

U.S. ESCO Industry: Industry Size and Recent Market Trends

Elizabeth Stuart

Nichole Hanus

Juan Pablo Carvallo

Peter Larsen, Principal Investigator

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About this Document

- This is the first time that the periodic LBNL U.S. ESCO industry trends study has been produced as a set of slides.
- LBNL has produced this report on the size and characteristics of the U.S. ESCO industry every 2 – 4 years for the past 20 years.
- We hope to provide annual updates on ESCO industry size and key trends annually in the future, in order to provide timely and useful information to policymakers, ESCOs, their customers, and other stakeholders.

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- All remaining errors are the responsibility of the authors.

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Document Overview

- Definition of an Energy Service Company (ESCO)
- Key Findings
- Background and Approach
- ESCO Market Size and Growth Trends
- Project Trends
- Industry Challenges
- Conclusion

ESCO Definition

- ESCOs are firms that provide energy efficiency-related and other value-added services and for which performance contracting makes up a core part of its energy-efficiency services business.
- In a performance contract, the ESCO guarantees energy and/or dollar savings for the project and ESCO compensation is linked in some fashion to the performance of the project.

ESCO Definition (cont.)

- For purposes of defining the industry scope and estimating industry revenue, we include only those companies that meet our definition of an ESCO...
 - We exclude firms such as HVAC, lighting, windows or insulation contractors; engineering and architectural firms; and mechanical contractors that provide energy efficiency equipment and energy management services but not performance contracts.
 - We exclude companies that provide on-site generation or renewable energy systems without also installing energy efficiency measures and companies that offer energy efficiency services, but typically do not enter into long-term contracts that link compensation to project savings and/or economic performance.
 - Some excluded companies serve as subcontractors to ESCOs and may occasionally engage in performance contracting, but not as a core business.
- We identify companies for whom performance contracting is a core part of its energy efficiency business as those that self-define as an ESCO in our surveys and interviews, and those that clearly indicate on their websites or through public news releases that they offer performance contracting.

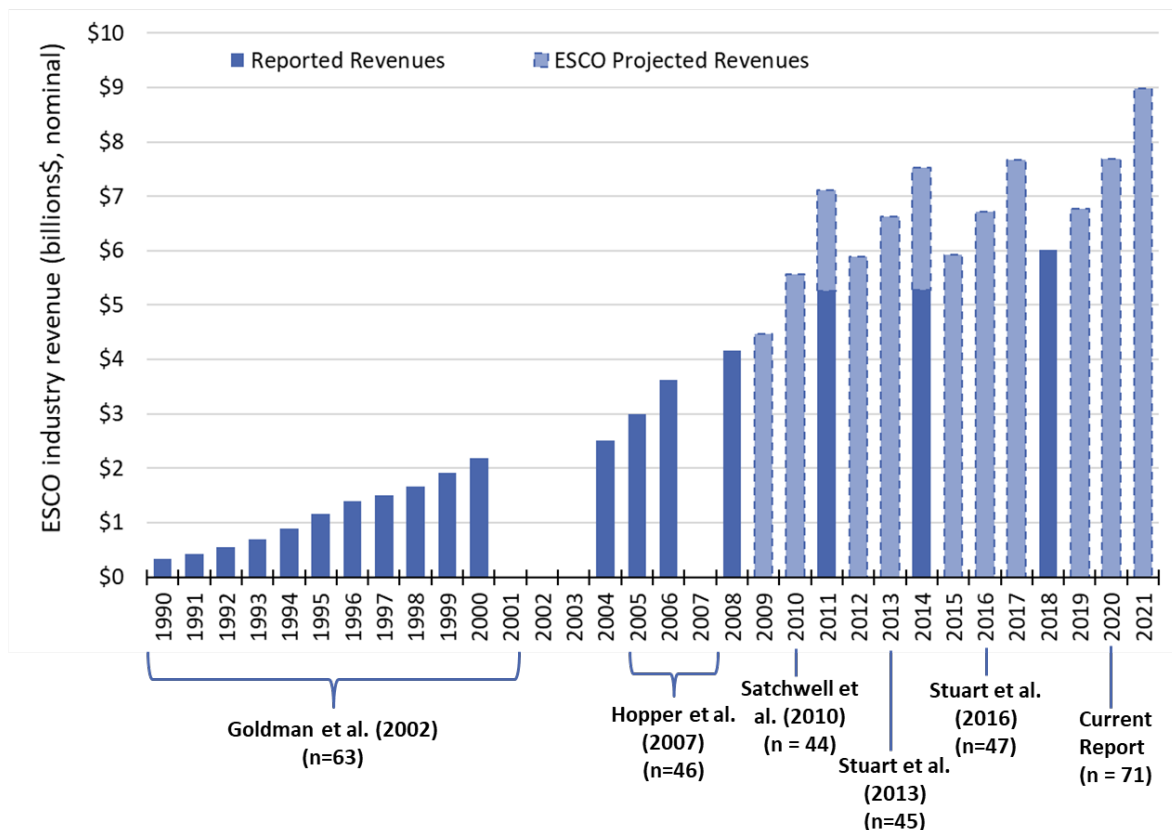
KEY FINDINGS



Key Findings – Industry Size and Growth

- After a period of little growth from 2011-2014, U.S. ESCO industry revenues increased to approximately \$6 billion in 2018.
- These results represent an industry annual growth rate of about 3.4% between 2014 and 2018.
- ESCOs anticipate annual revenues of \$9B in 2021, but ESCOs have tended to be overly-optimistic in past projections.

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



Key Findings – Revenue Trends by Market and Business Activity

- Industry revenue trends by market segment
 - Public and institutional markets accounted for 94% of 2018 ESCO industry revenue, which is consistent with previous studies.
 - K-12 schools represented a significantly larger share (32%) of industry revenue in 2018 as compared to 24% in 2014 and 19% in 2011.
- Industry revenue trends by business activity
 - Performance contracting continues to comprise the vast majority of industry revenue.
 - Performance contracting accounted for 85% of industry revenue in 2018.

Key Findings – Revenue Trends by ESCO Size

- Small ESCOs (annual revenue <\$100M) increased market share significantly, from 16% in 2014 to 22% in 2018.
 - This result reflects a recent increase in new market entrants, which include mechanical contractors expanding their offerings to include performance contracting, and former ESCO employees forming their own companies.
- Medium ESCOs' (\$100M-\$299M) share of industry revenue decreased from 33% in 2014 to 28% in 2018; large ESCO market share remained relatively steady.

Key Findings – Measurement and Verification (M&V) for Non-federal Customers

- More than 70% of ESCO respondents indicated that the M&V offering was of high or medium importance in the ESCO selection process for MUSH (municipal/state, university/college, K-12 schools and healthcare) customers.
- However, many MUSH projects do not contract M&V for the full term of the project financing.
 - The median percentage of state/local, K-12 and university/college projects contracted for the full term of the financing contract range is 50%-60%; the percentage is lower in other market segments.
 - In ~20% of MUSH projects, the customer cancels M&V earlier than the original term, typically after 3 years.

Key Findings – Non-energy Benefits and Resilience in ESPC

- The importance of various non-energy benefits for energy savings performance contracting (ESPC) has increased across all market segments; only tradeable emissions credits decreased in importance.
- A significant number of ESPCs initiated during 2016-2018 were primarily driven by capital improvement needs, rather than utility savings, in all markets except the federal sector.
- Resilience needs were the primary driver for ~26% of federal projects, ~21% of healthcare projects, and 9-10% for state/local government, K-12 schools, and university/college projects.

Key Findings – Incentives and New Customers for ESPC

- ESCOs report that tax incentives¹ are moderately important for enabling projects; however, use of tax incentives declined between 2014 and 2018 for all market segments.
- A majority of ESCOs indicated that ratepayer-funded incentives are of medium or high importance for making projects happen—across all market segments.
- ESCOs reported that 50% of K-12 schools and university/college projects and 70% of state/local projects initiated between 2016-2018 were implemented for new customers.

¹ Tax incentives include 179D, the production tax credit (PTC) and the investment tax credit (ITC)

Key Findings – ESCO Challenges

- Project development times are increasing due to factors that include: complex scopes, ending of of energy efficiency goals, customer staff turnover and lack of executive focus on performance contracting.
- One-third of ESCOs reported having difficulty finding enough qualified contractors, including minority-, women- and disadvantaged population-owned small business enterprise (MWDBE) subcontractors.
- Over 75% of ESCOs reported that at least some non-federal customers require them to justify finance payments several years into a project.
 - However, 25% of ESCO respondents said they or their customers sometimes have trouble locating key project documentation several years into a project.

BACKGROUND AND APPROACH



Selected Berkeley Lab U.S. ESCO Industry Research

- Berkeley Lab has produced reports related to the ESCO industry since 2002.
- This body of research tracks market and project performance trends.

ESCO Market Analyses		ESCO Project Data Analyses	
Report Link	Key Findings	Report Link	Key Findings
Goldman et al. 2005	Decrease in use of utility incentives; enabling policies have supported growth of ESCO industry	Goldman et al. 2002	First study to document savings, costs and economics from large sample of ESCO project results
Bharvirkar et al. 2008	Characterized ESPC and energy efficiency activity in the state government market	Larsen et al. 2012	K-12 schools and other public buildings install capital-intensive, low-energy savings measures to address maintenance backlogs
Satchwell et al. 2010	Sustained ESCO industry growth and focus on performance contracting	Carvallo et al. 2015	Industry-wide electricity and fuel savings total approximately 1% of U.S. commercial building consumption
Stuart et al. 2016	ESCO industry revenue plateaued for the first time	Larsen et al. 2017	Estimated remaining ESCO market technical potential of \$100+ billion
Stuart et al. 2021 (this study)	ESCO industry growing again; reached \$6B in 2018	Carvallo et al. 2019	Project investment per sq. ft. increasing; variety and number of measures increasing

LBNL ESCO Project Databases

□ LBNL/NAESCO Database

- Developed through 20-year collaboration between LBNL and NAESCO
- Contains project-level energy and financial performance data for ESCO projects
- Populated primarily through NAESCO accreditation submissions
- Contains ~6,000 projects installed from 1990 to 2017

□ eProject Builder

- Secure, web-based energy project database and tracking system
- Used by ESCOs and customers to upload project data and preserve project documents, and to report, benchmark and track projects for the life of the performance period
- Required by several accreditation organizations and federal and state ESPC programs
- Contains project- and measure-level data for ~1,800 projects across all market segments

Data Sources

- We collected information from several sources including:
 - ▣ Surveys and interviews with ESCO executives
 - ▣ Company websites
 - ▣ Publicly-available information on corporations' financial performance
 - ▣ A Delphi process with industry experts
 - ▣ Data from previous LBNL studies on ESCO industry trends and project performance
 - ▣ The eProject Builder web-based energy project database
 - ▣ The LBNL/National Association of ESCOs (NAESCO) database of projects
- The primary source of 2018 ESCO industry revenue information came from surveys and interviews with ESCO executives conducted during the fall of 2019 and first half of 2020.

Method

- We developed an initial list of 140 energy services firms that might meet our ESCO definition, drawing from a range of sources, including the following:
 - ▣ U.S. DOE list of qualified energy service providers
 - ▣ State government performance contracting programs' lists of pre-qualified ESCOs
 - ▣ Members of the Energy Services Coalition and NAESCO
 - ▣ Online research with follow-up email and phone communication to identify new performance contractors
 - ▣ Energy services companies that requested accounts or training for eProject Builder
 - ▣ ESCOs identified in previous LBNL studies

- We conducted market research and conferred with industry experts to determine which firms were still in business, were not subsidiaries of other respondent ESCOs and that offered performance contracting as a core business.

ESCO Response Rate

- This process resulted in the identification of 71 ESCOs that met our criteria and are still actively working in the U.S.
- 57 of the 71 firms responded to our request for information, representing an 80% response rate.
- We employed a Delphi process with industry experts to estimate 2018 annual revenues for the 14 non-respondent companies.

ESCO response rates for four LBNL ESCO market studies

Year	Respondent ESCOs	Response Rate
Satchwell et al. (2010)	29 of 38	76%
Stuart et al. (2013)	35 of 45	78%
Stuart et al. (2016)	43 of 47	91%
Stuart et al. (2021)	57 of 71	80%

ESCO Response Rate (cont.)

- This table presents the response rates for key survey questions used to calculate the study results. Some results require multiple question responses. For example, in order to calculate 2018 revenue by business activity and market segment, the respondent must have answered questions 4.a, 5.a, and 5.b.
- The highlighting in the table below indicates questions with the lowest response rates.

