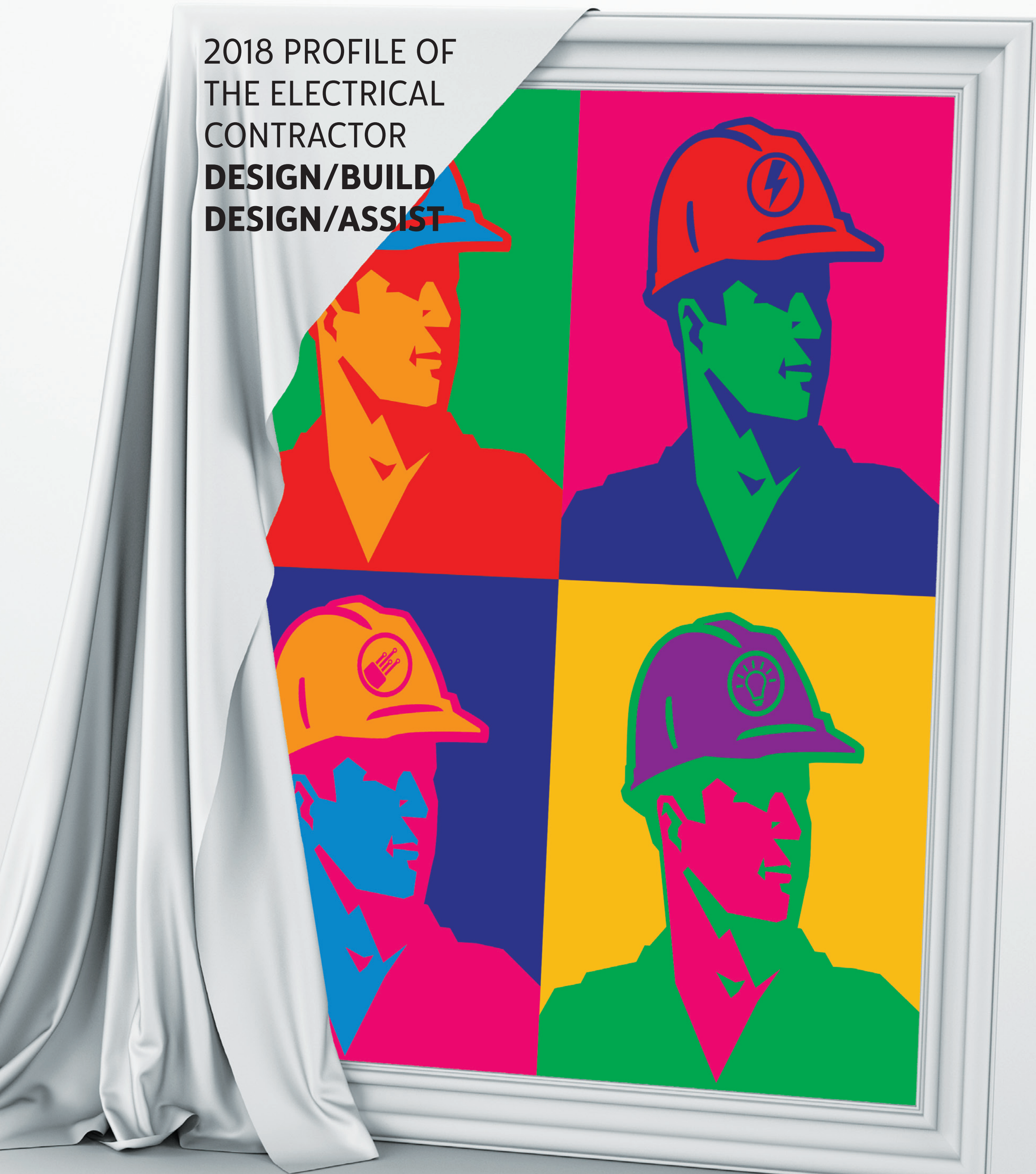
ELECTRICAL CONTRACTOR

POWER & INTEGRATED BUILDING SYSTEMS



2018 PROFILE OF
THE ELECTRICAL
CONTRACTOR
DESIGN/BUILD
DESIGN/ASSIST

7.18

2018 “ELECTRICAL CONTRACTOR Magazine Profile”
Database Report

Electrical Contractors:
Their Key and Evolving Role in Design/Build//Design/Assist Projects

A Special Report Prepared by
Renaissance Research & Consulting, Inc.

For:

Bethesda MD 20814
December 2018

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KEY FINDINGS

Overall, about 7 in 10 electrical contracting firms perform (ANY) Design/Build or Design Assist work (69%). On average, Design Build or Assist accounts for an average of 41% of revenue among the total sample.

- Compared with two years ago, the percentage of electrical contracting firms that do ANY work on a Design/Build or Design/Assist basis declined slightly but significantly among the total sample, driven by a significant decline among firms with 20-99 employees and non-significant declines among firms of all other sizes. Although "ANY" DB//DA work declined slightly but significantly compared to two years ago, *average revenue* among the total sample and by company size is statistically unchanged.

While larger companies are more likely to work on a D/B or D/A basis (it increases almost in a straight line as number of employees increases), *average revenue* from DB/DA is higher among smaller firms (1-9 employees) than among larger firms (10+ employees).

Similarly, as was the case in earlier Profile Studies, in 2018, the smallest firms (annual sales of less than $250,000) are *less* likely than larger firms to have performed (ANY) work on a Design/Build or Design/Assist basis in the previous year. Average revenue from D/B or D/A work is highest among firms with annual revenues of between $250K and under $1 million. In earlier Profile Studies, *but **not** in 2018*, there were additional revenue-related jumps in the likelihood of performing Design/Build or Design/ Assist work.

Whether a firm works on a D/B or D/A basis appears to have a bearing on changes in company size:

- In the 2018 Profile Study, firms that worked on a Design/Build or Design/Assist basis were about twice as likely to report an "increase" in the number of employees (26%) compared with firms that do not work on a D/B or D/A basis (14%). In contrast, firms that do no D/B or D/A work are statistically more likely to report "staying the same" (74% vs. 64%). This has been the case since at least the 2014 Profile Study.

As has been noted in previous Design Build Breakout reports, companies that work on a Design/Build or Assist basis tend to mirror the behavior of large electrical contracting firms:

- They are more likely to work for NECA-member firms and to have separate divisions that handle Low Voltage and/or Business Development.
- Firms that work on a Design/Build or Design/Assist basis are more likely to work on almost all of the 41+ project types included in this study and also to work on Systems Integration and Data Centers (including Commissioning and Programming), compared with firms that do not offer design services.
- Electrical contracting firms that worked on a D/B or D/A basis in 2017 were significantly more likely to have worked on ANY New Construction and to obtain a higher average percentage of revenue from CII projects. These findings are consistent with the fact that larger firms are even more likely than smaller firms to perform D/B or D/A work (and it is larger firms that are more likely to work on CII projects).

Continues on the next page…

- In a related finding, *younger* respondents (who tend to work for larger firms) were significantly more likely to say that their firm works on a D/B or D/A basis. As has been the case since at least 2010, in the 2018 Profile Study respondents aged 35-64 are more likely than those aged 65+ to work for firms that performed (ANY) Design/Build or Design/Assist work.

- In addition, firms that work on a DB/DA basis are far more likely to make use of BIM at all -- ANY -- and to report using BIM a higher percentage of the time.

We also looked at leisure activities of respondents and shopping characteristics of firms and found that electrical contractors that work on a D/B or D/A basis differ from those whose firms offer no design services in the following ways. Specifically, they are significantly more likely to...

- Be Innovators or Early Technology Adopters
- Participate in physical activities including golf, as well as spectator sports and music/theater

- Make purchases from an online company such as Amazon Business or direct from the manufacturer.

    - The last finding is particularly interesting and merits being followed up on.

        - In fact, as a side note, we had asked about where purchases were made in the 2006 Profile Study and, although at much lower levels, firms that work on a DB//DA basis were also more likely to purchase directly from the manufacturer compared with firms that offer no design services.

            - In addition, average spending from Big-Box stores is significantly higher among firms that do no DB//DA work.

Firms working on a Design/Build or Design/Assist basis have even more of an opportunity to make brand selections compared with firms that do not provide any Design/Build or Assist services. These findings provide further confirmation of the integral role played by those who provide design services and is another indication of the expanded responsibilities given to electrical contractors who work on a Design/Build or Design/Assist basis.

- Consistent with the results from two and four years ago, in 2018, electrical contractors who work on a Design/Build or Design/Assist basis say that the they receive ANY incomplete plans and specs 83% of the time, compared to a significantly lower percentage cited by those who do not work on a Design/Build or Design/Assist basis (55%).

- Also consistent with two and four years ago, electrical contractors that work on a Design/Build or Design/Assist basis estimate that an average of 42% of the plans and specs that they receive are incomplete, compared to a significantly lower percentage cited by those who do not work on a Design/Build or Design/Assist basis (31%).

Firms that work on a Design /Build or Design/Assist basis are significantly more likely than those that do not provide design services to have ANY professional relationship with an engineer, either as a consulting relationship with an engineer and/or to have both a consulting relationship **and** to work for a firm with an engineer on staff or as part of a separate division within the company.

- The high prevalence of working with engineers speaks to the complexity of much of the work performed by electrical contractors.

About three-quarters of electrical contractors (74%) report having a “high” (36%) or “medium” (38%) ability to influence the overall electrical design or specifications with building owners or design team members.

- Electrical contractors that work on a D/B or D/A basis are more likely than those that do not work on this basis to describe their influence as “high” (42% vs. 25%) and are significantly less likely to say that the “question is not applicable to them”.

Brand Choices: Although “Availability” and “Price” emerge as the top reasons for brand choice, “Availability” emerges as even more important as a reason for original brand selection to firms that work on a D/B or D/A basis compared with firms that don’t work this way. “Price” and “Ease of Installation” emerge as more important as a reason for brand substitution to firms that work on a D/B or D/A basis than to firms that don’t offer design services. In contrast, in the 2016 and 2014 Profile Studies, no differences emerged by whether the firm performed DB//DA or not on top 3 reasons for original brand selection or on brand substitution.

Training: there is no statistically significant difference in having taken training within the past 12 months (74%) or seeking training within the next 12 months (77%). However, firms that work on a DB//DA basis are much more likely to say that they plan to take training compared with firms that do not offer design services. There is no difference by design service status in past training.

- Sources of Training and Certification: Firms that offer design services are more likely than those who do not work in this way to seek training from organizations and associations. There is no difference by design service status in terms of where certification is or was obtained.

Course topics: The following courses are more likely to be cited by those who work on a Design/Build or Design/Assist basis than those who do not work this way.

- Course topics of a technical nature:
    - Most types of Automation/Controls Systems including Fire/Life Safety Systems, Home Automation Systems, (Commercial) Building Automation Systems; Lighting: Drivers and Ballasts, Lighting Design; Safety (Electrical/Personal/On-site/Jobsite); Power Quality; Electrical Testing and Maintenance; Electrical System Design or BIM; Collaborative Building, Prefab/Off-Site Building; Renovation/MACS/Maintenance.
- Course topics of a business-oriented nature:
    - Estimating/Financial Management; Developing New Business Opportunities; Increasing Productivity and How to Use New Software.

Design Build As the <u>Primary</u> Source of Revenue

Design/Build or Assist projects are the ***primary*** source of revenue for 33% of electrical contractors, statistically unchanged from two years ago.

- On average, Design/Build or Design/Assist work accounts for a whopping 84% of revenue for electrical contractors who work *primarily* on a Design/Build basis and is statistically unchanged since the 2006 Profile Study.

- In the 2018 Profile Survey, firms with 1-9 employees and/or those with annual revenues of between $250K to under $1 million were *most* likely to work ***primarily*** on a DB/DA basis.

The main difference is that firms working ***primarily*** on a DB or DA basis are more likely than firms where DB//DA accounts for between 1% and 50% of revenue to specialize in Residential projects (ANY and average revenue) and are less likely to work on CII projects. Further, while they are *less* likely to work on 30 of the 41+ types of projects tested in the Profile Study, they are more likely to work on Residential HVAC Controls and/or Residential Programming and Commissioning.

Since they are more likely to be smaller (1-9 employees) they are also *less* likely to work for NECA firms.

Interestingly, there is no difference between firms that work ***primarily*** on a Design/Build or Design/Assist basis and those where DB//DA accounts for between 1% and 50% of revenue on respondent age or level of responsibility. There is a slight difference in terms of educational attainment: respondents in firms working ***primarily*** on a DB//DA basis are more likely to have only a high school education (12% vs. 9%), but at the other end of the scale, are equally likely to have gone to college or to have a Bachelor's degree or higher.

- Nor is there a difference in terms of having a separate division that handles HVAC projects or in having a separate person or department responsible for business development.

- However, firms working ***primarily*** on a DB/DA basis are less likely to have a separate Low Voltage division.

The online sample was asked questions in a few more areas. From these questions we know that electrical contractors that work ***primarily*** on a D/B or D/A basis differ from those in firms where DB//DA accounts for between 1% and 50% in the following ways:

- They are significantly more likely to participate in boating/sailing or crafts but less likely to play golf or to participate in exercise/fitness, spectator or fantasy sports.

- They make a higher average percentage of spending from Big-Box stores but a lower average percentage of purchases from an online company such as Amazon Business.

By Sector: Compared with firms where D/B or D/A accounts for between 1-50% of revenue, firms working ***primarily*** on a D/B or D/A basis are ***less*** likely to have done (ANY) work in three of the sectors (New Construction, Modernization/Retrofit and Maintenance Done Under Contract); there is no difference in the case of doing Repair work or Maintenance not done under contract.

However, for those working ***primarily*** on a DB//DA basis, a higher percentage of *average* revenue comes from Repair.

Design/Build As the *Exclusive* Source of Revenue

In the 2018 Profile Study, Design/Build or Assist projects are the ***exclusive*** source of revenue for 12% of electrical contractors. This is statistically unchanged from two years ago. In fact, about 10% of electrical contractors have worked ***exclusively*** on a DB/DA basis since 2008.

As we observed two and four years ago among firms that do any D/B or D/A work, as company size shrinks, the percentage of revenue from Design/Build or Design/Assist increases:

- Firms that work ***exclusively*** (100%) on a Design/Build or Design/Assist basis are most likely to have 1- 4 employees and revenues of <u>under</u> $250K.

- As the percentage of revenue from D/B or D/A increases, the average percent of revenue derived from Residential work, particularly Single-Family housing, increases, while the percent of revenue from CII projects, particularly Commercial projects, decreases.

It is interesting to note that:

- Older respondents (aged 55 years +) are more likely to be employed by firms that work ***exclusively*** (100%) on a D/B or D/A basis or to be employed by firms that do **not** offer Design/Build or Design/Assist services.

- As was the case with respondent age, respondents who work in small firms are more likely to be employed by firms that work ***exclusively*** (100%) on a D/B or D/A basis <u>or</u> to be employed by firms that do **not** offer Design/Build or Design/Assist services.

METHODOLOGY

This report focuses on electrical contracting firms that worked on a Design/Build or Design/Assist basis in 2017. Please note that the Profile study is conducted in even years (2018 or 2016) and asks about the work performed in the previous year.

The survey was conducted by postal mail and via the Internet among a random sample of ELECTRICAL CONTRACTOR subscribers. The field period for the survey began on March 7, 2018 (for both the Internet and postal mail versions), and ended on April 3, which was the deadline for the July 2018 article. A total of 1597 interviews were completed – 901 via the Internet and 696 via postal mail. The data were weighted to equalize the influence of the two modes so that it was in line with the 50/50 split which was the case in the most recent Profile studies.

Each respondent who received the survey via the Internet was sent two follow-up e-mails. However, follow-up mailings were not made to non-responders in the postal mail sample. An incentive was offered for participation in the survey: For each completed survey, ELECTRICAL CONTRACTOR magazine would contribute $5 to charity, up to a total of $10,000. For the first time, the magazine also offered a sweepstakes drawing for one of five $150 Amazon e-gift cards

The Internet option was first introduced in 2004. In 2004 and 2006, the proportion of surveys completed via the Internet versus postal mail is approximately 60/40. Since 2008, the proportion has been closer to 50/50. As noted above, in 2014, the data were weighted to equalize the proportion that participated via postal mail and via the Internet.

As was the case since 2004, the survey was produced in different versions. Starting with the 2008 Profile study, there were four versions of the survey, which differed from each other on fewer than 10 questions. The first 3 pages were common to all versions while the differences among the versions occurred on the last page. The major difference was that in the Internet portion respondents were *required* in almost all cases to have percentage questions add to 100%.

In 2014, order to accommodate a longer list of questions while at the same time lessening the burden on the respondent, the survey was shortened from 5 print pages to 4. In order to accommodate all of the questions, the survey was produced in 8 versions (up from 4). This required a much larger sample size so that each of the questions would be asked of a large enough sample to allow for analysis – particularly by subgroups. In 2016, there were 7 versions; the two versions that deal with training (past 12 months and next 12 months) were combined. In 2018, there were also 7 versions.

In the 2018 Profile Study, for the first time, we also identified Subscriber Panel members who participated in the study as part of our random email survey invitation and also separately solicited Panel members to participate in the Profile survey by mailing them a separate survey link. In total, 117 Panel members participated in the Profile Study

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This research was conducted by New York, NY-based Renaissance Research & Consulting, Inc. (www.renaiss.com), an independent marketing research firm that has, as one of its specialties, market research for the construction industry.

