

# Keys to US ESCO Growth

UNEP CCC Webinar, 27 September 2022

# Overview

- Introduction to NAESCO
- Phases of US ESCO industry growth
- Major market drivers, including new federal funding
- Role of new technologies
- Potential new markets for ESCOs
- Risk management is key to growth

# Introduction to NAESCO

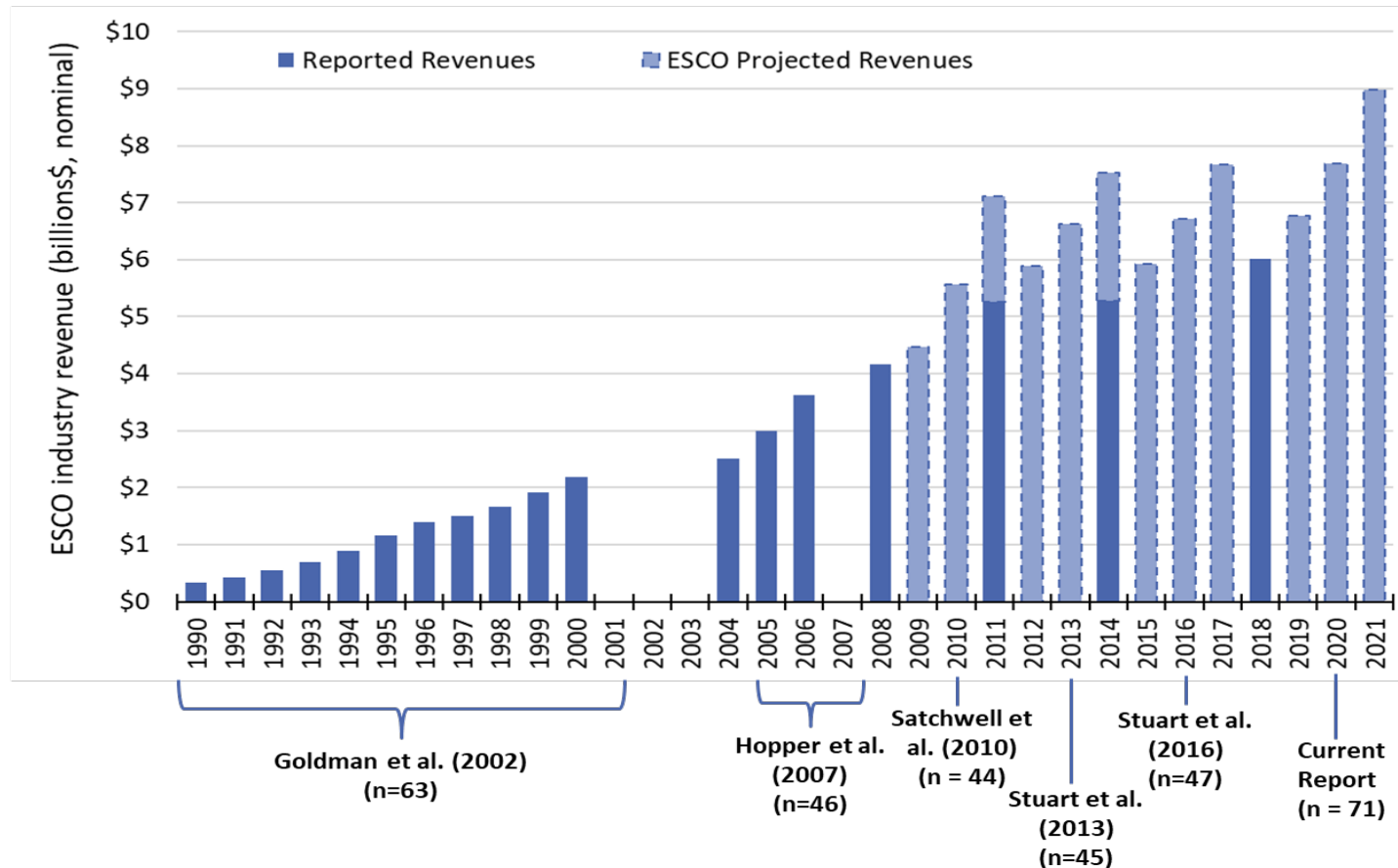
- National trade association of Energy Service Companies (ESCOs)
- Founded in 1983
- 135 members – 25 new members since June 2021
  - 44 are ESCOs
  - Affiliates provide equipment and services to ESCOs
- Implement about \$7 billion of projects annually
- Historically, ESCOs have delivered:
  - \$70 billion in projects paid from savings
  - \$75 billion in savings – guaranteed and verified
  - 650,000 person-years of direct employment
  - \$52 billion in public infrastructure improvements
  - 560 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