Survey Question	Number of Reported or Estimated Responses	Response Rate
4a. 2108 revenue from energy services	71	100%
4c. Projected growth (2019-2021)	54	76%
5a. Share of revenue by market	54	76%
5b. Share of revenue by business activity	50	70%
6a. Share of revenue by census region	61	86%
8b. Non-fed projects, M&V term across markets	41	58%
8c. Non-fed projects, cancelled M&V	28	39%
8d. Non-fed projects, M&V importance	45	63%
9a. Percentage of projects using tax credits	46	65%
9b. Importance of tax credits	46	65%
9c. Percentage of projects using ratepayer-funded incentives	46	65%
9d. Importance of ratepayer funded incentives	46	65%
9e. Financing methods	39	55%
10a. Incorporation of non-energy benefits	29	41%
10b. Primary ESPC motivation	33	46%
10c. Resilience measures implemented	26	37%
11a. Percent of projects for new customers	46	65%

Approach to Addressing Data Gaps

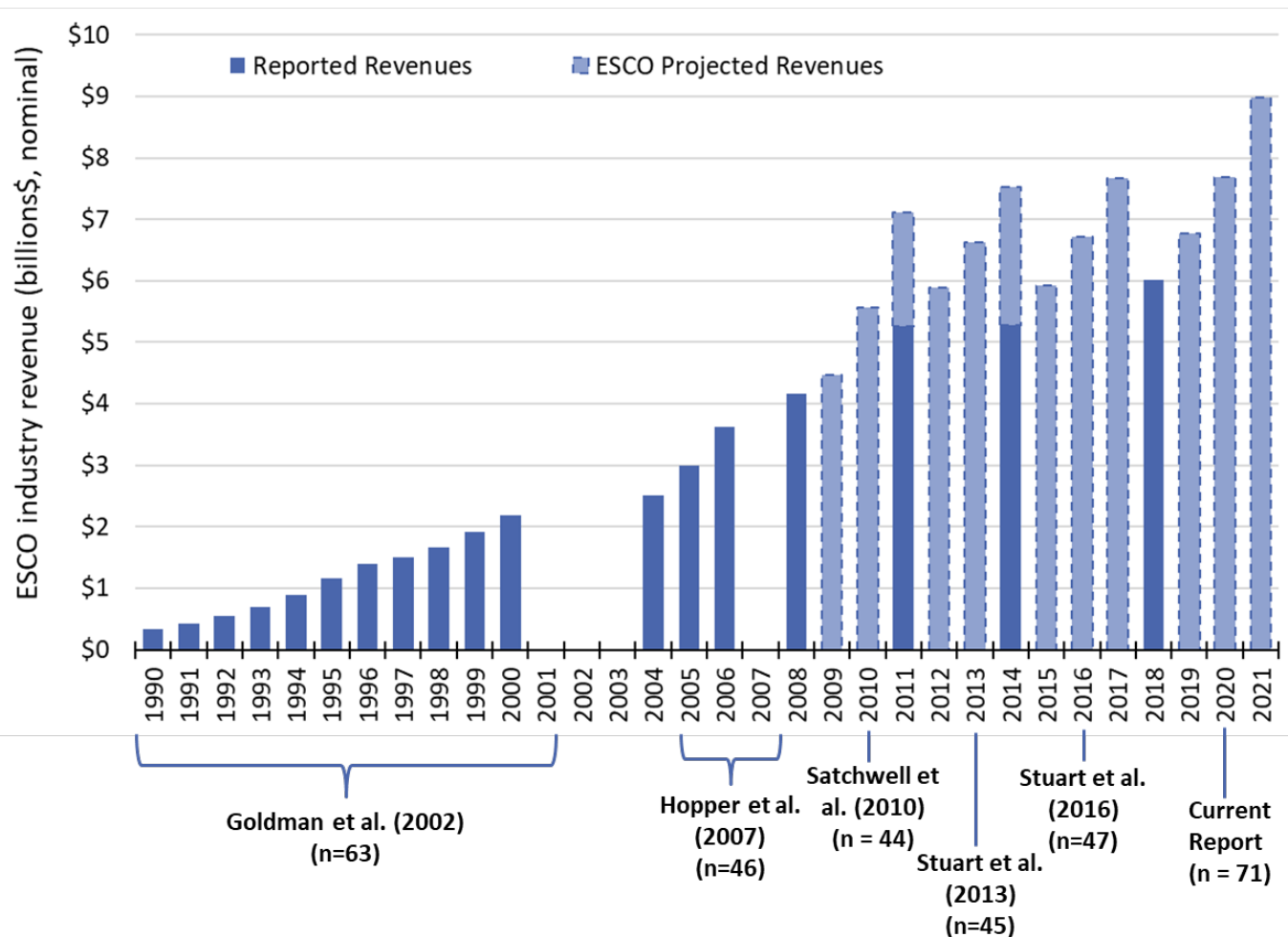
- Three (3) larger ESCOs who provided responses for past studies did not provide responses this time. We addressed the data gaps as follows:
 - Consulted with experts in a Delphi process to estimate their 2018 annual revenue
 - Performed correlation analyses across all ESCOs who responded to both the 2014 and 2018 surveys to determine that it was appropriate to use these companies' reported 2014 revenue breakouts by market segment and business activity for 2018
- The correlation analysis followed these steps:
 - We identified the subgroup of 27 ESCOs that responded to both the 2014 and 2018 surveys.
 - We extracted from each survey each ESCO's response to the market segment share. This collection of values is called the market segment vector.
 - We calculated the correlation between the market segment vectors for 2014 and 2018. If market strategy has not changed, we expect a relatively high correlation (above 50%). If the market share breakouts had changed, we would expect a low or negative correlation.
 - 22 out of the 27 ESCOs showed a relatively high correlation between their 2014 and 2018 market share vectors. This suggests that over a 3-4 year period, the percent of revenue by market tends not to change significantly and the 2014 market segment share represents the 2018 market segment share relatively well.

ESCO MARKET SIZE AND GROWTH TRENDS



Historic Revenue and Industry Growth Projections

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



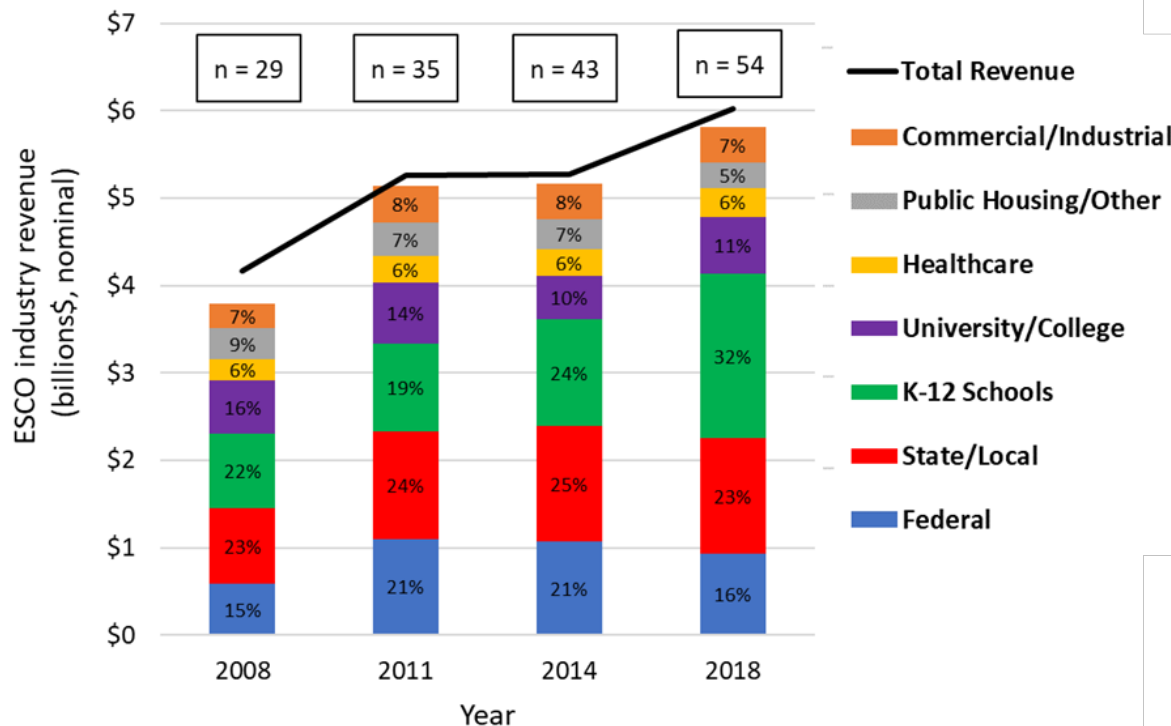
- ESCOs reported aggregate industry revenue of \$6 billion for 2018.
- After stagnant growth, revenue grew by a total of 14%, or 3.4% annually during 2015-2018.
- ESCO projections indicate the industry anticipates annual revenue of \$9B in 2021, but ESCOs tend to be overly-optimistic about future growth.

Revenue Trends by Market Segment

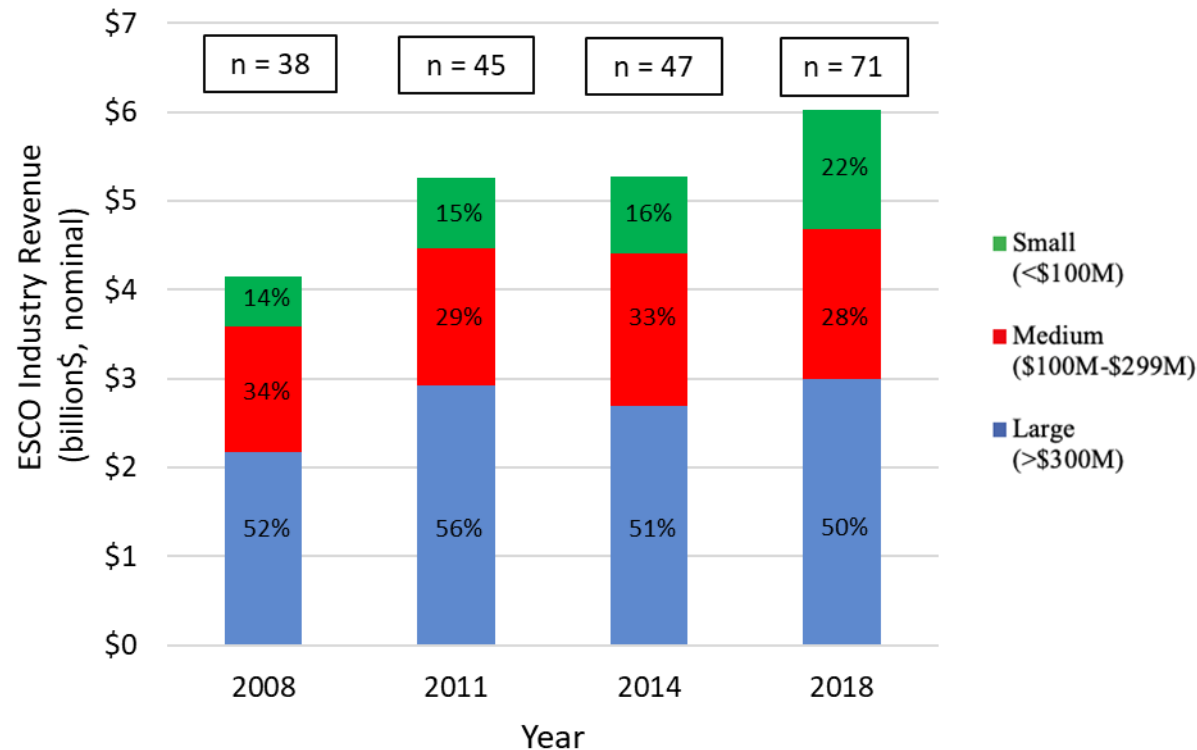
2018 ESCO industry revenue by market segment

Market Segment	Share of Total Revenue	2018 Revenue (\$ million)
K-12 Schools	32%	\$1,883
State/Local	23%	\$1,311
Federal	16%	\$936
University/College	11%	\$657
Healthcare	6%	\$324
Commercial/Industrial	7%	\$409
Public Housing/Other	5%	\$288
SUBTOTAL (n=51)	100%	\$5,809
Non-respondents (n=20)	-	\$209
TOTAL		\$6,018

- 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.



Share of Industry Revenue by ESCO Size



- Small ESCOs accounted for 22% of 2018 revenue, up from 16% in 2014. This may partially be a function of a relatively higher number of responses from small ESCOs this time; industry experts say it also indicates an increase in new market entrants.
- Large ESCOs made up about 50% of industry revenue in both 2018 and 2014, which is slightly down from previous reports.

Market share of total ESCO revenues by the eight largest companies

Year	% of Total Market Revenue	Revenue (\$ million)
2018	59%	\$3,572
2014	60%	\$3,178
2011	70%	\$3,707
2008	76%	\$3,137
2006	79%	\$2,867

- The largest eight ESCOs made up 59% of total estimated industry revenue in 2018; down slightly from 60% in 2014.
- ESCOs included in this top 8 list may have changed over time.