Statistics

The margin of error on the total sample of 1597 is +/– 2.1% for percentages around 50 percent (i.e., we are confident that a reported 50 percent will fall between 52.1 percent on the plus side and 47.9 percent on the minus side 90 percent of the time.) Please note that different rules apply to testing of averages, which were also tested at the 90 percent level of confidence and are noted in the report.

A significant difference in the total sample between 2018 with a sample size of 1597 and 2016, where the sample size was 2419 is at least 2.7% at the 90% confidence level.

Some of the questions were asked of only a subset of electrical contractors, on average, about 225. The 90% confidence band around 225 is +/- 5.5% for percentages around 50 percent (i.e., we are confident that a reported 50% will fall between 54.5% on the plus side and 45.5% on the minus side 90% of the time.) Please note that different rules apply to testing of averages, which were also tested at the 90% level of confidence and are also noted in the report. The margin of error comparing two smaller bases of about 225 (from different years) is 3.9%.

For this report, the estimates of market size are based on the 2016 County Business Patterns (CBP).

DETAILED FINDINGS

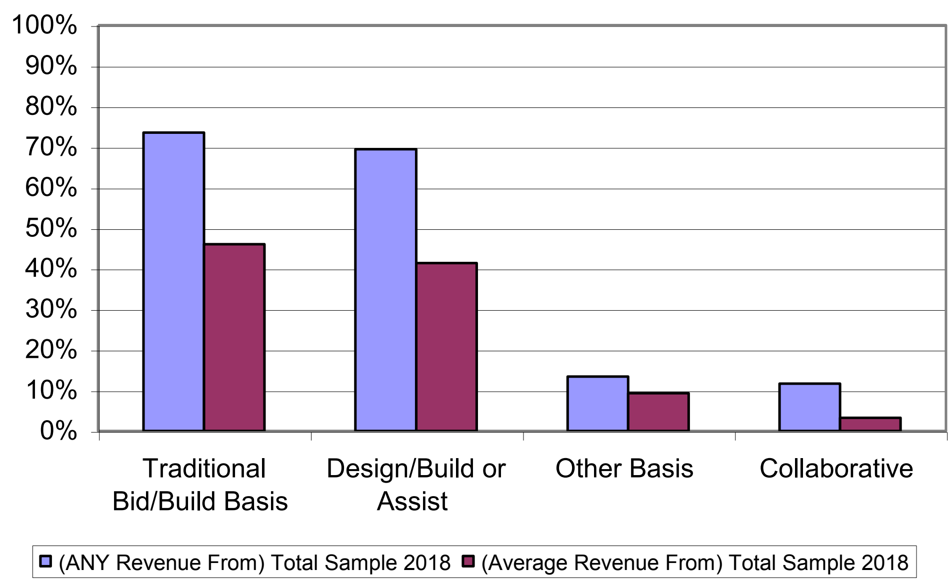
Who Performs Design/Build or Design/Assist Work?

…Overview

While this report focuses on Design/Build and Design /Assist, it is important to understand where that delivery method fits within the broader framework of the various methods of bidding and building projects.

Essentially, Traditional Bid/Build and Design Build are the two main ways that projects get bid and built. (About 70% of the Profile sample has performed ANY Traditional Bid/Build work and/or ANY Design/Build or Design/Assist work.)

ANY and Average Revenue From...



Q 9 2018 Sample = 1597 2016 Sample = 2419

Average Revenue Trended Among the Total Sample:

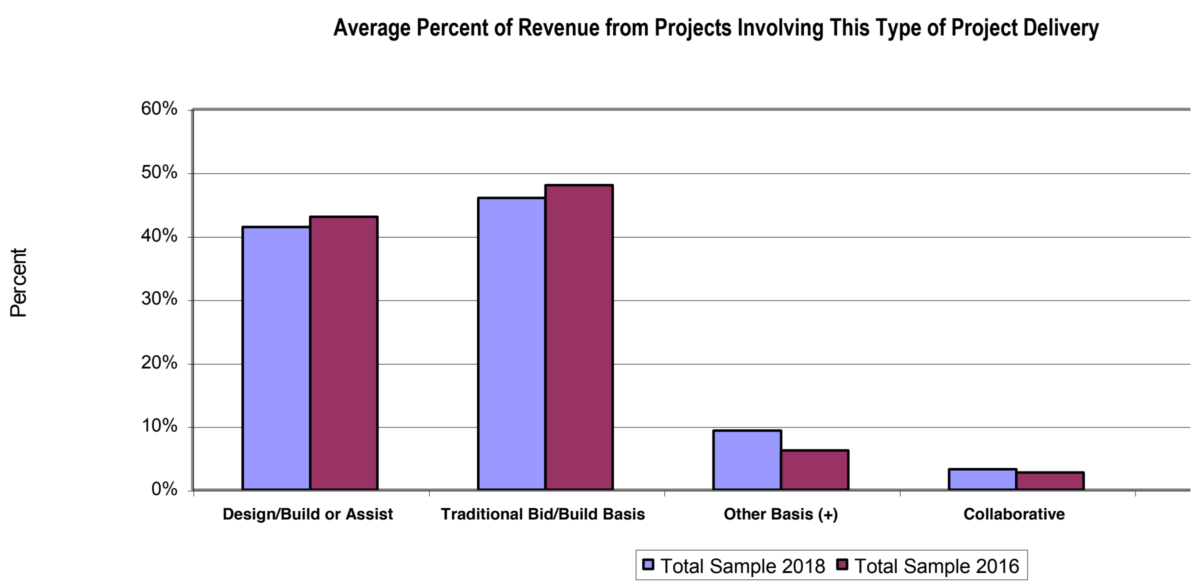
This report will also put somewhat more emphasis on average (or mean) revenue rather than ANY revenue. The reason is as follows: Because mean revenue must add up to 100%, it provides a constant sum and is therefore is better able to reflect changes, if any, over time.

Almost one-half of electrical contractors' average revenue comes from Traditional Bid/Build projects (46%), statistically unchanged from 48% in 2016.

Overall, an average of 41% of electrical contractors' revenue was done on either a Design/Build or Design/Assist basis. This is statistically unchanged compared with the 2016 level of 43%. (As in the past, the vast majority continues to be done as Design/Build --30% -- rather than Design/Assist -- 11%).

"Other delivery methods", which accounted for 9% of project delivery revenue, posted a sharp increase from its 2016 level of 6%. When asked to specify, other delivery methods was generally described as "time and materials" or some aspect of "maintenance, service or repair". These two categories should be pre-listed choices in the next wave of the Profile survey.

Across the total sample, Collaborative-building accounts 3.2% of average revenue, statistically unchanged compared with 2016.



Focus on Design/Build and Design/Assist
…By Number of Employees

As shown in the beginning of this section, 7 in 10 electrical contracting firms performed Design/Build or Design/Assist work in 2017 (69%). Note that companies of all sizes work on a Design/Build or Assist basis. Larger firms are more likely to work on a DB or D/A basis than are smaller firms.

- Firms with 5-9 employees are significantly more likely to work on DB or D/A basis compared with electrical contracting firms with 1-4 employees.
- Similarly, firms with 10+ employees are significantly more likely to provide DB or D/A services than are firms with 1-9 employees

Also, as shown in the beginning of this section, on average, D/B or D/A work accounted for 41% of revenue among the total sample. D/B or D/A work accounts for 56% of revenue, on average, among those who actually perform this type of work (not shown).

- Note that while firms with 10+ employees are more likely to perform Design/Build or Design/Assist compared with firms with 1-9 employees, ***it is firms with 1-9 employees that, on average, derive more revenue from DB or D/A compared with firms with 10+ employees.***

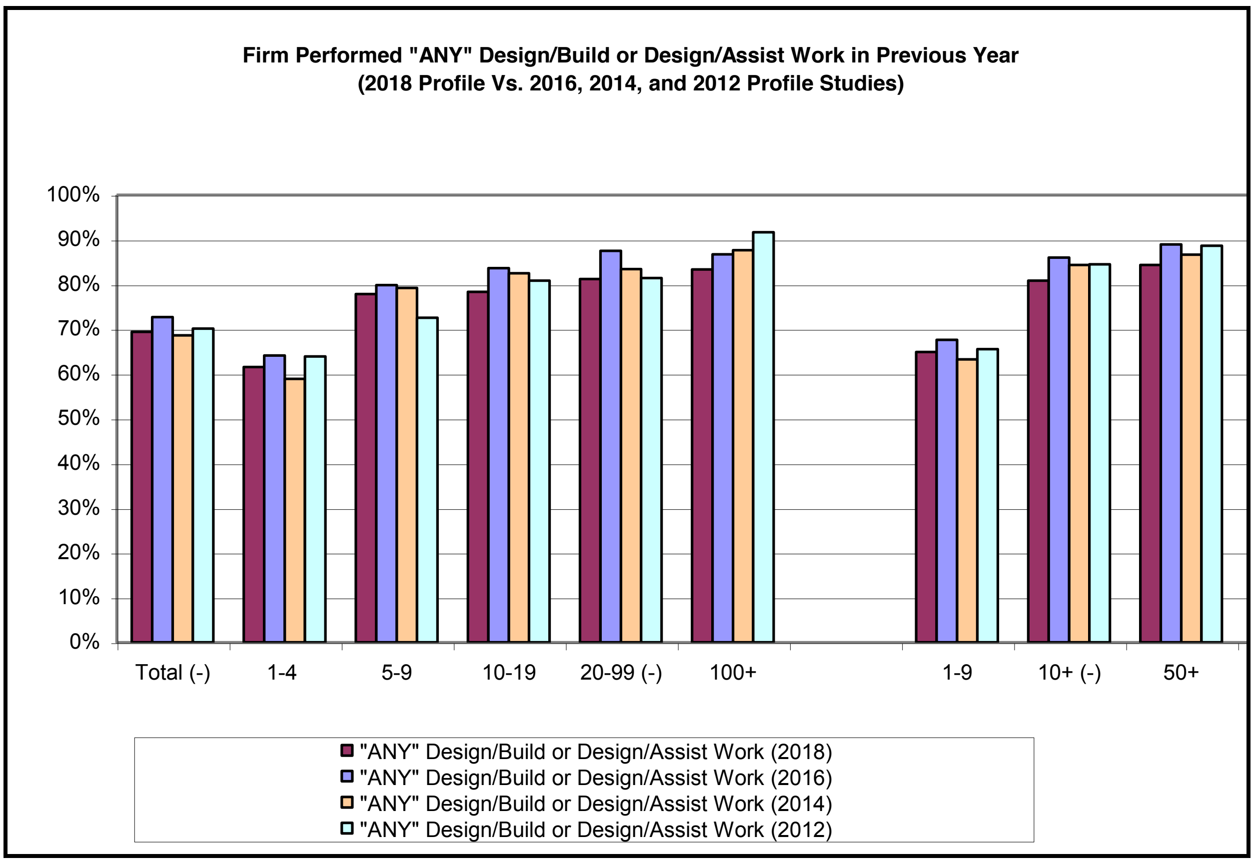
Design Build/Assist Work in Previous Year by Number of Employees (2018 Profile Study)								
	Total	1-4	5-9	1-9	10+	10-19	20-99	100+
	(1597)	(893)	(229)	(1122)	(469)	(157)	(178)	(134)
	%	%	%	%	%	%	%	%
"ANY" DB//DA Work	69	62	**<78**	65	**<81**	**78**	**81**	**83**
Average DB//DA Revenue	41	42	45	**43>**	38	39	35	40

< > Indicates that the difference is significant at the 90% level of confidence in the direction of the arrow

“ANY” Trended: Compared to two years ago, the percentage of firms working on a Design/Build or Design/Assist basis declined significantly among the total sample, driven by non-significant decreases among firms of all sizes except for firms with 20-99 where the decline was significant.

- The decline among firms with 20-99 employees also translates into a decline in ANY Design/Build or Design/Assist basis among firms with 10+ employees (shown on the right side of the chart).

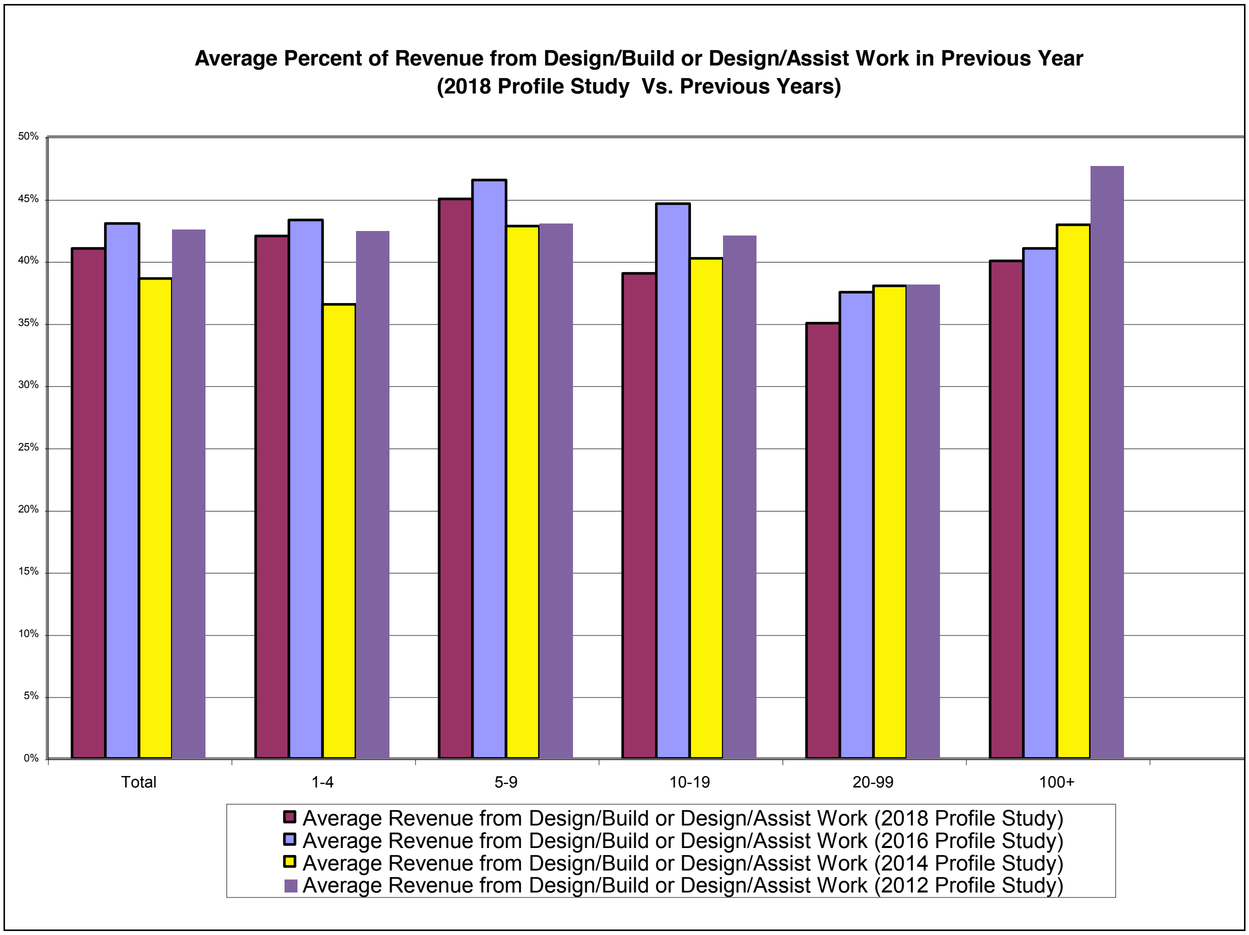
The 2018 findings indicate a continuation of what was reported since at least the 2012 Profile Study; specifically that larger firms are significantly even more likely to work on a D/B or D/A basis compared with smaller firms.



(+ or -) indicates a significant difference from the 2016 results

Average Revenue from Design/Build or Design/Assist by Number of Employees Trended:

- Although "ANY" DB//DA work declined slightly but significantly compared to two years ago, average revenue among the total sample and by company size is statistically unchanged. The apparent difference among firms with 10-19 employees vs. 2 years ago is just short of significance at the 90% level of confidence.



…By Annual Revenue

Firms with revenues of under $250K are also *less* likely to do ANY work on a Design/Build or Design/Assist basis compared with higher revenue firms.

- This was also the case in earlier Profile Studies.

Design/Build or Assist accounts for the highest average revenue among firms with annual revenues of between 250K and under $1 million.

- As shown on the next page, in earlier Profile Studies, *but* ***not*** *in 2018*, there were additional revenue-related jumps in the likelihood of performing Design/Build or Design/ Assist work. However, in 2018, the only statistically significant difference by company size is between firms with annual revenues of under and over $250K.

