

Examining U.S. ESCO Industry Trends: Practices and Applied Technologies: Results from the NAESCO Database Project



C. Goldman, N. Hopper

E. O. Lawrence Berkeley National Laboratory

Terry Singer, NAESCO

CAGoldman@lbl.gov
(510) 486-4637

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Project Background



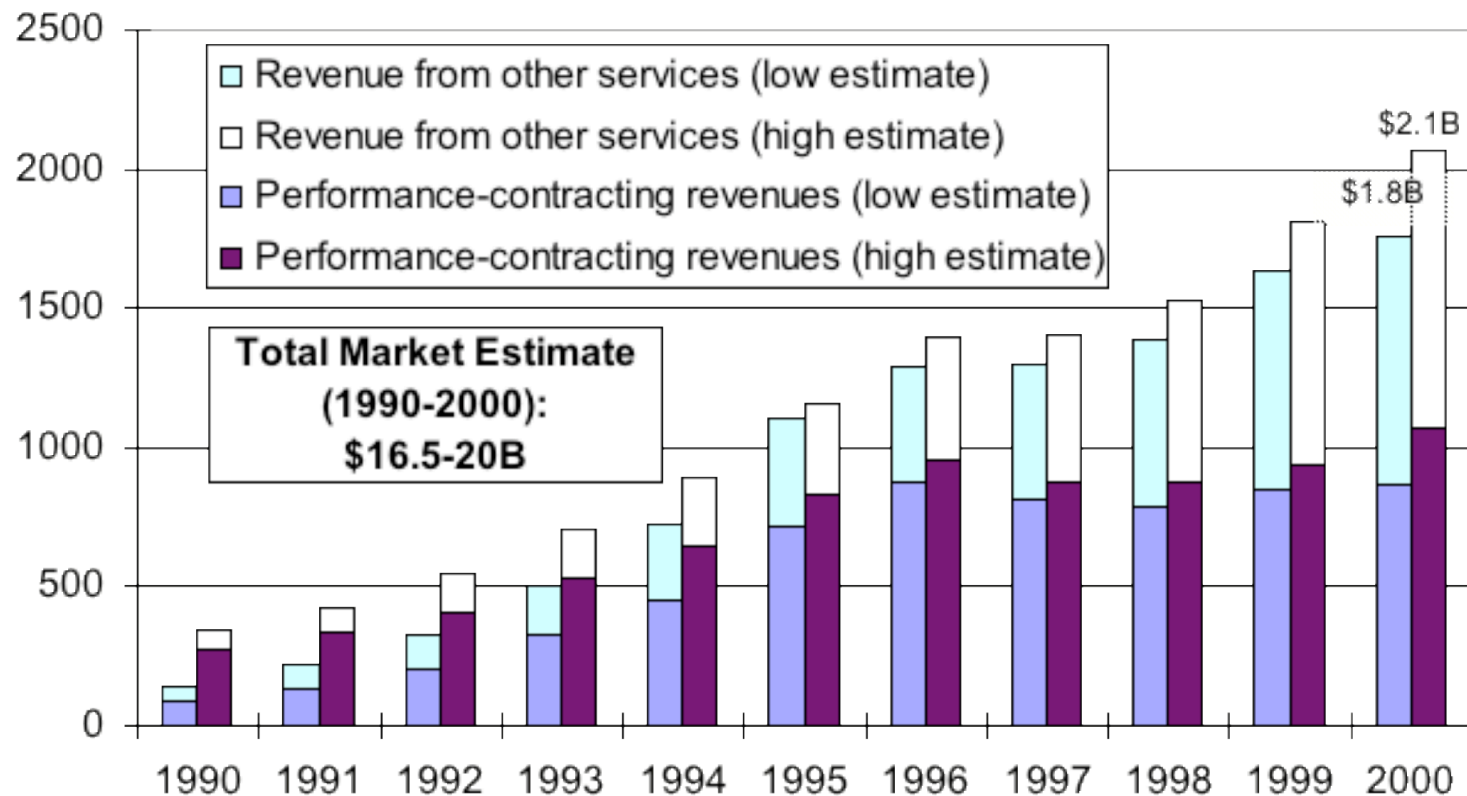
- Objectives
 - Track industry performance and evolution
 - Project data useful for economic analysis, policy development, and technology impacts
- Approach
 - NAESCO/LBNL partnership with voluntary participation from industry and gov't agencies
 - Project data primarily from accred. process; 18% of projects are from state agencies
 - Information verified through peer review and reference checks