**Reported and projected ESCO industry revenues (nominal): 1990-2021**



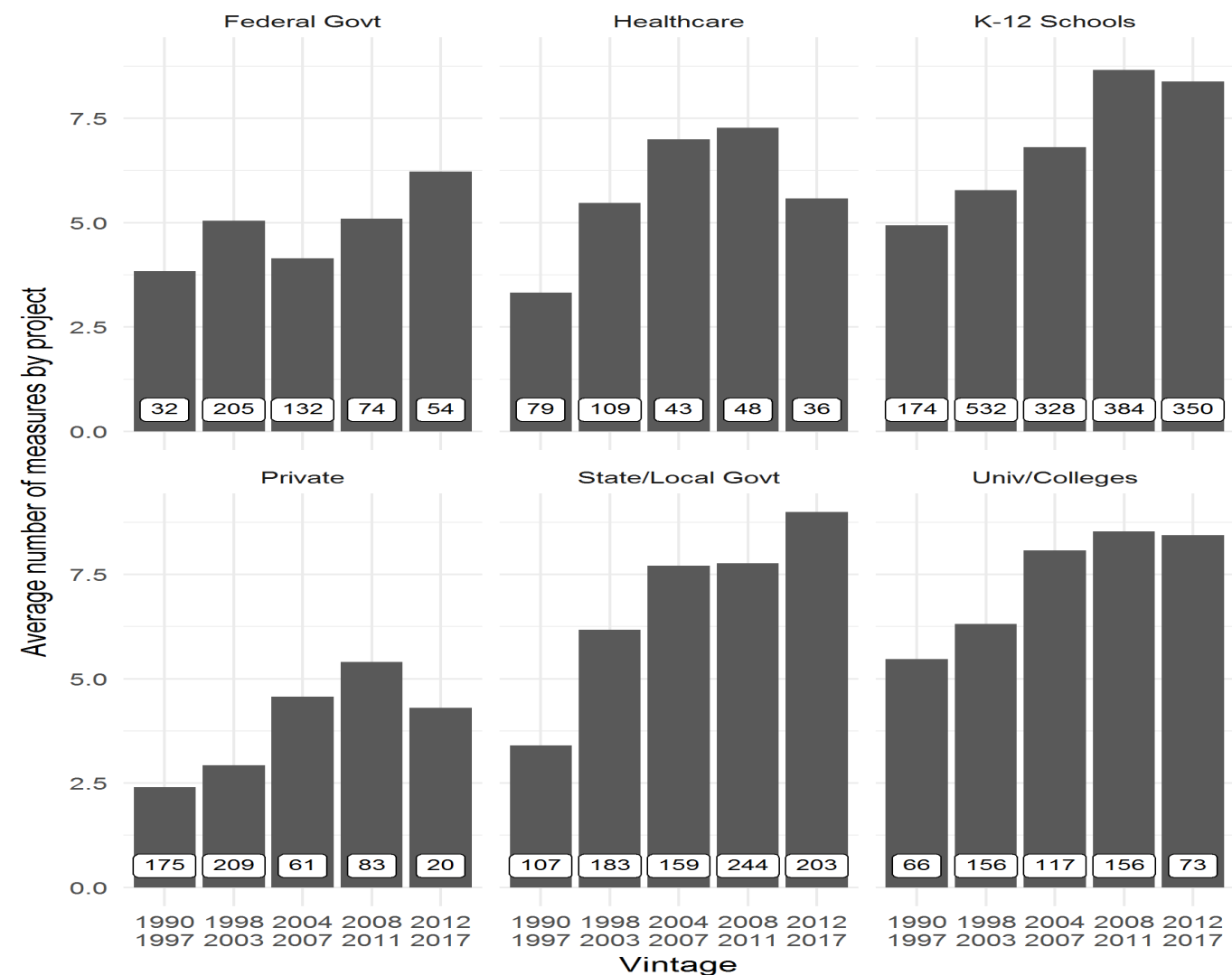
# Early ESPC, 1985-1995

- Utilities solicit bids for “energy efficiency power plants”
- Utilities pay for kWh delivered: 80-100% of project costs
- M+V emulates utility metering ( $\geq 15\%$  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