Design Build/Assist Work in Previous Year by Annual Revenue (2018 Profile Study)

	Total	**Under $250K**	**$250K to Under $1 Million**	**$1 Million to Under $2.5 Million**	**$2.5 Million to Under $10 Million**	**$10 Million +**
	(1597)	(689)	(381)	(153)	(143)	(137)
"ANY" DB//DA Work	69%	56%	**<78%**	**80% vs. 56%**	**84% vs. 56%**	**84% vs. 56%**
Average DB//DA Revenue	41%	40%	**<46%>**	**39%**	**38%**	**35%**

Electrical Contracting Firm Performed "ANY" Design Build or Design/Assist Work in Previous Year						
	Total	**Under $250K**	**$250K to Under $1 Million**	**$1 Million to Under $2.5 Million**	**$2.5 Million to Under $10 Million**	**$10 Million +**
	(1597)	(689)	(381)	(153)	(143)	(137)
"ANY" Design/Build or Design/Assist Work (2018)	69%	56%	**<78%**	**80% vs. 56%**	**84% vs. 56%**	**84% vs. 56%**
"ANY" Design/Build or Design/Assist Work (2016)	^ 73%	^ 61%	**<77%**	**<85%**	**86% vs. 77%**	**90% vs. 85%**
"ANY" Design/Build or Design/Assist Work (2014)	69%	57%	**<75%**	**<84%**	**84%**	**92% vs. 84%**
"ANY" Design/Build or Design/Assist Work (2012)	70%	60%	**<77%**	**84% vs. 60%**	**80% vs. 60%**	**<95%**
"ANY" Design/Build or Design/Assist Work (2010)	70%	59%	**<74%**	**<88%**	**78% vs. 59%**	**<96%**
"ANY" Design/Build or Design/Assist Work (2008)	77%	67%	=	**<85%**	**<91%**	**<90%**
"ANY" Design/Build or Design/Assist Work (2006)	79%	68%	=	**<86%**	**<90%**	**<96%**

Bold and < indicates significant difference at the 90% level of confidence
Bold **and ^ indicates a significant decline vs. 2017**

…By Change in Company Size During Past 12 - 18 Months

Among the total sample: When questioned about changes in company size in the 2018 Profile Study, the percent that said that their firm "increased" is more than twice as high than the percent that "decreased" (22% vs. 9%), while about two-thirds said that their firm size had stayed the same over the past 12 - 18 months.

- Further, when the 2018 Profile Study is compared with the 2016 Profile results, there is, once again, a statistically significant *decrease* in the percentage of firms that said that they lost employees (9% in 2018 compared with 13% in 2016). However, there is no statistically significant difference in the percent of firms that increased the number of employees or in the percentage of firms that stayed the same.
    - Note the sharp, steady and continuing decline of firms that lost employees (decreased) between 2010, when it was 36% and 2012, when it was 24% and 2018. (2010 and 2012 are not shown below).

In addition, whether a firm works on a D/B or D/A basis appears to have a bearing on changes in company size:

- In the 2018 Profile Study, firms that worked on a Design/Build or Design/Assist basis were about twice as likely to report an increase in the number of employees (26%) compared with firms that do not work on a D/B or D/A basis (14%). In contrast, firms that do no D/B or D/A work are statistically more likely to report staying the same (74% vs. 64%).

- This same pattern was observed since 2014.

Change in Company Size During Past 12 - 18 Months

	Total				2018			2016			2014	
					D/B or D/A			D/B or D/A			D/B or D/A	
	2018	2016	2014		Any	None		Any	None		Any	None
	(1597)	(2419)	(2722)		(1116)	(393)		(1740)	(547)		(1860)	(733)
Increased	22%	21%	20%		**26>**	14%		**24%>**	12%		**24%>**	11%
Stayed the Same	67%	**65%>**	61%		64%	**<74%**		62%	**<74%**		56%	**<72%**
Decreased	**9%**	**<13%>**	18%		9%	10%		13%	12%		19%	16%

< > Indicates that the difference is significant at the 90% level of confidence in the direction of the arrow

Who Performs Design/Build or Design/Assist Work?

…By Age of Respondent

Background: There is a strong relationship between the age of the respondent and the size of the firm for which he or she (usually he) works.

As noted in previous Profile reports, smaller firms tend to have respondents with an older average age. One hypothesis is that older electrical contractors may found their own -- smaller firms -- after working for others earlier in their careers.

Respondent Age 2018 Profile Study				
		Firm Size		
	Total	1-4	1-9	10+
		(a)	(b)	(c)
Average Age (2018 Study) N=1597	58.2	**60.6**	**60.0>**	53.8
Average Age (2016 Study) N=2419	57.3	**58.7**	**58.5>**	54.1

Given that the respondent from larger firms tend to be several years younger than the respondent from smaller firms and given that ANY DB//DA work skews toward larger firms, it is not surprising that the mean age for those whose firm works on a D/B or D/A basis is significantly younger—57.4 compared with those working for firms that do *not* work on a D/B or D/A basis, where it is 59.7.
.

	Respondent Age 2016 Profile Study		
	Total	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
	(1597)	(1116)	(393)
Mean Age (2018)	58.2	57.4	**<59.7**
	(2419)	(1740)	(547)
Mean Age (2016)	57.3	56.6	**<58.5**

Bold indicates that the percentage shown for this firm size is significantly larger than its pair in the direction of the > <

Who Performs Design/Build or Design/Assist Work?

…By Age of Respondent (Trended)

In the 2018 Profile Study, respondents aged 35-64 are more likely than those aged 65+ to work for firms that performed (ANY) Design/Build or Design/Assist work. Respondents aged 35-64 have been more likely than those 65+ to work on a DB//DA basis since at least 2010.

Electrical Contracting Firm Performed "ANY" Design/Build or Design/Assist Work in Previous Year By Age of Survey Respondent						
	Total	**18-34**	**35-44**	**45-54**	**55-64**	**65+**
	%	%	%	%	%	%
"ANY" Design/Build or Design/Assist Work (2018)	69	**66**	**<81** vs. 60	**75** vs. 60	**74>**	**60**
"ANY" Design/Build or Design/Assist Work (2016)	73	**75** vs. 63	**78** vs. 63	**79>**	**74>**	**63**
"ANY" Design/Build or Design/Assist Work (2014)	69	**77 vs. 59**	**77>**	**71** vs. 59	**70>**	**59**
"ANY" Design/Build or Design/Assist Work (2012)	70	**92>**	**80** vs. 51	**78>**	**71>**	**51**
"ANY" Design/Build or Design/Assist Work (2010)	70	**76 vs. 55**	**77** vs. 55	**71** vs. 55	**73>**	**55**

Bold indicates that the percentage shown for this firm size is significantly larger than its pair

…By Respondent Education

58% of survey respondents have some college education. In 2018, as was the case in 2016~~,~~ survey respondents from firms that perform work on a Design/Build or Design/Assist basis are **not** more likely to be college educated. In fact, there are no differences in highest level of education attained between those whose firms who do or do not work on a DB//DA basis. (Not shown.)

…By Level of Responsibility

77% of the sample is composed of company owners and top management, 10% say that they are Master Electricians or the Equivalent Title, 5% are project managers, 3% are field managers and 5% say that they have another title. As was the case two years ago, a slight, but significantly higher percentage of respondents who work for firms that do ANY work on a Design/Build or Design/Assist basis say that they are Field Managers (3.3% vs. 1.1% among those whose firms do no D/B or D/A work). In addition, a slight, but significantly higher percentage of respondents who work for firms that do ANY work on a Design/Build or Design/Assist basis say that they are Project Managers (5.4% vs. 3.0% among those whose firms do no D/B or D/A work).

There are no other differences in level of responsibility by D/B or D/A status. [Not shown]

…By Other Firm Characteristics: (NECA Membership, Separate HVAC or Low Voltage Divisions, Business Development, Technology Adoption, Leisure Activities and Where Purchases are Made)

- 18% of firms in this survey are NECA members, statistically unchanged from the 2016 level of 19%. As was the case two years ago, NECA membership is significantly higher among firms that work on a D/B or D/A basis. (Membership is 19% among firms that work on a DB/DA basis versus 12% among firms that do not work this way.)

- 11% of firms have a separate Low Voltage division (12% among firms that offer design services vs. 7% among firms that do not). An additional 5% of firms plan to create a separate Low Voltage division (6% among firms that work on a DB//DA basis vs. 2% of firms that do not work in this way)

- 16% of firms have a separate person or department responsible for business development, up significantly from the 12% measured in 2016 (not shown). Separate business development entities are more prevalent in firms that work on a D/B or D/A basis compared with those who do not work this way (18% vs. 11%). An additional 2% of firms plan to create this responsibility (4% among firms that work on a D/B or D/A basis vs. a statistically significantly lower zero percent among firms that do not offer design services.

- 6% of firms have a separate division that handles HVAC. However, there is no statistically significant difference between firms that work on a DB//DA basis and those that do not offer design services. While 3% of firms plan to create a separate HVAC division, there is no difference between firms that work on a D/B or D/A basis and those who do not.

Other Firm Characteristics			
	Total 2018	Any D/B or D/A Work	No D/B or D/A Work
	(1597)	(1116)	(393)
	%	%	%
Firm is a NECA Member (Q10)			
Yes	18	**19>**	12
Q7C/D [T41]			
Separate division that handles HVAC			
Yes	6	7	6
No	91	92	94
But planning to create HVAC division	3	3	2
Q7A/B [T40]			
Separate division that handles Low Voltage			
Yes	11	**12>**	7
No	87	87	**<93**
But planning to create Low Voltage division	5	**6>**	2
Separate person or department (V1/2, 5) responsible for business development? [T63]			
Yes	16	**18>**	11
No	84	82	89
But planning to create in 12-18 months	2	**4>**	0

Bold indicates that the percentage shown for this firm size is significantly larger than its pair

In addition, the online sample was asked questions in a few more areas, shown below. From these questions we know that electrical contractors that work on a D/B or D/A basis differ from those whose firms offer no design services in the following ways. Specifically, they are significantly more likely to...

- Be Innovators or Early Technology Adopters
- Participate in physical activities including golf, as well as spectator sports and music/theater

- Make purchases from an online company such as Amazon Business or direct from the manufacturer
    - The last finding is particularly interesting and merits being followed up on.
        - In fact, as a side note, we had asked about where purchases were made in the 2006 Profile Study and, although at much lower levels, firms that work on a DB//DA basis were also more likely to purchase direct from the manufacturer compared with firms that offer no design services.

            - In addition, average spending from Big-Box stores is significantly higher among firms that do no DB//DA work.

Other Individual and Firm Characteristics			
	Total 2018	Any D/B or D/A Work	No D/B or D/A Work
Online Sample Only or Selected Versions	(865)	(641)	(224)
	%	%	%
Innovator/Early Technology Adopter	36	**37>**	31
Leisure Activities			
Fishing/Hunting	36	**38>**	31
Exercise/Fitness	26	**27>**	21
Golf	23	**25>**	16
Spectator Sports	18	**19>**	13
Music/Theater	17	**19>**	13
Playing Sports	7	**8>**	5
Where Purchases Are Made [ANY] [92]	(214)	(148)	(56)
	%	%	%
Online From Company Like Amazon Business	33	**39>**	21
Direct from Manufacturer	32	**42>**	10
Where Purchases Are Made [Average] [93]			
Big-Box Stores	22	19	**<28**
Direct from Manufacturer	4	**6>**	0.7

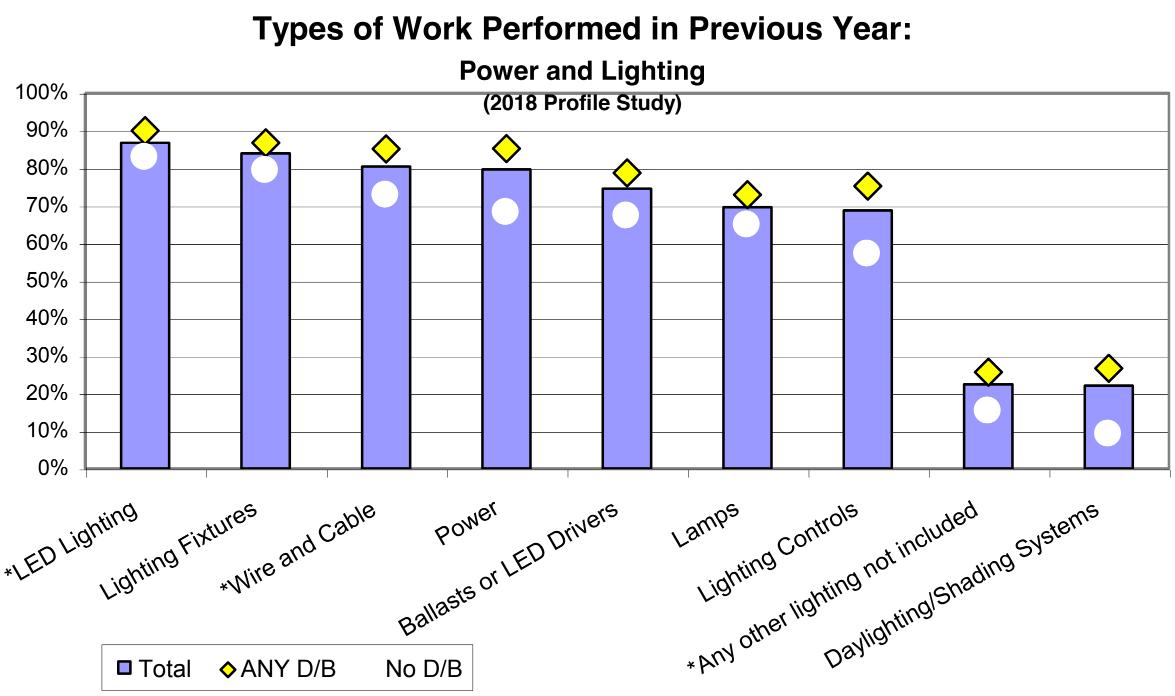
Bolded numbers > and < indicate statistically significant differences in the direction of the arrow.

Types of Work Performed
…By Categories: Power and Lighting

In 2018, electrical contracting firms that worked on a Design/Build or Design/Assist basis in the previous year (2017) were…

- Significantly more likely to have worked in each of the aspects of Power and Lighting. This was also the case since at least the 2012 Profile Study [Earlier years are not shown.]

All differences shown are significant at the 90% level of confidence



* Added in the 2018 Profile Study

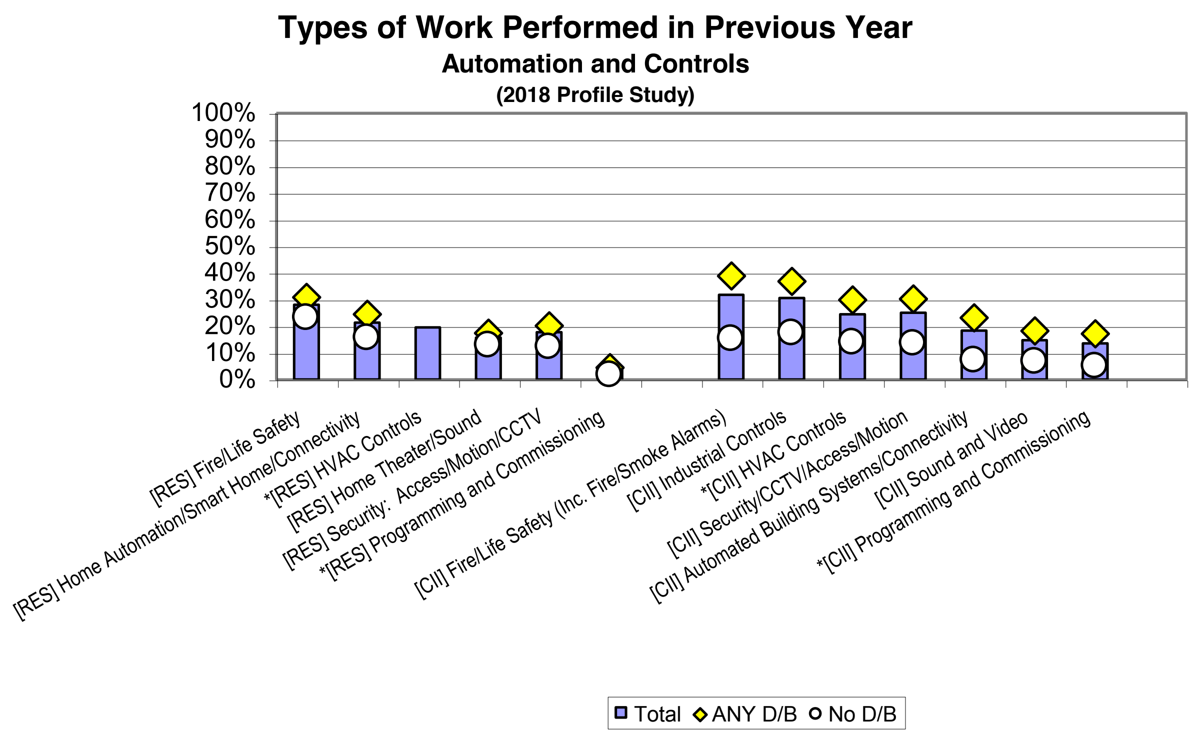
Full questionnaire wording for LED Lighting is LED Lighting (including Lamps, Fixtures and Controls)

Types of Work Performed
…By Categories: Automation/Controls Systems

In 2018, electrical contracting firms that worked on a Design/Build or Design/Assist basis in the previous year (2017) were…

- Significantly more likely to have worked in *all* of the aspects of **CII** Automation/Controls and with the exception of Residential HVAC Controls to perform *all* of the aspects of **Residential** Automation/Controls than those who did no Design/Build or Design/Assist work in 2017. [Note: This category is reported *separately* for Residential and CII because slightly different project types were asked by building type. For example, Industrial Controls was not asked in the case of Residential construction nor was Home Automation asked of those who work only in CII.]
    - This was also the case two years and four years ago. [Earlier years are not shown.]

