their primary retrofit strategy (e.g., lighting-only, major HVAC, minor HVAC, distributed generation)
- Share of lighting-only projects is declining over time (25 to 3%); share of onsite, distributed generation projects is increasing over time

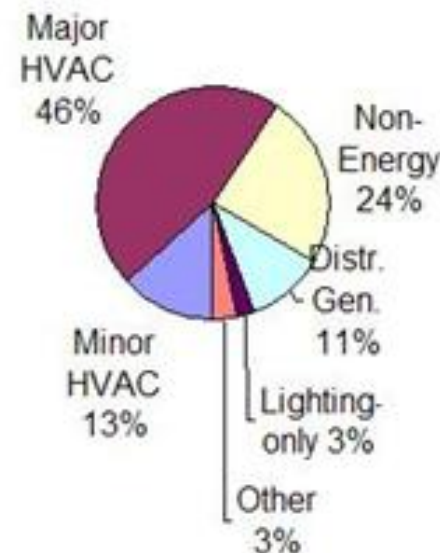
1990-1997 (n=464)



1998-2004 (n=1,467)



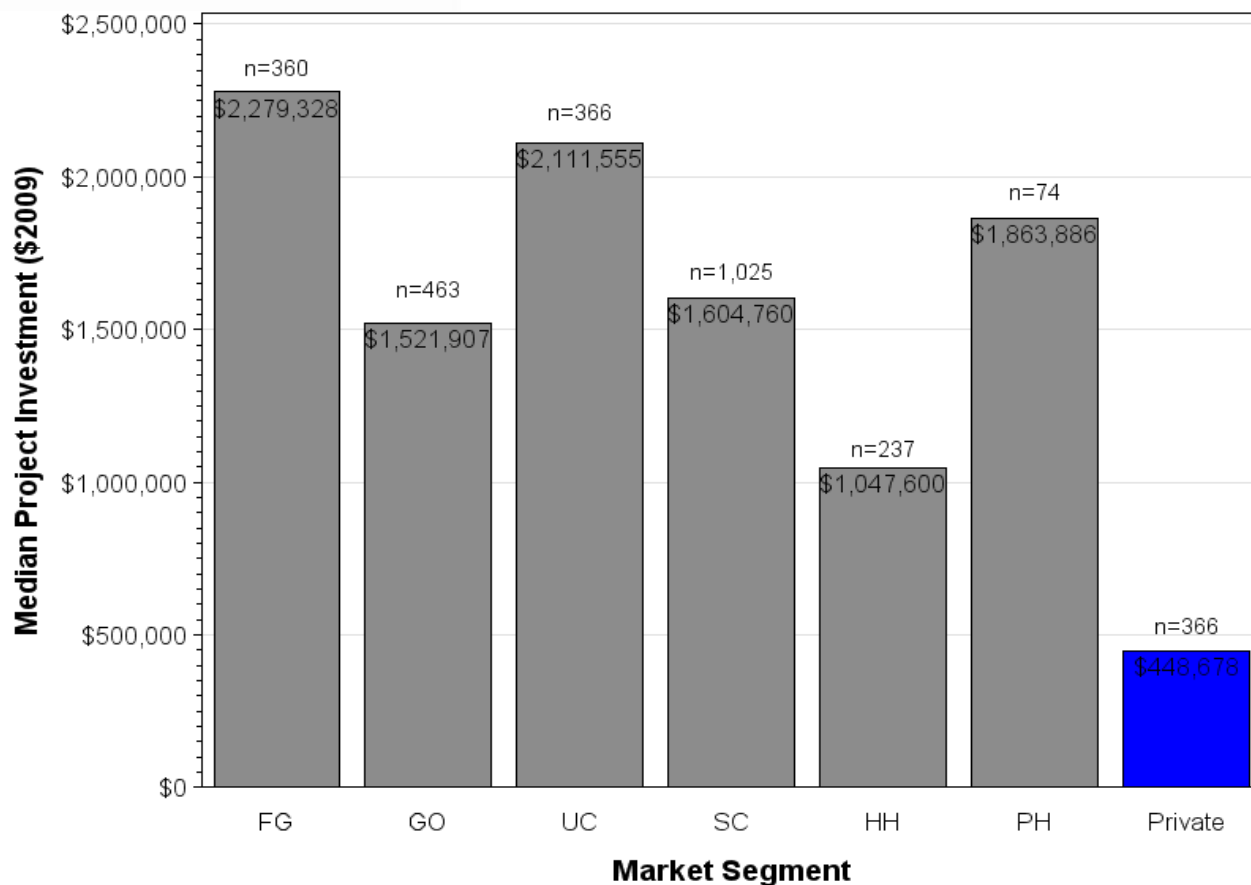
2005-2008 (n=656)