Estimating Aggregate U.S. ESCO Industry Market Activity: Approach



- Market definition:
 - companies must offer performance contracting, but
 - services offered / revenue estimates are not exclusively PC
 - non “value-added” services excluded
- Sources:
 - company interviews
 - state RFQs, NAESCO accreditation applications
 - expert interviews
- Grouped by company size:
 - 14 “large” companies: >\$30M/yr
 - 26 “medium” companies: \$5-30M/yr
 - 23 “small” companies: <\$5M/yr

ESCO Industry has experienced strong growth

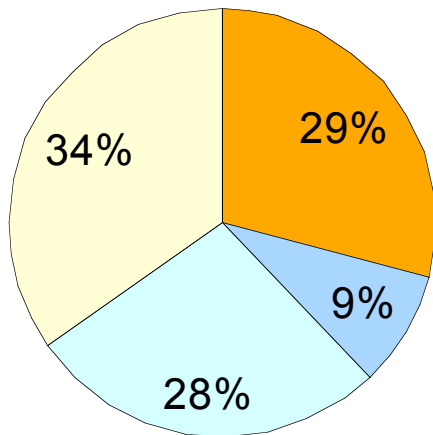


- ESCO Market for energy-efficiency related services is ~\$1.8-\$2.1B in 2000; 24% annual growth rate (1990-2000)
- Performance contract revenues: \$0.9-\$1.0B in 2000

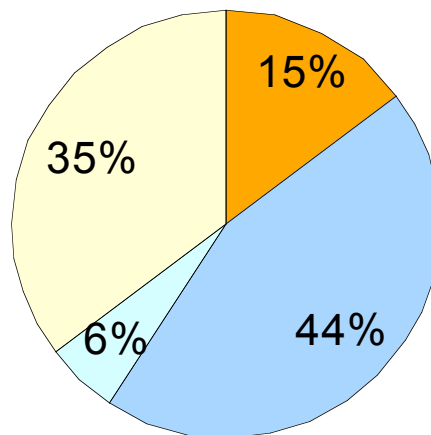
ESCO Industry Ownership Structure



Industry Ownership in 2000...