All differences shown are significant at the 90% level of confidence



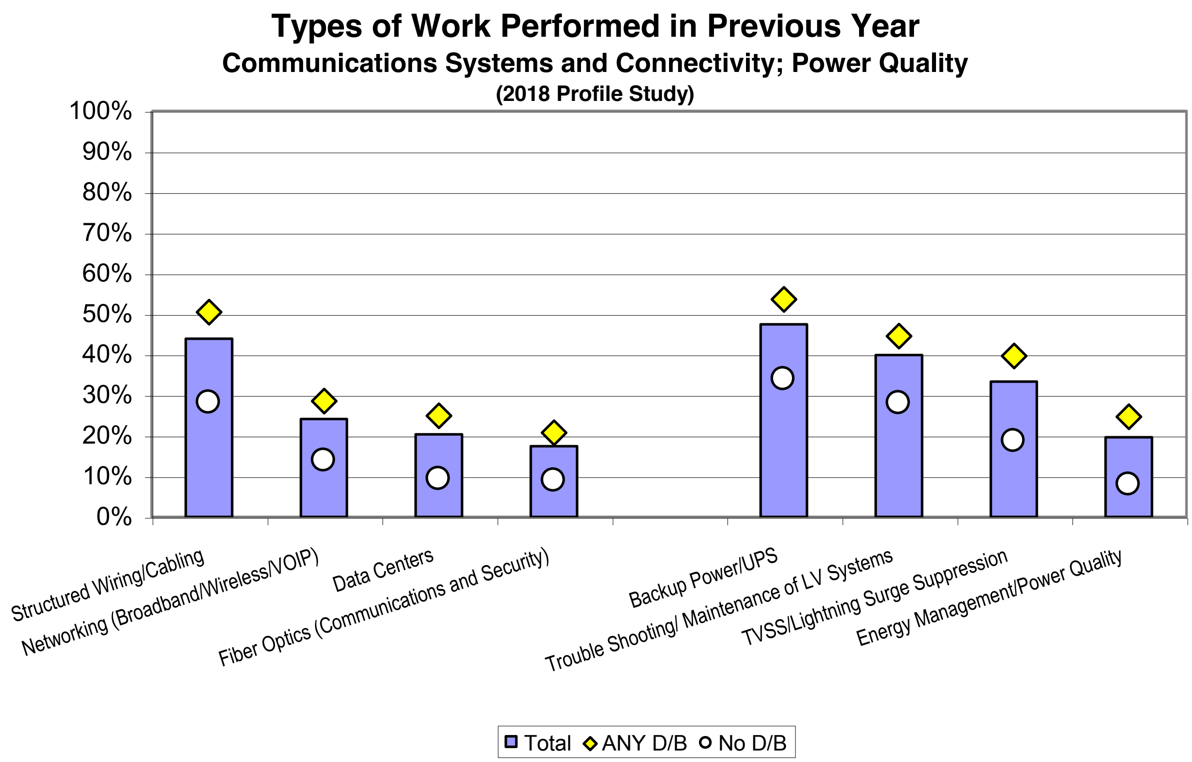
* Added in the 2016 Profile Study

Types of Work Performed
…By Categories: Communications Systems/Connectivity and Power Quality

Electrical contracting firms that worked on a Design/Build or Design/Assist basis in 2017 were…

- Significantly more likely to have worked in all aspects of Communications Systems and Connectivity and Power Quality than those who do **not** work on a Design/Build or Design/Assist basis.
    - This was also the case in each of the Profile Studies going back to 2006 (reporting on the previous year) for the aspects that were asked in those years (earlier years not shown).

All differences shown are significant at the 90% level of confidence

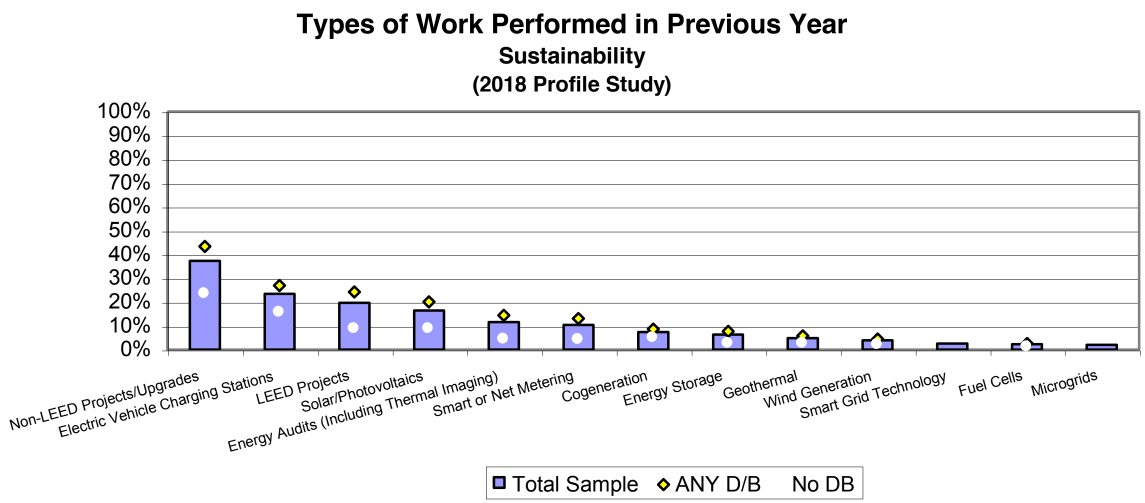


Types of Work Performed
…By Categories: Sustainability

Electrical contracting firms that worked on a Design/Build or Design/Assist basis in 2017 were…

- Significantly more likely to have worked on almost all aspects of Sustainability than those who did not do DB//DA projects. The two exceptions are Smart Grid Technology and Microgrids.
  - These results essentially mirror results from the Profile Studies going back to 2014 (reporting on 2013).

All differences shown are significant at the 90% level of confidence



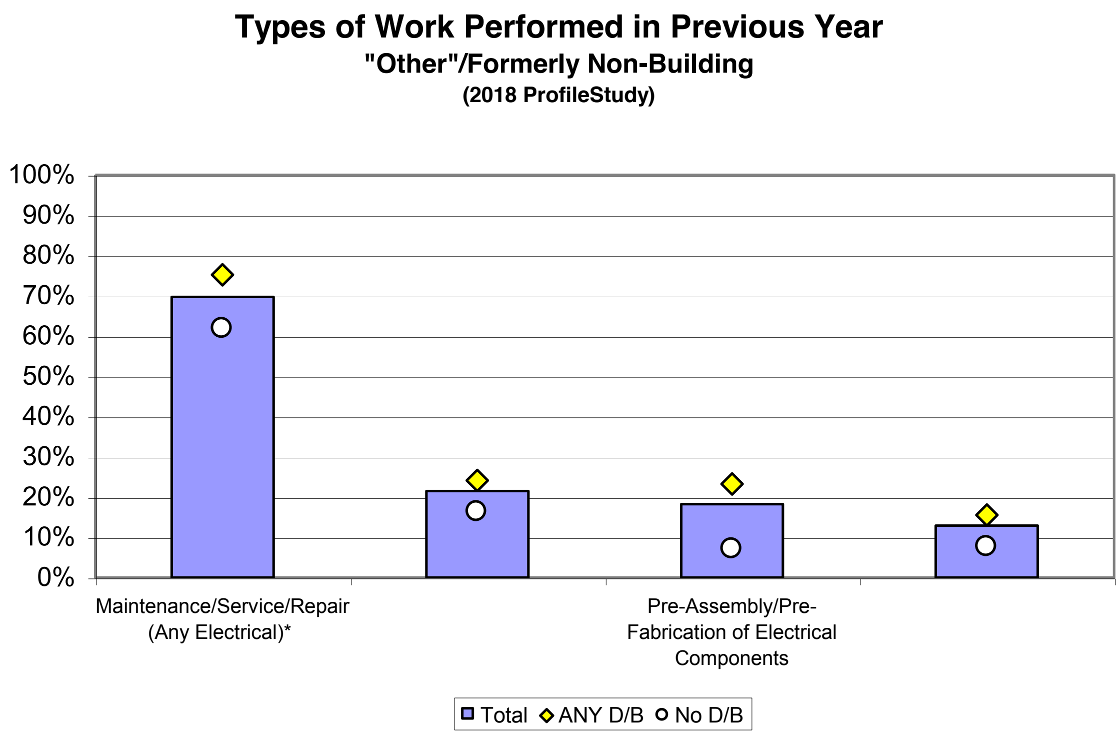
…By Categories: "Other" (Formerly Non-Building)

Electrical contracting firms that worked on a Design/Build or Design/Assist basis in 2017 were…

Significantly more likely to have worked on Maintenance/Service/Repair (Any Electrical), HVAC/ Mechanical, Pre-Assembly/Prefabrication of Electrical Components, and/or Water Utilities or Waste Water Treatment Plants.

- This was also the case in the 2018 Profile Study for the three types of work that were measured in both years. (Maintenance/Service/Repair_Any Electrical) was first added in the 2018 Profile Study and cannot be trended.

All differences shown are significant at the 90% level of confidence



Types of Work Performed (Sources of Revenue)

…CII Vs. Residential

In 2017, electrical contracting firms that work on a Design/Build or Assist basis were significantly more likely to have done ANY work on Commercial/Industrial/Institutional (CII) projects (92% vs. 81% for firms that do not offer D/B or D/A services). Further, firms working on a DB//DA basis also obtain a significantly higher percentage of their *revenue* from *CII* work compared with electrical contractors that do **not** work on a D/B or D/A basis (54% vs. 38%).

- These findings are consistent with the fact that larger firms are even more likely than smaller firms to perform D/B or D/A work (and it is larger firms that are more likely to work on CII projects).

While an approximately equal percentage of firms (77% - 80%) perform ANY Residential work, firms that do **not** perform any D/B or D/A services derive a significantly *higher* percentage of their *average* revenue from *Residential* building particularly single-family housing (56% vs. 39%.)

Firms that work on a DB//DA basis are significantly more likely to perform ANY Non-Building work (36% vs. 22% for firms that do not work on a D/B or D/A basis) including ANY Utility work (25% vs.12%). In addition, they derive significantly more average revenue from *certain types* of Non-Building projects: Distributed Generation/Alternative Energy and Electrical Vehicle Charging Equipment but derive significantly less revenue from Smart Grids. Note however, that although significant, the percentages performing these types of Non-Building projects are very small.

Average revenue is illustrated below; Any revenue is not shown

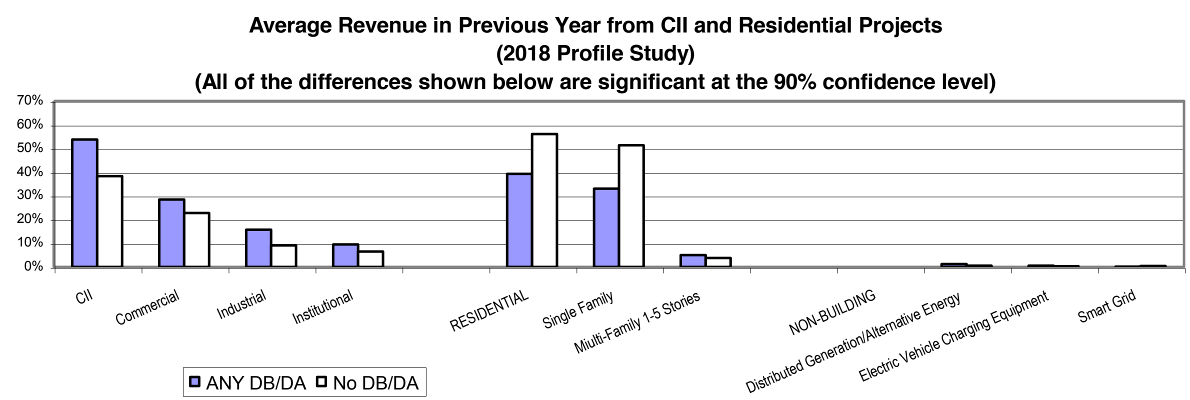


Table is Q4, Table 23 and Table 24

The following are not shown above since there is no difference between firms that offer DB//DA services and those that do not on Not Multifamily 6+; Utility or Linework, Transportation Lighting and Communications, Power Generation and/or Substations and Energy Storage.

Types of Work Performed

…By Sectors (New Vs. Modernization/Retrofit Vs. Maintenance/Repair)

Firms that worked on a Design/Build or Design/Assist basis in 2017 were more likely than firms that do not offer design services to be well-represented in each of the three major construction sectors.

- Electrical contracting firms that worked on a D/B or D/A basis in 2017 were significantly more likely to have worked on New Construction, Modernization/Retrofit and on Maintenance, but not on Repair, where there is no statistically significant difference.
  - This was also the case since at least 2013 (reported in the 2014 Profile Study).

Electrical Contracting Firm Has Done "ANY" of This Work in…

	2017			2015			2013		
	Total	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**	**Total**	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**	**Total**	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
	(1597)	(1116)	(393)	(2419)	(1740)	(547)	(2722)	(1860)	(733)
	%	%	%	%	%	%	%	%	%
ANY New Construction	76	**83>**	61	78	**83>**	68	77	**84>**	64
ANY Modernization/ Retrofit	77	**83>**	66	77	**83>**	65	76	**82>**	63
ANY Maintenance/ Repair	88	89=	87	89	**91>**	84	90	**91>**	89
Repair	74	73=	77	74	**75>**	71	75	75	74
ANY Maintenance	71	**75>**	63	71	**75>**	58	72	**76>**	63
Maintenance – No Contract	57	**60>**	51	57	**61>**	44	57	**61>**	49
Maintenance (Under Contract)	37	**42>**	26	37	**38>**	28	37	**41>**	27

Q5 **Bold** and > indicates a significant difference at the 90% level of confidence

…By Sectors (New Vs. Rehab Vs. Maintenance/Repair), Continued

In 2017, there were a number of differences between firms that worked on a Design/Build or Design/Assist compared with firms that do not offer these services in terms of average ***revenue***:

- Firms that work on a D/B or D/A basis derive significantly more revenue on average from New Construction but less revenue on average from Repair or from Maintenance (not done under contract).

- In contrast, firms that do **not** work on a D/B or D/A basis derive a significantly higher percentage of their revenue from Repair or from Maintenance (not done under contract) compared to firms that offer Design/Build or Design/Assist services. This finding is consistent with the fact that smaller firms derive a larger percentage of average revenue from Repair work.

    - A number of these findings have been consistent over time: Since at least the 2014 Profile study (reporting on 2013), firms that work on a Design/Build or Design/Assist basis derive a greater percentage of average revenue from New Construction and a smaller percentage of average revenue from Repair compared with firms that do not offer design services. Modernization/retrofit and Maintenance (no contract) has varied over time.

Mean Revenue From This Work

	2017			**2015**			**2013**		
	Total	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**	**Total**	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**	**Total**	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
	(1597)	(1116)	(393)	(2419)	(1740)	(547)	(2722)	(1860)	(733)
	%	%	%	%	%	%	%	%	%
New Construction	33	**36>**	25	34	**35>**	30	32	**35>**	26
Modernization/Retrofit	27	**=**	=	27	**28>**	26	27	**28>**	26
Repair	20	17	**<28**	20	17	**<26**	20	17	**<26**
Maintenance – No contract	12	11	**<14**	12	**12>**	11	13	12	**<13**
Maintenance (Under Contract)	9	**=**	=	7	=	=	9	=	=

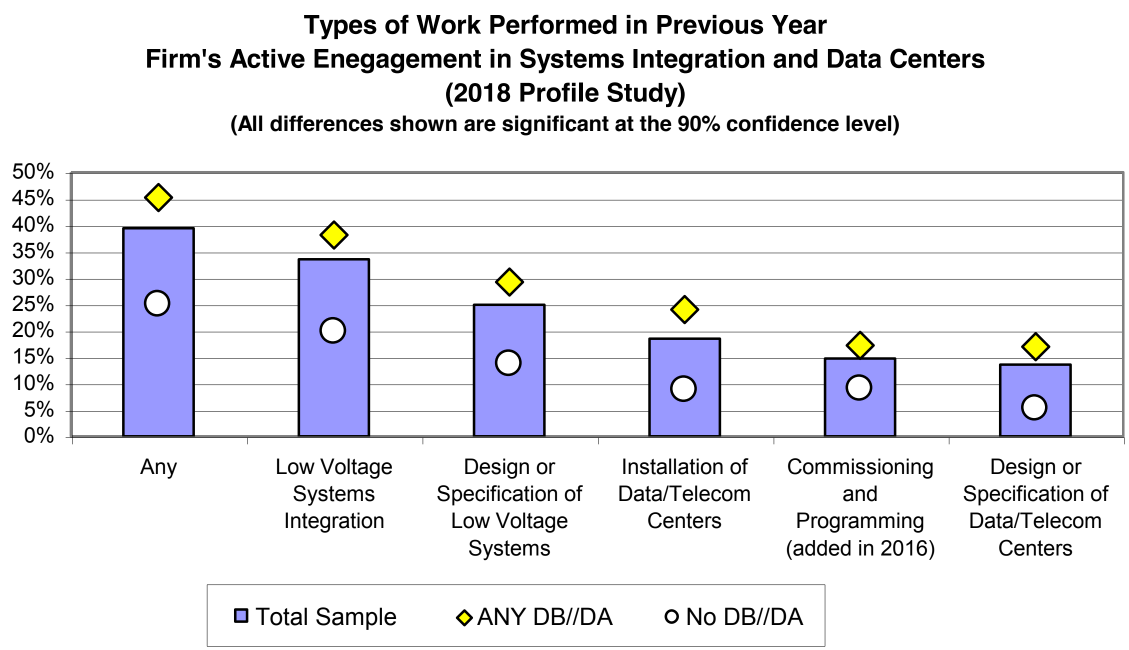
Bold < > indicates that the percentage shown for this firm size is significantly larger in the direction of the arrow.

