



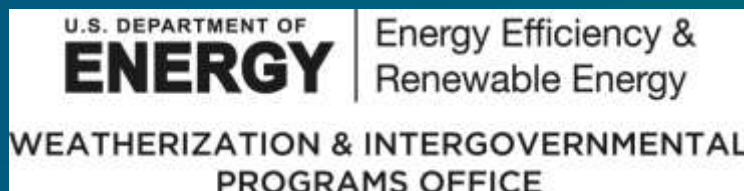
Environmental Energy Technologies Division

Lawrence Berkeley National Laboratory

Current Size and Remaining Market Potential of U.S. ESCO Industry

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- **ESCO Industry Study Motivation**
- **U.S. ESCO Industry Size and Growth Projections**
- **Revenue Shares**
- **Remaining Market Potential**
- **Other Interesting Findings**
- **Conclusion and Future Research Activities**

Project Objectives:

- Track and analyze ESCO industry and market trends: industry revenues, market activity, changes in industry structure; remaining market potential

Approach:

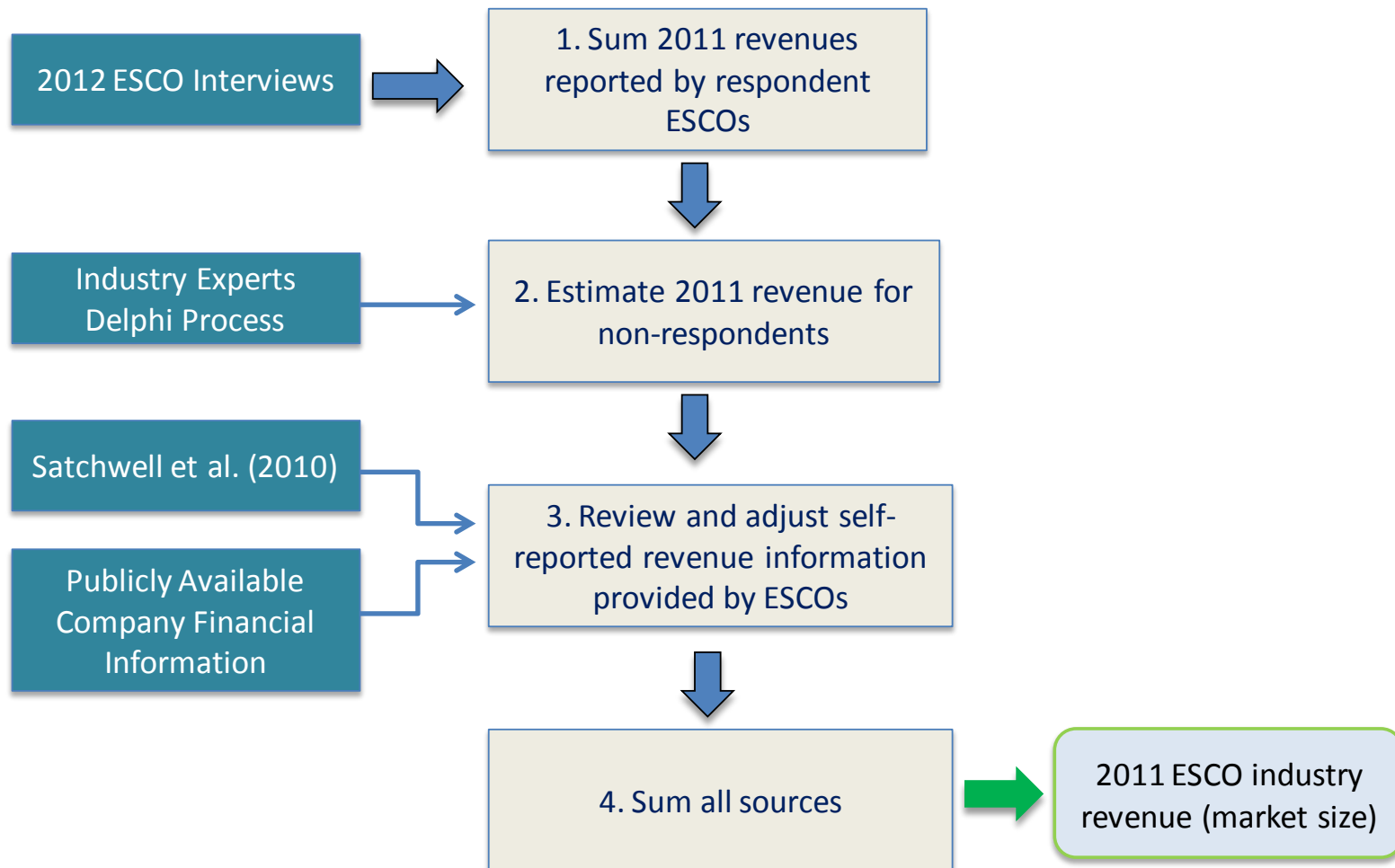
- Similar “top-down” approach as previous LBNL research, but also included remaining market potential estimate
- Discussions facilitated by LBNL/NAESCO with companies using the following sources:
 - NAESCO membership list;
 - DOE-qualified ESC list; and
 - Qualified performance contractors on state lists
- Response rate:
 - 2012: **78%** (35 out of 45 ESCOs); all large ESCOs responded
- Topics:
 - Current revenues by market segment, contract type, and technology;
 - Anticipated revenues in next 3 years;
 - Impact of U.S. recession, incentives, tax credits, and financing vehicles; and
 - Market penetration from 2003-2012