...based on revenues

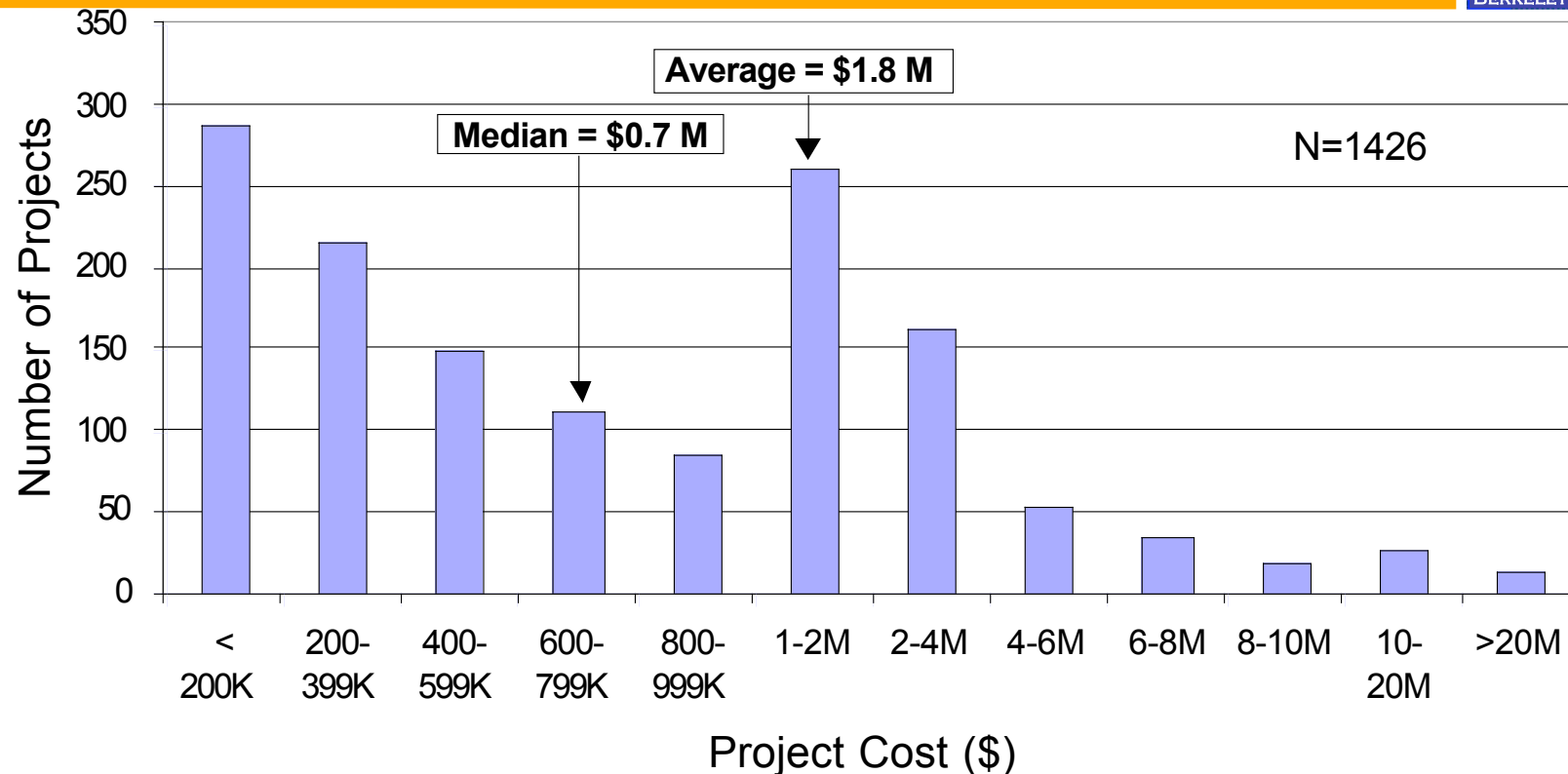


...based on number of companies



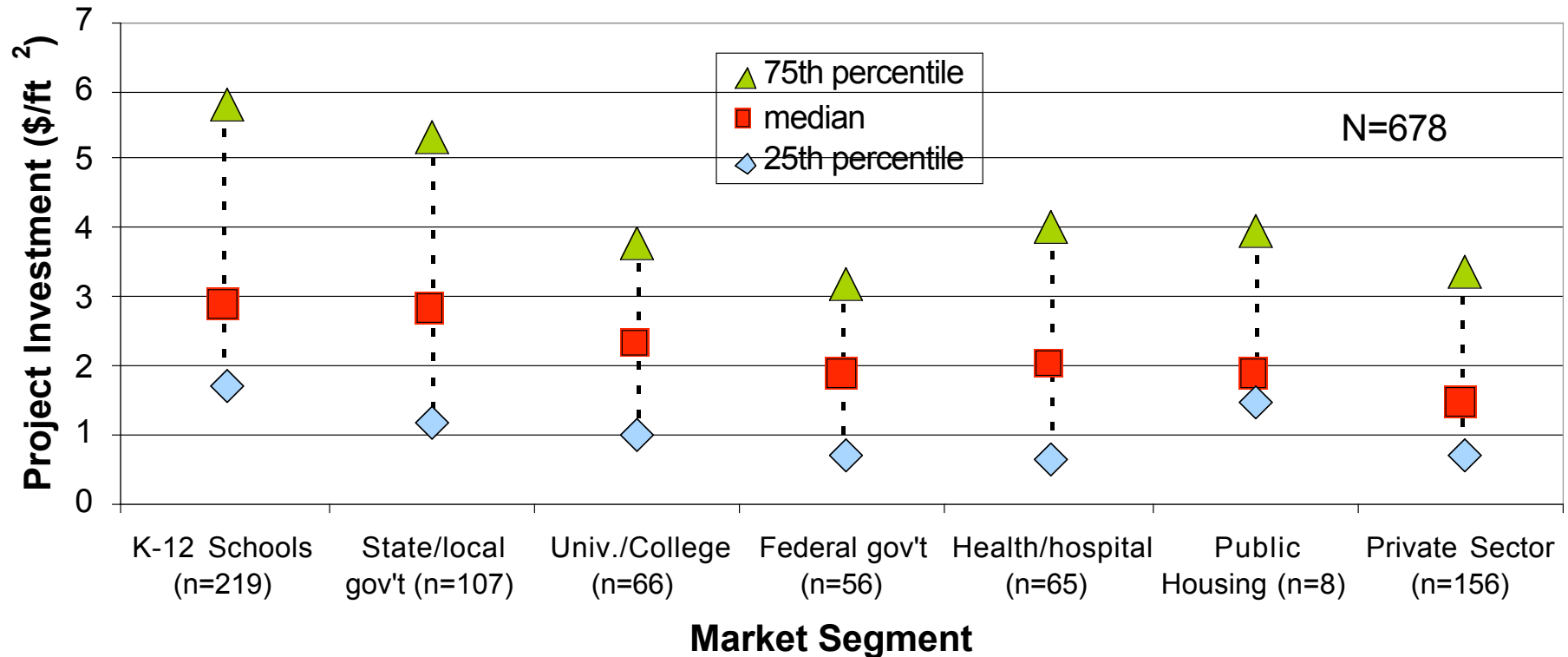
- Quickly changing industry -- mergers and acquisitions very common;
- Expect significant consolidation: fallout from CA, Enron and stalled retail market
- About 12 companies consistently comprise ~70% of industry revenues

