Keys to US ESCO Growth

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Overview

• Introduction to NAESCO
• Phases of US ESCO industry growth
• Major market drivers
• Role of technologies
• Risk management is key
Introduction to NAESCO

• National trade association of Energy Service Companies (ESCOs)
• Founded in 1983
• About 110 members - we’re in a growth spurt
  • 42 are ESCOs
  • Affiliates provide equipment and services to ESCOs
• Implement about $7 billion of projects annually
• Historically, ESCOs have delivered:
  • $60 billion in projects paid from savings
  • $65 billion in savings - guaranteed and verified
  • 500,000 person-years of direct employment
  • $45 billion in public infrastructure improvements
  • 480 million tons of CO2 savings at no additional cost

• Projects include EE, RE, sustainability technologies
• Almost all projects are performance contracts in public facilities
Phases of US ESCO Growth
US ESCO Industry Growth – 1990-2018

- Steady growth over 30 years, even through the 2008-2010 financial crisis
Early ESPC, 1985-1995

- Utilities solicit bids for “energy efficiency power plants”
- Utilities pay for kWh delivered: 80-100% of project costs
- M+V emulates utility metering (≥ 15% of project cost)
- ESCOs assemble turnkey service packages
  - Audits + construction + financing + maintenance + savings guarantees
- Measures are mostly lighting and controls
- ESCOs target high run-hour customers
  - Industrials, hospitals, prisons, some schools, etc.
- Financing on ESCO balance sheets using shared savings contracts
  - ESCO assumes project performance risk and credit risk
Industry Evolution, mid 1990s into early 2000s

- Customers more comfortable with EE technologies
- Federal and state governments authorize ESPC
  - Impose savings mandates without capital appropriations
- Larger, more complex projects
  - Increased project development costs and risks
- Utilities buy out ESCO entrepreneurs
  - 50+ utility-owned ESCOs for a few years
- New Finance Model
  - Guaranteed savings replaces shared savings
  - Banks and specialized companies provide financing
- New M+V Model
  - NAESCO, ASHRAE, US DOE create IPMVP
Projects are becoming more comprehensive

Source: Lawrence Berkeley National Laboratory
Investment levels per square foot have increased significantly

Source: Lawrence Berkeley National Laboratory
Focus on Public Facilities, 2004-present

• Industrial and large commercial customers turned off by Enron debacle and financial crisis
  • No more long-term deals

• ESCOs focus on public buildings
  • Energy savings mandates
  • Deferred maintenance + lack of capital = large projects
  • Pay for improvements with savings - energy and maintenance
  • 10-20-year project paybacks

• ESCOs add technologies to meet customer needs
  • Distributed generation + renewables + storage + street lighting + water infrastructure

• Utility subsidies help project economics
Revenue Trends by Market Segment

- Public and institutional customers have consistently made up over 90% of industry revenue.

- K-12 schools represented a larger portion (32%) of industry revenue in 2018 as compared to 2014 (24%) and 19% in 2011.

- Conversely, federal facilities made up a smaller portion (16%) than in previous years.

- Share of industry revenue for other market segments has changed very little since the previous report.

Source: Lawrence Berkeley National Laboratory
Major Market Drivers

Government Savings Mandates and Building Needs
Government mandates and public facility needs

• Federal and state legislation requiring significant reductions
• US public facilities need more than $1 trillion of capital investment
  • Half of US schools need major HVAC work
  • Illinois public schools have $7.65 billion in deferred maintenance
• Little or no capital funding to meet mandates or building needs
• Government instead drives the market through administrative actions
  • Standardized ESPC project processes and documents
  • Competitive solicitations to create lists of qualified ESCOs
  • Requirements that state agencies implement all cost-effective ESPCs
  • Obama Performance Contracting Challenge - $4 billion on four years

https://betterbuildingssolutioncenter.energy.gov/energy-savings-performance-contracting-espc-toolkit
The percentage of ESCOs who reported a high or medium level of ESPC use for capital improvement increased between the previous survey (2014) and the current survey (2018) for all market segments.

The most significant increases occurred for the state/local, university/college, public housing/other and commercial/industrial market segments.


Source: Lawrence Berkeley National Laboratory
Role of Technologies

Not the key to long-term growth
Technology comes to the ESCO market in waves
ESCOs introduce technologies and are overtaken by other market players

**Lighting**
- Drove the first phase of growth
- ESCOs dominated the market
  - Knew the technology better than lighting installation firms
  - Warehoused equipment because distributors would not
- Market caught up
  - Lighting firms learned
  - Project specifications were routinized
  - Equipment stocked by distributors and big box stores
- ESCOs learned to partner with lighting firms to shift risk

**HVAC and Controls**
- Large companies sold proprietary control systems
- Large companies could manage and finance boiler, chiller and ventilation retrofits
- Market caught up
  - Proprietary control systems replaced by generic hardware and open-source software
  - Mechanical contractors learned how to manage project development and guarantees
- ESCOs learned to partner with mechanical contractors

**Solar PV**
- ESCOs bundled PV into a comprehensive project
- Blended long-payback PV with short-payback lighting and controls
- Market caught up
  - Tax incentives (+30% of costs) diluted the benefit of comprehensive projects
  - ESCOs couldn’t compete with low-overhead PV vendors
- ESCOs learned to partner with PV vendors and integrate PV with storage, demand response, and microgrids
Increased adoption of capital intensive retrofit strategies

Source: Lawrence Berkeley National Laboratory
Risk Management is Key
ESCO business risk management

Identify and minimize risks in a complex business

Marketing and Sales

• Understand what you are selling
  • Comprehensive, long-payback projects
  • Understand what segments need what you are selling
  • Market to those segments

• Understand that the long sales cycle is the riskiest part of the ESCO business
  • Identify customers with an urgent need
  • Don’t pursue others
  • The second-best first sales call is a quick goodbye

Contract and Construction

• ESCOs use experts
  • In-house or retained attorneys who specialize in ESPC to write contracts
  • Specialized construction managers, not design engineers, to manage construction

Savings M&V

• US ESCOs use the IPMVP
  • Options A, B, and C

• Define the savings guarantee
  • Units of energy, not dollars
  • O&M savings
  • O&M responsibilities
  • Building operating parameters
  • Baseline adjustments

• Make sure the customer understands the M&V reports

• Store all project documents electronically to assure access for the term of the contract

• Review results with customer