Industry Revenue Growth Trends by ESCO Size

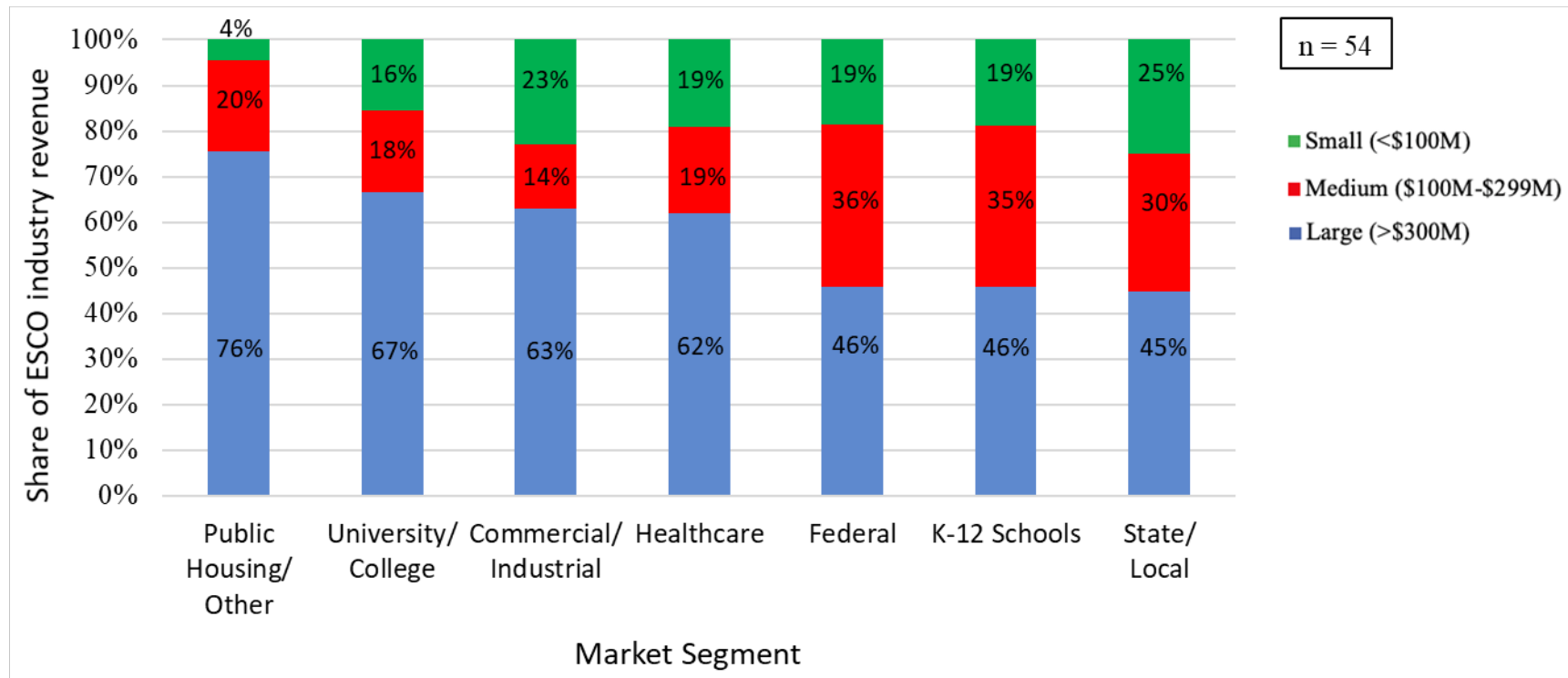
- We calculate aggregate average annual growth rates by ESCO firm size—small (<\$100M annual revenue), medium (\$100M-\$299M) and large (>\$300M) — as indicated by their annual revenues.
- For the 2015-2018 period, aggregate revenue for the small ESCOs grew an average of 2.7% annually, while aggregate medium ESCO revenue grew an average of 11% annually.
- The long-term (2008-2018) annual growth rates across ESCO sizes ranged from 2.2% to 6%.

Average annual growth rates (nominal) by size of ESCO*

ESCO Size	Aggregate Average Annual Growth Rate 2008-2011	Aggregate Average Annual Growth Rate 2011-2014	Aggregate Average Annual Growth Rate 2015-2018	Aggregate Average Annual Growth Rate 2008-2018
Small (<\$100M annual revenue)	16.7% (n=15)	1.3% (n=15)	2.7% (n=13)	6.0% (n=9-15)
Medium (\$100M-\$299M)	12.1% (n=9)	-12.4% (n=9)	11.0% (n=9)	2.6% (n=7-9)
Large (>\$300M)	6.6% (n=4)	0.8% (n=6)	0.0% (n=6)	2.2% (n=4-6)

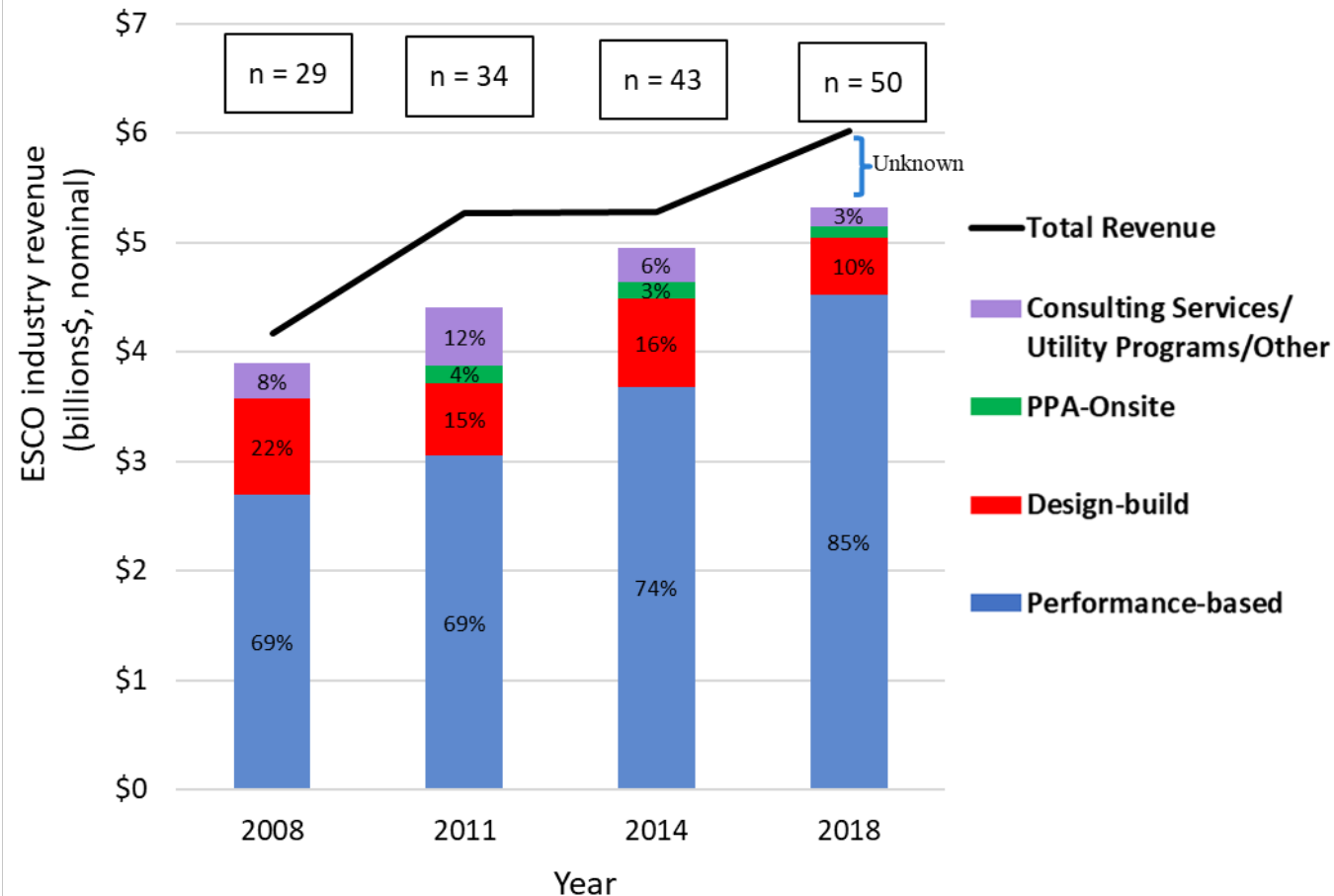
*Aggregate annual growth rates are calculated for only those ESCOs that have participated in at least three of the four surveys in the past decade.

2018 Revenue by Market Segment and ESCO Size



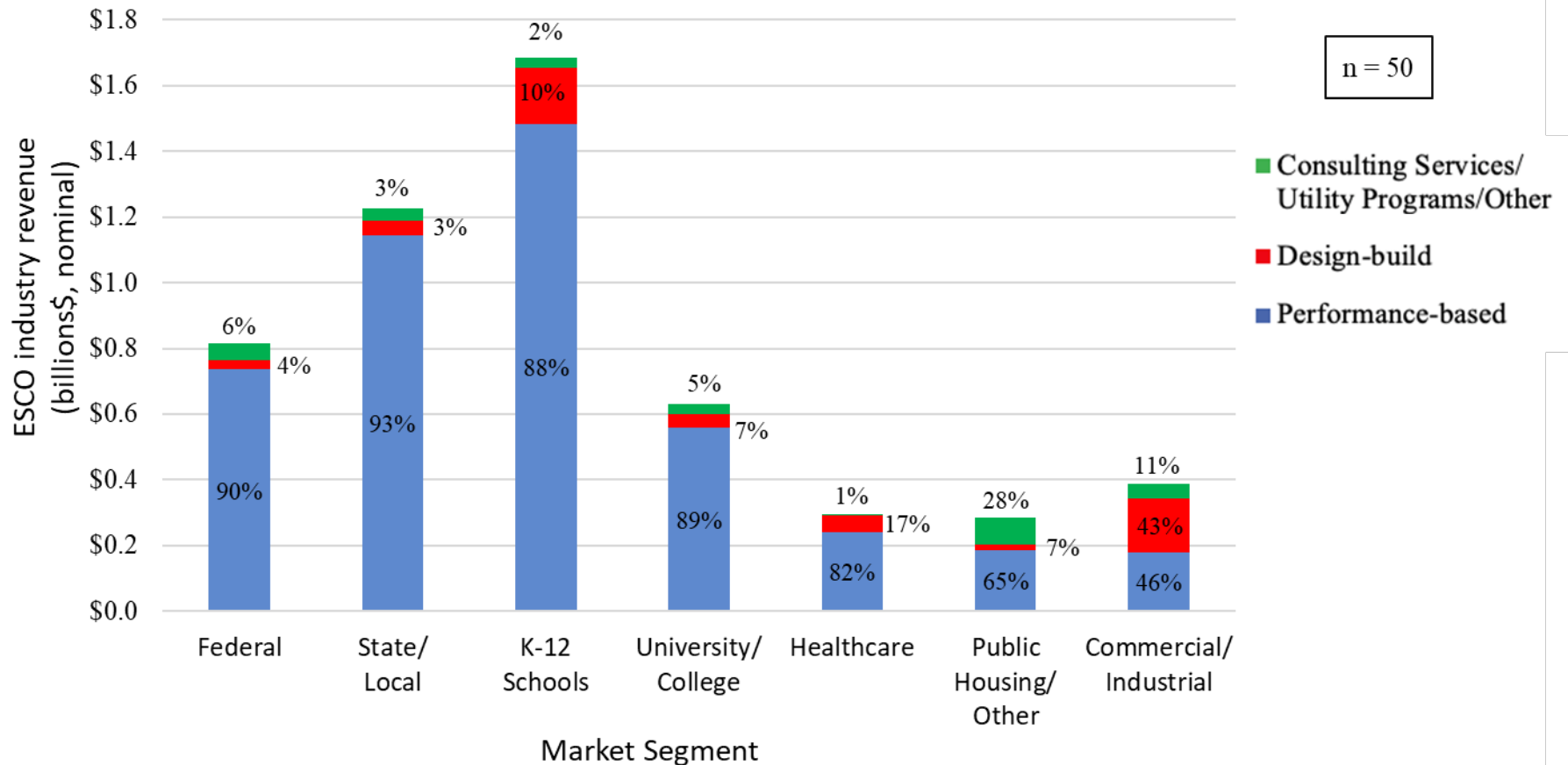
- Large ESCOs accounted for a significant majority of industry revenues in the public housing, university/college, commercial/industrial, and healthcare market segments.
- Medium ESCOs accounted for more than 33% of industry revenue from K-12 schools and federal market segments.
- Small ESCOs accounted for about 25% of industry revenues in the commercial/industrial and state/local market segments.

Revenue Trends by Business Activity



- Performance-based contracting has consistently made up the vast majority of industry revenue.
- In 2018, performance-based contracts made up 85% of industry revenue.
- We do not know the breakout by business activity for about \$700M of total industry revenue.