Types of Work Performed
…Firms' Active Engagement in Systems Integration and Data Centers

As noted earlier in this report, 11% of firms currently have a separate low voltage division, statistically unchanged from the 10% recorded in the 2016 Profile Study (12% among firms that work on a D/B or D/A basis vs. a statistically lower 7% among firms that do not work this way; both are unchanged from two years ago); an additional 5% are planning to set one up (6% among firms that offer DB//DA services versus a statistically lower 2% among firms that do not offer D/B or or D/A services.)

Electrical contracting firms that worked on a Design/Build or Design/Assist basis in 2017 were…

- Significantly even more likely to have worked in each aspect of Systems Integration and Data Centers compared with firms that do **not** work on a Design/Build or Design/Assist basis.
    - This was also the case since at least the 2008 Profile Study (not shown), for the systems that were tested in each of those studies.



Version 5, Q15

…Roles Played by Firm in Integrated Systems

Electrical contractors were asked to indicate the extent to which they specify, install or both specify **and** install selected integrated systems.

- A whopping 68% of electrical contractors that perform design/build work also both specify *and* install Lighting (including Controls);
  - In addition to Lighting, firms that do DB/DA work are significantly more likely to both specify *and* install: Fire/Life Safety, Communications, Building Controls (including HVAC) and HVAC (not including Controls) compared with firms that do not work on a D/B or D/A basis.
    - However, there is no difference between firms that on work on a DB/DA or not in the case of performing Security work.
- In addition, there is also no difference by whether or not the firm offers design services in the extent to which the firm installs only.

Roles Played by Firm in Integrated Systems					
	Specify *and* Install			**Install *Only***	
	Do "ANY" DB//DA Work	**Do No DB//DA Work**		**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
	(165)	(60)		(165)	(60)
Version 7, Q16 Base (243)	%	%		%	%
Lighting (including Controls)	**68>**	52		24	32
Fire/Life Safety	**32>**	20		34	27
Security	20	17		31	23
Communications (VDV, etc.)	**30>**	13		27	20
Building Controls (including HVAC)	**20>**	10		36	28
HVAC (not including Controls)	**12>**	5		26	18

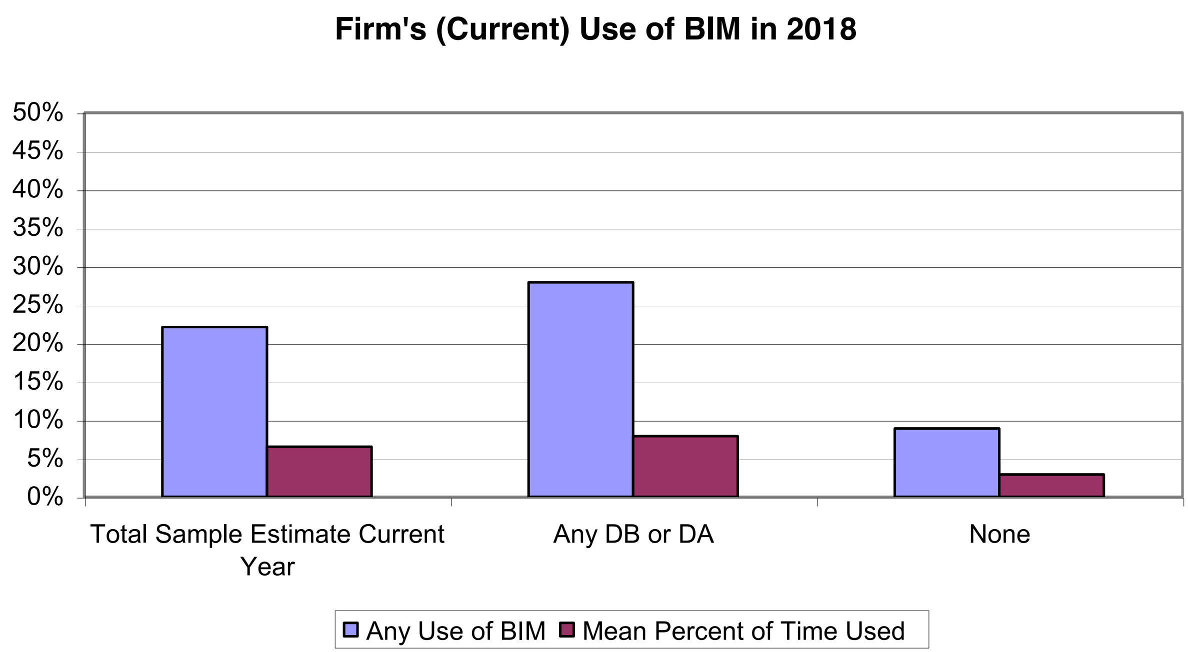
How Contractors Perform Work

BIM (Building Information Modeling)

Electrical contractors were asked to estimate the percentage of the time that they or someone in their firm uses BIM (Building Information Modeling) for the current year (2018).

As shown below, firms that work on a DB//DA basis are far more likely to make use of BIM at all -- Any -- and to report using BIM a higher percentage of the time.

- This was also the case since the 2012 Profile Study (earlier years are not shown).



Specifications

Completeness of Plans and Specs

Across the total sample, about 7 in 10 (73%) say that "any" of the plans and specs that they currently receive are incomplete. Among electrical contractors who work on a Design/Build or Design/Assist basis, the percent who say that they receive ANY incomplete plans and specs is 83% compared to a significantly lower percentage cited by those who do not work on a Design/Build or Design/Assist basis (55%).

- Across the total sample, electrical contractors say that they receive incomplete plans and specs on average 42% of the time. Electrical contractors who work on a Design/Build or Design/Assist basis estimate that an average of 46% of the plans and specs that they receive are incomplete compared to a significantly lower percentage cited by those who do not work on a Design/Build or Design/Assist basis (31%).

As might be expected, the incompleteness of plans and specs varies dramatically by building category. It is highest in single-family construction and declines as the level of complexity increases.

- With the exception of Institutional construction, where there is no difference in terms of average percentage of incomplete plans and specs, firms that work on an D/B or D/A basis are more likely than firms that do not work this way to receive a higher percentage of plans and specs that are incomplete. The differences shown on the next page are significant at the 90% level of confidence.

Completeness of Plans and Specs (ANY and Average) Among Those Who Work In This Building Type… 2018 Profile Study (V7_ N= 243)			
	Total	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
	%	%	%
Single-Family			
ANY	61	**70>**	48 [p505]
Average	37	**43>**	28
Commercial			
ANY	65	**74>**	42 [p488]
Average	23	**27>**	16
Industrial			
ANY	59	**64>**	25 [p499]
Average	22	**24>**	9
Multi-Family			
ANY	48	**55>**	28[p499
Average	18	**22>**	7
Institutional			
ANY	55	**61>**	33 [p493/4]
Average	15	17=	10

Version 7_Q14B (Base varies: Those who work on this construction type)

Bold and > indicates a significant difference at the 90% level of confidence
'=' indicates no difference from its 'pair'
** (Base varies: those who work on this construction type)

Role of Engineers within Electrical Contracting Firms

Electrical contractors were asked about the professional relationship(s) that their firm has with engineers:

- Consulting Relationship
- On staff or in a separate engineering division
  - These questions were asked independently of each other since we did not want to assume that one type of relationship would rule out the other.

Across the total sample, almost five in ten (47%) electrical contracting firms have a professional relationship with an engineer. While *consulting* relationships are more prevalent (42%), 13% report having an engineer on staff and/or having a separate engineering division. Almost one in ten firms (8%) have **both** a consulting relationship as well as having an engineer on staff or a separate engineering division. Firms that work on a Design /Build or Design/Assist basis are significantly more likely than those that do not provide design services to have a (ANY) professional relationship with an engineer or to have a consulting relationship with an engineer or to have **both** a consulting relationship and an engineer on staff.

- There is no difference by whether design services are offered in terms of having an engineer on staff/or as a separate division.

With one exception, these results are consistent with the 2016 Profile Study findings. The only difference is that in the 2018 Profile Study firms working on a D/B or D/A basis are now significantly more like than firms not offering design services to have **both** a consulting relationship and an engineer on staff. This difference did not emerge two years ago. (Note that the 2016 Profile Study was the first time that questions were asked about the professional relationship(s) that electrical contracting firms have with engineers.)

The high prevalence of working with engineers speaks to the complexity of much of the work performed by electrical contractors.

	Professional Relationship With Engineer(s) 2018 Profile Study		
		Design Build or Design Assist	
	TOTAL	**ANY**	**None**
	(243)	(165)	(60)
	%	%	%
ANY Professional Relationship	47	**55>**	32
Consulting	42	**50>**	27
On Staff/Separate Division	13	=	=
Both	8	**10>**	3

Project Collaboration/Level of Influence

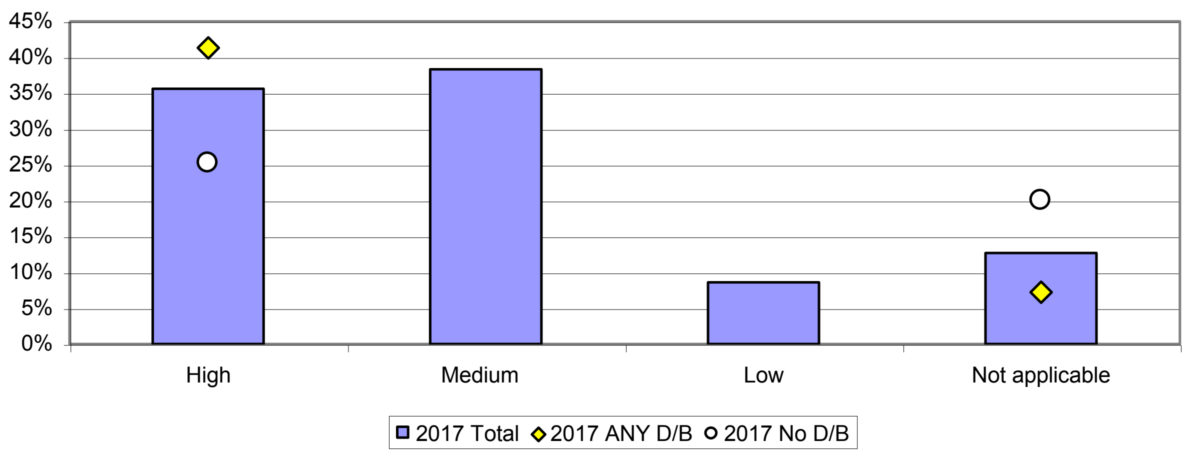
About three-quarters of electrical contractors (74%) report having a “high” or “medium” ability to influence the overall electrical design or specifications with building owners and/or design team members.

- 36% describe their level of influence as "high" while 38% characterize their level of influence as "medium."

- Electrical contractors who work on a D/B or D/A basis are more likely than those who do not work this way to describe their influence as “high” (41% vs. 25%) and significantly less likely to say that the “question is “not applicable to them”.

    - These results are generally consistent with the findings from two and four years ago (not shown).

Ability to Influence Electrical Design or Specifications
2018 Profile Study
(All differences shown are significant at the 90% confidence level)



Electrical contractors were also asked about their current level of collaboration with the following key trades: Mechanical, HVAC, Plumbing and Systems Integrator from other trades.

- Electrical contractors that work on a Design/Build or Design/Assist basis interact more than those who do not offer design services with those who work in HVAC and/or with Systems Integrators from Other Trades. The level of interaction is "Medium" in the case of those who work on HVAC and either a High or Low (but not "Not Applicable) in the case of Systems Integrators from Other Trades.

	Current Level of Project Collaboration With Selected Trades… 2018 Profile Study		
	Total	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
	MECHANICAL		
	%	%	%
High	14	=	=
Medium	35	**=**	=
Low	24	=	=
Not Applicable	22	=	**=**
	HVAC		
High	16	=	=
Medium	33	**37>**	23
Low	23	=	=
Not Applicable	25	22	**<35**
	PLUMBING		
High	11	=	=
Medium	25	=	=
Low	26	=	=
Not Applicable	33	30	**<47**
	SYSTEMS INTEGRATOR FROM OTHER TRADES		
High	13	**16>**	7
Medium	23	**=**	=
Low	19	**23>**	13
Not Applicable	38	32	**<54**

Tables 199 ff

Building Stage That Electrical Contracting Firm Gets Involved in Project Collaboration

Electrical contractors were asked at what stage their firm typically gets involved in Project Collaboration. This question was first asked in the 2016 Profile Study. Of those who gave a definitive answer (rather than "it depends") Construction (34%) and Pre-Construction (20%) were mentioned most often. 10% say that they get involved in the Project Design stage. Only 1% say that they get involved in Procurement.

- As shown below, firms working on a D/B or D/A basis were more likely than firms that don't work in this way to get involved in Pre-Construction. There are no other meaningful differences on this measure between firms that offer design services and those that do not.

Stage the Firm Typically Gets Involved in Project Collaboration			
		Work on a Design/Build or Design/Assist Basis	
Base: Version 7 (N=243)	Total	ANY	None
	(243)	(165)	(60)
	%	%	%
Project Design	10	=	**=**
Pre-Construction	20	**25>**	10
Procurement	1	=	=
Construction	34	**=**	**=**
It depends	32	=	=

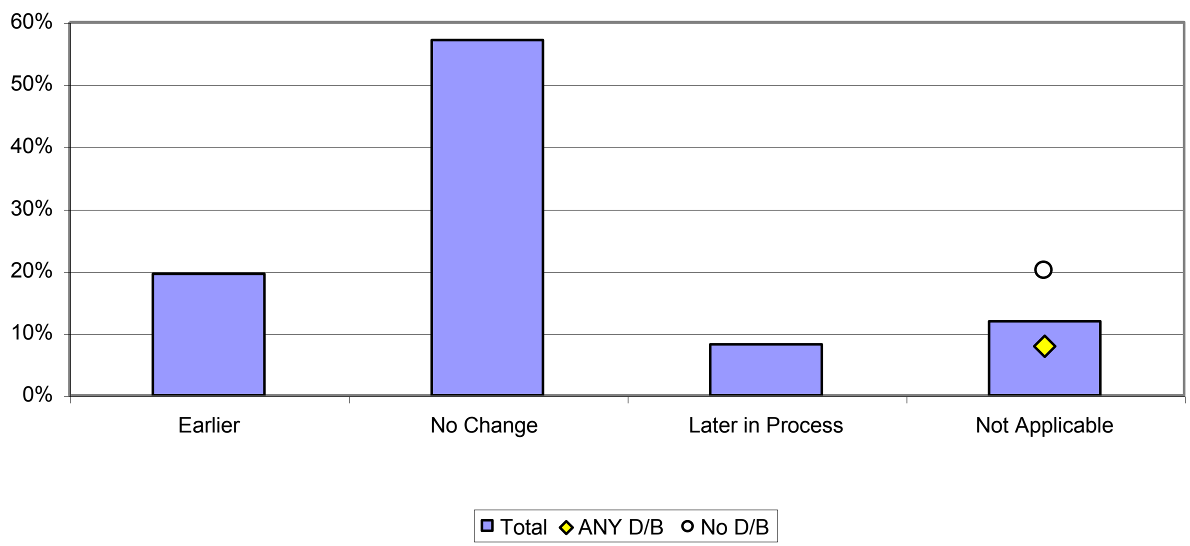
Q15c

Across the total sample, almost two in 10 electrical contractors say that they now get involved *earlier* in the design collaboration; about 60% report *no change* and 8% say that they now get involved *later* in the process. The remainder said that this question is not applicable to them or that they don't know the answer.

- Those firms that work on a D/B or D/A basis are far less likely to say that the question is "not applicable" to them. There are no other statistically significant differences between electrical contractors who work on a D/B or D/A basis and those who do not work on this basis on the chart below.

    - Two and four years ago, electrical contractors that work on a DB//DA basis were also more likely than those that don't work in this way to say that they got involved earlier in the process (not shown), in addition to saying that the question wasn't applicable.

Current Level of Project Collaboration Compared With 3- 5 Years Ago
2018 Profile Study
(All differences shown below are significant at the 90% level of confidence)



Version 7, N= 243 Table 169

How Products are Specified

About three-quarters of the specifications given to electrical contractors are “Multiple” or “Or Equal” or “Performance Specified” which is another indication of contractors’ ability to select brands. This breakdown between single and other than single specifications has been consistent for many years.

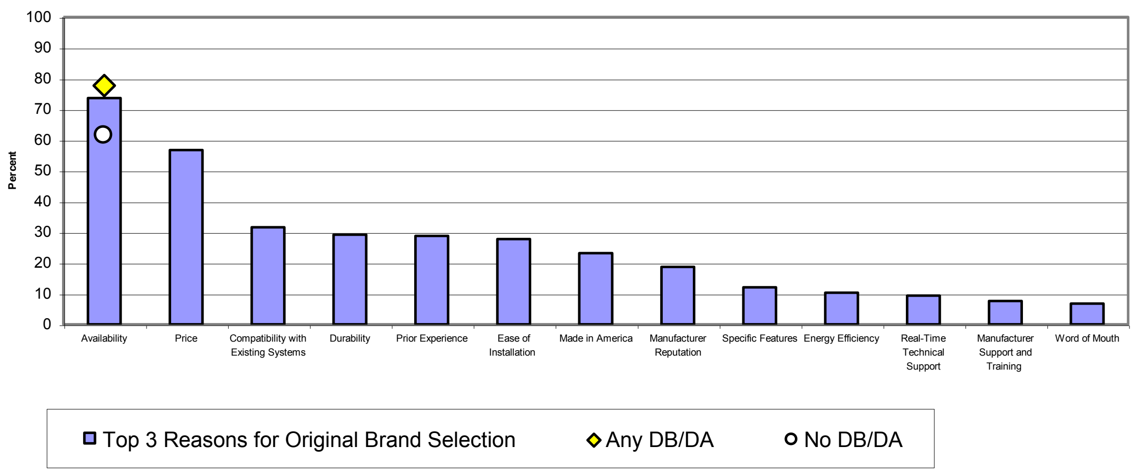
- In the 2018 Profile Study report, there are no differences between those firms that work on a D/B or D/A basis and those that do not offer design services.
    - Two years ago, firms that work on a D/B or D/A basis were significantly more likely than those firms that do not offer design services to be given specs that are “or equal to”. In 2014 there were no differences in terms of specification by whether a firm offered design services or not (earlier years not shown).