Project Investment Trends



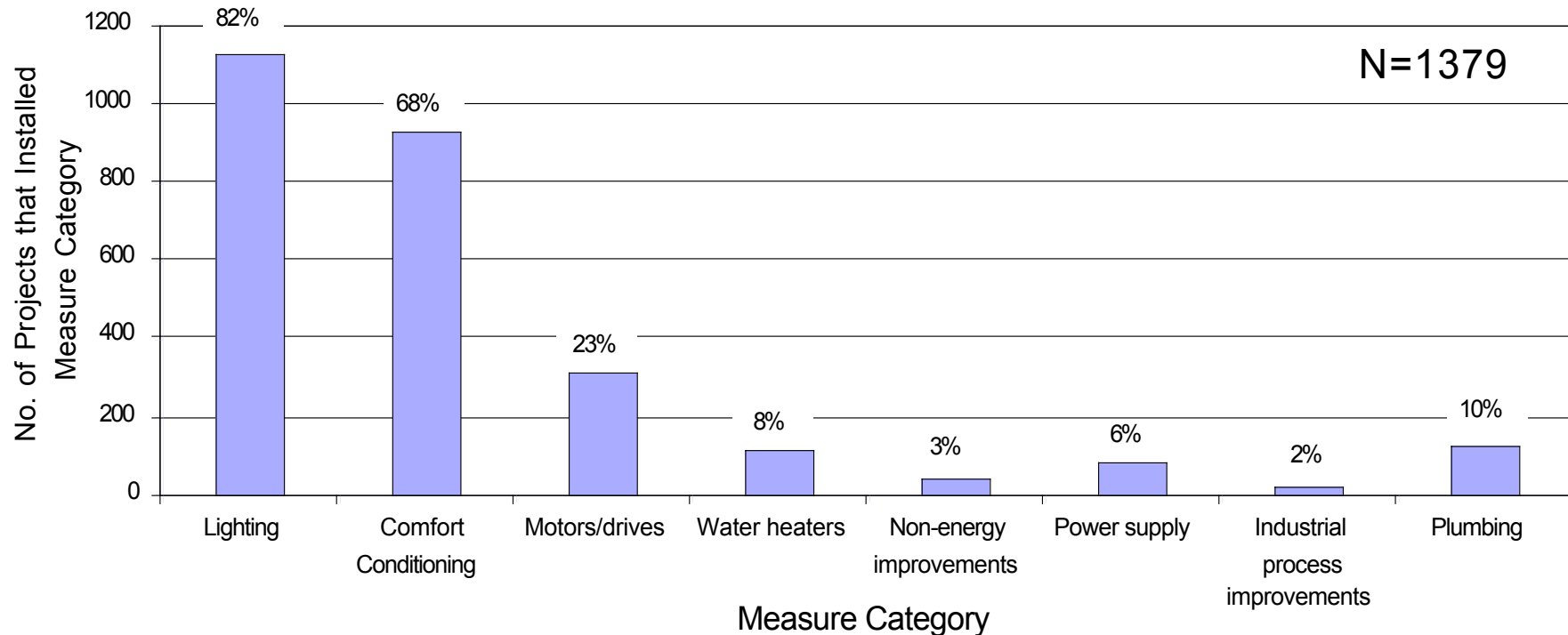
- \$2.55B of work completed by 51 companies
- Significant activity in four states (44% in NY, NJ, CA, TX)
- Median and average project costs: \$0.7M and \$1.8M, respectively