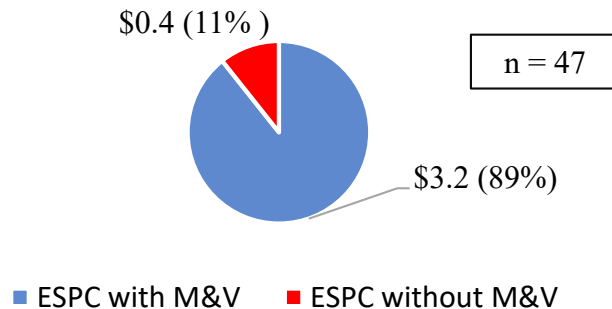
2018 Revenue by Business Activity and Market Segment



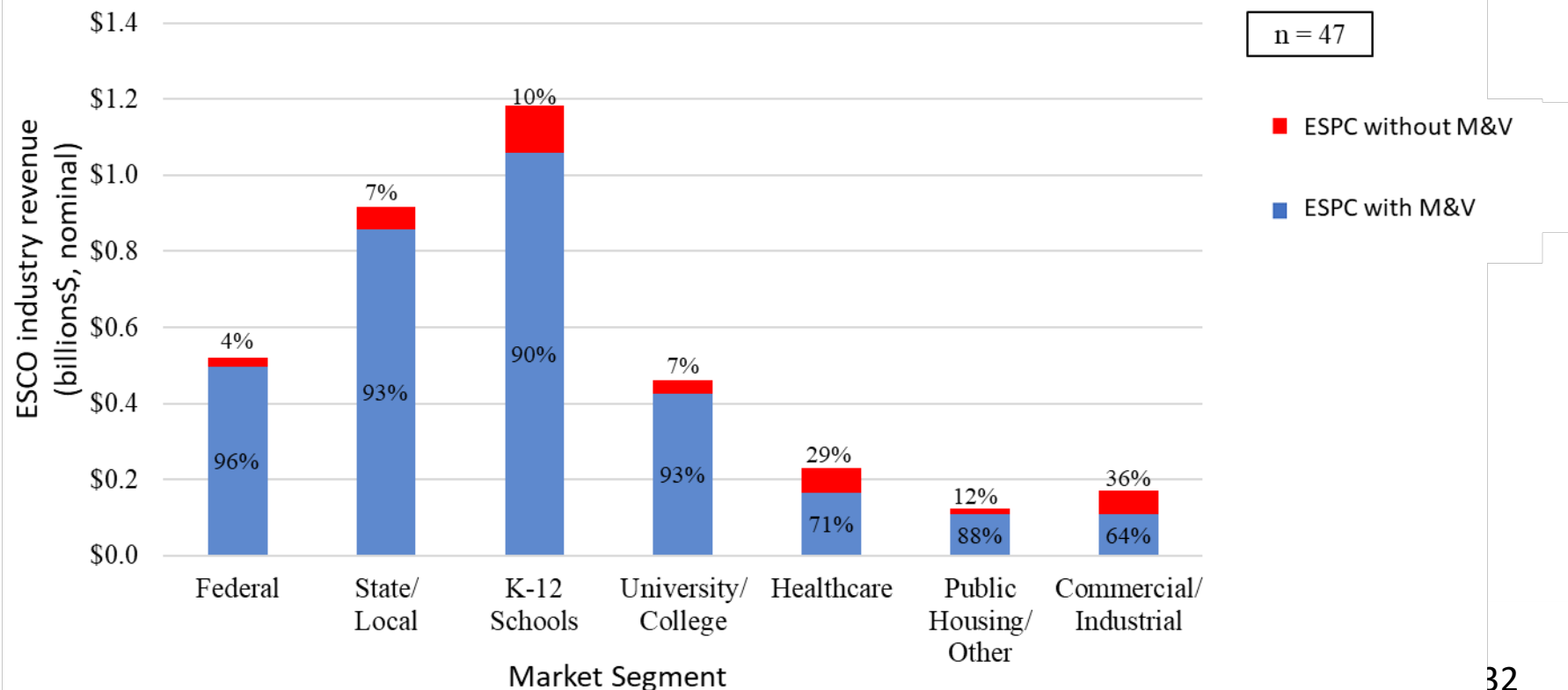
- Performance contracting accounted for the majority of 2018 industry revenue across all market segments, except for the commercial/industrial market segment.
- The commercial/industrial market segment was split fairly evenly between design-build and performance-based contracting.

2018 Revenue from ESPC with and without M&V

ESPC Revenue (billions\$, nominal)



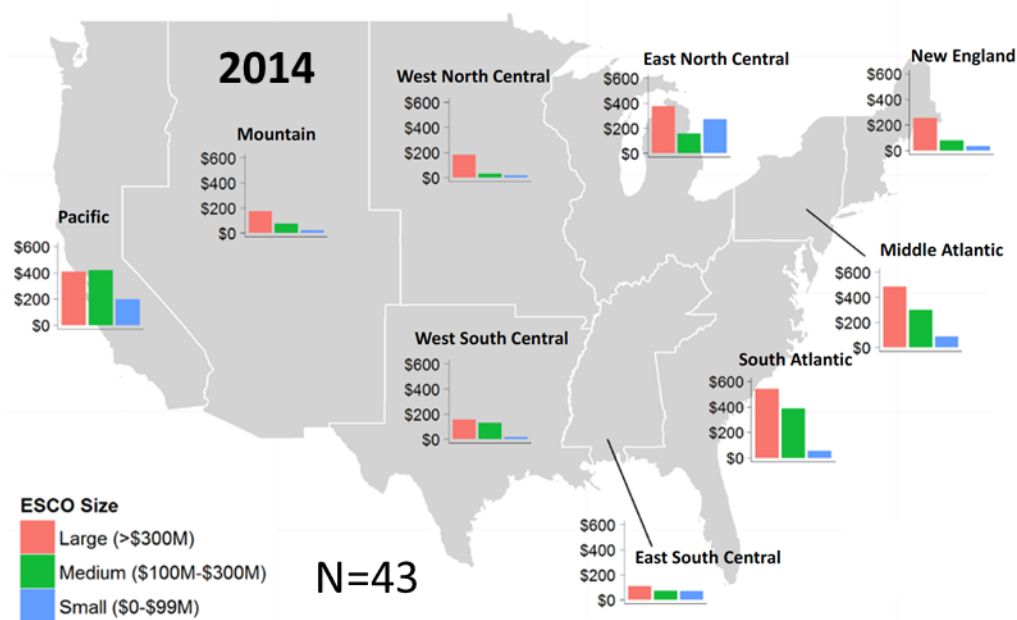
- For the first time, we asked ESCOs to report share of revenue from energy savings performance contracting (ESPC) that did and did not involve measurement and verification (M&V).
- Over 90% of revenue from performance contracting projects in the federal, state/local, K-12 schools and university/college market segments included M&V.
- Roughly 1/3 of ESPC revenue from healthcare and commercial/industrial projects did not require M&V.



2018 Revenue by U.S. Census Region

U.S. Census Region	States	Total 2018 Revenue (\$M)	Count of ESCOs Reporting Revenue for Region	Large ESCOs 2018 Revenue (\$M) (% Share of Region)	Medium ESCOs 2018 Revenue (\$M) (% Share of Region)	Small ESCOs 2018 Revenue (\$M) (% Share of Region)
New England	CT, MA, ME, NH, RI, VT	\$548	19	\$235 (43%)	\$260 (47%)	\$53 (10%)
Middle Atlantic	PA, NJ, NY	\$1,055	22	\$459 (44%)	\$318 (30%)	\$278 (26%)
South Atlantic	DE, DC, GA, FL, MD, NC, SC, VA, WV	\$628	24	\$214 (34%)	\$216 (34%)	\$199 (32%)
East South Central	AL, KY, MS, TN	\$340	18	\$129 (38%)	\$109 (32%)	\$101 (30%)
West South Central	AR, LA, OK, TX	\$358	19	\$139 (39%)	\$98 (27%)	\$121 (34%)
East North Central	IL, IN, MI, OH, WI	\$782	29	\$294 (38%)	\$281 (36%)	\$207 (27%)
West North Central	IA, KS, MN, MO, ND, NE, SD	\$432	16	\$285 (66%)	\$85 (20%)	\$62 (14%)
Mountain	AZ, CO, ID, MT, NV, NM, UT, WY	\$373	17	\$165 (44%)	\$137 (37%)	\$71 (19%)
Pacific	AK, CA, HI, OR, WA	\$647	22	\$286 (44%)	\$184 (28%)	\$177 (27%)
Subtotal – All Regions		\$5,162	63	\$2,205 (43%)	\$1,687 (33%)	\$1,270 (25%)
Unknown		\$856				
Total – All Regions and Unknown		\$6,018	63	\$2,205	\$1,687	\$1,270

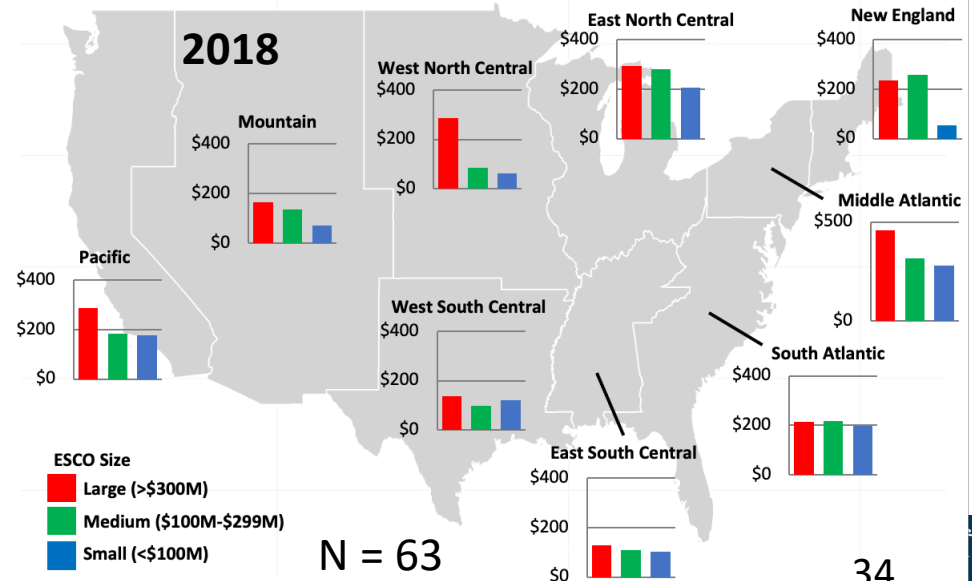
Revenue by U.S. Census Region - 2014 vs. 2018



- In both 2014 and 2018, the Middle Atlantic, East North Central, and Pacific regions tended to deliver the highest share of revenue.
- However, in 2014, the South Atlantic appeared to be more dominant than it was in 2018.
- In 2014, large ESCOs tended to capture most of the regional revenues; revenue shares by ESCO size varied more in 2018.

Caveats to the 2018 data:

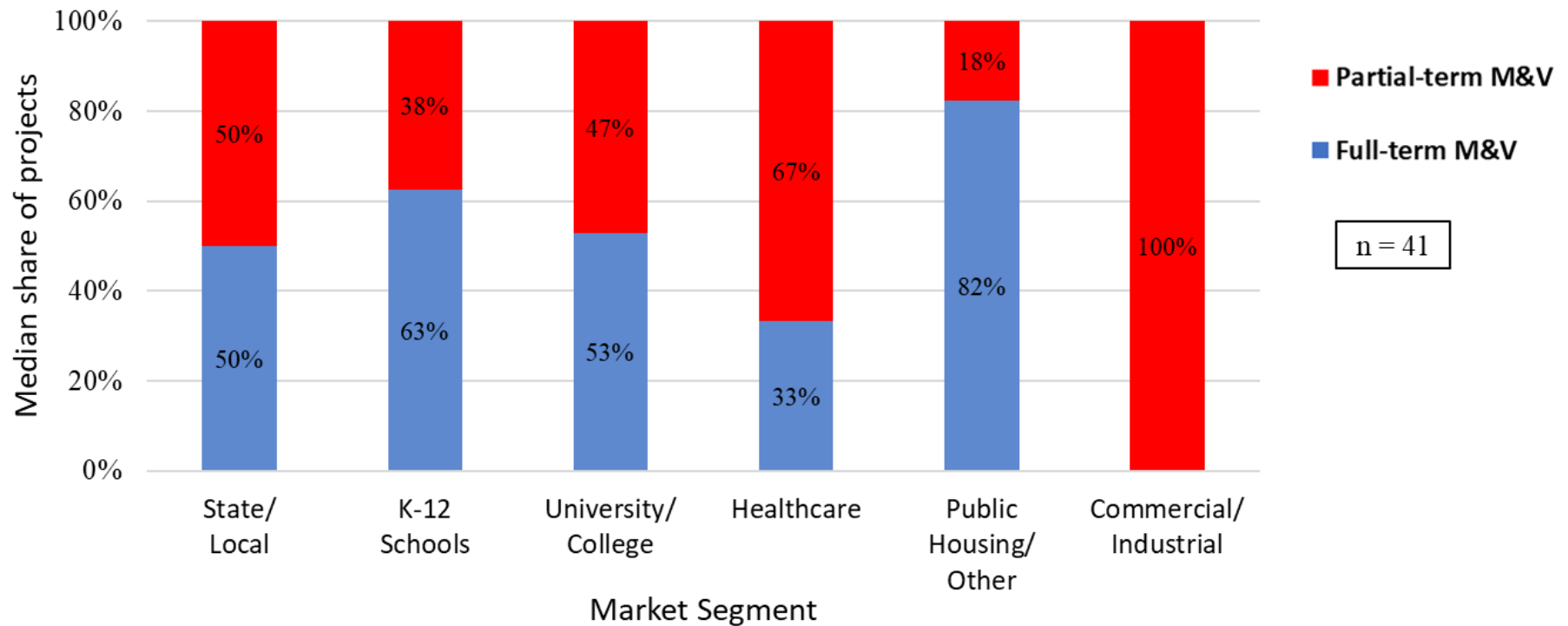
- For 2018, only \$5.2B (86%) of the \$6B industry revenue estimate is depicted in the map.
- In contrast, \$5.2B (98%) of the \$5.3B 2014 industry revenue estimate is depicted in the 2014 map.