	Average Percent of Specifications That Are… 2018 Profile Study		
	Total	ANY D/B Work	No D/B Work
Single Brand	27%	=	=
Multiple Brand	29%	=	=
"Or Equal To"	29%	**=**	=
Performance Specified	15%	=	=

Main Reasons for Original Brand Selection

In the 2018 Profile results, there is only one difference between firms that work on a Design/Build or Design/Assist basis and those that don't work this way: Availability emerges as even more important to firms that work on a DB//DA basis. This is in slight contrast to results from 2016 and 2014 where there were no differences between electrical contractors that work on a Design/Build or Design/Assist basis and those who do not offer design services in terms of the their top 3 reasons for Original Brand Selection. However, in all three time periods "Availability" and "Price" emerge as the most important reasons regardless of whether the firm offers design services or not.

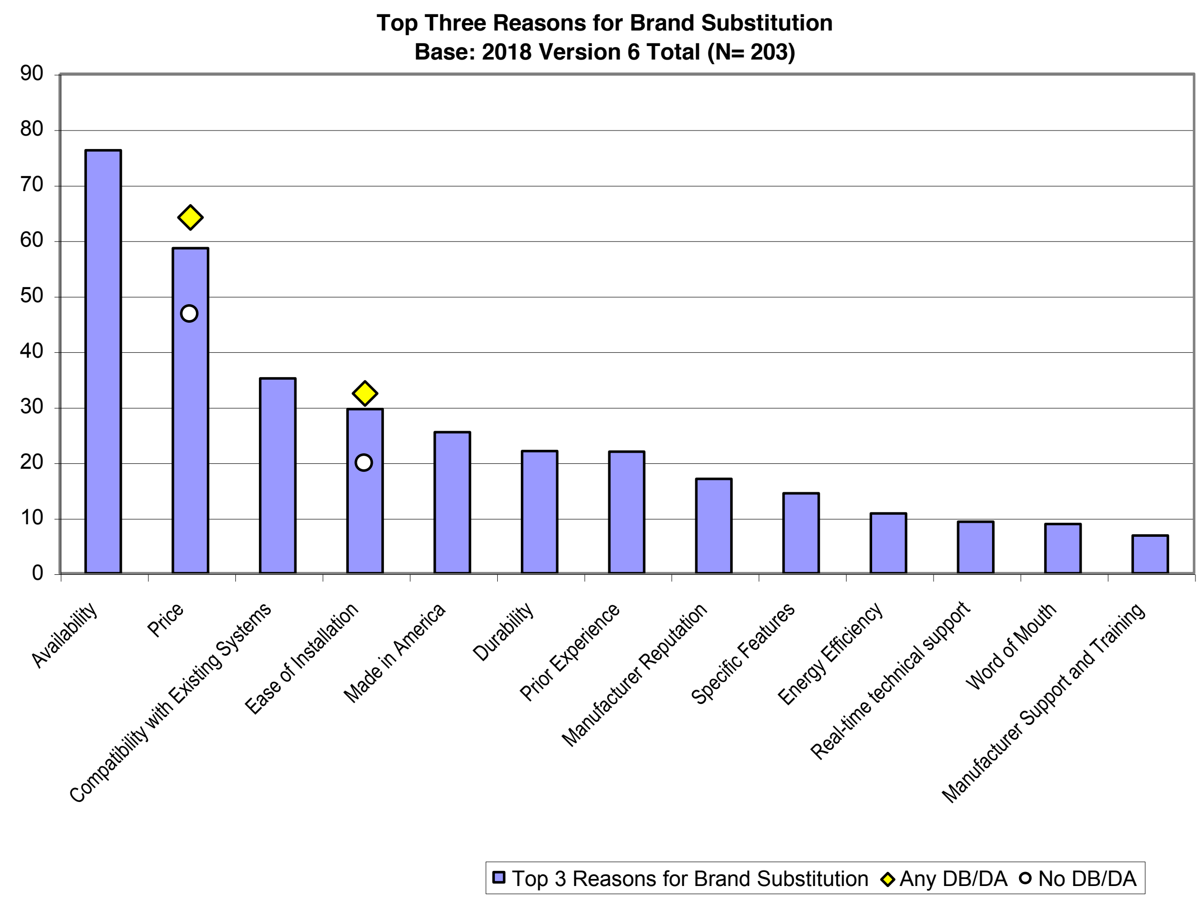
Top 3 Reasons for Original Brand Selection
Base: 2018 Version 6 Total (N= 203)



Version 6_Q16b

Main Reasons for Brand Substitution

In the 2018 Profile results, there are only two differences between firms that work on a Design/Build or Design/Assist basis and those that don't work this way on Brand Substitution: specifically, "Price" and "Ease of Installation" emerge as even more important to firms that work on a DB//DA basis. This is in slight contrast to results from 2016 and 2014 where there were no differences between electrical contractors that work on a Design/Build or Design/Assist basis and those that don't offer design services in terms of the their top 3 reasons for brand substitution. However, in all three time periods "Availability" and "Price" emerge as the most important reasons regardless of whether the firm offers design services or not.



Version 6_Q15b

Training (including Certification)

74% of electrical contracting firms took training in the *past* 12 months and 77% say that they plan to seek training in the *next* 12 months. There is no statistically significant difference in the level of training taken (77%) or who are planning to take training (74%). However, firms that work on a DB/DA basis are much more likely to say that they plan to take training compared with firms that do not offer design services.

- Firms that work on a Design/Build or Design/Assist basis are significantly more likely to cite organizations and associations as a source of *training* compared to firms that do not offer design services. There are no other differences by source of *training* between electrical contracting firms that work on a D/B or D/A basis compared with firms that don't offer design/build or assist services.
- There is no difference between firms that work on a Design/Build or Design/Assist and those that do not offer design services by source of *certification*.

Training Courses 2018 Profile Study

	Future Training				Past Training		
	Total	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**		**Total**	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
	(223)	(156)	(66)		(223)	(156)	(66)
Plan to Take Training [61]	77%	**82%>**	68%		Not Asked	Not Asked	Not Asked
Took Training [60]	Not Asked	Not Asked	Not Asked		74%	=	=

	Past/Future Training				Past/Future Certification		
	Total	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**		**Total**	**Do "ANY" DB//DA Work**	**Do No DB//DA Work**
Plan to Take or Took Training	(189)	(134)	(49)*		(189)	(134)	(49)*
Organization or Association	52%	**57%>**	40%		45%	**=**	=
Manufacturer	31%	**=**	=		23%	**=**	=
Vocational or Other School	30%	=	=		27%	=	=
All Other Sources	15%	=	=		15%	=	=

*Caution: Small Base

Course topics: The following courses are more likely to be cited by those who work on a Design/Build or Design/Assist basis than those who do not work this way.[1]

- Course topics of a technical nature, including:
    - Most types of Automation/Controls Systems including Fire/Life Safety Systems, Home Automation Systems, (Commercial) Building Automation Systems; Lighting: Drivers and Ballasts, Lighting Design; Safety (Electrical/Personal/On-site/Jobsite); Power Quality; Electrical Testing and Maintenance; Electrical System Design or BIM; Collaborative Building, Prefab/Off-Site Building; Renovation/MACS/Maintenance.
- Course topics of a business-oriented nature:
    - Estimating/Financial Management; Developing New Business Opportunities; Increasing Productivity and How to Use New Software

It is interesting to note that there is not yet a difference between firms that do and do not offer design services in terms of course work involving drones or the IoT (Internet of Things).

The full listing of courses is shown on the next page.

On the chart on the next page, empty cells indicate no difference between firms working on a D/B or D/A basis and those that do not offer design services

*Caution: Small Base

[1] Starting with the 2016 Profile Study, the periods of *past* 12 months and *next* 12 months were combined

Training – Main Focus of Course Work (2018 Profile Study)			
	Total	ANY DB//DA	No DB//DA
Base Size of Version	(189)	(134)	(49)*
Will Take/Has Taken Training	*97%*	*98%*	*98%*
And Answered Question Re: Course Work	*(184)*	*(131)*	*(47)*
	%	*%*	*%*
NEC Changes	54		
AUTOMATION/CONTROLS (NET)	32	**37>**	*14*
Fire / Life Safety Systems	20	**23>**	*10*
Automation / Controls: Home Auto Systems	9	**11>**	***4***
Automation / Controls: Build Automation System	15	**18>**	*8*
Security Systems	13		
LIGHTING (Net)	46		
Lighting: Controls / Systems	33		
Lighting: Lamp Technology (including LED)	33		
Lighting: Drivers/Ballasts	23	**26>**	*15*
Lighting: Lighting Design	18	**23>**	*6*
Grounding / Bonding	32		
Safety (Electrical / Personal / On-site/Jobsite]	37	**42>**	*29*
GREEN/SUSTAINABLE NET	23		
Green: Alternative Energy Systems	11		
Green: Electric Vehicle Charging Stations	10		
Green: LEED Certification	6		
Green: Energy Use Regulations	6		
Green: Community Solar	6		
Green: Energy Storage	6		
Green: Green / Sustain Build/ Energy Audits	7		
CABLING (NET)	23		
Cabling: Cabling (Power)	14		
Cabling: Data, Telecom (Cable, Conduit, etc.)	15		
Cabling: Data and Telecom: Testing	13		
Power Quality	14	**18>**	*6*
Electrical Testing and Maintenance	27	**30>**	*18*
Estimating / Financial Management	13	**18>**	*2*
Design/Build	11		
Electrical System Design or BIM	9	**11>**	*4*
Developing New Business Opportunities	8	**11>**	*0*
Increasing Productivity	9	**12>**	*0*
How to Use New Software	9	**10>**	*2*
Systems Integration	9		
Sound and Video (Residential)	7		
Sound and Video (Commercial)	5		
Prefab/Off-Site Building	3	**5>**	*0*
Renovation / MACs / Maintenance	3	**5>**	*0*
Line Work	4		
Collaborative Building (Including IPD)	2	**2>**	*0*
Drones	2		
HVAC	10		

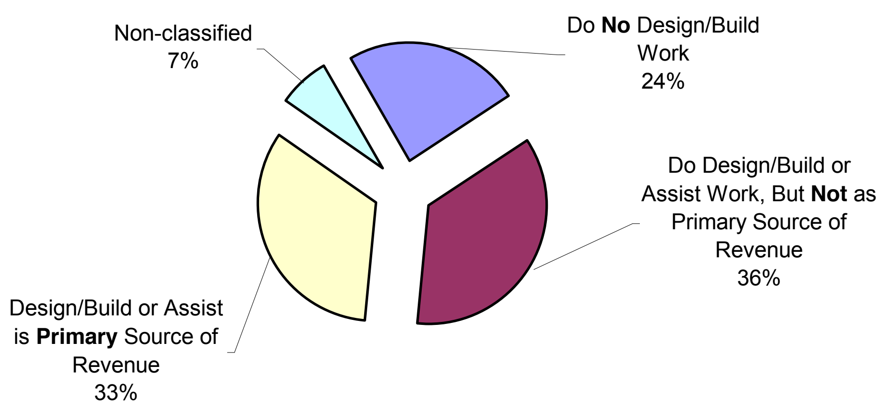
IoT	7		

WHEN DESIGN/BUILD OR DESIGN/ASSIST IS THE *PRIMARY* SOURCE OF REVENUE

In the 2018 Profile Study, Design/Build or Design/Assist projects were the ***primary*** source of revenue for 33% of electrical contractors in the previous year (2017). This is statistically unchanged from two years earlier when it was 34%

- On average, Design/Build or Design/Assist work accounts for a whopping 84% of revenue for electrical contractors who work *primarily* on a DB//DA basis, which is statistically unchanged since 2006. [Earlier results are not shown].

Percentage of Firms Working on a Design/Build Basis: 2018 Profile Study



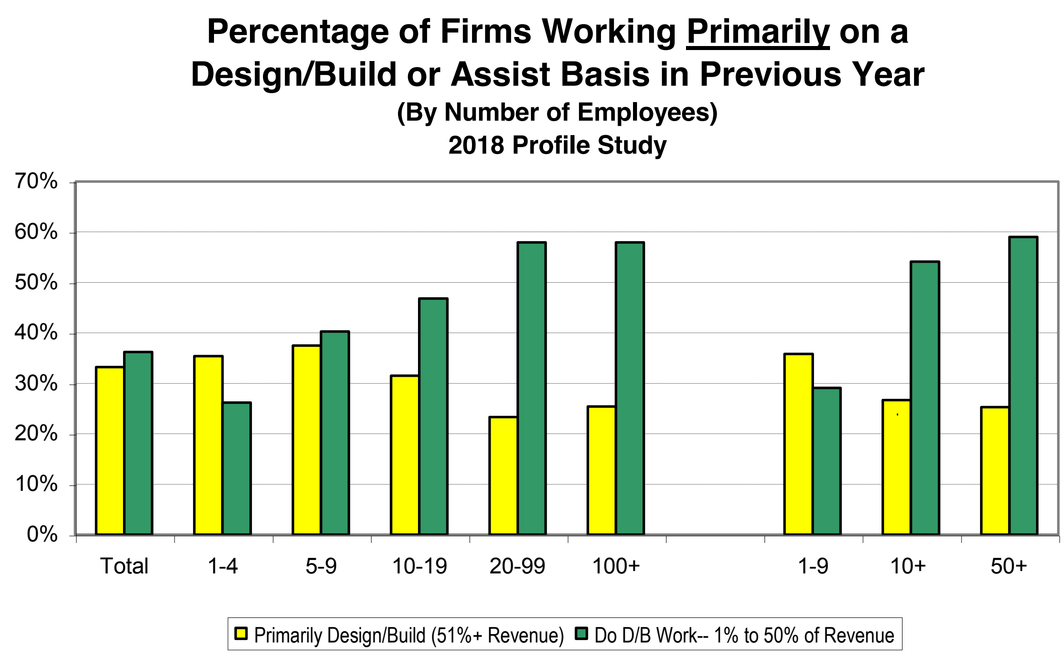
In some cases, the trending tends to move around when looking at firms that work ***primarily* on** a D/B or D/A basis. Therefore, in this section, we'll only note differences over time if there is consistency rather than simply jumping around.

Who Works Primarily on a Design/Build or Design/Assist Basis?

…By Number of Employees

The main differences between firms working ***primarily*** on a DB//DA basis and those where DB//DA revenue accounts for between 1% and 50% of revenue are in terms of company size, specifically firm's number of employees and annual revenue.

- Smaller firms (1-4 and 1-9 employees) are more likely than larger firms (10+ employees) to work ***primarily*** on a DB//DA basis. In contrast, firms with 10+ employees are more likely to work on a Design/Build or Design/Assist basis when it accounts for less than 50% of their revenue (the green bars) than when it is their primary source of revenue (the yellow bars).



…By Annual Revenue

As noted earlier in the report, 33% of electrical contractors work ***primarily*** on a Design/Build or Design/Assist basis and an additional 36% perform D/B or D/A work but where it is not their primary source of revenue.

- In 2017, there was only one significant difference by annual revenue: firms with annual revenue of $10 million or more were significantly *less* likely than firms of other sizes to work ***primarily*** on a DB//DA basis. This was also the case two years ago, (not shown).

PERFORM DESIGN/BUILD OR DESIGN/ASSIST WORK IN PREVIOUS YEAR (2017) (BY ANNUAL REVENUE)

	Total	<$250K	Between $250K and $1 Million	Between $1 Million and $2.5 Million	Between $2.5 Million and $10 Million	$10 Million +
	(1597)	(689)	(381)	(153)	(143)	(137)
Primarily D/B or D/A (51%+ Revenue)	33%		**38%>**			*18%*
Do D/B-A Work—1% to 50% of Revenue	36%	*23%*	**<40%**	**<49%**	**53%**	**<67%**

Q9 **Bold** and > indicates a significant difference at the 90% level of confidence
Note (1): Cells that are empty indicate that there is no difference in that subgroup from the total (overall average).

…By Age, Education, Level of Responsibility

There are **no** differences between firms that work ***primarily*** on a Design/Build or Design/Assist basis and those where DB//DA accounts for between 1% and 50% of revenue on respondent age or level of responsibility (not shown).

- The mean age of those that work ***primarily*** on a Design/Build or Design/Assist basis is statistically no different than those who work for firms where DB//DA accounts for less than one –half of annual revenue (57.6 years old vs. 57.2 years old).

There is a slight difference in educational attainment:

- Respondents in firms working primarily on a DB//DA basis are more likely to have only a high school education (12% vs. 9%). However, while there is no difference in post-secondary schooling between respondents whose firms work ***primarily*** on a DB//DA basis and those who work for firms where DB//DA accounts for less than one half of the firm's revenue (Any college: 58% vs. 60%; Bachelor's degree: 24% vs. 23%)

The findings on this page not illustrated.

…By Other Firm Characteristics: (NECA Membership, Separate HVAC or Low Voltage Divisions and Business Development)

- 19% of firms in this survey that do any DB//DA work are NECA members, statistically unchanged from the 2016 level. As was the case two years ago, firms working ***primarily*** on a D/B or D/A basis are *less* likely to belong to NECA (Membership is 16% among firms that work ***primarily*** on a DB//DA basis versus 23% among firms where D/B or D/A accounts for less than 50% of revenue.)