METHOD: INDUSTRY SIZE

Data Source

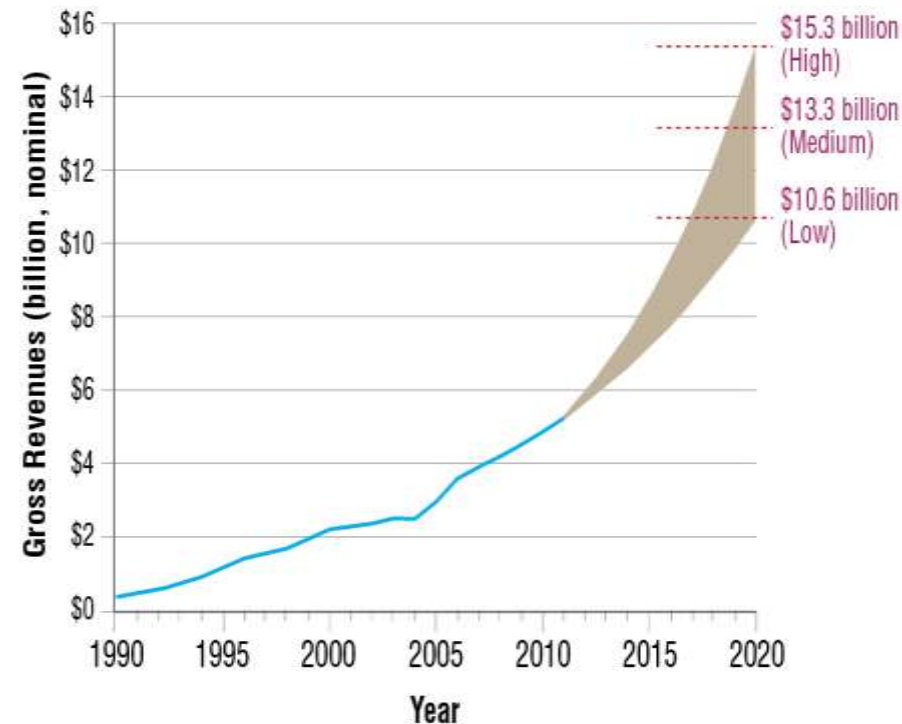
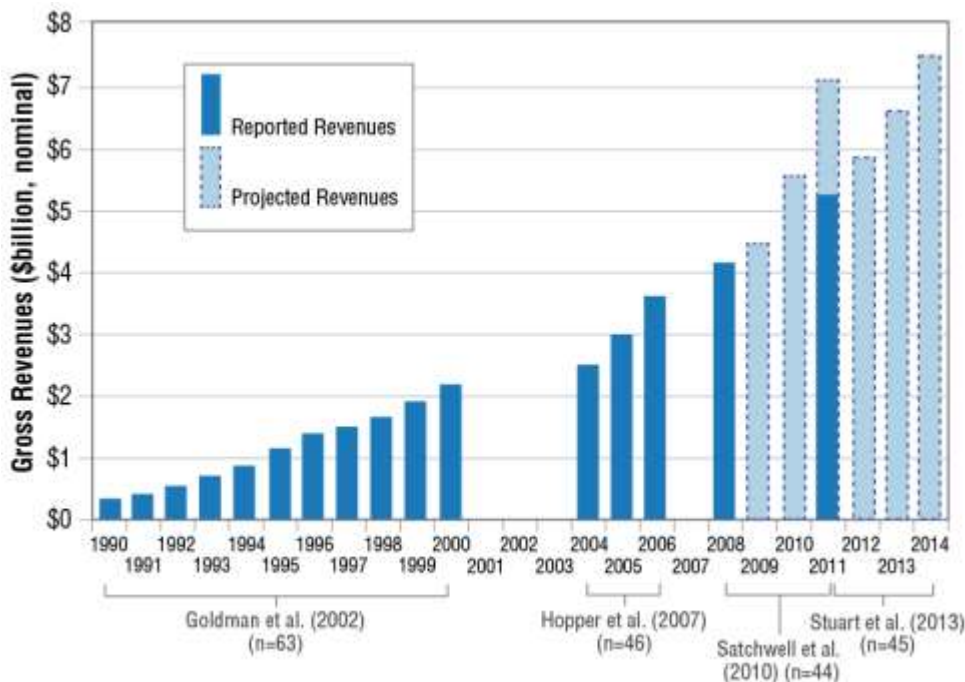
Method

Results



INDUSTRY SIZE: CURRENT AND PROJECTED

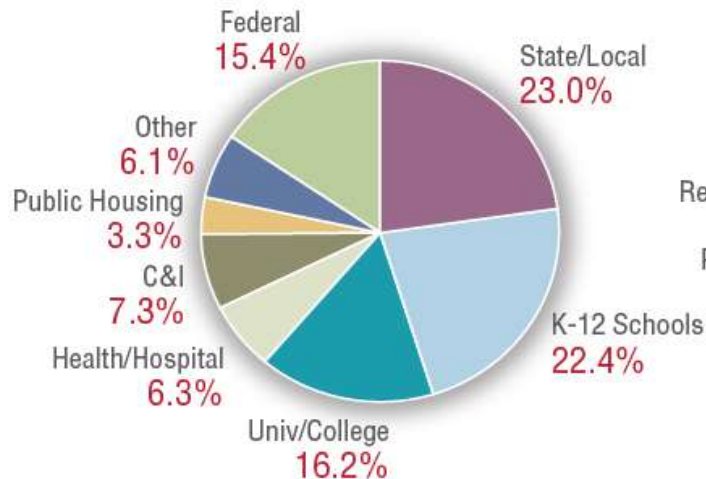
- The ESCO industry continued to grow at a steady pace--despite the onset of a major recession--reporting revenues of approximately \$5.3 billion in 2011.