PROJECT TRENDS

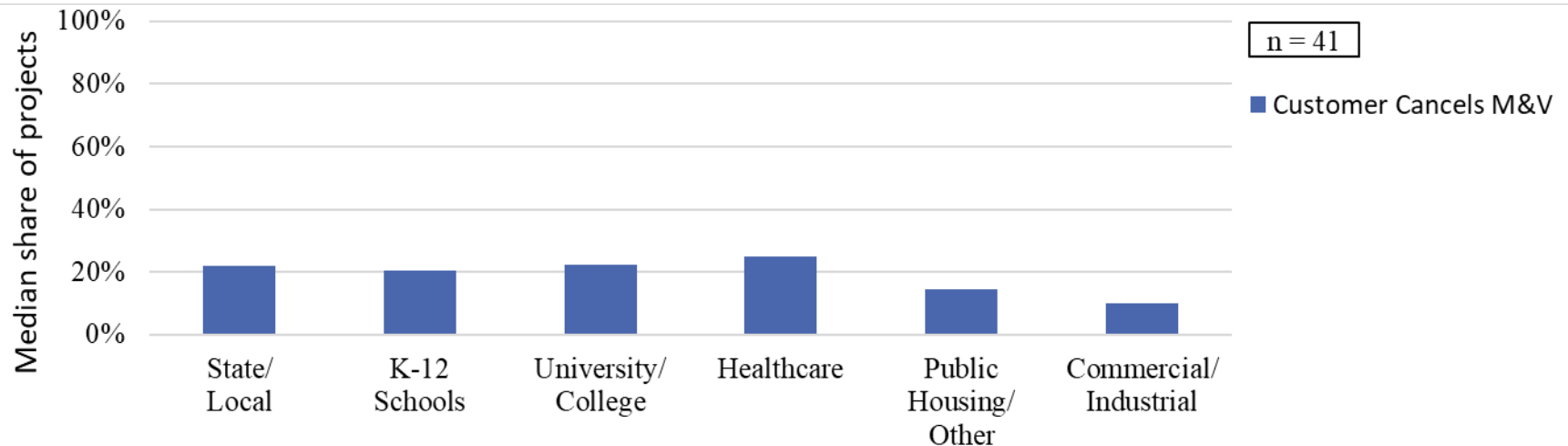


M&V Term for Non-federal ESPC



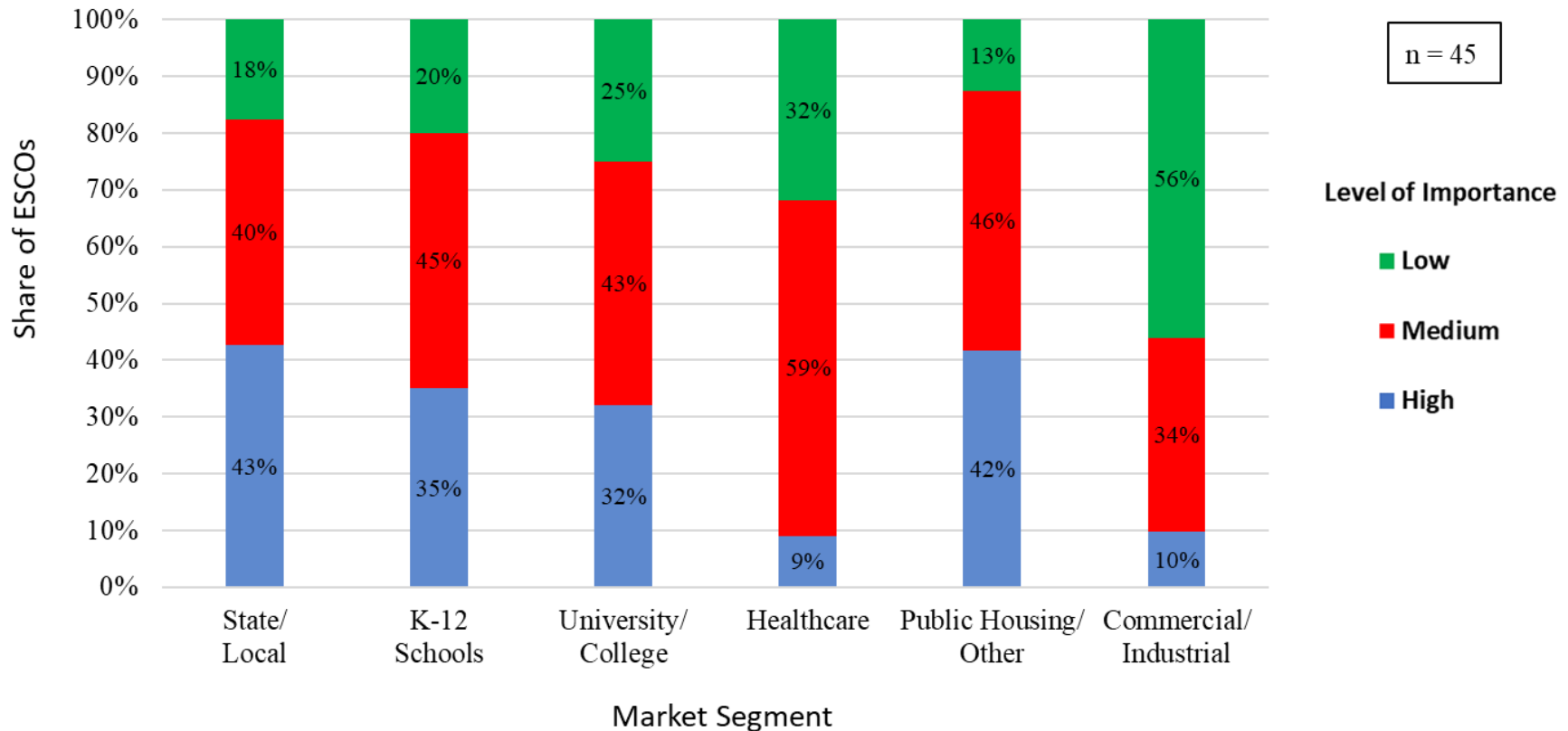
- We asked ESCOs to estimate the percentage of their non-federal ESPC projects with M&V for which their company typically delivers M&V for the full-term or partial-term of the performance/financing contract.
- The percentage of projects typically contracted for full term ranges from 50% to 60% in the state/local government, K-12 schools, and university/college market segments.

M&V Cancellation by Non-Federal Customers



- ESCOs reported the percentage of non-federal projects in which the customer cancels M&V early.
- 20%-25% of projects for the state/local, K-12 schools, university/college and healthcare market segments cancel M&V early.
- ESCOs also reported the number of years they typically deliver M&V before the customer cancels.
- The typical number of years that the ESCO delivers M&V before the customer cancels are:
 - 1 year - Commercial/Industrial
 - 3 years - State/Local Government, K-12 Schools, and Healthcare
 - 4 years - University/College
 - 5 years - Public Housing/Other

M&V Importance for Non-Federal ESPC Customers

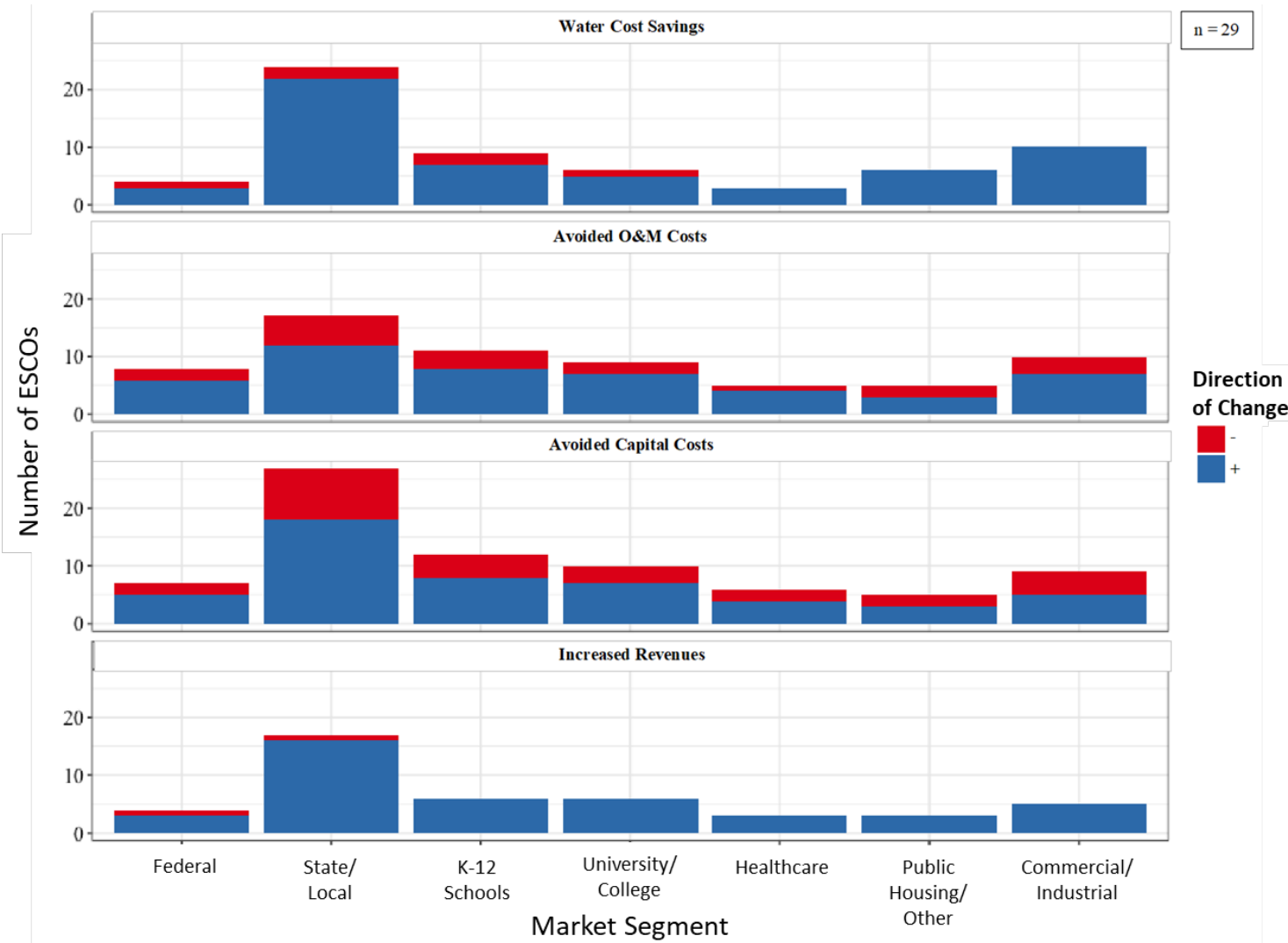


- We asked ESCOs to indicate the importance of the ESPC M&V offering as an ESCO selection factor for various market segments.
- More than 70% of ESCOs indicated that the M&V offering was of high or medium importance for selecting an ESCO in the state/local, K-12, university/college and public housing/other segments.

Non-federal Customer Review of M&V Reports

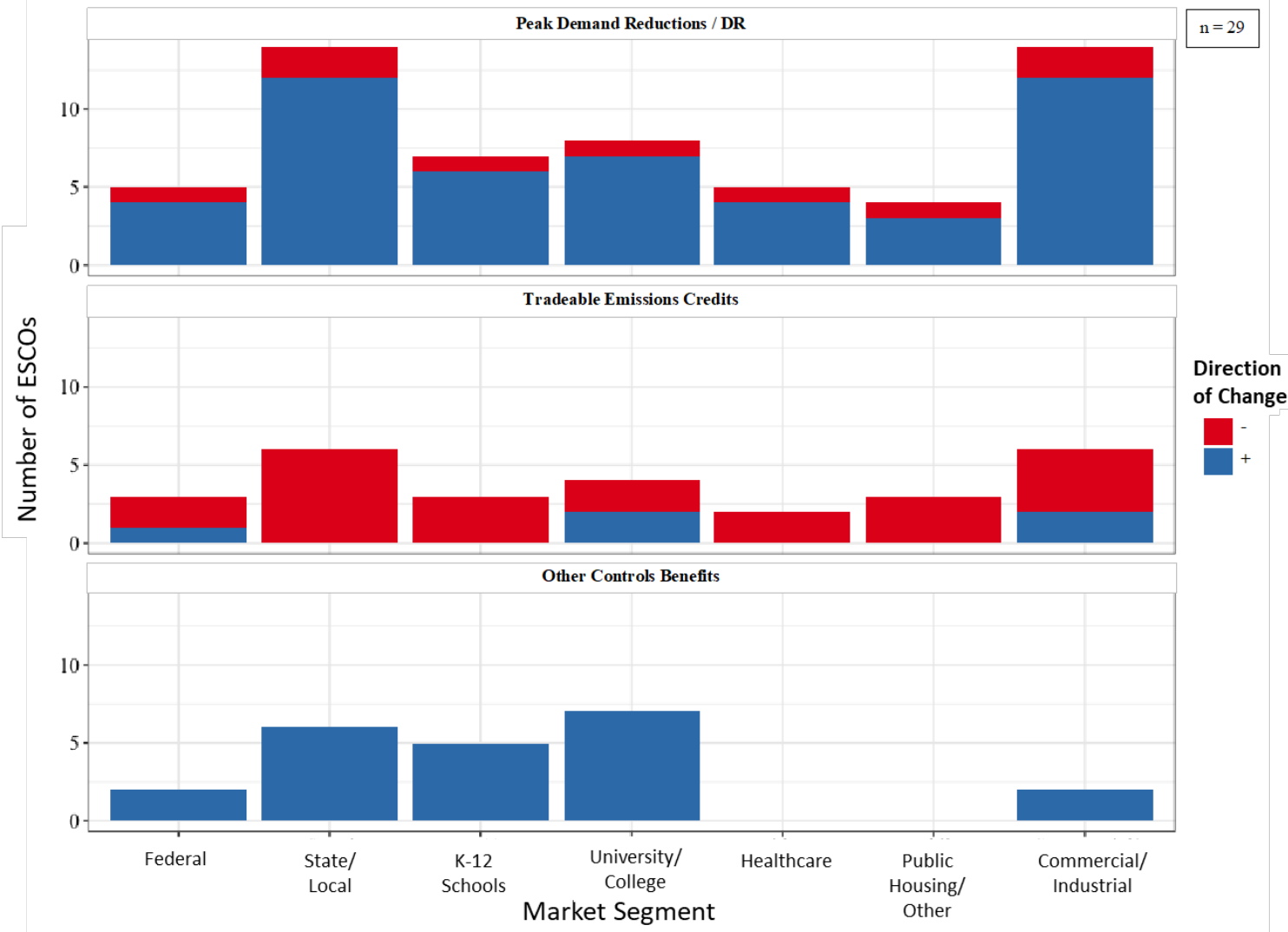
- We asked ESCOs what percentage of non-federal customers, or their third-party consultants, regularly review the provided M&V reports.
- Only 9% of ESCO respondents reported that all of their non-federal customers review M&V reports.
- 48% of respondents said that between 50% and 80% of their non-federal customers review M&V reports.
- 42% of respondents answered that between 0% and 30% of their non-federal customers review M&V reports.