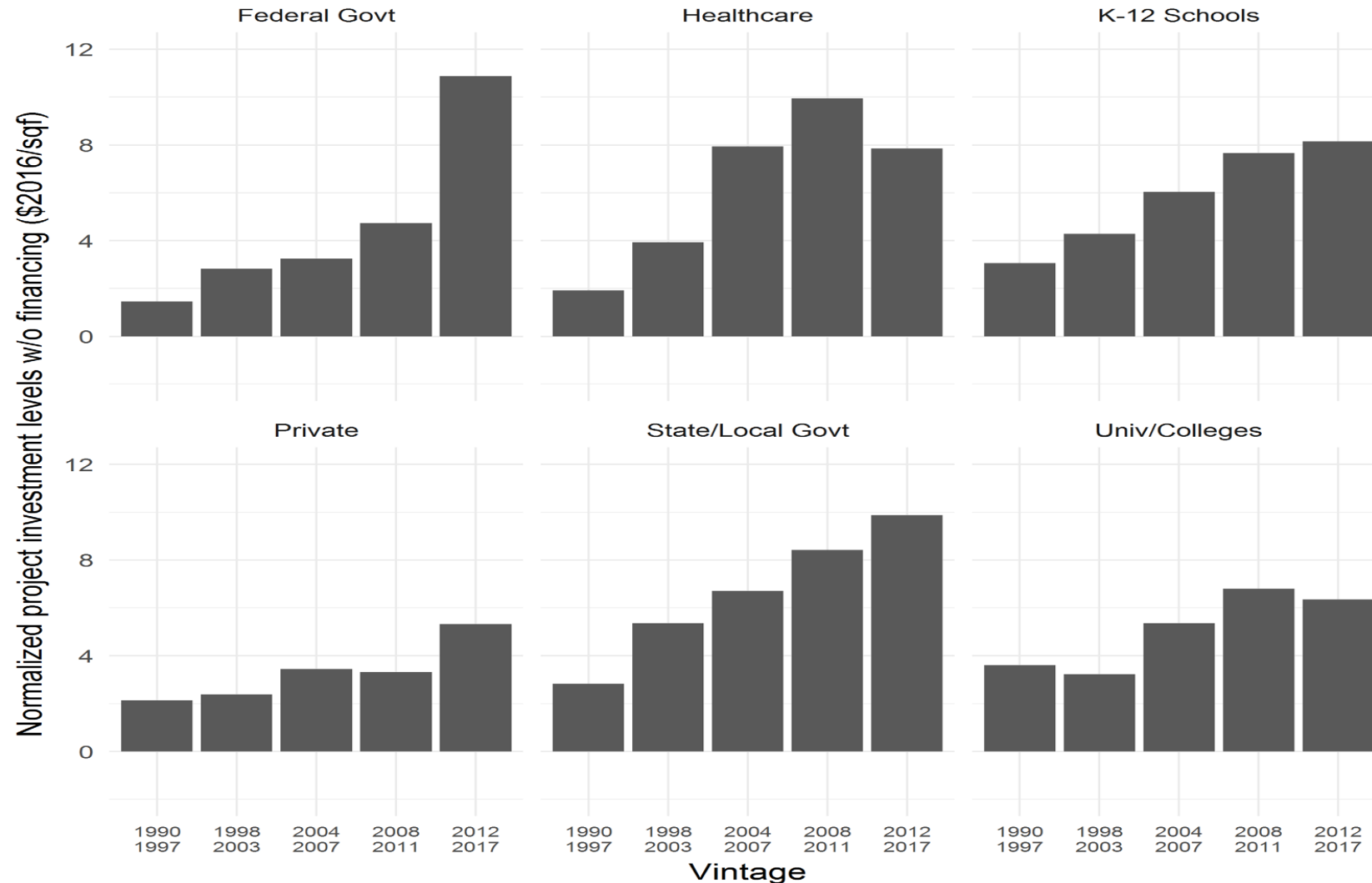
# Projects are becoming more comprehensive