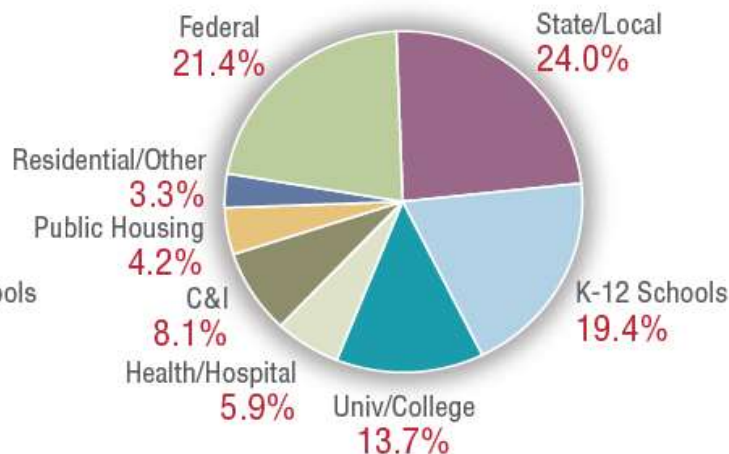
- We project that the ESCO industry will more than double in size from ~\$6 billion (2013) to \$11-\$15 billion (2020).

2008 & 2011 REVENUE SHARES

2008 Revenues (n=29)

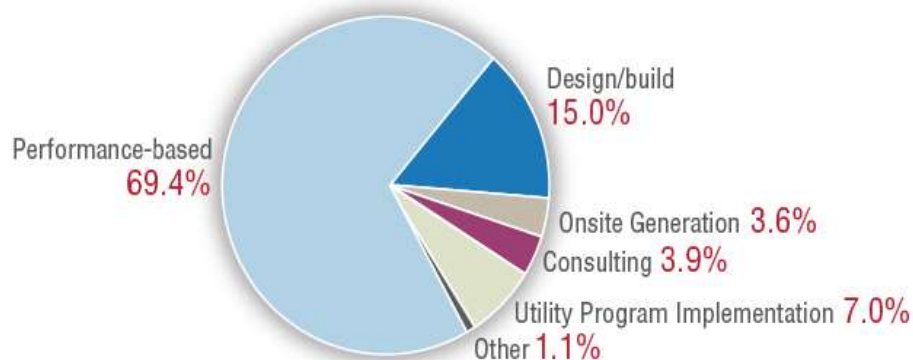


2011 Revenues (n=35)



- ~85% revenue from “MUSH”+ Federal market

2011 Revenues (n=34)

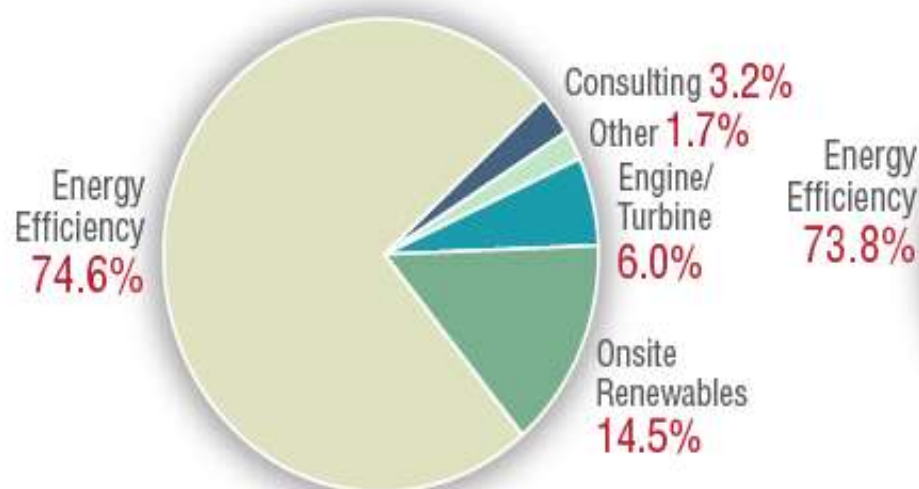


- ~70% of 2011 revenue from performance-based contracts; 15% from design/build.

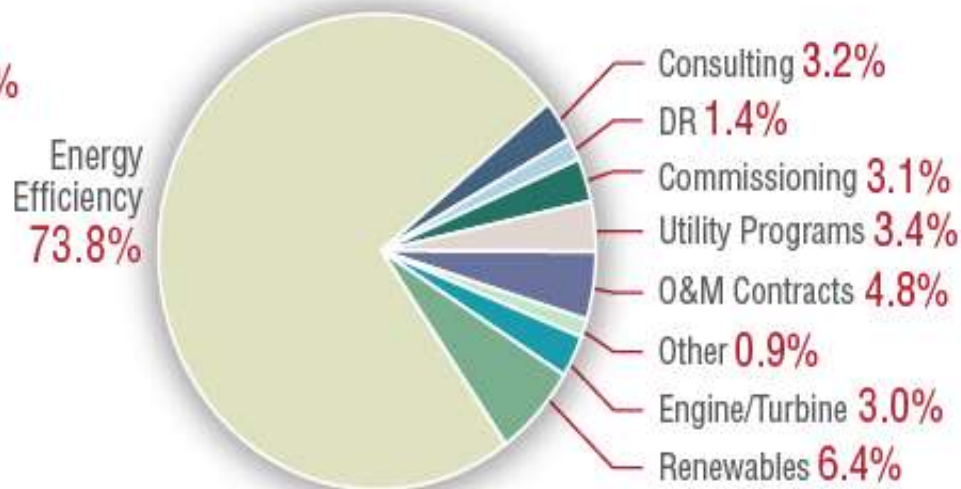
2008 & 2011 REVENUE SHARES (CONT.)

