M&V in Performance Contracting

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Overview

- Introduction to ESCO Industry
- Brief History of Performance Contracting
- Evolution of Performance Contracting M&V
- Challenges Going Forward

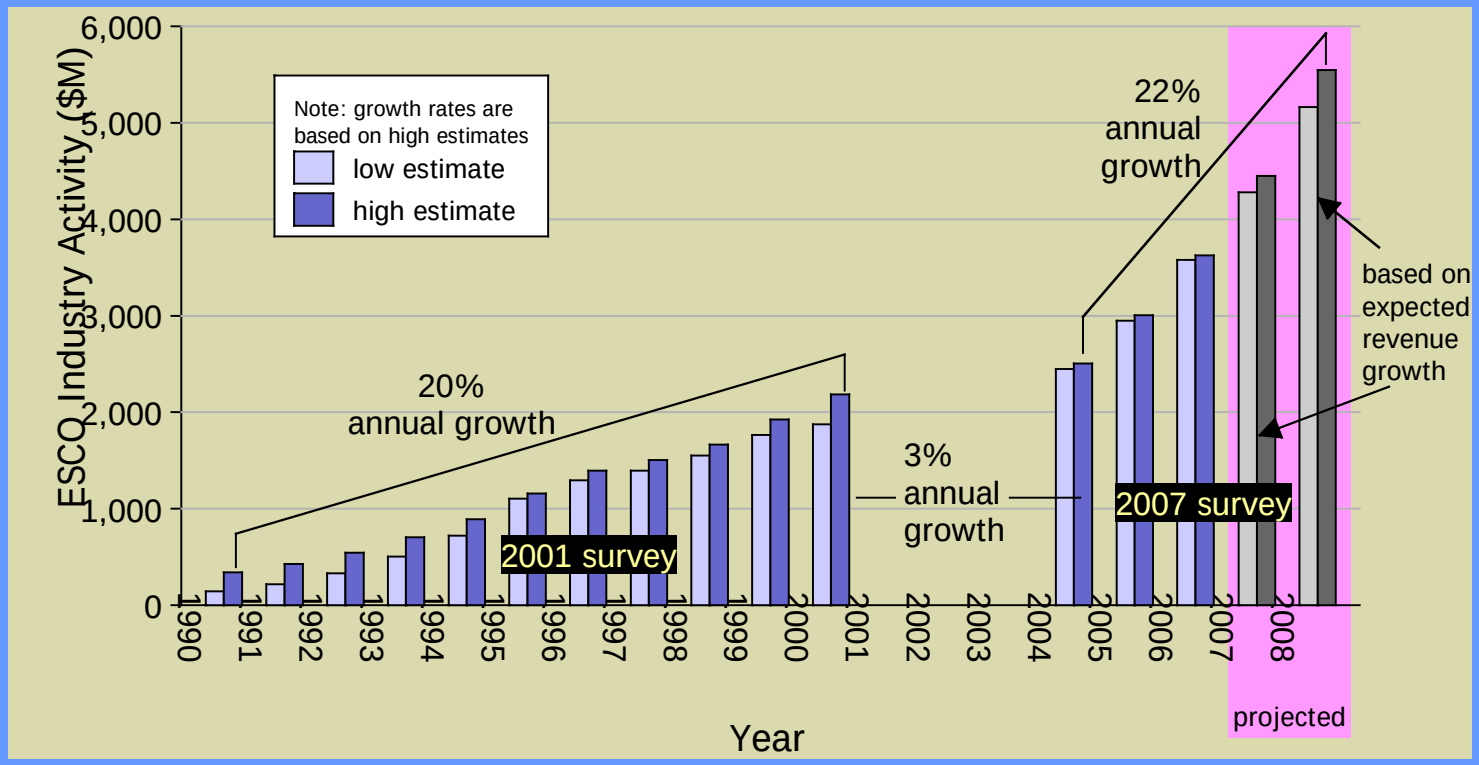
ESCO Industry Overview

- NAESCO has about 30 member ESCOs
  - ≈ 95% of national ESCO industry revenues
- ESCOs provide turnkey projects
  - Full range of efficiency and renewable technologies
  - Project costs paid from savings
- ESCOs delivering $5.5 B of projects in 2009
  - ≈ All US utility EE programs combined
  - ≈ 20% of projects involve utility incentives