Source: Lawrence Berkeley National Laboratory



# Investment levels per square foot have increased significantly

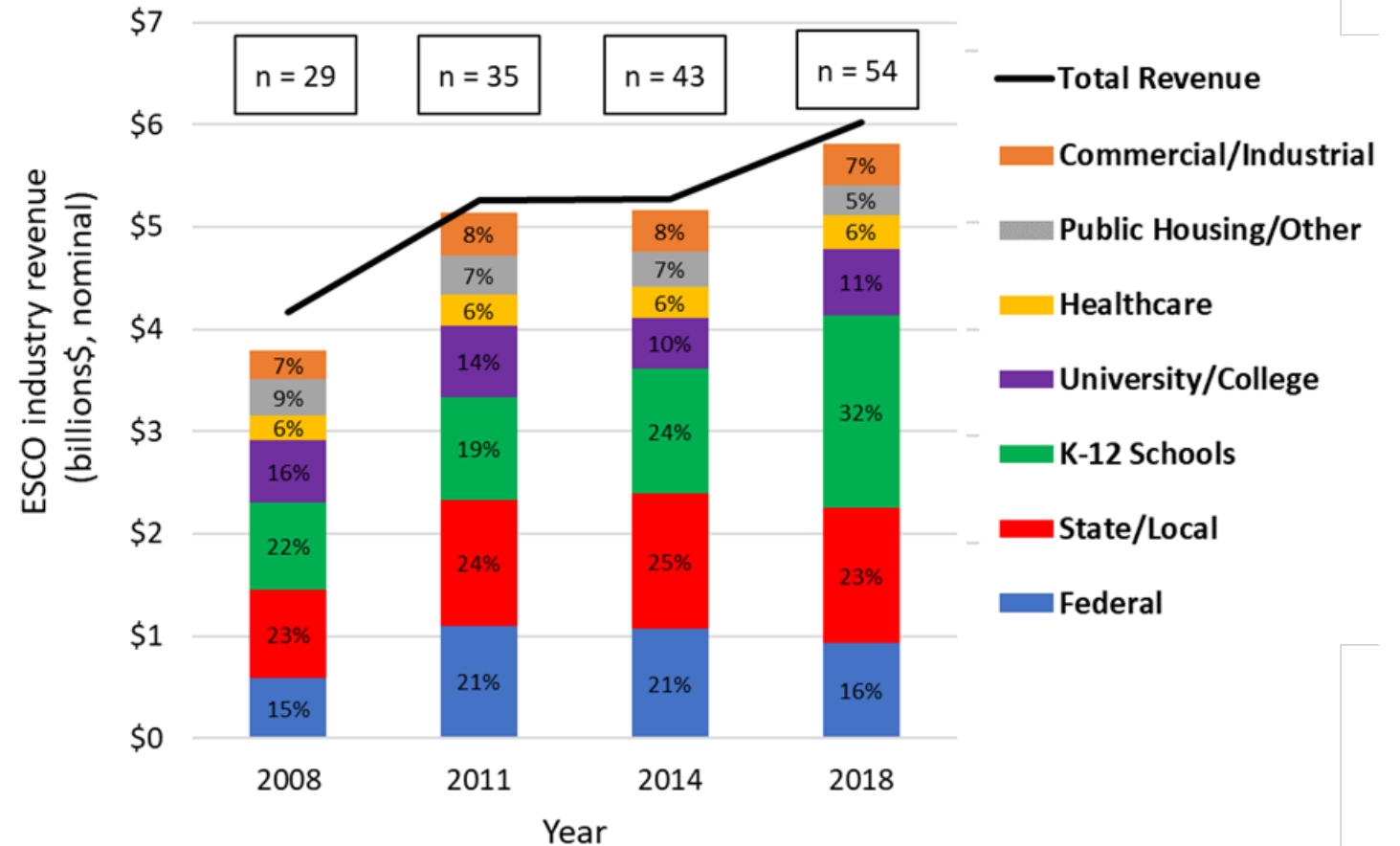


# Focus on Public Facilities, 2004-present

- 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
  - ESCOs re-purpose wasted \$\$ to finance capital improvements
  - Deferred maintenance + lack of capital = large projects
  - 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.