- Onsite generation and renewable energy share decreased from 2008-2011
- EE-related activity accounted for ~75% of revenue

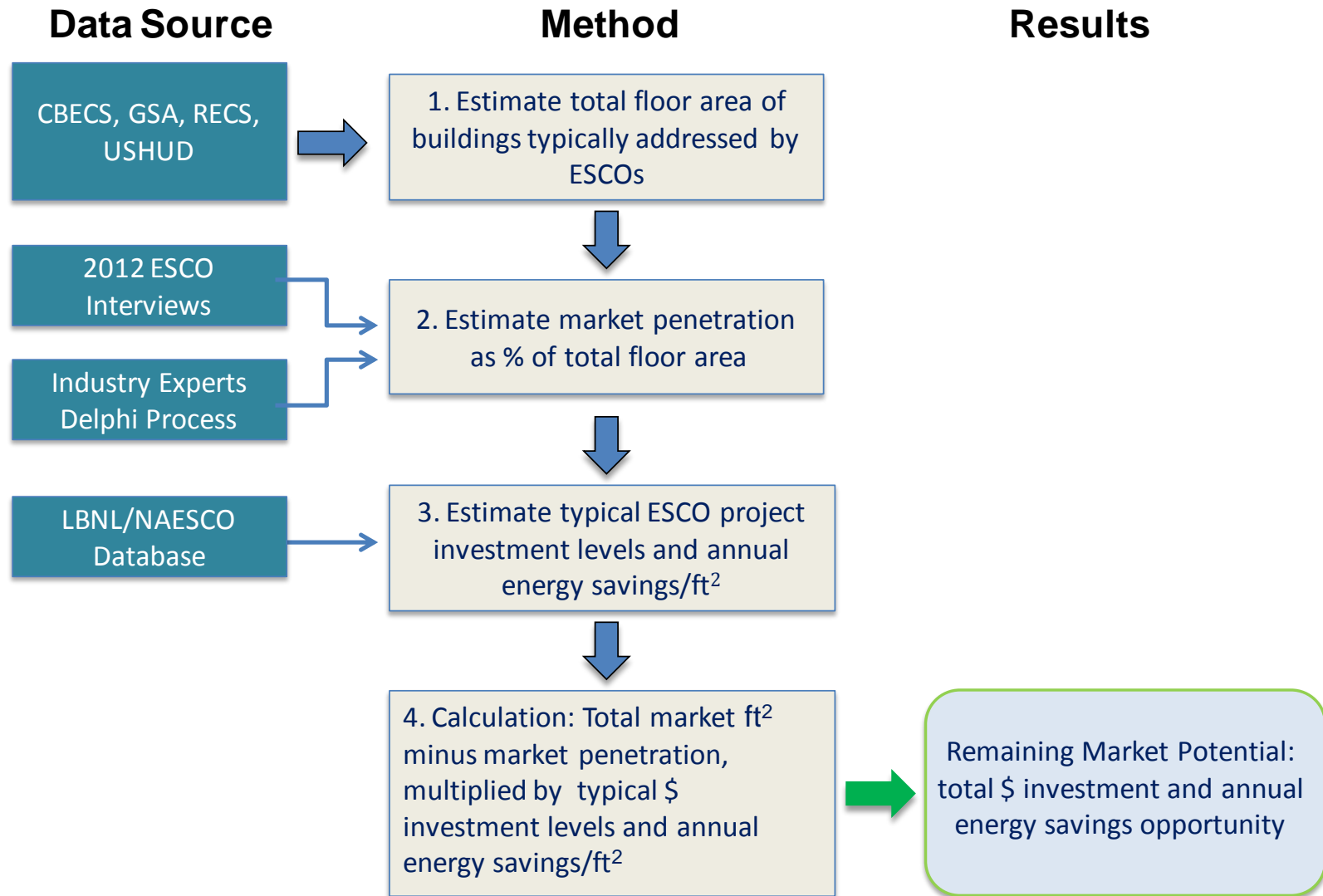
2008 Revenues (n=29)