ESCO Industry History

- $35B in projects since 1990
- $50B savings – guaranteed and verified
- 330,000 person-years of direct employment
- $25 billion of infrastructure improvements
- 420 million tons of CO_2 savings at no additional cost

ESCO Industry Growth



M&V Dictated by Customers

- PC is a customer-driven business
- PC must be win-win or it disappears
- M&V has evolved to meet customer needs
- M&V protocol is contracted between the ESCO and the customer

A Short History of PC

- Four Phases
  - 1985-1993: Emergence of PC
  - 1994-1999: Success and Consolidation
  - 2000-2003: The Enron Mess
  - 2003 – present: Growth and New Services

PC Emerges, 1985-1993

- Regulators want energy efficiency to provide thousands of MW
- Utilities told to put programs out for bid
- ESCOs develop business model
- Customers afraid of technology risks
- Customers' risk concerns covered with expensive shared savings contracts

M&V for Early PC Projects

- Shared savings contracts – custom M&V
- Utilities procured efficiency resources that were cheaper than generation
- Utility incentives based on avoided costs
  - The $90 CFL
- Utilities and regulators learned that M&V had to track benefits <u>and</u> cap costs

First Large-Scale PC -- Mid 90s

- New Jersey regulators mandate utilities to acquire an “energy efficiency power plant”
- ESCOs deliver ≈ 300 MW
- M&V very rigorous and expensive
  - Electric circuits monitored and tele-metered
  - ESCOs collect data and bill monthly
  - Reporting and billing for life of contract

Lessons Learned – Mid 90s

- Performance contracting catches on
- Specialized financiers making money
- Other financiers wanted into the business
  - Did not understand technologies
  - Needed to know that savings are real
- NAESCO, ASHRAE, US DOE created a new standard – IPMVP

Lessons Learned – Late 90s

- Customers more comfortable with technologies
- Customers don’t want to pay for shared savings
- Customers don’t see the need for NJ-style M&V

Lessons Learned – Late 90s

- California and New York observed NJ
  - Liked the savings produced
  - Liked the ESCO business model
  - Did not like the high M&V costs
- CA and NY developed new M&V
  - Stipulated savings for standard measures
  - More rigorous M&V for complex measures
  - Customer/ESCO options (IPMVP)

PC Growth, 1997-2003

- Federal government begins to use PC
  - Savings mandates and facilities needs
- State and local governments authorize PC
  - Savings mandates and facilities needs
- Utility incentives in some states
- Customer M&V more comprehensive than utility program M&V

PC M&V Matures

- IPMVP becomes the standard
  - Allows stipulation and measurement methods
  - Matches M&V approach and costs to risks
- Federal agencies use and adapt IPMVP
- States adopt IPMVP and guarantees
- IPMVP supplemented with custom O&M and capital cost avoidance methodologies

M&V Developments – Two Tracks

- More precise M&V of energy savings to use for capacity and environmental credits
- Better evaluation of operations and capital avoidance savings
- Both tracks evolving rapidly
- Neither track cares much about the other's concerns

Measurement Track

- Extensive research on energy savings
  - Regulators relying on energy efficiency to meet future load growth
  - Savings measures have to pass muster with the supply side of the utilities
- Significant R&D expenditures to develop next generation monitoring technology
  - Controls companies leading the way

Operations/Capital Track

- PC accepted as a way to address capital and maintenance issues
- Wide range of current practice
  - 0% to 100% of total project savings
- NAESCO working with stakeholders to develop standard protocols

What Keeps ESCOs Awake?

- Prospect of multiple M&V systems
  - Customers
  - Project financiers
  - Utilities
  - ISOs and RTOs
  - Carbon trading certification authorities
  - US DOE

Thank You

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