- Firms that work ***primarily*** on a D/B or D/A basis are significantly *less* likely to have a separate division that handles Low Voltage projects.

- Firms that work ***primarily*** on a D/B or D/A basis are significantly *more* likely to have "stayed the same" in terms of number of employees over the past 18 months. In contrast, firms where D/B or D/A accounts for less than 50% of revenue are more likely to have "*increased*"; however, there is no difference in "decreased" by whether the firm works ***primarily*** on a D/B or D/A basis compared with firms where D/B or D/A accounts for less than 50% of revenue.)

However, there is **no difference** between firms that work ***primarily*** on a DB//DA basis and those where revenue from DB//DA accounts for between 1% and 50% of the firm's annual revenue in terms of:

- Having a separate division that handles HVAC projects

- Having a separate person or department responsible for business development

	ANY D/B or D/A Work	Primarily D/B or D/A Work	D/B or D/A Less Than 50% of Revenue
	(1116)	(537)	(579)
	%	%	%
Firm is a NECA Member (Q11)			
Yes	19	16	**<23**
Q7C/D [T41]			
Separate division that handles HVAC			
Yes	6	=	=
No	91	=	=
But planning to create HVAC division	3	=	=
Q7A/B [T40]			
Separate division that handles Low Voltage			
Yes	11	9	**<15**
No	87	**90>**	84
But planning to create LV division	5	=	=
Separate person or department (V1/2, 5) responsible for business development? [T63]			
Yes	15	=	=
No	84	=	=
But planning to create in 12-18 months	2	=	=
Change in Number of Employees in past 18 Months [BxB]			
Increased	22	20	**<31**
Stayed the Same	67	**70>**	59
Decreased	9	=	**=**

Bolded numbers > and < indicate statistically significant differences in the direction of the arrow

Empty cells or = indicate no difference between firms that derive more than one half of their revenue from D/B or D/A and those for whom D/B or D/A accounts for between 1% and 50% of revenue

In addition, the online sample was asked questions in a few more areas, shown below. From these questions we know that electrical contractors that work ***primarily*** on a D/B or D/A basis differ from those firms where DB//DA accounts for between 1% and 50% in the following ways. Specifically, they are significantly more likely to...

- Participate in boating/sailing or crafts but less likely to play golf or to participate in exercise/fitness, spectator sports or fantasy sports

- Make a higher average percentage of spending from Big-Box stores but a lower average percentage of purchases from an online company such as Amazon Business**.

Other Individual and Firm Characteristics			
	ANY D/B or D/A Work	Primarily D/B or D/A Work	D/B or D/A Less Than 50% of Revenue
Online Sample Only or Selected Versions	(865)	(325)	(316)
	%	%	%
Innovator/Early Technology Adopter [196]	37	=	=
Leisure Activities [195]			
Exercise/Fitness	27	23	**<32**
Golf	25	21	**<29**
Boating/Sailing	20	**23>**	17
Spectator Sports	19	14	**<25**
Crafts	8	**10>**	5
Fantasy Sports	6	4	**<8**
Where Purchases Are Made [Average]* [92]	(148)	(72)	(76)
	%		
Big-Box Stores	19	**23>**	16
Online Through a Company Like Amazon Business	3**	2	**<4**

*** There is no difference in terms of ANY purchases from these sources (Not shown)**

**** Note that the absolute level of average spending from this source is quite low among firms working on a D/B or D/A basis.**

Types of Work Performed
…By Categories

Electrical contracting firms that work ***primarily*** on a Design/Build or Design/Assist basis appear to be specializing (that is, working in fewer categories), compared with firms that perform D/B or D/A work but where it accounts for between 1% and 50% of their revenue. This has been the case since at least the 2014 Profile Study.

- Firms that work ***primarily*** on a DB//DA basis…
  - Are slightly, but significantly, ***less*** likely to work in 30 of the 41+ project types[2], including all aspects of Power and Lighting, all aspects of Power Quality, most aspects of Communications and Connectivity and a number of aspects of Automation/Controls and a number of aspects of Sustainability (was called "Green" in 2014).
  - There is no difference between firms that work ***primarily*** on a Design/Build or Assist basis and firms for whom D/B or D/A accounts for between 1% and 50% of their revenue on 14 of the project types. However, firms working ***primarily*** on a DB//DA basis are ***more*** likely than firms where DB//DA accounts for between 1% and 50% of revenue to work on Residential HVAC (Controls) and/or Programming and Commissioning.
  - Are more likely to work in 1 –3 of the broad categories* rather than in 4+ categories compared with firms that work on a D/B or D/A basis but where DB//DA accounts for less than half of their revenue.
    - These findings are consistent with what was reported in the 2016 and 2014 Profile Study reports.

*** Categories are the groups of project types such as Power and Lighting or Sustainability**

[2] There are more than 41 project types because Residential and CII Controls are counted separately

Types of Work Performed in Previous Year By Percent of DB//DA Revenue (2018 Profile Study)			
Table 39	**Total**	**Primarily D/B or D/A (51%+)**	**D/B or D/A Between 1%- 50%**
	(1597)	(537)	(579)
	%	%	%
Lighting Fixtures	84	LO	<HI
Wire and Cable	80	LO	<HI
Power	80	LO	<HI
LED Lighting (Including Lamps, Fixtures, and Controls)	87	LO	<HI
Ballasts or LED Drivers	75	LO	<HI
Lamps	70	LO	<HI
Lighting Controls	69	LO	<HI
Daylighting/Shading Systems	22	LO	<HI
[NEW] Any Other Lighting Not Included Above	22	LO	<HI
Backup Power/UPS	47	LO	<HI
Trouble Shooting/Maintenance of Low Voltage Systems	40	LO	<HI
TVSS/Lightning/Surge Suppression	33	LO	<HI
Energy Management/Power Quality	20	LO	<HI
Structured Wiring/Cabling	44	=	=
Networking (VOIP/Wireless/Broadband, etc.)	24	LO	<HI
Fiber Optics (Communications and Security)	17	LO	<HI
Data Centers	20	LO	<HI
Energy Efficiency Projects/Upgrades (non-LEED)	37	LO	<HI
LEED Projects	20	LO	<HI
Solar Photovoltaics	16	=	=
Electric Vehicle Charging Stations	23	LO	<HI
Energy Audits (Including Thermal Imaging)	12	LO	<HI
Geothermal	5	=	=
Smart or Net Metering	10	=	=
Energy Storage	6	=	=
Cogeneration	7	LO	<HI
Wind Generation	4	=	=
Smart Grid Technology	3	=	=
Microgrids	2	=	=
Fuel Cells	2	=	=
Maintenance/Service/Repair (Any Electrical)	70	=	=
Pre-Assembly/-Fabrication of Electrical Components	18	LO	<HI
HVAC (Mechanical)	22	LO	<HI
Water Utilities or Waste Water Treatment	13	LO	<HI
HVAC Controls and Mechanical	16	=	=

Types of Work Performed in Previous Year By Percent of DB//DA Revenue (2018 Profile Study)

	Total		Primarily D/B or D/A (51%+)	D/B or D/A Between 1%- 50%
	(1597)		(537)	(579)
	%			
[CII] Fire/Life Safety (including Alarms/Detectors)	32		*LO*	<HI
[CII] Industrial Controls	31		*LO*	<HI
[CII] HVAC Controls	25		=	=
[CII] Security/CCTV/Access/Motion, etc	25		*LO*	<HI
[CII] Sound and Video or VDV	15		*LO*	<HI
[CII] Automated Build Systems/ Connectivity	18		*LO*	<HI
[CII] Programming and Commissioning	14		*LO*	<HI
[RES] Fire/Life Safety (incl Alarms/Detectors)	28		=	=
[RES] Security/CCTV/Access/Motion, etc	18		=	=
[RES] Home Automation/Smart Home/Connectivity	21		=	=
[RES] HVAC Controls	20		HI>	*LO*
[RES] Home Theater/Sound	16		=	=
[RES] Programming and Commissioning	4		HI>	*LO*
Mentioned 1-9 Types	32		HI>	*LO*
Mentioned 10-11 Types	14		=	=
Mentioned 12+ Project Types	52		*57%*	<66%
Mentioned 12-19	32		=	=
Mentioned 20+ (out of 41) Project Types	20		*LO*	<HI
Work in 1-3 Categories	33		HI>	*LO*
Only One Category	6		=	=
Work in 2 Categories	11		HI>	*LO*
Work in 3 Categories	16		=	=
Work in 4 + Categories	65		*LO*	<HI
Work in 4 Categories	16		=	=
Work in 5 Categories	21		=	=
Work in All 6 Categories	28		*LO*	<HI

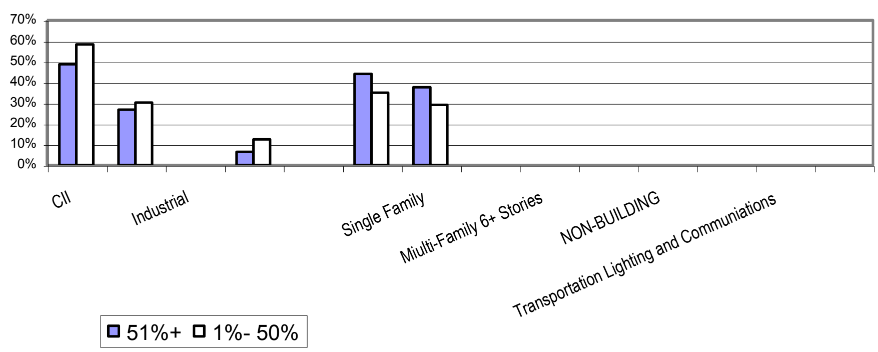
Empty cells or = indicate no difference between firms that derive more than one half of their revenue from D/B or D/A and those for whom D/B or D/A accounts for between 1% and 50% of revenue

Sources of Revenue by Building Type and Sector

By Building Type: In 2017, compared with firms that do Design/Build or Design/Assist work, but not as their primary source of revenue, firms that work ***primarily*** on a DB//DA basis are *more* likely to (do ANY) work on Residential projects, particularly Single-Family housing[3]. This difference also emerged in the 2016 and 2014 Profile Study reports (not shown).

- In contrast, compared with firms that do Design/Build or Design/Assist work, but not as their primary source of revenue, firms that work ***primarily*** on a DB//DA basis are *less* likely to do all aspects of CII work: Commercial, Industrial and Institutional. This was also the case two years and four years ago. There is no difference in the current study on Non-Building work between these two groups.[4]

Average Revenue in Previous Year from CII and Residential Projects (2018 Profile Study) (All of the differences shown below are significant at the 90% confidence level)



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[3] But less likely to work on Multi-Family housing

[4] However, in 2015, firms that work *primarily* on a DB/DA basis were *less* likely to do Non-Building work including Utility work such as Transportation Lighting and Communications, Power Generating and Substations, Distributed Generation/Alternative Energy, Line work and/or Smart Grid Technology. [T24]

By Sector: Compared with firms where D/B or D/A accounts for between 1%-50% of revenue, firms working ***primarily*** on a D/B or D/A basis are ***less*** likely to have done (ANY) work in these three of the sectors (New Construction, Modernization/Retrofit and/or Maintenance Done Under Contract); there is no difference in the case of doing Repair work and Maintenance not done under contract.

The 2018 results are consistent with what was reported in the 2016 and 2014 Profile Study reports.

There are only two differences in terms of average revenue: Average revenue from Repair is significantly higher among firms working ***primarily*** on a DB//DA basis, while average revenue from New Construction is statistically lower compared with firms where DB//DA work accounts for between 1% and 50% of average revenue.

- There are no other differences in average revenue (including Non-Building and Utility work) between those that work primarily on a DB//DA basis and those that work on a DB//DA basis but where it accounts for less than half of their annual revenue.

2018 Profile Study				
	ANY Revenue from D/B or D/A		**Average Revenue from D/B or D/A**	
Table 39	**Primarily D/B or D/A (51%+)**	**Between 1%- 50%**	**Primarily D/B or D/A (51%+)**	**Between 1%- 50%**
	(537)	(579)	(537)	(579)
New Construction		<		<
Modernization/Retrofit		<		=
Repair		=	>	
Maintenance Done Under Contract		<		=
Maintenance Not Done Under Contract		=		=

How Contractors Perform Work
Specifications

In terms of specifications, there are relatively few differences between firms that work ***primarily*** on a Design/Build or Design/Assist basis and those where design services account for less than 50% of the firm's revenue.

- There is no difference in the percentage of plans and specs that are single brand/proprietary vs. the various types of multiple specs in total or by type of multiple spec: Multiple brand, "Or Equal to", or Performance Specified.

- There is no difference in the high percentage of plans and specs (ANY) that are incomplete (ANY incomplete: 86% for firms working ***primarily*** on a D/B or D/A basis and 81% for firms where D/B or D/A accounts for between 1% and 50% of revenue). However, the *average* percent of incomplete plans and specs is significantly higher for firms working ***primarily*** on a D/B or D/A basis (56%) compared with 38% where D/B or D/A accounts for between 1% and 50% of revenue.

- Firms that work ***primarily*** on a DB//DA basis report a higher average percentage of incomplete plans and specs on Commercial and Industrial projects but no in difference on Institutional or Residential projects compared with firms where D/B or D/A accounts for between 1% and 50% of revenue. [162]

- Firms working ***primarily*** on a D/B or D/A basis are more likely to have a high level of ability to influence the electrical design with building *owners*/other *design team* members (51% on average vs. 34%). [165]

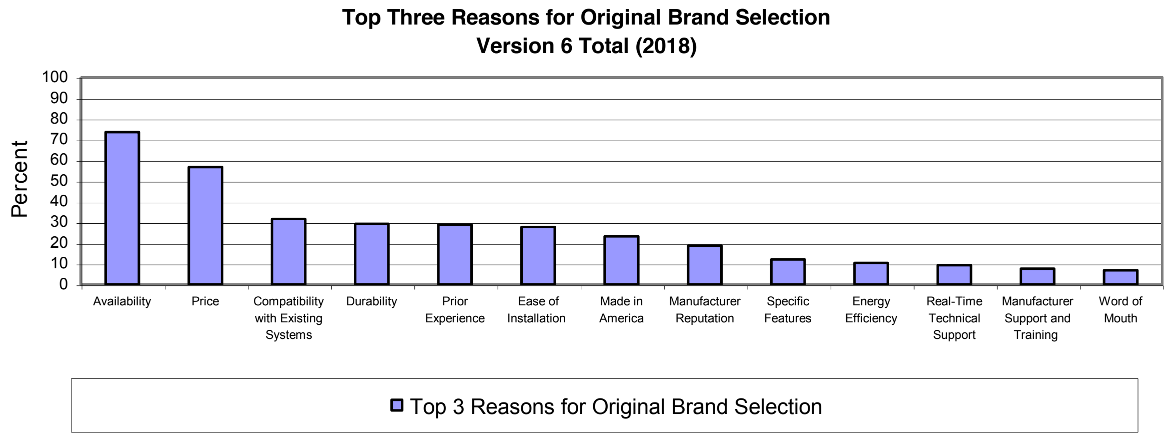
- However, there is no meaningful difference in influence or the degree of collaboration with key trades and specialties between those working primarily on D/B or D/A vs. firms where D/B or D/A accounts for 1-50% of revenue. [166 ff]

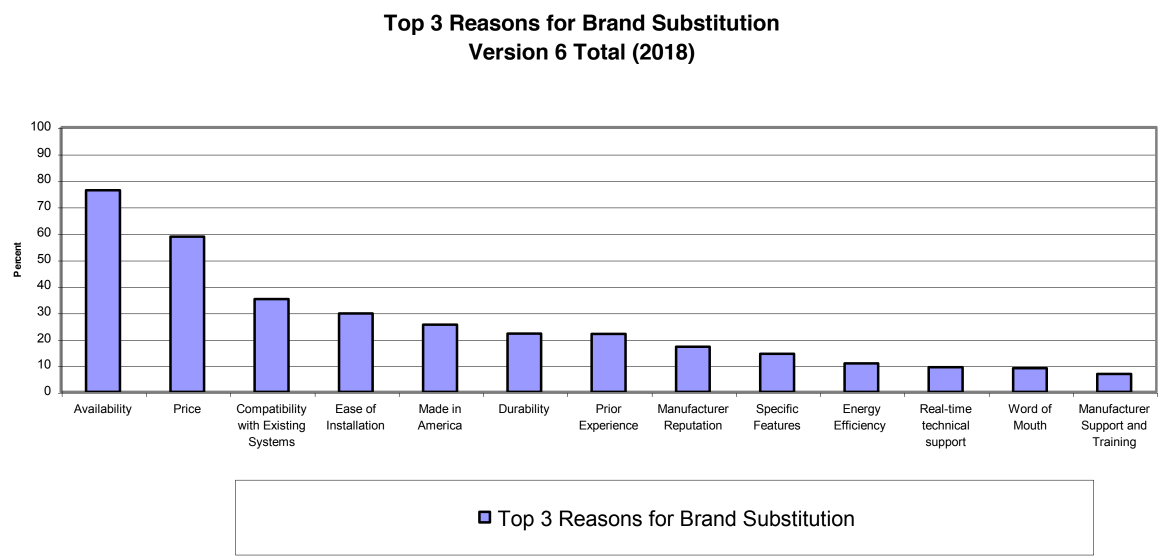
- As shown below, firms that work ***primarily*** on a D/B or D/A basis are more likely to both Specify and Install Fire Life Safety Systems. In contrast, firms where D/B or D/A accounts for less than 50% of revenue are more likely to install only in the categories of Fire/Life Safety, Security, Communications (VDV, etc.) and Building Controls (including HVAC)

Roles Played by Firm in Integrated Systems						
	Specify *and* Install		**Install *Only***		**Don't Work in Category**	
	Primarily D/B or D/A	**D/B or D/A Accounts for 1%- 50%**	**Primarily D/B or D/A**	**D/B or D/A Accounts for %- 0%**	**Primarily D/B or D/A**	**D/B or D/A Accounts for 1% - 50%**
	(71)	(94)	(71)	(94)	(71)	(94)
Version 7 Base (326)	%	%	%	%	%	%
Lighting (including Controls)	=	=	=	=	=	=
Fire/Life Safety	**40>**	27	24	**<42**	=	=
Security	=	=	23	**<37**	=	=
Communications (VDV, etc.)	=	=	20	**<33**	=	=
Building Controls (incl. HVAC)	=	**=**	27	**<43**	=	=
HVAC not including Controls)	=	**=**	=	=	=	=

Main Reasons for Brand Selection – Original and When Making a Substitution

There are no differences between firms working ***primarily*** on a D/B or D/A basis and those who perform DB//DA work, but for whom it is not the primarily source of revenue, in terms of any of the reasons for *original* brand selection or brand *substitution*. In 2016, a few differences emerged which were not reprised in 2018 (not shown).