2011 Revenues (n=34)



METHOD: REMAINING MARKET POTENTIAL

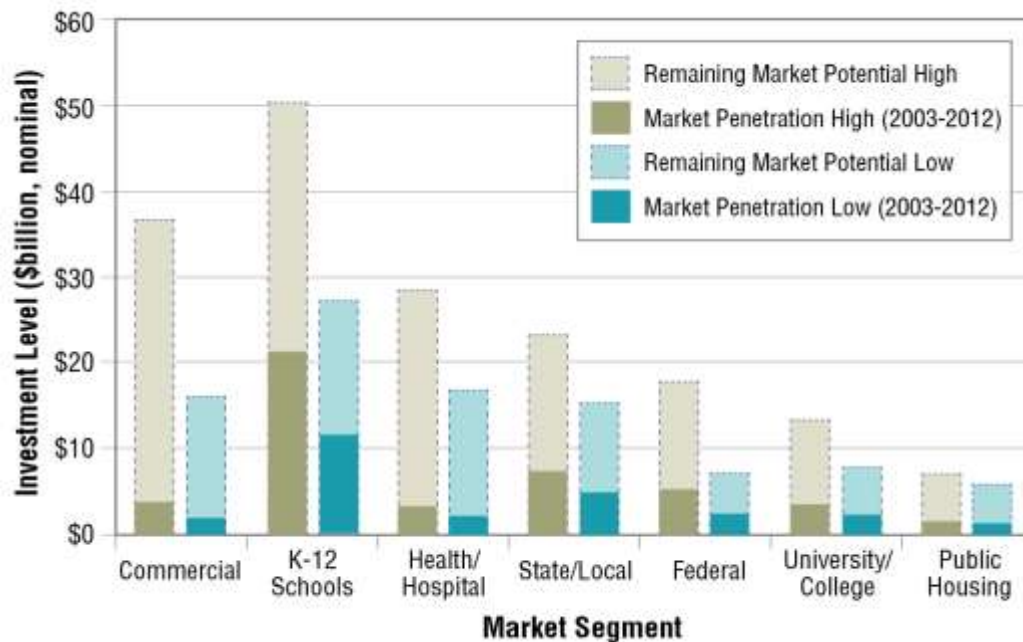


MARKET PENETRATION (2003-2012)

- Market penetration of performance contracting is highest in the K-12 schools sector and lowest in the C&I and healthcare sectors...

Market Segment	U.S. Census Region				
	Northeast	Midwest	South	West	U.S.
K-12 Schools	45%	40%	42%	30%	42%
State / Local	39%	30%	30%	45%	30%
Federal	27%	28%	25%	27%	28%
Universities/Colleges	25%	25%	23%	30%	25%
Public Housing	20%	15%	18%	18%	18%
Health/Hospitals	10%	10%	15%	15%	10%
Private Commercial	10%	6%	8%	9%	9%

REMAINING MARKET POTENTIAL



- Remaining investment potential in facilities typically addressed by this industry ranges from ~\$71 to \$133 billion.

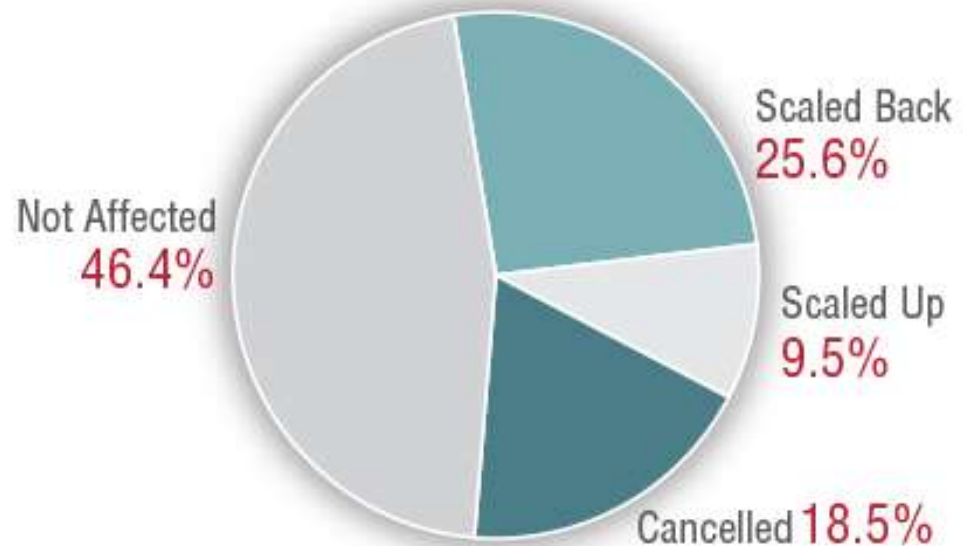
Market Segment	Low Estimate	High Estimate
K-12 Schools	\$15.8	\$29.4
Health/Hospital	\$15.0	\$25.6
Private Commercial	\$14.4	\$33.5
State/Local	\$10.6	\$16.3
Public Housing	\$4.7	\$5.7
Universities/Colleges	\$5.7	\$9.8
Federal	\$4.9	\$12.7
Total	\$71.2	\$133.0

- Questions remain about the economic potential of these markets and the accuracy of this estimate...

- ESCOs reported % of planned *state/local government* projects affected by either the U.S. financial crisis or debt policy from 2009-2011