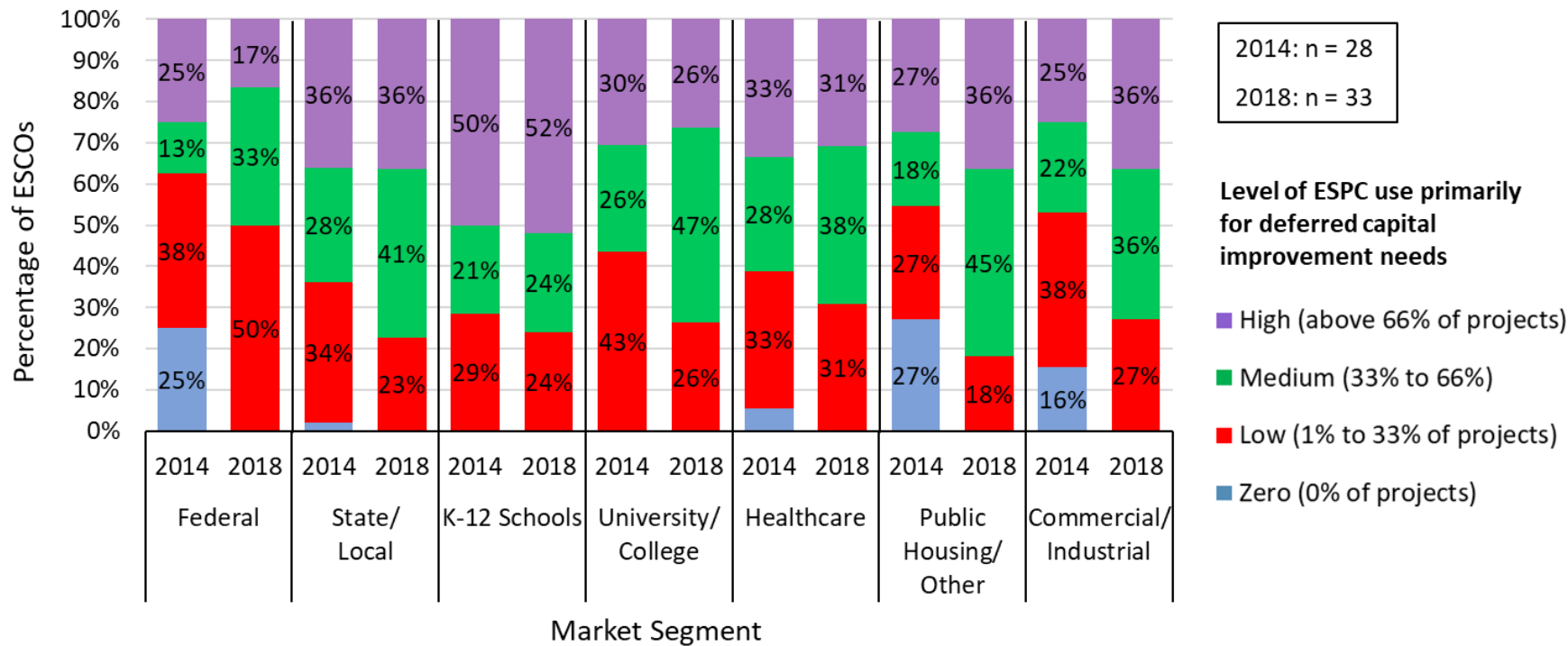
# Major Market Drivers

Government Savings Mandates and Building Needs

# Government mandates, public facility needs, and new funding

- Federal and state legislation requires significant reductions
- New GHG reduction mandates for all federal facilities specify ESPC
- US public facilities need more than \$1 trillion of capital investment
- New federal legislation provides substantial funding for public infrastructure
  - + 3 Stimulus bills in 2020-2021
  - + Infrastructure Investment and Jobs Act (IIJA) in 2021
  - + Inflation Reduction Act (IRA) in 2022
- Potential investment is \$ billions, but there are many new programs with complex rules administered by understaffed federal granting agencies
- States drive the ESCO market through administrative actions
  - + Standardized ESPC project processes and documents
  - + Requirements that state agencies implement all cost-effective ESPCs