Project Investment Trends by Market Sector



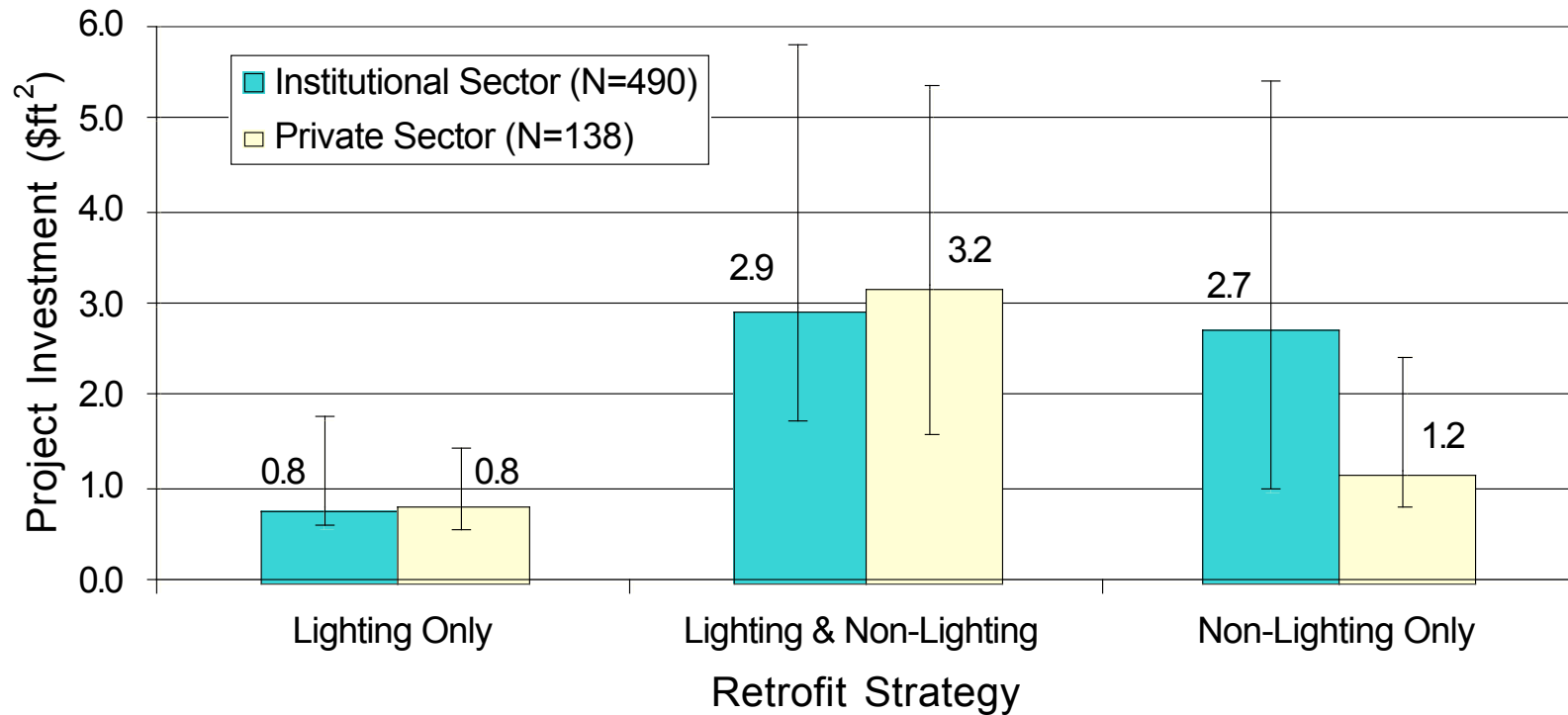
- Median project investment levels are 1.8 times greater in institutional than private sector projects (\$2.50 vs. \$1.40/ft²)