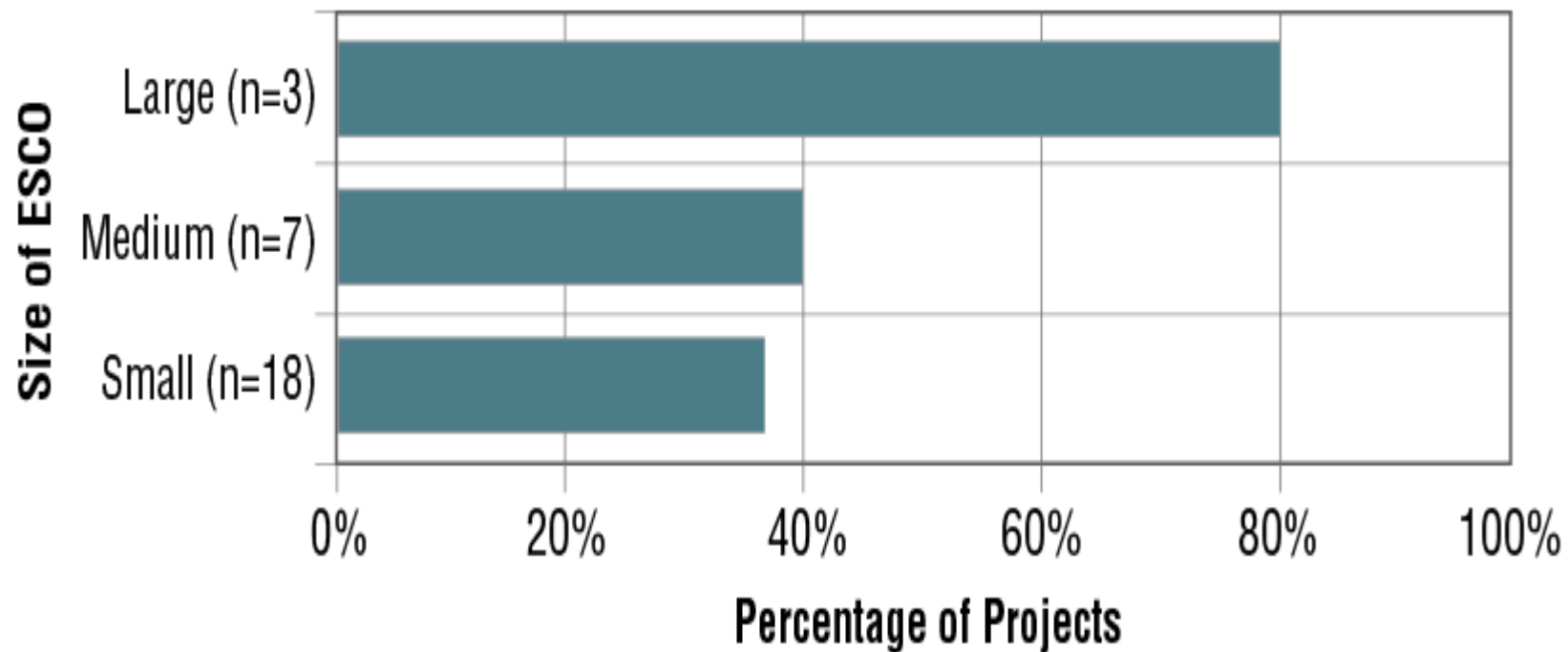
- 44% of projects cancelled or scaled back
- Nearly half unaffected
- ~10% scaled up

State and Local Projects
2009-2011 (n=22)



% OF PROJECTS USING THIRD-PARTY ADVISORS

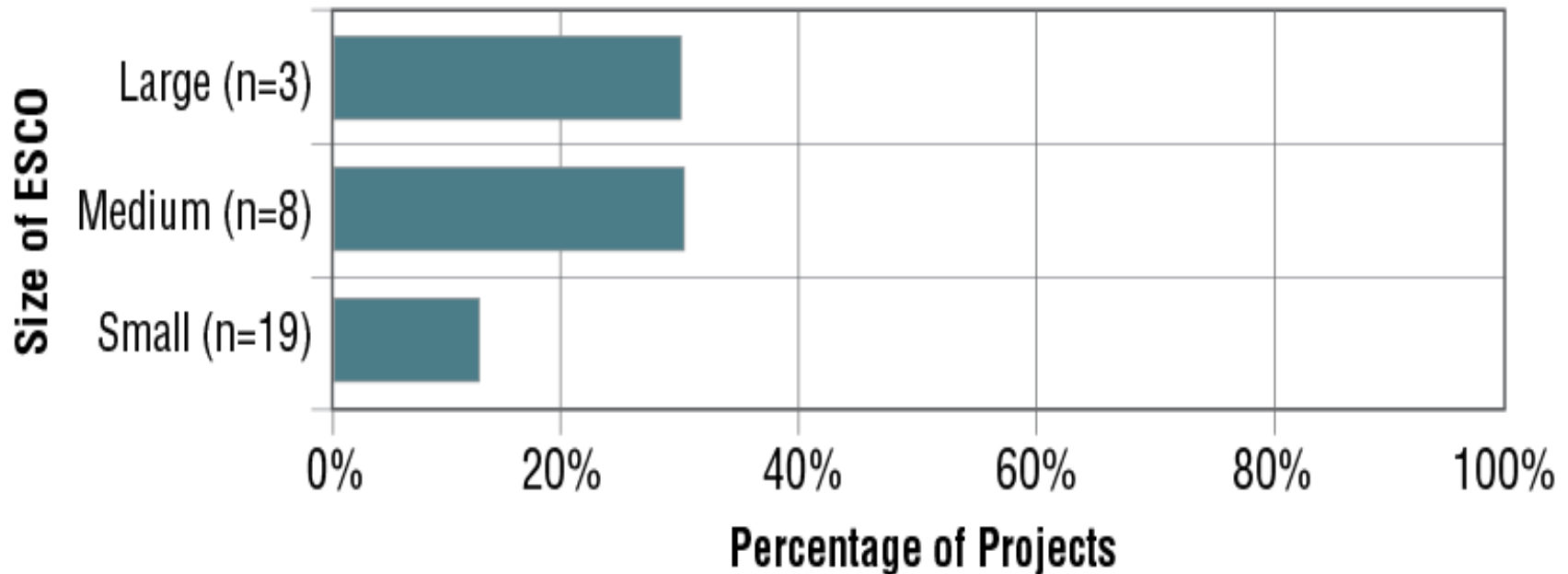
In what percentage of your [company's] projects during the past three years did the customer use third party professional financial advisors (e.g., bond counsel or financial consultant)?



- Customers of larger ESCOs tend to use third-party financial advisors more frequently than small-to-medium sized ESCOs.