# Project Investment Levels by Market Segment

- Typical ESCO project costs \$2.2M in federal government and university/college facilities; ~\$1.5M in K-12 schools and local govt. buildings. Investment levels are much lower in private sector buildings (\$500,000)

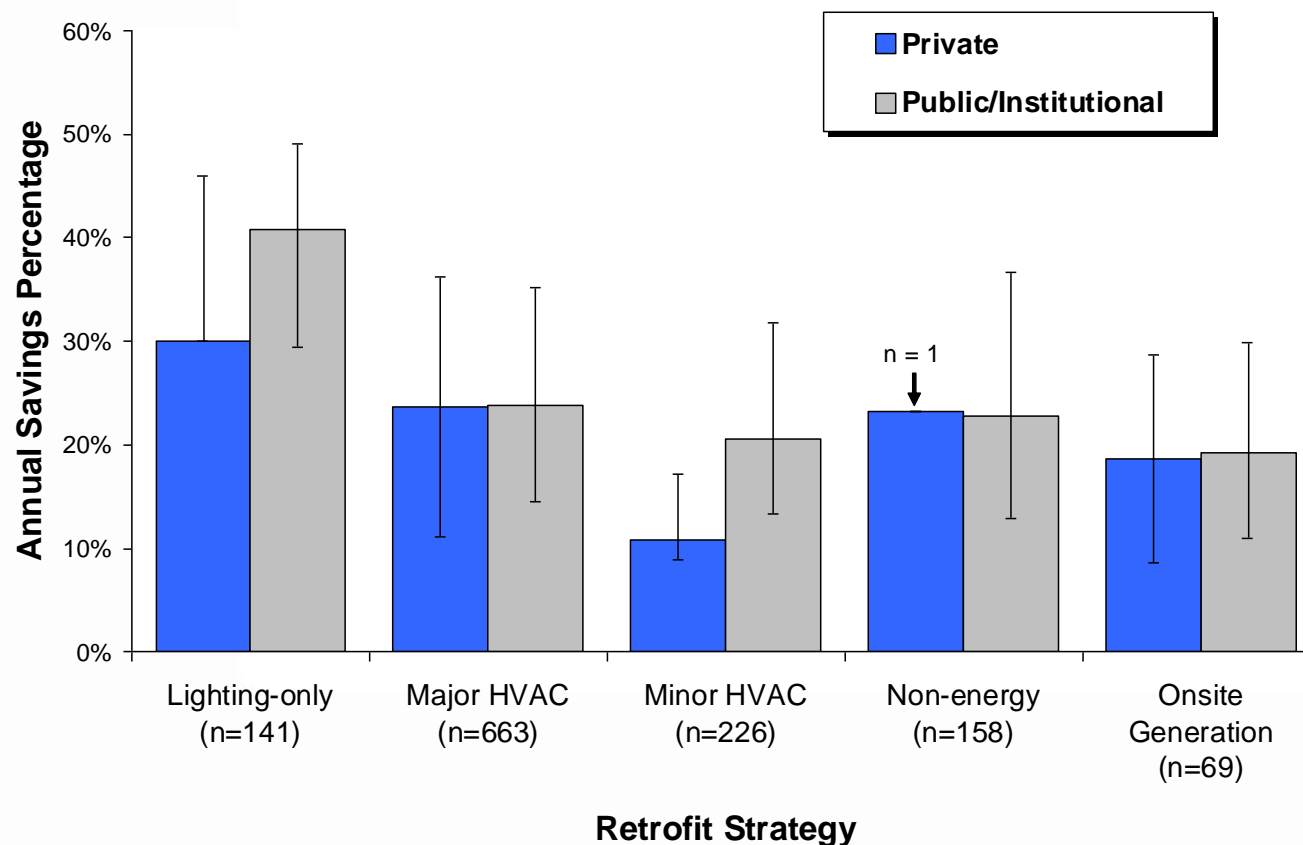


FG = Federal govt.  
GO = State/local govt.  
UC = Universities/colleges  
SC = K-12 schools  
HH = Healthcare  
PH = Public housing