Frequency of Installed Measures



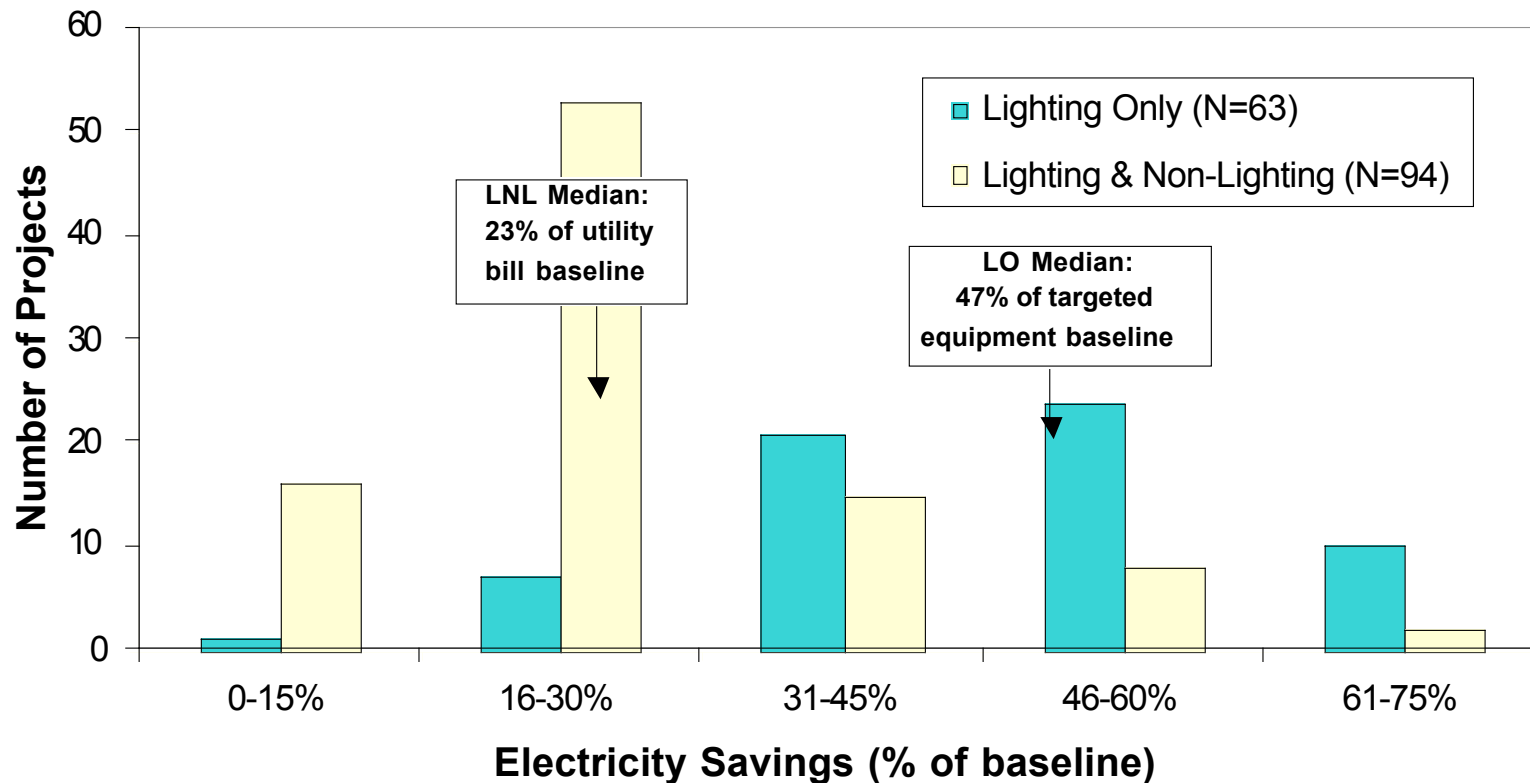
- Typical project consists of multiple measures and strategies
- Lighting and HVAC are most common measures, in both institutional and private sectors
- Non-energy improvements (e.g., roofs, asbestos abatement) reported in institutional sector projects

