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

Elizabeth Stuart, Peter H. Larsen, Charles A. Goldman
Lawrence Berkeley National Laboratory

Donald Gilligan
National Association of Energy Service Companies

U.S. Department of Energy
Energy Efficiency & Renewable Energy
Weatherization & Intergovernmental Programs Office

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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**
- 2012 ESCO Interviews
- Industry Experts Delphi Process
- Satchwell et al. (2010)
- Publicly Available Company Financial Information

**Method**
1. Sum 2011 revenues reported by respondent ESCOs
2. Estimate 2011 revenue for non-respondents
3. Review and adjust self-reported revenue information provided by ESCOs
4. Sum all sources

**Results**
2011 ESCO industry revenue (market size)
• 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)

- Federal 15.4%
- State/Local 23.0%
- Public Housing 3.3%
- C&I 7.3%
- Health/Hospital 6.3%
- Univ/College 16.2%
- K-12 Schools 22.4%

2011 Revenues (n=35)

- Federal 21.4%
- State/Local 24.0%
- Residential/Other 3.3%
- Public Housing 4.2%
- C&I 8.1%
- Health/Hospital 5.9%
- Univ/College 13.7%
- K-12 Schools 19.4%

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

- ~85% revenue from “MUSH”+ Federal market
• Onsite generation and renewable energy share decreased from 2008-2011
• EE-related activity accounted for ~75% of revenue
METHOD: REMAINING MARKET POTENTIAL

**Data Source**
- CBECs, GSA, RECS, USHUD
- 2012 ESCO Interviews
- Industry Experts Delphi Process
- LBNL/NAESCO Database

**Method**
1. Estimate total floor area of buildings typically addressed by ESCOs
2. Estimate market penetration as % of total floor area
3. Estimate typical ESCO project investment levels and annual energy savings/ft²
4. Calculation: Total market ft² minus market penetration, multiplied by typical $ investment levels and annual energy savings/ft²

**Results**
Remaining Market Potential: total $ investment and annual energy savings opportunity
Market penetration of performance contracting is highest in the K-12 schools sector and lowest in the C&I and healthcare sectors...

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

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

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Low Estimate</th>
<th>High Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-12 Schools</td>
<td>$15.8</td>
<td>$29.4</td>
</tr>
<tr>
<td>Health/Hospital</td>
<td>$15.0</td>
<td>$25.6</td>
</tr>
<tr>
<td>Private Commercial</td>
<td>$14.4</td>
<td>$33.5</td>
</tr>
<tr>
<td>State/Local</td>
<td>$10.6</td>
<td>$16.3</td>
</tr>
<tr>
<td>Public Housing</td>
<td>$4.7</td>
<td>$5.7</td>
</tr>
<tr>
<td>Universities/Colleges</td>
<td>$5.7</td>
<td>$9.8</td>
</tr>
<tr>
<td>Federal</td>
<td>$4.9</td>
<td>$12.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$71.2</strong></td>
<td><strong>$133.0</strong></td>
</tr>
</tbody>
</table>

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
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.
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%
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.

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Cash</th>
<th>Partial Cash</th>
<th>Term Loan</th>
<th>State/Local Bond</th>
<th>Lease</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal (n=19)</td>
<td>40%</td>
<td>7%</td>
<td>0%</td>
<td>3%</td>
<td>19%</td>
<td>31%</td>
<td>100%</td>
</tr>
<tr>
<td>State/Local (n=24)</td>
<td>15%</td>
<td>14%</td>
<td>16%</td>
<td>31%</td>
<td>23%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>K-12 Schools (n=25)</td>
<td>7%</td>
<td>8%</td>
<td>18%</td>
<td>34%</td>
<td>28%</td>
<td>5%</td>
<td>100%</td>
</tr>
<tr>
<td>Univ/College (n=23)</td>
<td>20%</td>
<td>16%</td>
<td>22%</td>
<td>22%</td>
<td>19%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Health/Hospital (n=16)</td>
<td>33%</td>
<td>16%</td>
<td>28%</td>
<td>1%</td>
<td>21%</td>
<td>1%</td>
<td>100%</td>
</tr>
<tr>
<td>Public Housing (n=6)</td>
<td>17%</td>
<td>3%</td>
<td>5%</td>
<td>4%</td>
<td>58%</td>
<td>13%</td>
<td>100%</td>
</tr>
<tr>
<td>C&amp;I (n=16)</td>
<td>50%</td>
<td>4%</td>
<td>23%</td>
<td>2%</td>
<td>5%</td>
<td>16%</td>
<td>100%</td>
</tr>
</tbody>
</table>
### U.S. ESCO Industry in a Global Context

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

- **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**

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

• Ongoing database development activities

• Research into non-energy benefits of projects

• Ongoing technical assistance activities
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