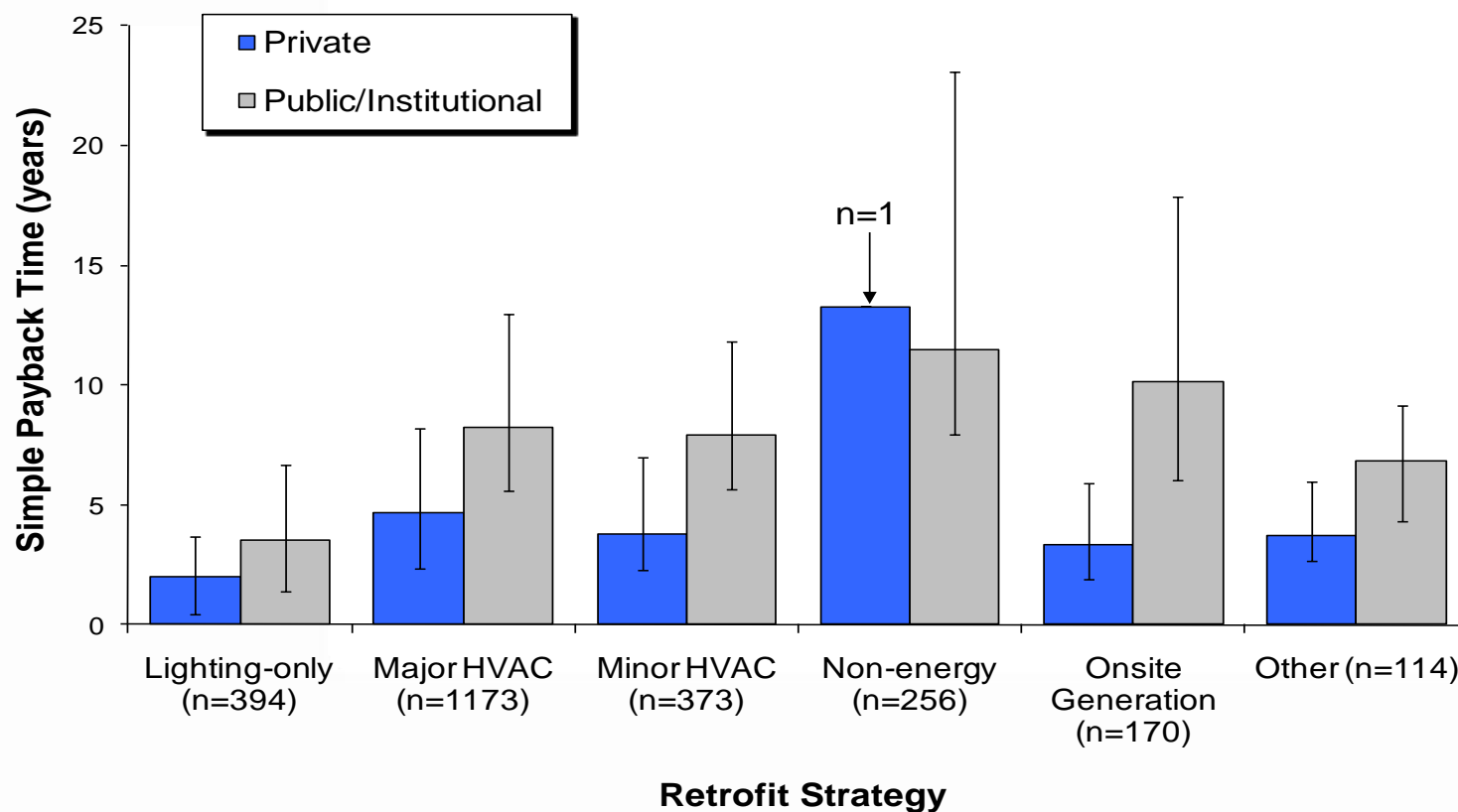
# Annual Savings by Retrofit Strategy

- Major HVAC Projects typically save ~25% of baseline energy usage
- Lighting-only retrofits typically save ~30-40% of lighting energy usage