Impact of Retrofit Strategy on Project Costs



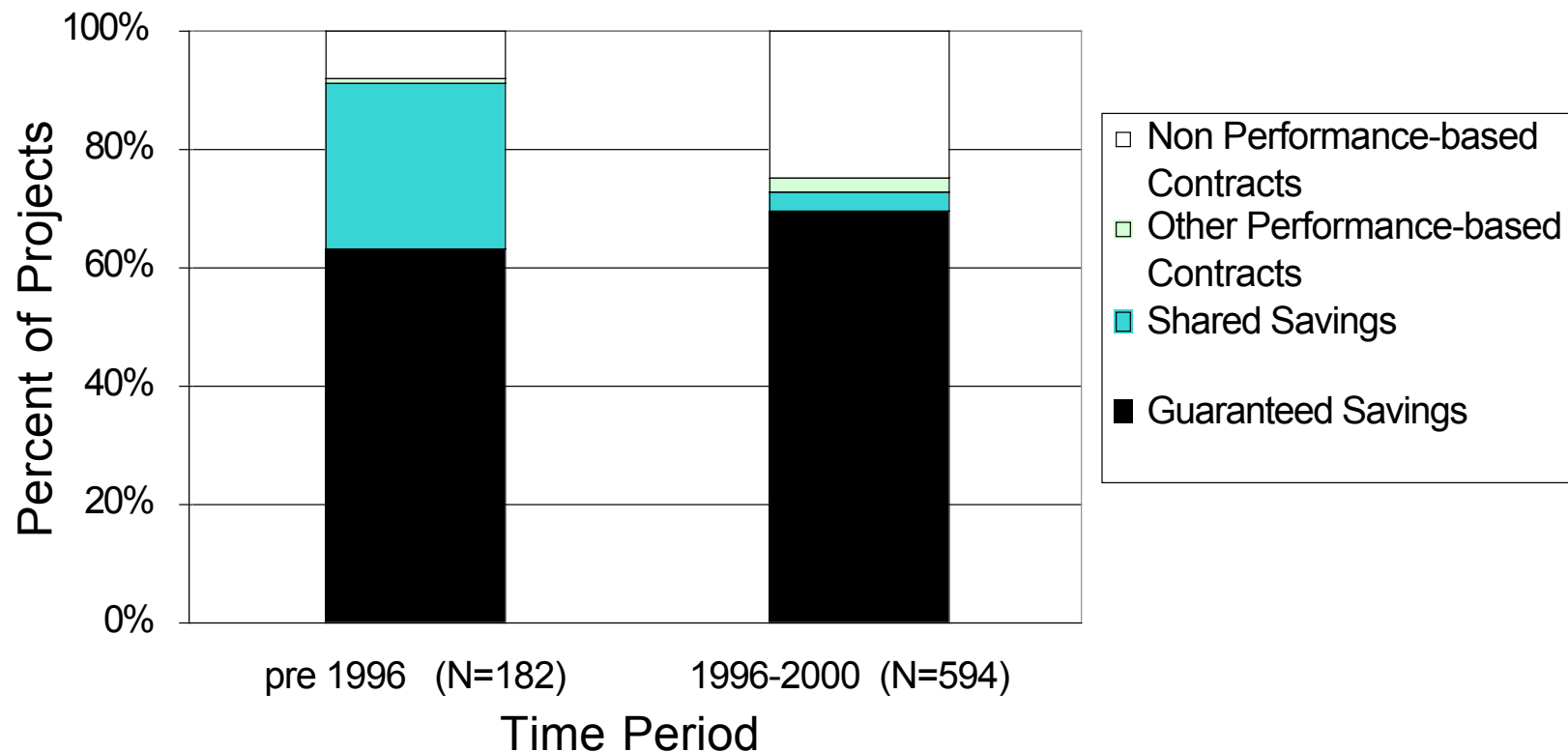
- ESCOs investment levels significantly greater in Comprehensive Projects compared to Lighting Only
- Lighting project costs comparable across institutional and private sectors

Project Savings obtained from Energy Efficiency Measures



- Two baseline metrics: utility bill and targeted equipment
- Lighting-Only projects saved 47% of equipment targeted electricity
- Lighting & Non-lighting projects saved 23% of utility bill electricity

Performance Contracting is a Decreasing Share of ESCO Business



- Market share of performance contracting is decreasing among NAESCO members (92% to 76%)
- Design/Build & Fee-for Service approaches account for ~30% of ESCO projects in 1996-2000