Increasing (+) or Decreasing (-) Importance of Non-energy Benefits for ESPC Projects Initiated 2016-2018



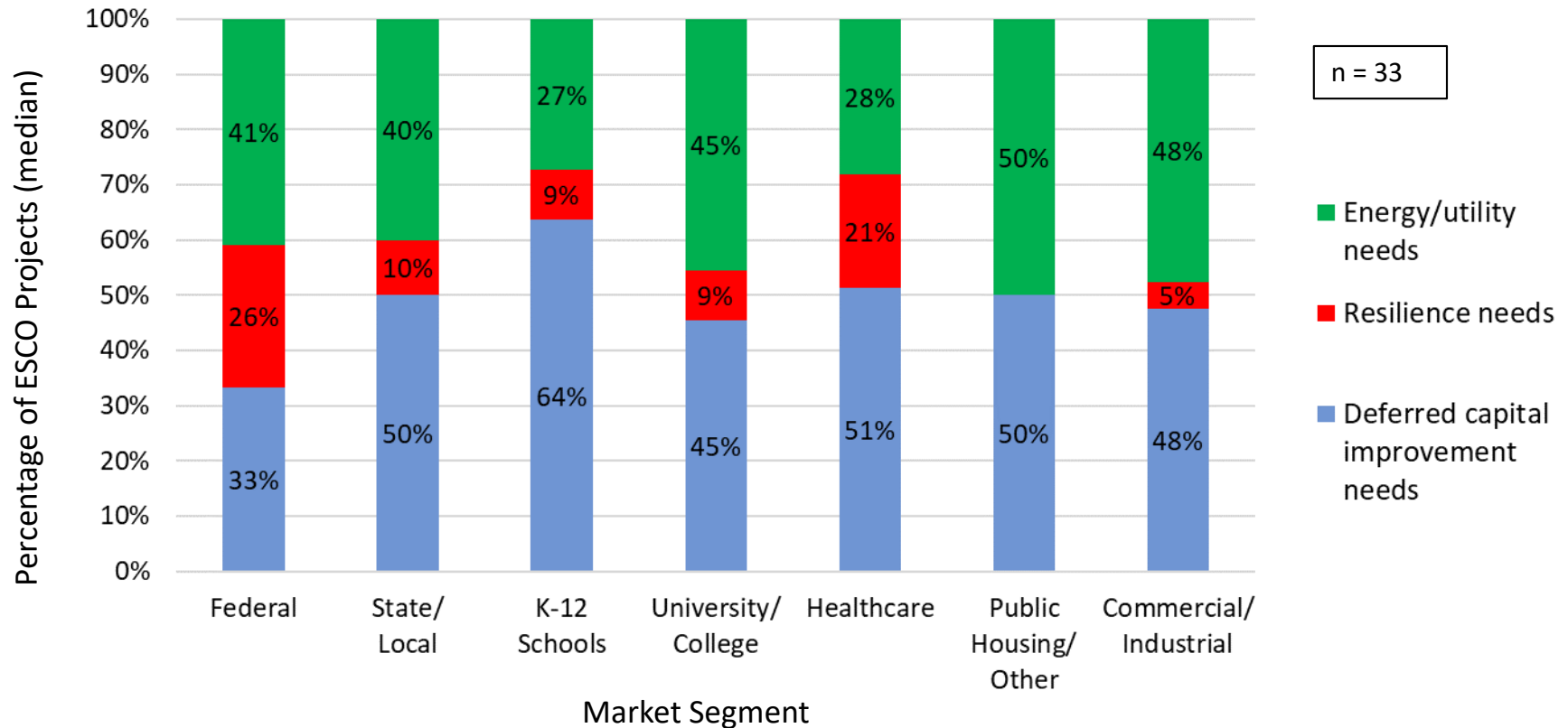
- We asked ESCOs to indicate whether the importance of various non-energy benefits increased or decreased for projects initiated during 2016-2018.
- A majority of ESCOs reported that for all market segments, the importance of all of the non-energy benefits shown here has increased across all market segments.

Increasing (+) or Decreasing (-) Importance of Non-energy Benefits for ESPC Projects Initiated 2016-2018



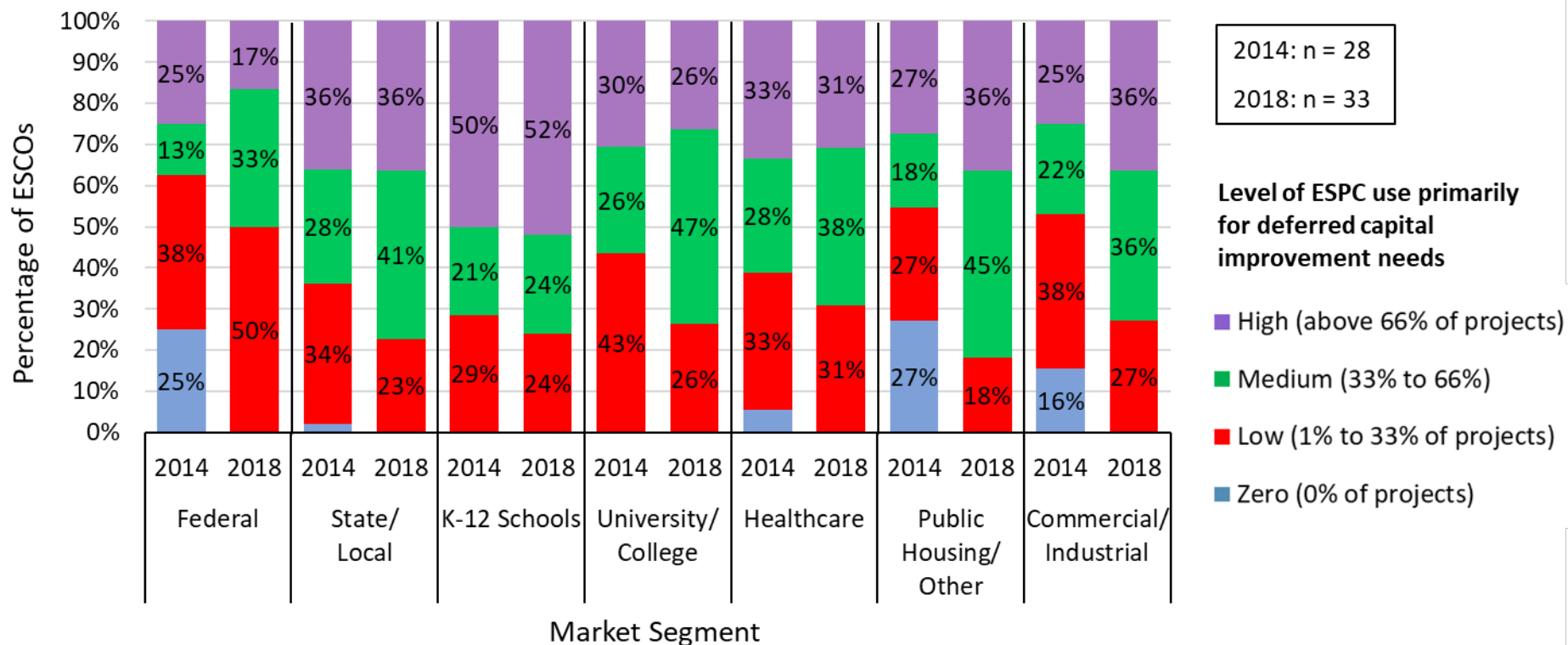
- Most ESCOs reported that the importance of tradeable emissions credits *declined* across all market segments except for university/college projects, where half of the ESCOs reported that emissions credits *increased* in importance.

Capital Improvement and Resilience as Primary ESPC Motivation – Projects Initiated 2016-2018



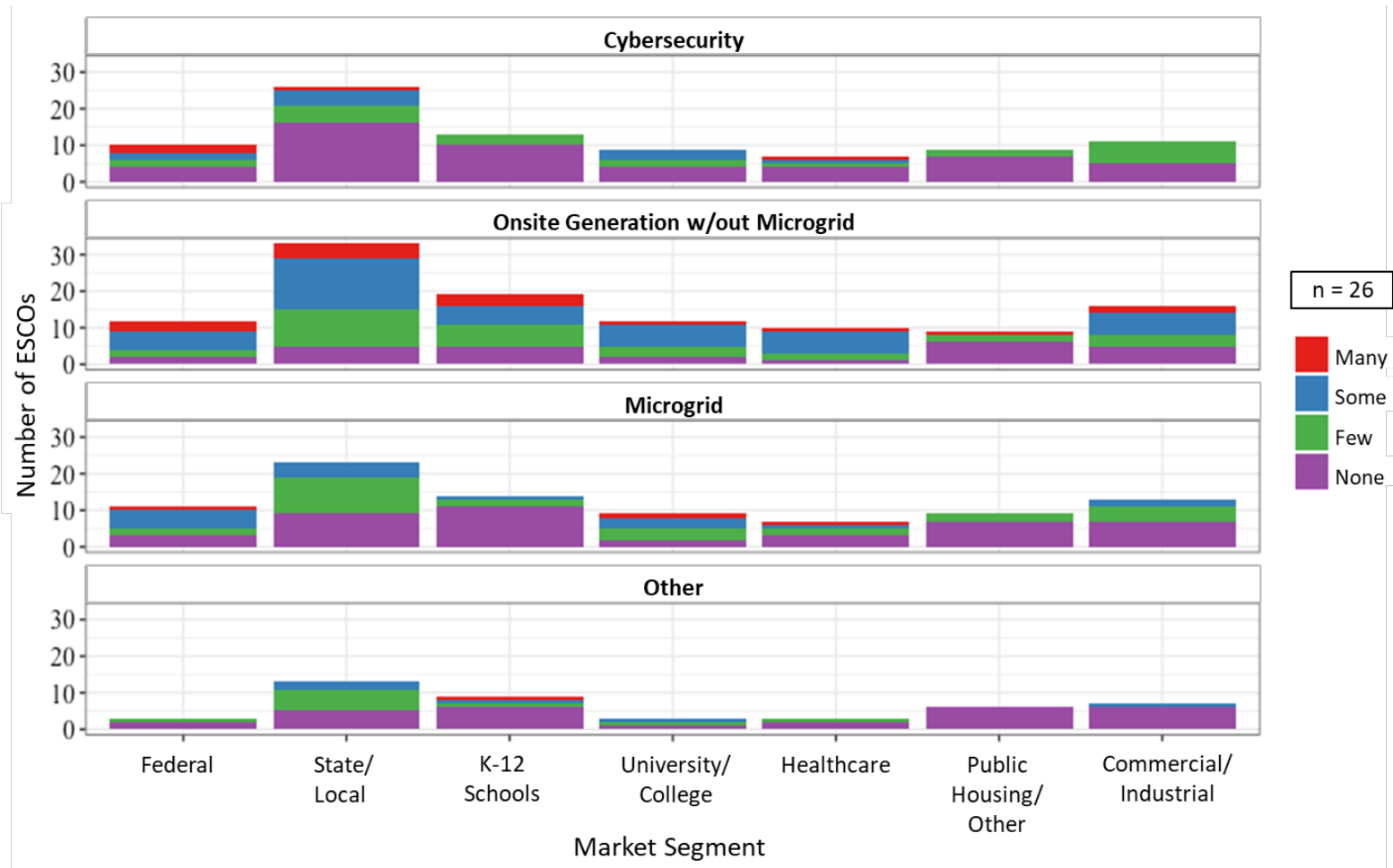
- ESCOs indicated that 50% or more of projects initiated in 2016-2018 in the state/local government, K-12 schools, healthcare, and public housing sectors were primarily motivated by deferred capital improvement needs.
- Resilience needs drove a significant number of projects in federal and healthcare facilities.
- Energy/utility needs were the biggest drivers in projects in the public housing/other sector.