[Sections 143 and 149]

Training

As shown below, there are no differences between firms that work ***primarily*** on a D/B or D/A basis and those for whom DB//DA accounts for between 1% and 50% of their revenue on participation in training, the sources of their training and few differences on the types of courses taken.

- There is no difference in their likelihood to have taken or to plan to take training.

- There is only one difference between those who work ***primarily*** on a DB//DA basis and those for whom D/B or D/A accounts for between 1% and 50% of their revenue on sources of training or certification: Those who work ***primarily*** on DB//DA are less likely to seek or have sought certification from a manufacturer.

Training 2018 Profile Study

	Future Training			**Past Training**		
	Total	**Design/Build Work Accounts for 51%+**	**Design/Build Work Accounts for 1% to 50%**	**Total**	**Design/Build Work Accounts for 51%+**	**Design/Build Work Accounts for 1% to 50%**
	(233)			(233)		
Plan to Take Training [61]	77%	=	=	Not Asked	Not Asked	Not Asked
Took Training [60]	Not Asked	Not Asked	Not Asked	74%	=	=

Sources of Training and/or Certification

	Past/Future Training			**Past/Future Certification**		
	Total	**Design/Build Work Accounts for 51%+**	**Design/Build Work Accounts for 1% to 50%**	**Total**	**Design/Build Work Accounts for 51%+**	**Design/Build Work Accounts for 1% to 50%**
Plan to Take or Took Training	(189)	(70)	(64)	(189)	(70)	(64)
Organization or Association	52%	=	=	45%	=	=
Manufacturer	31%	=	=	23%	14%	**<34%**
Vocational or Other School	30%	=	=	27%	=	=
All Other Sources	15%	=	=	15%	=	=

There are twelve differences in types of course work, shown below, between firms that work primarily on a D/B or D/A basis and firms that work on D/B or D/A projects but for whom it is not their primary source of revenue. In two of the cases—Home Automation and Energy Audits—interest is *higher* among firms that work ***primarily*** on a D/B or D/A basis. In the remaining ten cases, interest is higher among firms that work on D/B or D/A but not as their primary source of revenue.

- Four of the topics are spread across a number of subject areas including Sustainability, Lighting and Automation (Residential); three of the topics are more general/business-oriented and four deal with processes: Electrical System Design or BIM, Prefab/Off-Site Building, MACS/Service/Maintenance and/or Collaborative Building

Training – Main Focus of Course Work (2018 Profile Study)

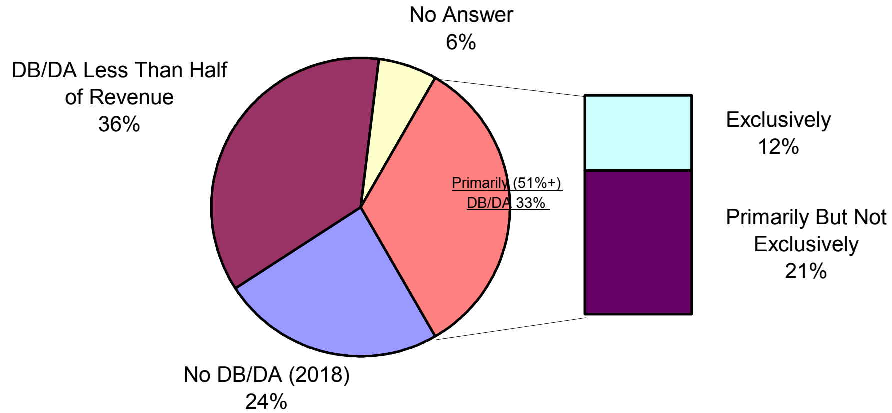
	Total	**Primarily DB//DA**	**DB//DA is 1%- 50% of Revenue**
	(189)	(70)	(64)
Will Take/Has Taken Training			
And Answered Question About Course Work	%	%	%
Lighting: Lighting Controls/Systems	33	24	**<44**
Sustainability: Alternative Energy Systems	10	6	**<18**
Home Automation Systems	9	**15>**	6
Sustainability: Energy Audits	7	**3>**	0
Sustainability: LEED Certification	6	1	**<13**
Estimating/Financial Management	13	10	**<26**
How to Use New Software	9	4	**<17**
Developing New Business Opportunities	8	4	**<18**
Electrical System Design or BIM	9	3	**<21**
Prefab/Off-Site Building	3	1	**<8**
MACS/Service/Maintenance	3	0	**<9**
Collaborative Building	2	0	**<5**

Bold and > indicates a significant difference at the 90% level of confidence [64]

WHEN DESIGN/BUILD OR DESIGN/ASSIST IS THE *EXCLUSIVE* SOURCE OF REVENUE

In the 2018 Profile Study, Design/Build or Assist projects are the ***exclusive*** source of revenue for 12% of electrical contractors. This is statistically unchanged since 2016 when it was 13%. In fact, about 10% of electrical contractors have worked exclusively on a DB//DA basis since 2008.

2018 Revenue from Design/Build or Design/Assist Work



Who Works *Exclusively* on a Design/Build or Design/Assist Basis?
…By Age

Older respondents (aged 55 years +) are more likely to be employed by firms that work ***exclusively*** (100%) on a D/B or D/A basis **or** to be employed by firms that do **not** offer Design/Build or Design/Assist services.

[How to read table: ANY DB//DA is tested versus Do No DB//DA Work; 100% DB//DA is tested versus 1%-99% DB//DA]

	Firm Offers Design/Build or Design/Assist Work by Age of Respondent				
Table 1	Total	Do "ANY" DB//DA Work	DB//DA Work Accounts for 100% of Revenue	DB//DA Work Accounts for 1-99% of Revenue	Do No DB//DA Work
	(1597)	(1116)	(190)	(926)	(393)
Age 55+	70%	67%	**76%>**	66%	**<73% vs. 67**
Age 65+	32%	28%	32%	27%	**<40% vs. 28**
Mean Age	58.2	57.4	59.0*	57.1*	**<59.7 vs. 57.4**

Bold and > indicates a significant difference at the 90% level of confidence

Note: Cells that are empty indicate that there is no difference in that subgroup from the total (overall average)

* Not tested

…By Respondent Education

In 2018, firms that work exclusively on a D/B or D/A basis are more likely to have the survey respondent be only a HS graduate while firms where DB/DA revenue accounts for between 1% and 99% were more likely to have the survey respondent be a graduate of a trade/vocational school or an apprenticeship program. However, in 2016 there were was *no difference* in educational attainment between firms working exclusively on a D/B or D/A basis compared with firms that offer design services but not exclusively.

This is another instance in which the findings have varied markedly over time; there is no discernable trend in these changes (not shown).

[Testing Note: In the table below, ANY DB//DA is tested versus Do No DB//DA Work; 100% DB/DA is tested versus 1%-99% DB/DA]

	Firm Offers Design/Build or Design/Assist Work by Education of Respondent				
	Total	Do "ANY" DB//DA Work	DB//DA Work Accounts for 100% of Revenue	DB//DA Work Accounts for 1-99% of Revenue	Do No DB//DA Work
	(1597)	(1116)	(190)	(926)	(393)
	%	%	%	%	%
HS Only	12	10	**15>**	9	13
Apprenticeship or Trade or Vocational School	30	30	25	**<31**	29
Any College	58	59	61	59	56

Bold and > indicates a significant difference at the 90% level of confidence

…By Number of Employees

As was the case with respondent age, respondents who work in small firms are more likely to be employed by firms that work ***exclusively*** (100%) on a D/B or D/A basis **or** to be employed by firms that do **not** offer Design/Build or Design/Assist services.

[Testing Note: In the table below, ANY DB//DA is tested versus Do No DB//DA Work; 100% DB/DA is tested versus 1%-99% DB/DA]

	Firm Offers Design/Build or Design/Assist Work by Number of Employees				
	Total	Do "ANY" DB//DA Work	DB//DA Work Accounts for 100% of Revenue	DB//DA Work Accounts for 1-99% of Revenue	Do No DB//DA Work
	(1597)	(1116)	(190)	(926)	(393)
	%	%	%	%	%
1-4	56	50	**82>**	43	**<72 vs. 50**
5-9	15	**17> vs. 10**	8	**<18**	10
10-19	10	**11> vs. 7**	4	**<12**	7
20-99	11	**13> vs. 7**	2	**<15**	7
100+	8	**10> vs. 4**	3	**<11**	4
1-9	71	66	**90>**	61	**<82 vs. 66**
10+	29	**34> vs. 18**	10	**<39**	18
50+	12	**15> vs. 6**	4	**<17**	6

Bold and > indicates a significant difference at the 90% level of confidence

…By Annual Revenue

In 2018, small firms (those with revenues of under $250K) are more likely to work ***exclusively*** (100%) on a D/B or D/A basis **or** to **not** offer Design/Build or Design/Assist services. This was also the case two years and four years ago.

- In contrast, firms with revenues of **over** $1 million are significantly more likely to perform D/B or D/A work but where this type of work accounts for *less* than 100% of their revenue.

- As was noted earlier in the report, firms with revenues of under $250K are also *less* likely to do ANY work on a Design/Build or Design/Assist basis compared with higher revenue firms.

[Testing Note: In the table below, ANY DB//DA is tested versus Do No DB//DA Work; 100% DB/DA is tested versus 1%-99% DB/DA]

	Firm Offers Design/Build or Design/Assist Work by Annual Revenue				
	Total	Do "ANY" DB//DA Work	DB//DA Work Accounts for 100% of Revenue	DB//DA Work Accounts for 1-99% of Revenue	Do No DB//DA Work
	(1597)	(1116)	(190)	(926)	(393)
	%	%	%	%	%
<$250K	43	35	**63>**	30	**<61** vs. 35
$250K-$1M	24	**27>** vs.18	25	28	18
$1M-$2.5M	10	**11>** vs. 6	4	**<13**	6
$2.5M-$10M	9	**11>** vs. 5	1	**<13**	5
$10M or more	8	**10>** vs. 4	1	**<12**	4

Q9 **Bold** and > indicates a significant difference at the 90% level of confidence

Types of Work Performed

Sources of Revenue by Building Type and Sector

By Building Type: Those who work ***exclusively*** on a Design/Build or Assist appear to be specializing in **Residential** construction, particularly Single Family housing, compared to firms where Design/Build or Assist accounts for between 1% and 99% of firm revenue.

Further, compared with firms where DB/DA accounts for between 1-99% of revenue, firms that work ***exclusively*** on a DB/DA basis:

- Are *less* likely to do any work CII work, Commercial, Institutional and/or Industrial, as well as Non-Building including Utilities.

ANY Work From This Building Type (2018 Profile Study)			
Table 24	ANY D/B or D/A	100% Exclusively D/B or D/A	1% to 99% D/B or D/A
	(1116)	(190)	(926)
		%	%
CII	92	82	**<94**
Commercial	84	73	**<87**
Institutional	39	16	**<44**
Industrial	55	34	**<59**
RESIDENTIAL	77	**82>**	75
Single Family	71	**82>**	69
Multi-Family	34	21	**<36**
NON-BUILDING	36	17	**<40**
TOTAL UTILITY	25	10	**<28**

By Sector: Those who work ***exclusively*** on a Design/Build or Design/Assist are less likely to do ANY New Construction or Modernization/Retrofit or Maintenance but are equally likely to do Repair work compared with firms where Design/Build or Assist accounts for between 1% and 99% of firm revenue.

ANY Work From This Sector (2018 Profile Study)			
Table 33	**ANY D/B or D/A**	**100% Exclusively D/B or D/A**	**1% to 99% D/B or D/A**
	(1116)	(190)	(926)
	%	%	%
New Construction	83	64	**<87**
Modernization/Retrofit	83	69	**<86**
Repair	73	69	=74
Maintenance Done Under Contract	42	25	**<45**
Maintenance Not Done Under Contract	60	45	**<63**

Types of Work Performed
…By Categories

Electrical contracting firms that work ***exclusively*** on a Design/Build or Design/Assist basis appear to be specializing (that is, working in fewer categories), compared with firms that perform D/B or D/A work but where it accounts for between 1% and 99% of their revenue. In a nutshell, they are significantly less likely to work on almost all of the 41+ project types, with the exceptions of Home Theater/Sound /VDV, Wind Generation and HVAC Mechanical and Controls, where there are no differences. In contrast, they are **not more** likely to work on any of the category types shown on the next two pages.

Types of Work Performed in Previous Year By Percent of DB//DA Revenue
(2018 Profile Study)

	Total	Any	100%	1-99 %
	%	%	%	%
Power	80	85	77	**<87**
Wire and Cable	80	85	79	**<86**
LED Lighting (Including Lamps, Fixtures, and Controls)	87	90	84	**<91**
Lighting Fixtures	84	87	82	**<88**
Lamps	70	73	63	**<75**
Lighting Controls	69	75	59	**<79**
Ballasts or LED Drivers	75	79	68	**<81**
Daylighting/Shading Systems	22	28	13	**<31**
[NEW] Any Other Lighting Not Included Above	22	25	15	**<28**
Structured Wiring/Cabling/Connectivity	44	50	36	**<53**
Networking (VOIP/Wireless/Broadband, etc.)	24	29	17	**<31**
Fiber Optics (Communications and Security)	17	21	8	**<23**
Data Centers	20	25	11	**<28**
Backup Power/UPS	47	54	30	**<51**
Troubleshooting/Maintenance of Low-Voltage Systems	40	45	29	**<48**
TVSS/Lightning Surge Suppression	33	40	19	**<44**
Energy Management/Power Quality	20	25	11	**<27**
Fire/Life Safety (Including Alarms/Detectors)	47	54	35	**<58**
HVAC Controls	34	38	31	**<39**
Security: CCTV/Access/Motion, etc.	34	39	22	**<42**
Industrial Controls (Including PLCs and VFDs)	31	37	21	**<40**
Home Automation/Smart Home/Connectivity	21	25	19	**<26**
Home Theater/Sound or VDV	16	17	17	17
Building Automation Systems/Facilities Connectivity	18	23	9	**<26**
Sound and Video or VDV	15	18	6	**<21**
Programming and Commissioning	14	17	7	**<19**

Table Continues on the Next Page

Types of Work Performed in Previous Year By Percent of DB//DA Revenue (2018 Profile Study)				
	Total	**Any**	**100%**	**1-99 %**
	%	%	%	%
Energy Efficiency Projects/Upgrades (Non-LEED)	37	43	23	**<47**
LEED Projects	20	24	9	**<27**
Electric Vehicle Charging Equipment	23	27	14	**<29**
Solar/Photovoltaics	16	20	10	**<22**
Energy Audits (Including Thermal Imaging)	12	14	3	**<17**
Cogeneration	7	9	3	**<10**
Smart or Net Metering	10	13	2	**<15**
Geothermal	5	6	3	**<6**
Energy Storage	6	8	3	**<8**
Wind Generation	4	5	3	5
Fuel Cells	2	2	1	**3***
Microgrids	2	2	1	**<3***
Smart Grid Technology	3	3	1	**<3***
HVAC (Mechanical)	22	24	19	**<25**
Pre-Assembly/Prefabrication of Elec Components	18	23	10	**<26**
Water Utilities or Waste Water Treatment Plants	13	16	9	**<17**
[NEW] Maintenance/Service/Repair (Any Electrical)	70	75	68	**<77**
Any HVAC (Controls ***or*** Mechanical)	40	44	36	**<45**
HVAC Controls *and* Mechanical	16	19	15	19
Any Low Voltage	95	97	93	**<98**

* Differences in significance can be due to rounding

Bold and > indicates a significant difference at the 90% level of confidence

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Compared with firms that do not offer design services, firms that work ***exclusively*** on a DB/DA basis…are significantly more likely to work in only two areas: Power and Structured Wiring and Cable (not shown).

- Interestingly, two years ago the list was much longer and included: Power, Lighting Fixtures, LED Lighting (including Lamps, Fixtures and Controls), Energy Management/Power Quality, Data Centers, many aspects of Sustainability including Energy Efficiency Projects (non-LEED projects), Solar Photovoltaics, Energy Audits including Thermal Imaging, Geothermal, Smart or Net Metering, Co-Generation, HVAC (Mechanical) HVAC Controls.