% OF PROJECTS USING STIMULUS

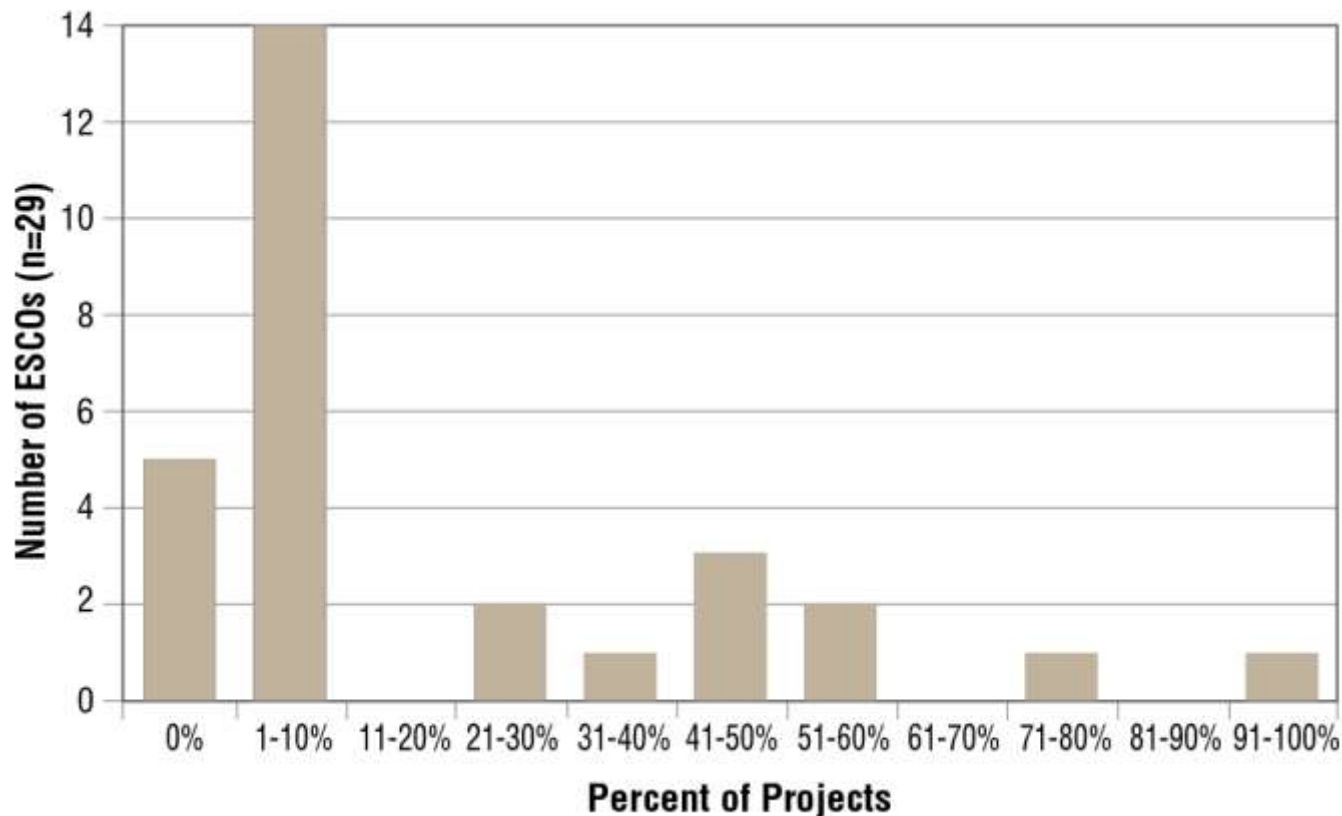
What percentage of your [company's] projects have used federal stimulus programs including: ARRA grants, other direct grants, revolving loans, QECBs, QZABs, etc. during the past three years?



- 11 medium and large respondent ESCOs reported that ~30% of their projects in the last three years relied on some type of federal program; 19 small ESCOs reported ~15%

% OF PROJECTS USING TAX CREDITS

What percentage of your [company's] projects have used local, state, or federal tax credits (e.g., Section 179d, Investment Tax Credit, Production Tax Credit) during the past three years?



FINANCING VEHICLES

- 40% of *federal projects* used 100% cash (i.e., appropriations);
- Most *K-12 schools* employed either a state/local bond issuance or a lease arrangement; and
- State or local bonds and tax-exempt municipal leases were most common in *state/local government* projects.

Market Segment	Cash	Partial Cash	Term Loan	State/Local Bond	Lease	Other	Total
Federal (n=19)	40%	7%	0%	3%	19%	31%	100%
State/Local (n=24)	15%	14%	16%	31%	23%	0%	100%
K-12 Schools (n=25)	7%	8%	18%	34%	28%	5%	100%
Univ/College (n=23)	20%	16%	22%	22%	19%	0%	100%
Health/Hospital (n=16)	33%	16%	28%	1%	21%	1%	100%
Public Housing (n=6)	17%	3%	5%	4%	58%	13%	100%
C&I (n=16)	50%	4%	23%	2%	5%	16%	100%