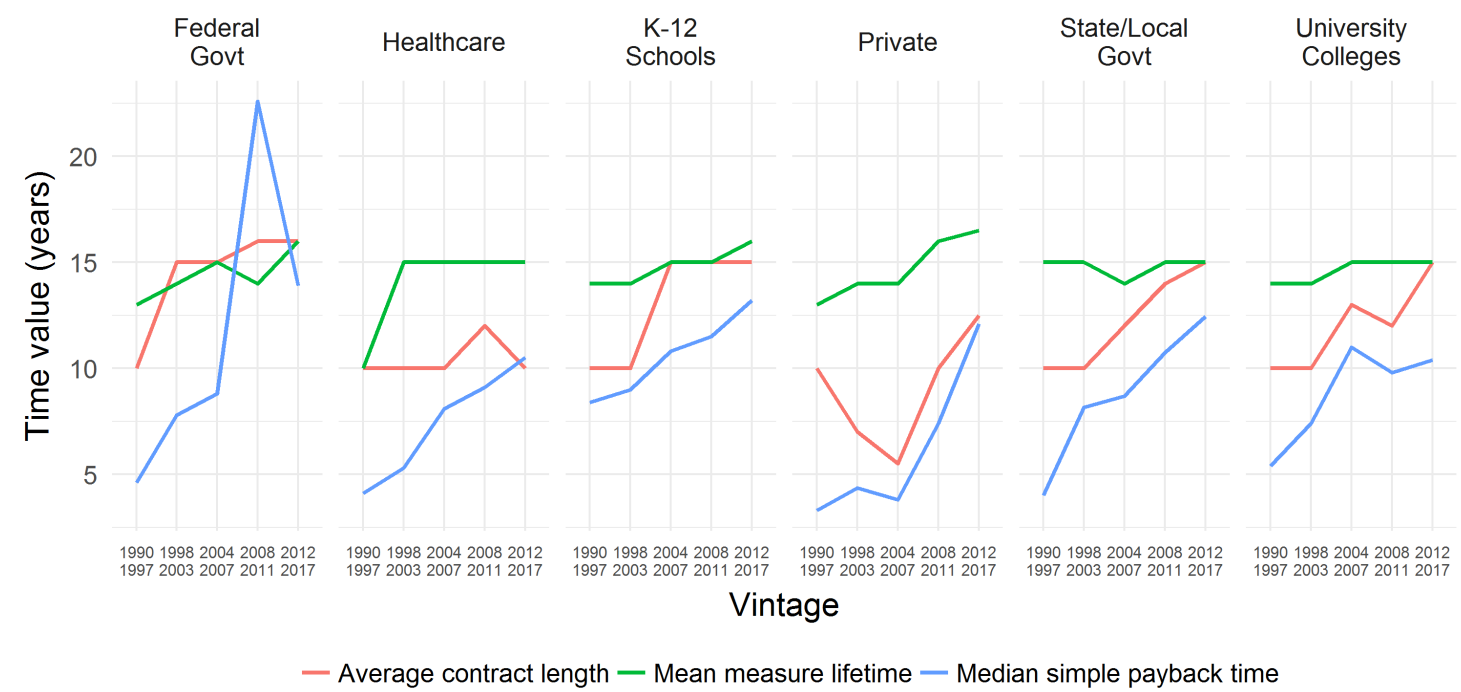
# ESPC for Capital Improvement (2014 vs. 2018)



- 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.
- For 2014, ESCOs answered this question for projects initiated 2012-2014. For 2018, ESCOs answered for projects initiated 2016-2018.

# SPT increase correlates with increase in CL

Growth in Simple Payback Time (SPT) is correlated with increase in contract lengths. Contract Length (CL) may be increasing to allow for project payback during the performance period.