ESPC for Capital Improvement (2014 vs. 2018)



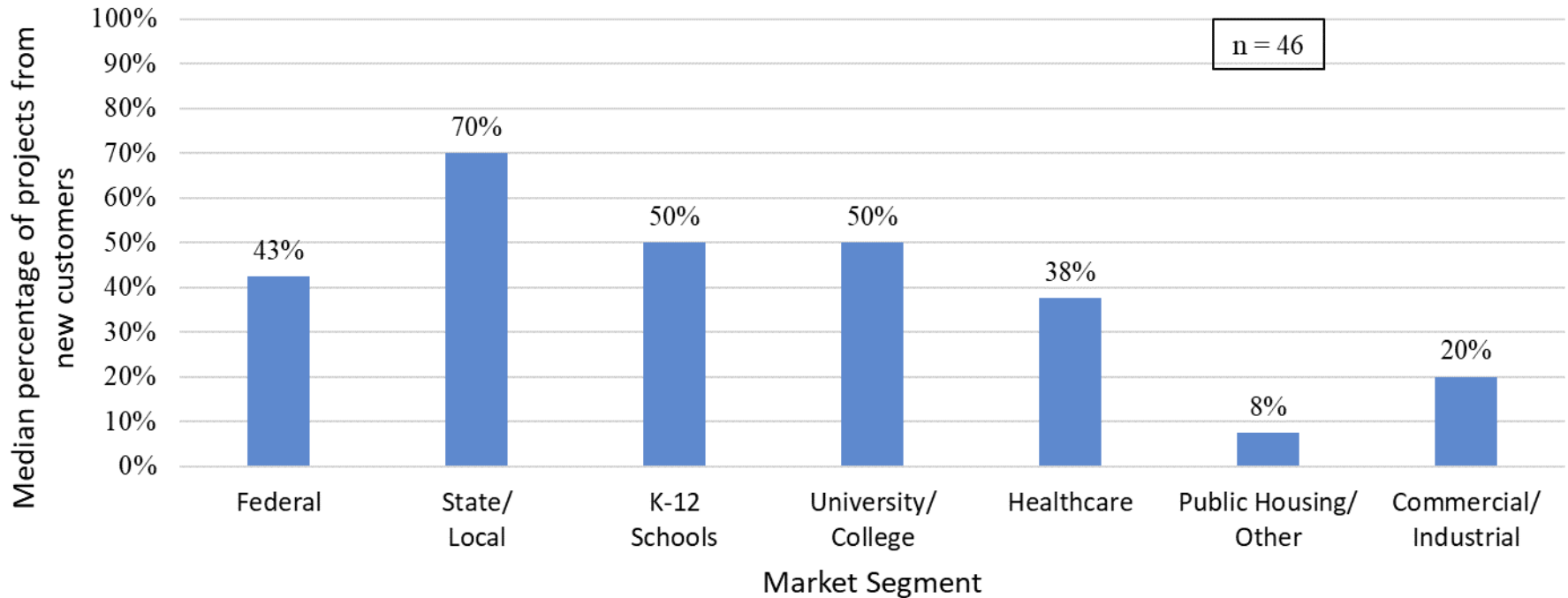
- The percentage of ESCOs who reported a high or medium level of ESPC use for capital improvement increased between the previous survey (2014) and the current survey (2018) for all market segments.
- The most significant increases occurred for the state/local, university/college, public housing/other 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.

Resilience Measures in ESPC – Projects Initiated 2016-2018



- About 50% of ESCOs reported that onsite generation was installed in *some* or *many* of their performance-based projects in all markets except public housing/other.
- About 25% indicated microgrid or cybersecurity measures were installed in *some* or *many* of their federal, state/local, and university/college projects.

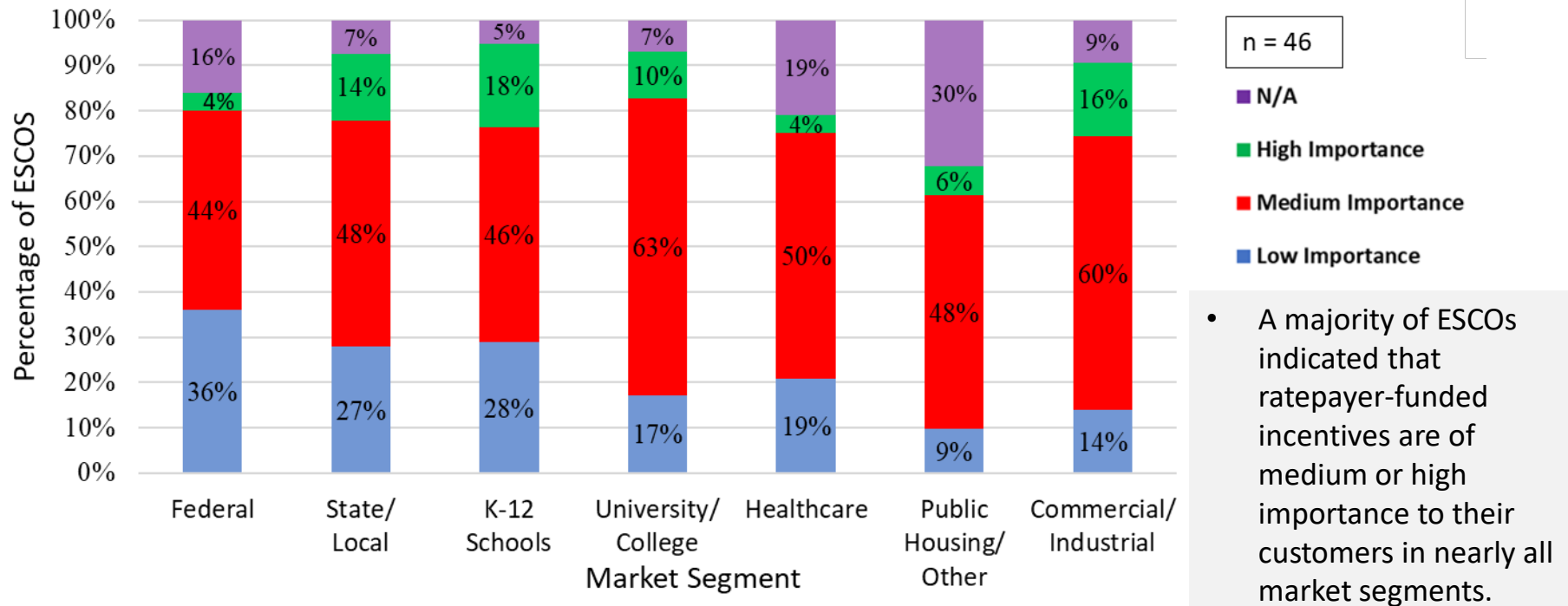
Share of ESPC Projects from New Customers (2016-2018)



- ESCOs serving state/local, K-12 schools, and university/college customers reported that 50% or more of their projects initiated during 2016-2018 came from *new* customers.
- Conversely, ESCOs reported that a majority of their projects in the federal, healthcare, public/housing/other, and commercial/industrial market segments initiated 2016-2018 came from *existing* customers.

Ratepayer-Funded Incentives – Importance and Use (2016-2018)

Importance of ratepayer-funded incentives for projects initiated during 2016-2018

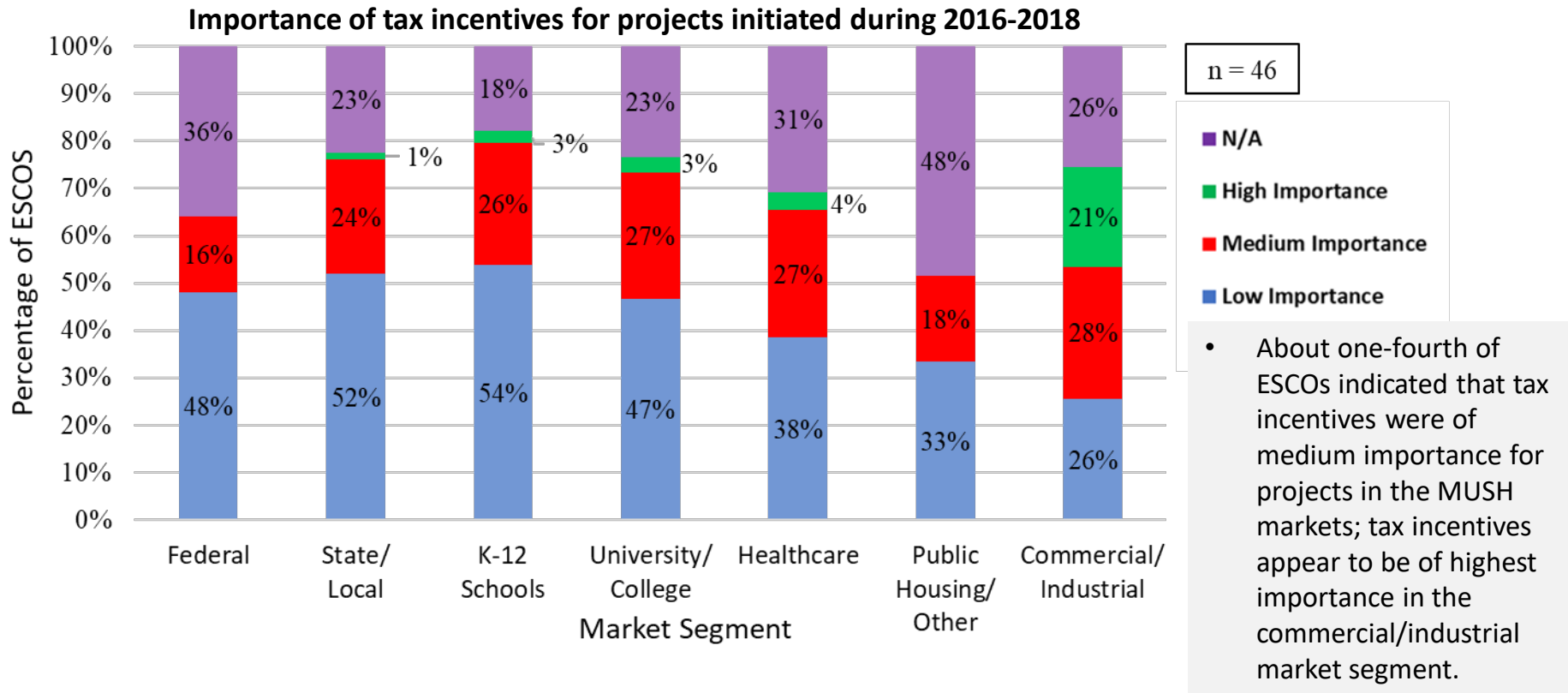


Percentage of projects initiated during 2016-2018 that used ratepayer-funded incentives

Market	Median Percentage	Count of Respondents
Federal	10%	20
State/Local	80%	46
K-12 Schools	70%	37
University/College	65%	24
Healthcare	40%	18
Public Housing/Other	50%	23
Commercial/Industrial	50%	34

- ESCOs reported the most prevalent use of ratepayer-funded incentives in state/local, K-12 schools and university/college projects.