# Payback Times for ESCO projects

- Payback times are typically 7-9 years in public sector projects; 4 years in private sector projects; and 2-3 years for lighting only projects





# Summary

- **The ESCO industry continues to grow despite a general downturn in the broader economy**
- **ESCOs are installing a more comprehensive mix of technologies at project sites**
- **The public/institutional market sector continues to be the dominant market for U.S. ESCOs**
- **The investment level of ESCO projects continues to increase primarily because of customer demand for a more comprehensive mix of capital-intensive technologies**
- **Despite installation cost increases, ESCOs are still able to generate net economic benefits for their customers.**



## For More Information...

- Download reports here:

<http://eetd.lbl.gov/ea/emp/ee-pubs.html>

- LBNL Contacts:

Charles Goldman, [CAGoldman@lbl.gov](mailto:CAGoldman@lbl.gov), (510) 486-4637

Peter Larsen, [PHLarsen@lbl.gov](mailto:PHLarsen@lbl.gov), (510) 486-5015

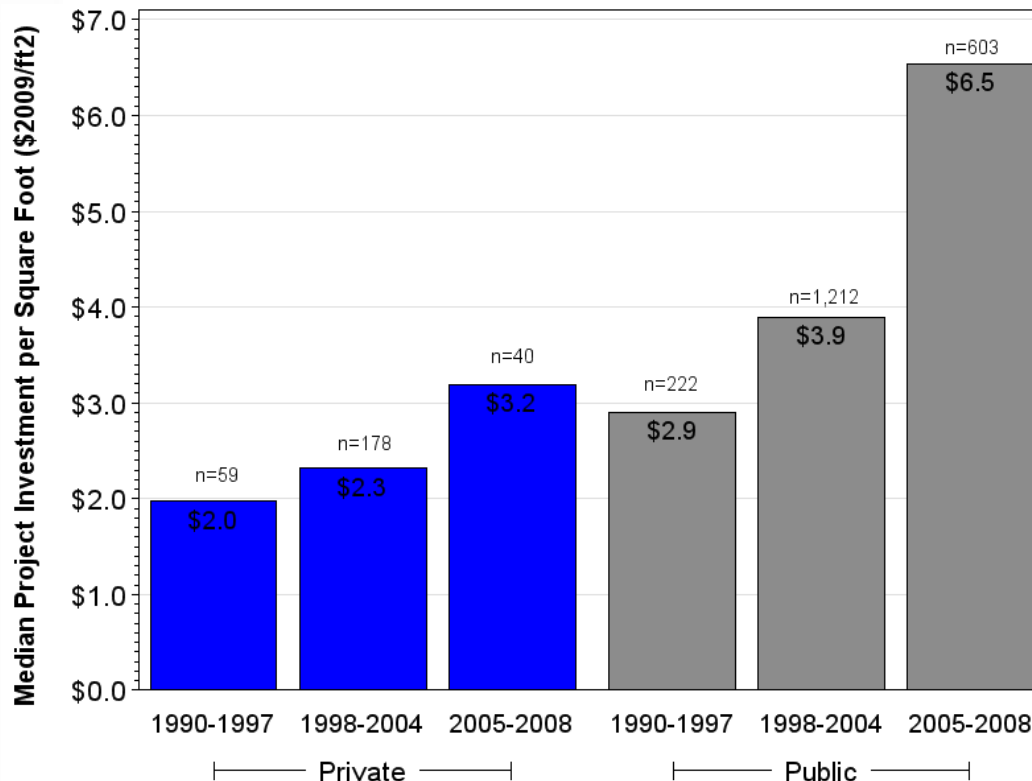
Andrew Satchwell, [Asatchwell@lbl.gov](mailto:Asatchwell@lbl.gov), (510) 486-6544





# Project Investment Levels

- Project investment levels (i.e., per-contract installation costs) are increasing over time, even after accounting for effects of inflation;
- Reasons: More comprehensive projects, including on-site generation and non-energy installations; labor and material cost inputs may also be increasing faster than inflation rate.



# Project Economics

- Increasing installation costs over time are influencing payback time trends.

