National Association of Energy Service Companies

The ESCO Industry in the U.S.

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National Association of Energy Service Companies

- NAESCO represents the retail energy service industry
- Members involved in the design, manufacture, financing, and installation of energy efficiency equipment and the provision of energy efficiency services in the private and public sectors
NAESCO Membership

- Energy Service Companies (ESCOs)
- Utilities
- Energy Efficiency Product Suppliers and Manufacturers
- Financial Institutions
- Engineering and Design Firms
- Law Firms and Consultants
- Government Agencies
ESCO Market Drivers

- **Savings Mandates**
  - Federal and many state governments mandating energy savings goals for public facilities, but not providing capital budgets to pay for energy efficiency improvements

- **Facility Modernization**
  - Institutional market facilities use ESCO projects to obtain facility improvements without the need for directly allocated funding

- **Green Buildings**
  - Savings produced from energy efficiency measures help to finance renewables measures
ESCO Market Drivers

- Climate Change
  - Energy efficiency is the first choice of policy planners trying to meet state mandates for greenhouse gas reductions

- Utility Programs
  - State regulators looking to large-scale energy efficiency programs as an alternative to building new power plants
  - ESCO projects attractive because they can be self-financed through energy savings
Standard Services Offered by ESCOs

- Feasibility study
- Investment grade energy audit
- Comprehensive project design
- Arrange project financing
- Complete project installation and management
- Project performance guarantees for the duration of the contract
- Savings measurement and verification
- Ongoing equipment maintenance services
Standard Services Offered by ESCOs

- The energy and cost savings from the project is used to pay for the work.
- Guarantee that the project will result in a specific level of energy savings.
Other Services Offered by ESCOs

- Onsite generation (turbine, renewable technologies and central plant retrofits)
- Energy billing
- Commodity purchase
- Consulting
- Facilities Management
- Operations and Maintenance
Standard Services Offered by ESCOs

1. Feasibility Study
   - Customer accepts proposed project
     - Project design and construction
       - Maintenance & Monitoring
   - Customer does not accept proposed project
     - Customer pays ESCO for audit
   - Investment grade audit and project proposal
Traditional ESCO Markets in the U.S.

- K-12 Schools
- Hospitals
- Colleges and Universities
- State and Local Government Facilities
- Federal Facilities

Focus is on retrofitting existing buildings, not new construction
Break-down of ESCO Market as of 2006

- MUSH: 58%
- Federal: 22%
- Public housing: 2%
- Residential: 3%
- Commercial: 9%
- Industrial: 6%
Typical Energy Saving Measures Employed in an EE Retrofit

- Lighting
- Heating Ventilation & Air Conditioning (HVAC)
- Energy Management Systems
- Motors
- Variable Speed Drives
- Building Envelope Measures
Industry Snapshot

- Project Technologies as portion of ESCO revenue:
  - Mix of energy efficiency technologies (73 percent)
  - Renewable technologies (10 percent)
  - Distributed generation or combined heat and power (6 percent)
  - Balance of ESCO revenues derived from consulting and planning services

- Project costs typically are in the range of $1 - $2 million, although trending to significantly larger dollar volumes over several phases

- 23% median electric savings
ESCO Industry Size & Growth Trends

There are ~ 46 active ESCOs in the U.S. (this number may not include some smaller local companies)
Company Ownership Structure

- 2000:
  - Number of companies: 44% independent ESCOs, 15% building equipment manufacturers, 35% utility companies, 6% other energy/engineering companies.
  - Revenues: 27% independent ESCOs, 39% building equipment manufacturers, 24% utility companies.

- 2006:
  - Number of companies: 61% independent ESCOs, 13% building equipment manufacturers, 15% utility companies, 10% other energy/engineering companies.
  - Revenues: 21% independent ESCOs, 59% building equipment manufacturers, 9% utility companies, 10% other energy/engineering companies.
Key Issues in Performance Contracting

- Contract Development and Management
  - Serves as blueprint of how the project is going to operate
  - Defines role and responsibility of both the ESCO and the customer, and explicitly spells out how the project is expected to perform
  - Frames basic legal provisions and protections of both parties
Key Issues in Performance Contracting