Project Economics: Indicators and Approach



- Three indicators:
 - net benefits (direct economic benefits; value of energy and non-energy savings)
 - benefit/cost (B/C) ratio
 - simple payback time (SPT)
- Separate assumptions/analysis for institutional and private sectors
 - 7-10% nominal discount rate for institutional
 - 10-15% nominal discount rate for private
- DSM Incentives accounted for in SPT

Customer Economics: Institutional Sector



Market Segment	N	Total Project Costs (\$M)	7% Discount Rate			10% Discount Rate		
			Direct Economic Benefits (\$M)		B/C Ratio median	Direct Economic Benefits (\$M)		B/C Ratio median
			Gross	Net		Gross	Net	
K-12 schools	289	714	803	88	1.0	633	-81	0.8
State/ local gov't	159	276	581	305	1.7	471	195	1.4
Univ./ colleges	100	301	809	508	1.7	637	336	1.4
Federal gov't	58	153	280	126	1.7	225	72	1.4
Health/ hospital	134	136	365	229	2.3	295	159	1.9
Public Housing	31	96	140	45	1.5	114	18	1.2
Institutional Sector	771	1,677	2,978	1,301	1.6	2,375	698	1.3

- Median B/C ratio for institutional sector projects ranges between 1.0 and 2.3
- B/C ratio >1 for 70% of projects
- Median SPT is 7 years

Customer Economics: Private Sector Projects



Market Segment	N	Total Project Costs (\$M)	10% Discount Rate			15% Discount Rate		
			Direct Economic Benefits (\$M)		B/C Ratio	Direct Economic Benefits (\$M)		B/C Ratio
			Gross	Net	median	Gross	Net	median
Commercial*	192	137	349	212	2.2	265	128	1.7
Industrial	76	95	181	86	1.8	136	41	1.4
Other**	41	28	47	18	1.8	34	6	1.3
Private sector	309	260	576	317	2.1	435	176	1.6

*Commercial includes hotels/hospitality, retail space, and commercial offices.

- Median B/C ratio for private sector projects ranges between 1.8-2.2 -- highest in commercial projects
- B/C ratio >1 for 87% of projects
- Median SPT is 3 years

SPT influenced by Choice of Retrofit Strategy & State Guidelines



Retrofit Strategy	Simple Payback Time (years)							
	Institutional Sector				Private Sector			
	N	25 val	median	75 val	N	25 val	median	75 val
Lighting Only	146	1	2	4	128	1	2	4
Lighting & Non-Lighting	498	5	8	13	97	3	4	6
Non-Lighting Only	98	2	8	14	73	1	2	5

- More private sector projects are Lighting-Only (43% vs 20%);
Two year SPT for institutional and private sector markets
- Lighting/non-lighting and non-lighting only projects payback time is much longer in institutional than in private sector
- SPT influenced by State performance contracting guidelines;
34 states allow max. contract term >10+ years

Drivers of Performance Contracting in Institutional Markets



State	ESCO Project Costs (SC, UC & GO)			Economic Activity (1999 GSP)*		State Energy Office Activity	Number of Sectors with Legislation	LBNL Overall Ranking of State Support for Perf. Contracting
	Rank	(\$M)	N	Rank	(\$B)	1=low, 2=medium, 3=high**		
New York	1	287	76	2	755	2.3	3	7
California	2	147	81	1	1229	1.0	3	3
Texas	3	131	40	3	687	2.0	3	6
Indiana	4	112	23	15	182	1.0	3	3
New Jersey	5	84	95	8	332	2.0	3	6
Illinois	6	75	38	4	446	2.0	3	6
Ohio	7	68	45	7	362	2.0	1	2
Massachusetts	8	66	27	11	263	1.7	3	5
Florida	9	65	23	5	443	1.0	3	3
Pennsylvania	10	54	37	6	383	2.0	3	6

- PC activity in institutional market sectors affected by:
 - State's overall potential market size
 - favorable enabling legislation & procurement rules
 - state energy program activity

Conclusions



- U.S. ESCO business is well established
 - Market Activity (2000): ~\$2 Billion/yr
 - ESCOs sell “solutions” to customers: EE is byproduct
- Important accomplishment in face of:
 - Historic low energy prices
 - U.S. government environmental policies
- ESCO business is fluid and will continue to evolve
 - Expect industry growth + firm consolidation