U.S. ESCO INDUSTRY IN A GLOBAL CONTEXT

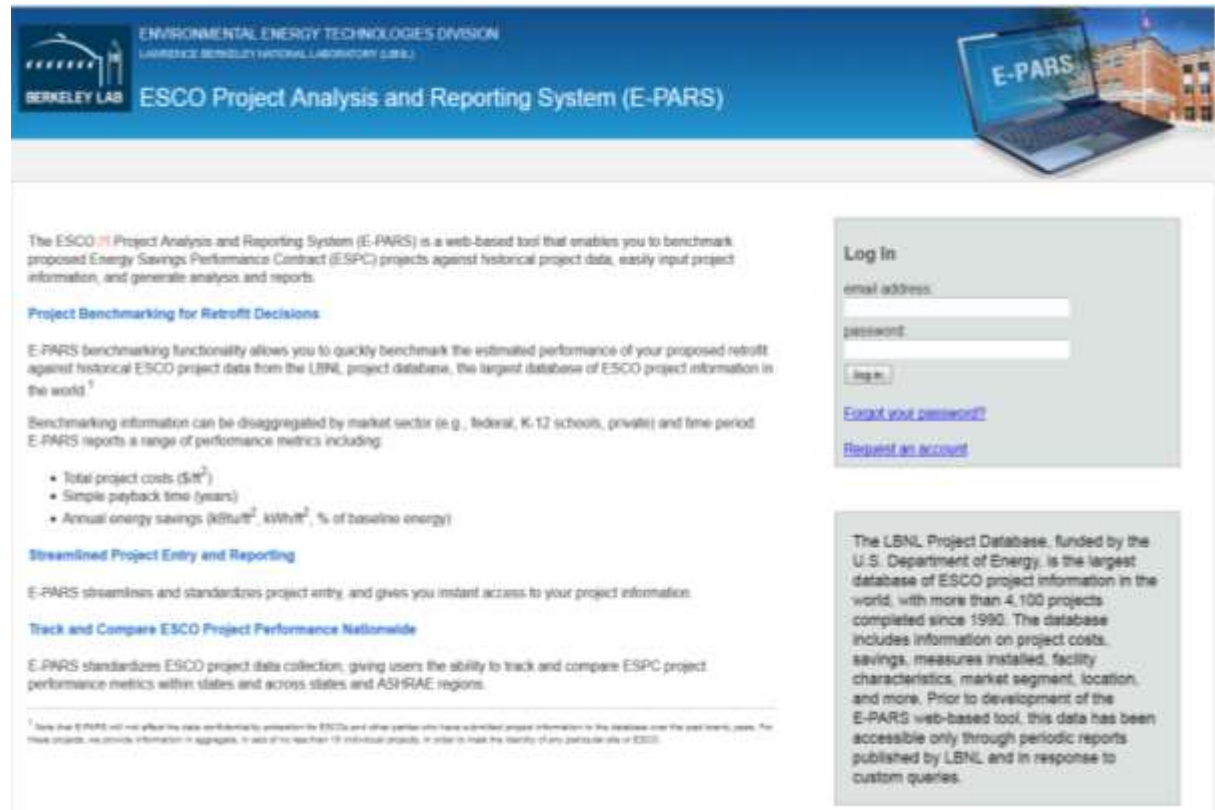
Country	Estimated ESCO Industry Size (\$ million)	Source
China	\$4,000-\$7,000	Cahill and Bertoldi (2013)
United States	~ \$5,300	Stuart et al. (2013)
Germany	~\$3,900-\$5,200	Cahill and Bertoldi (2013)
France	~\$4,000 - \$5,000	Marino et al. (2010)
United Kingdom	~\$320	Cahill and Bertoldi (2013)
Italy	~\$600	Cahill and Bertoldi (2013)
Spain	\$390-\$500	Cahill and Bertoldi (2013)
Switzerland	~\$170-\$300	Marino et al. (2010)
Denmark	\$180-\$190	Cahill and Bertoldi (2013)
Japan	~\$374	Murakoshi (2013)
Romania	~\$50	Marino et al. (2010)

Note: Cahill and Bertoldi (2013) are preliminary results.

- **U.S. ESCO industry is comparable and probably larger than French and German industry; Chinese ESCO industry is growing rapidly and may soon surpass U.S. ESCO industry size**
- **Definition of ESCO and revenue reporting practices vary among countries**


- Industry grew steadily from 2008-2011 (\$5.3 billion)
- We anticipate that industry will double-to-triple in size by 2020 (\$10.6 to \$15.3 billion)
- Remaining market potential of ~\$71-133 billion
- Revenue share from onsite/renewable generation is decreasing
- ESCO customers use a variety of financing vehicles

- Ongoing database development activities
- Research into non-energy benefits of projects
- Ongoing technical assistance activities



ENVIRONMENTAL ENERGY TECHNOLOGIES DIVISION
LAWRENCE BERKELEY NATIONAL LABORATORY (LBNL)

ESCO Project Analysis and Reporting System (E-PARS)

The ESCO  Project Analysis and Reporting System (E-PARS) is a web-based tool that enables you to benchmark proposed Energy Savings Performance Contract (ESPC) projects against historical project data, easily input project information, and generate analysis and reports.

Project Benchmarking for Retrofit Decisions

E-PARS benchmarking functionality allows you to quickly benchmark the estimated performance of your proposed retrofit against historical ESCO project data from the LBNL project database, the largest database of ESCO project information in the world.¹

Benchmarking information can be disaggregated by market sector (e.g., federal, K-12 schools, private) and time period. E-PARS reports a range of performance metrics including:

- Total project costs (\$/ft²)
- Simple payback time (years)
- Annual energy savings (kBtu/ft², kWh/ft², % of baseline energy)

Streamlined Project Entry and Reporting

E-PARS streamlines and standardizes project entry, and gives you instant access to your project information.

Track and Compare ESCO Project Performance Nationwide

E-PARS standardizes ESCO project data collection, giving users the ability to track and compare ESPC project performance metrics within states and across states and ASHRAE regions.

¹ Note that E-PARS will not release data confidential to project owners for ESCOs and other parties who have submitted project information to the database over the past twenty years. For these projects, we provide information in aggregate, in sets of no less than 10 individual projects, in order to mask the identity of any particular data or ESCO.

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The LBNL Project Database, funded by the U.S. Department of Energy, is the largest database of ESCO project information in the world, with more than 4,100 projects completed since 1990. The database includes information on project costs, savings, measures installed, facility characteristics, market segment, location, and more. Prior to development of the E-PARS web-based tool, this data has been accessible only through periodic reports published by LBNL and in response to custom queries.



Acknowledgments:

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