- Managing Risk
  - Performance risk – guarantee that the project will achieve a specified level of energy savings over the life of the contract
  - Financial risk – assumption of credit risk by borrowing the money to finance the project
  - ESCOs always assume the project performance risk, but, generally, do not take on the financial risk (e.g., interest rate fluctuations) or market risk (power cost fluctuations)
  - Relationship between customer and financing institution is usually separate
  - Customer is directly responsible to financial institution for meeting its debt service requirement
Key Issues in Performance Contracting

Guaranteed Savings

“Market Risk”

CUSTOMER

Savings Guarantee

ESCO

“Performance Risk”

Fixed Repayment Schedule

Lender/Investor

“Credit Risk”
Key Issues in Performance Contracting

- Guaranteed Savings
  - Customer assumes obligation to repay a third-party financier
  - ESCO guarantees to the customer that project’s realized savings will at a minimum equal the payments made for debt service over the term of the financing
  - If energy savings fall short of guarantee, ESCO pays customer the difference so customer can meet its debt service obligations
  - If savings exceed guarantee, customer agrees to share excess with ESCO based on a prearranged formula
Key Issues in Performance Contracting

**Shared Savings**

- **Customer**
- **“ESCO” Performance & Credit Risk**
- **Project Services Savings Guarantee**
- **Lender/Investor 100% Funding**
Key Issues in Performance Contracting

- Shared Savings (used in Federal projects)
  - Customer has no independent obligation to repay debt service
  - Customer commits to pay to ESCO a percentage of realized savings over a specified period
  - ESCO finances the project, usually by borrowing from one or more lender
Key Issues in Performance Contracting

- ESCOs prefer guaranteed savings approach because:
  - Third party assesses customer credit risk and assumes financial risk
  - Enhanced incentive for customer to resolve on-going project issues
  - Enables larger project size since ESCO’s balance sheet is not basis for financing
Key Issues in Performance Contracting

- Financial Instruments
  - Debt financing
  - Leases
  - Bonds

- Municipal Leases and Bonds
  - Most common for schools and other facilities owned by state and local governments with “tax exempt” status
  - Lower interest rates for customer
Key Issues in Performance Contracting

- Measurement & Verification
  - Critical to the success of a project:
    - Defines how much a customer pays an ESCO
    - Maximizes the persistence of cost savings over the contract term
    - Verifies the savings guaranteed under the performance contract – important for financing
  - Projects with high degree of certainty that savings will be achieved require minimal M&V
  - Complex projects with some degree of uncertainty may require more well-defined M&V procedures
Key Issues in Performance Contracting

- Measurement & Verification
  - Commonly used M&V protocols and guidelines:
    - International Performance Measurement and Verification Protocol (IPMVP)
      - Developed by U.S. Department of Energy with state energy officials, energy services industry, and engineering groups
    - American Society of Refrigeration and Air Conditioning Engineers (ASHRAE) guidelines for “Measurement and Verification of Savings”
Case Study – Fort Detrick

- $25 million contract
- 1,200 acre government research complex

Scope of Services
- New chiller plants
- Lighting upgrades
- Steam plant and distribution system upgrades
- Digital controls on heating and cooling systems

Savings
- $3 million annual savings
- $60 million projected savings over the life of the project
Case Study – County of Fresno

- $13 million, 15-year contract
- Scope of Services
  - 1.25 MW CHP facility
  - High efficiency lighting modification
  - Upgraded chillers with variable frequency drives
  - Upgraded energy management systems
  - Installed low-flow plumbing systems
  - Installed high-efficiency boilers
  - High efficiency motors on fans and pumps
- Results
  - $1.29 million annual savings
  - Projected reduction of 5,086 tons of CO2
Case Study – Pennsylvania State University, Altoona

- 10-year contract
- 28 buildings

Scope of Services
- High efficiency lighting
- Expand energy management control systems
- Building envelop measures
- Upgrade plumbing fixtures

Results
- $360,000 annual energy savings
Case Study – Windham Public Schools, Windham, CT

- 6 separate school facilities, including classrooms, gymnasiums, offices, auditoriums, kitchens, libraries
- Scope of services:
  - Lighting upgrades
  - HVAC controls
  - 150 kW cogeneration system
  - Building shell – building insulation, water efficiency
  - Energy curriculum developed for students
- Results:
  - Cost -- $5.2 million; utility rebates -- $390,000
  - Annual savings -- $528,510
  - Annual water savings – 1.7 million gallons
  - Annual greenhouse gas reductions – 2,619 tons
Thank you

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