# Role of New Technologies

Adaptation is 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

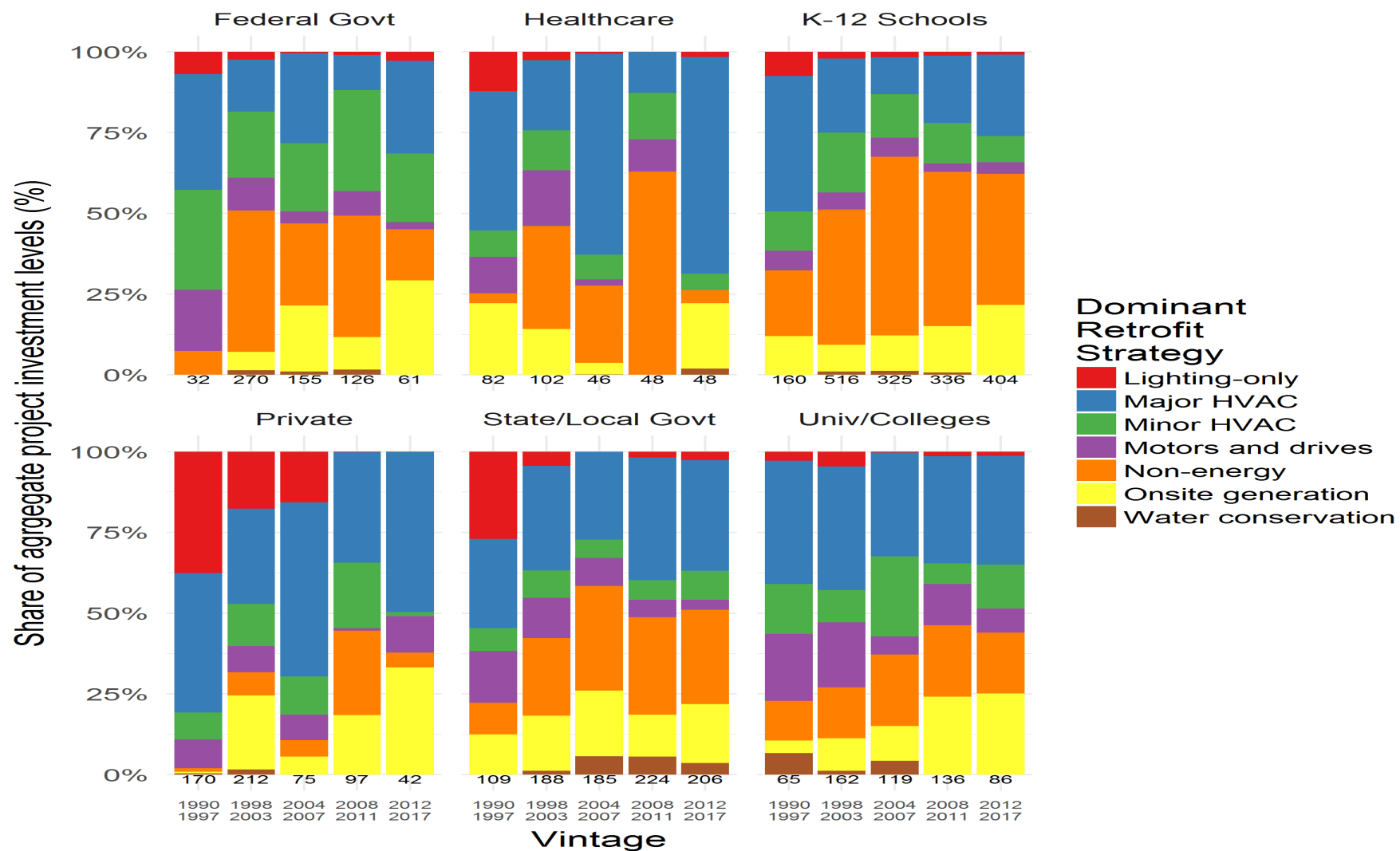
## HVAC and Controls

- 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



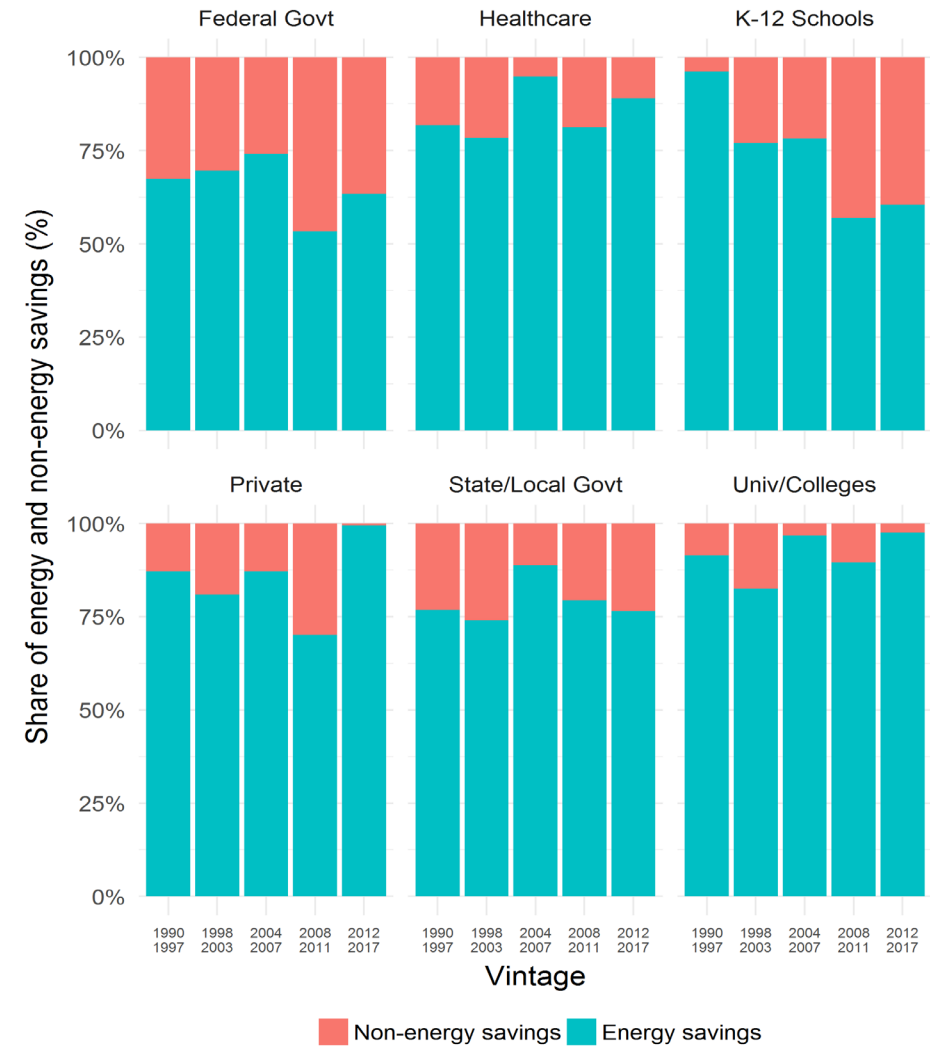
# New Markets

Expand from energy measures to construction

# Design/Build construction projects

- One company designs the project and builds the project
- Alternative to traditional public construction “spec and bid” procurement in which a contractor bids on a specification prepared by an architect or engineering firm
- ESPC is a form of Design/Build
- Some state permit some non-energy measures (NEMs) to be included in an ESPC
  - Usually limited to a small percentage of contract value and/or ancillary to energy measures
  - Example is construction of an outbuilding to house a backup generator
- ESCOs want to expand the list of allowable NEMs and the dollar value
  - Water and wastewater facilities and metering
  - Construction of zero net energy school expansions
- Strong resistance from other construction industry players
  - Architects and engineers
  - General contractors
  - Specialized construction companies (e.g., wastewater facility contractors)

- Reported non-energy savings include savings in O&M expenditures and deferred capital costs from energy efficiency investments
- Non-energy dollar savings are significant and increasing in federal and K-12 Schools



# Risk Management is Key

ESCOs are not in an explosive-growth market

# 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

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# Thank You

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