Tax Incentives – Importance and Use (2016-2018)

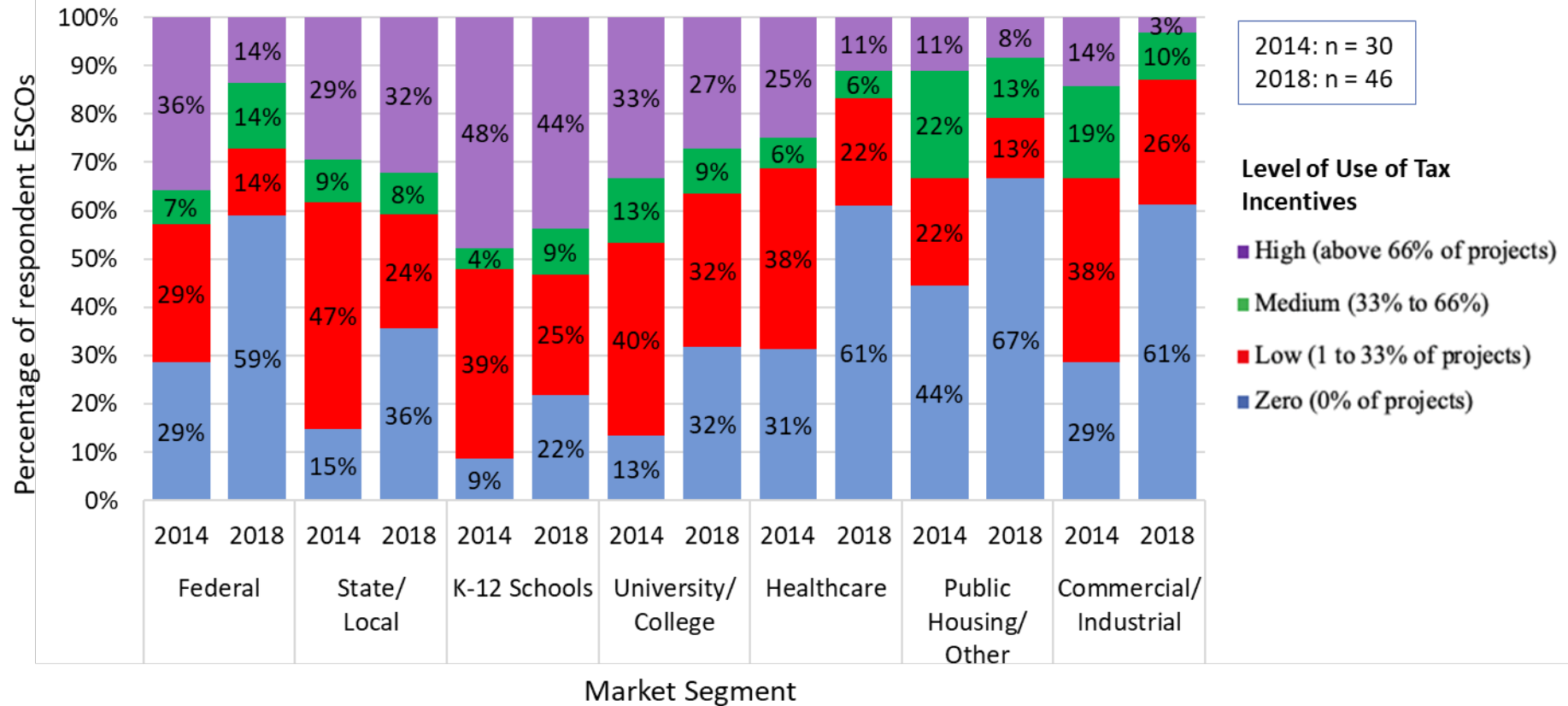


Percentage of projects initiated during 2016-2018 that leveraged tax incentives

Market	Median Percentage	Top Quartile Percentage	Count of Respondents
Federal	0%	40%	22
State/Local	20%	75%	46
K-12 Schools	40%	90%	32
University/College	20%	65%	22
Healthcare	0%	20%	18
Public Housing/Other	0%	13%	24
Commercial/Industrial	0%	7%	31

- However, ESCOs reported little actual use of tax incentives in the commercial/industrial market; most prevalent use of tax incentives in state/local, K-12 schools and university/college projects.

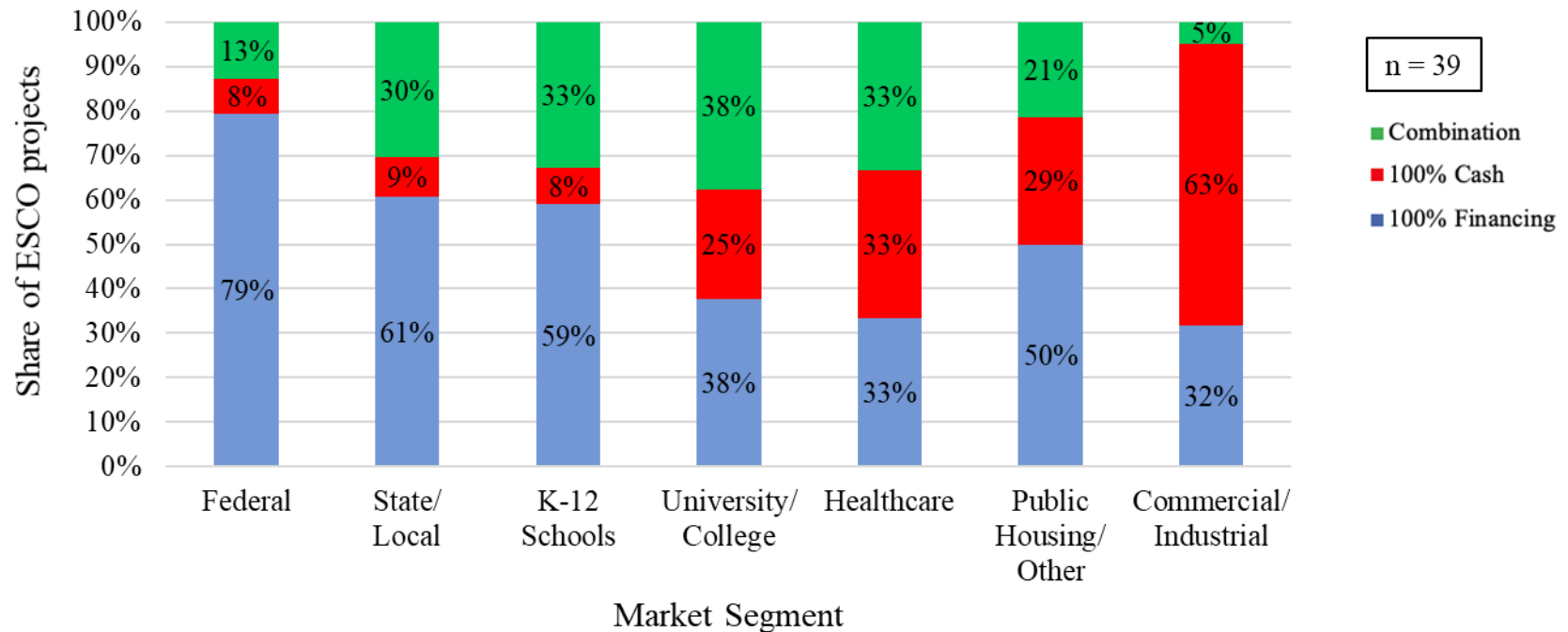
Use of Tax Incentives (2014 vs. 2018)



- We compare current responses to previous study regarding percentage of projects in each market that used tax incentives* for the most recent 3 year period (2015-2018 and 2012-2014).
- The percentage of respondent ESCOs who reported that none of their projects in that market used tax incentives increased significantly in 2018 (see blue area).
- The previous slide indicated that at least ~25% of ESCOS said tax incentives are typically of medium importance in most markets, but actual use of the incentives appears to have declined between 2014 and 2018.

* Tax incentives include 179D, the investment tax credit (ITC) and the production tax credit (PTC)

ESPC Funding Approach by Market Segment



- ESCOs estimated the percent of energy savings performance contract (ESPC) projects that used 100% financing, 100% cash or a combination of the two.
- 50%+ of ESCO projects in the federal, state/local, K-12 schools, and public housing/other sectors utilized 100% financing between 2016-2018.
- ESCOs reported cash being much more prevalent in funding projects in the commercial/industrial.

ESPC Financing Approach by Market Segment

Percentage of projects that used various financing approaches in each market segment

Market	Financing Approach	25th Percentile % of Projects	Median % of Projects	75th Percentile % of Projects	Respondent Count
Federal	Special	0%	0%	44%	7
	UESC	21%	50%	93%	10
	Other	25%	68%	95%	10
State/Local	Traditional Means (Loan, Lease, Bond)	100%	100%	100%	38
	ESA or MESA	0%	0%	18%	10
	PACE	0%	0%	0%	7
K-12 Schools	Traditional Means (Loan, Lease, Bond)	100%	100%	100%	30
	ESA or MESA	0%	10%	20%	8
	PACE	0%	0%	0%	3
University/ College	Traditional Means (Loan, Lease, Bond)	100%	100%	100%	19
	ESA or MESA	3%	15%	43%	6
	PACE	0%	0%	0%	3
Healthcare	Traditional Means (Loan, Lease, Bond)	80%	100%	100%	13
	ESA or MESA	0%	10%	20%	5
	PACE	0%	0%	0%	3
Public Housing/ Other	Traditional Means (Loan, Lease, Bond)	100%	100%	100%	13
	ESA or MESA	0%	0%	0%	6
	PACE	0%	0%	0%	6
Commercial/ Industrial	Traditional Means (Loan, Lease, Bond)	25%	90%	100%	16
	ESA or MESA	0%	20%	90%	11
	PACE	0%	0%	8%	7

INDUSTRY CHALLENGES



Challenges – Project Development Time

- We asked ESCOs about several key challenges.
- Nearly half of all ESCOs reported that project development times are increasing.
- Commonly-cited reasons that *federal* project times are increasing include:
 - Complex scopes (e.g., with microgrids, cybersecurity, onsite generation)
 - End of the federal Presidential Performance Contracting (PPCC) challenge
 - Expiration of annual energy efficiency (EE) goals
- Commonly-cited reasons that *non-federal* project times are increasing include:
 - Complex scopes; increased amount of non-energy benefits to analyze
 - Lack of EE goals and lack of state executive focus (governor, mayor or school board) on performance contracting

Challenges – Contracting

- Turnover of government staff, including contracting officers and administrators, presents key challenges to this industry.
- Unlimited liability terms in standardized contracts presents issues for both small and large companies; legal review has increased dramatically, which add costs and cause delays.
- Contracts sometimes include excessive or potentially unfair contract terms associated with force majeure, making it difficult for the ESCO to cover additional costs due to natural hazards, COVID-19, etc.

Challenges – Subcontractors

- 33% of ESCO respondents indicated having difficulty finding enough cost-competitive qualified subcontractors.
 - The issue is largely regional, particularly in the Midwest, Mountain, Pacific and South regions.
 - Finding contractors for large-scale, mechanical, engineering-intensive projects is particularly challenging.

- 48% of respondents indicated having difficulty finding enough qualified minority-, women-, and disadvantaged population-owned small business enterprise (MWDBE) subcontractors .
 - The issue is largely regional, especially in the Northeast, Pacific and South regions.

- 28% of respondents indicated having difficulty fulfilling customer-mandated MWDBE goals.

Challenges – Non-federal Customer Understanding of Calculations and Presentations

- 44% of ESCOs indicate that non-federal customers have trouble understanding the savings calculations.
- 28% said that standardized savings calculations could help them close more projects.

Percentage of non-federal projects for which standardized calculations would be helpful	Number of ESCO respondents
100%	4
80%	1
50%	3
10-30%	5

Challenges – Project Documentation

- 45% of ESCOs reported that most of their non-federal customers do not store project documentation electronically in a readily accessible way.
- 25% of ESCOs reported that they or their non-federal customers sometimes have trouble locating key project documentation several years into the project.
- 78% of ESCOs indicated that at least some of their customers ask them to justify finance payments several years into a project.
 - 40% of this group reported that it takes two days to three weeks to prepare a presentation to answer those customers' requests.
 - The remaining indicated that it takes a day or less.

Importance of Preserving Project Documentation

- More than 50% of respondents affirmed that offering customers the ability to electronically store project documentation for the full project term would help their companies in one or more ways.

Offering customers centralized electronic document storage/access for full project term will help my company...	Number of ESCO respondents (each could provide more than one answer)
Build our reputation as a high-quality provider	16
Easily justify project savings	13
Close more projects	8
Easily justify the required finance payments to new customer staffers	6

eProject Builder Use for Non-federal Projects

- 30% of respondents use eProject Builder for non-federal projects for the functions listed in the table below.

Reason(s) for using eProject Builder for non-federal projects	Number of ESCO respondents (each could provide more than one answer)
NAESCO accreditation application	7
DOE List of Qualified ESCOs application	6
Standardized savings calculations/scenarios for presentation to customer	6
Customer or state requires use of ePB	1
Storing and presenting project documentation to educate customer staff and managers	1



eProjectBuilder

CONCLUSION



Conclusion

- ESCO industry revenues increased to \$6B in 2018, representing a ~3% annual growth rate between 2014 and 2018.
- The industry continues to serve mostly the public sector.
- The coincident increase in small ESCO market share and share of revenue from K-12 schools likely indicates that new market entrants may focus on K-12 schools, which present a lower barrier to entry than other market segments.
- In addition, California's Proposition 39, which awarded \$1.7B over 5 years (2014-2018) to support energy efficiency in the state's K-12 schools, drove some ESPC work in the state.

Conclusion (cont.)

- Tax incentives are of moderate importance for enabling projects in most market segments; however, use of tax incentives declined between 2014 and 2018 for nearly all market segments.
 - Uncertainty regarding the retroactive reinstatement of 179D after it lapsed in 2018, and uncertainty about other tax incentives made tax incentives less tenable.
- More than half of ESCOs indicated that ratepayer-funded incentives are of medium or high importance for projects across all market segments.
- Customers indicate that M&V is important for ESCO selection, but often do not use it to assure that savings are met over the financing term.
- Non-energy benefits are increasingly important for projects; resilience and capital improvement needs are key drivers of ESPC.

Conclusion (cont.)

- About 50% or more projects were implemented for new customers in most MUSH market segments.
- The industry faces some challenges finding enough qualified subcontractors to competitively bid on projects.
- Customers for all ESCOs ask for justification of the finance payment years into a project, yet 25% of ESCOs or their customers cannot locate critical documentation.
 - It can take ESCOs a significant amount of time to respond to those customer requests.
- ESCOs and their customers that currently use eProject Builder benefit from standardized calculations and centralized document preservation provided by the tool.

Reports and presentations can be downloaded by visiting:

<https://emp.lbl.gov/>

For more information, please contact:



Peter Larsen, PI
phlarsen@lbl.gov
(510) 486-5015

Elizabeth Stuart
estuart@lbl.gov
(510) 495-2370

